

【DESCRIPTION】

【Invention Title】

Novel Biphenyl Derivative and Method for Preparing
Same

5 【Technical Field】

The present invention relates to novel muscarinic M3
receptor antagonists, and more particularly, to novel
biphenyl derivatives having muscarinic M3 receptor
antagonist activity, or isomers thereof, pharmaceutically
10 acceptable salts thereof, or hydrates thereof, methods for
preparing the same, and a pharmaceutical composition
containing the same as an active ingredient.

【Background Art】

Muscarinic receptors are found in all parts of the
15 human body, including the brain and salivary glands. Such
receptors are members of G-protein coupled receptors, and
are further divided into five subtypes (M1 to M5). Among
these subtypes, M1, M2 and M3 receptors are extensively
found in tissues of animal and human, and their
20 pharmacological properties have been elucidated.
Muscarinic M1 receptor is expressed mainly in cerebral
cortex, and is involved in the regulation of higher
cognitive functions. The M2 receptor is found mainly in
heart and bladder smooth muscles, and is involved in
25 regulation of heart rate. It is known that the M3 receptor
is extensively expressed in many peripheral tissues and is
involved in stimulation of the gastrointestinal tract and

the urinary tract, and salivation. The M4 and M5 receptors are found in the brain, and the M4 receptor is mainly involved in movement, but the role of the M5 receptor remains obscure.

5 Generally, it was found that muscarinic receptor antagonists are useful for the treatment of various diseases, for example, chronic obstructive pulmonary disease, asthma, irritable bowel syndrome, urinary incontinence, rhinitis, spasmodic colitis, chronic cystitis,
10 Alzheimer's disease, senile dementia, glaucoma, schizophrenia, gastroesophageal reflux disease, cardiac arrhythmia, and hyper-salivation syndromes (Invest. Drugs, 1997, 6 (10), 1395-1411, Drugs Future, 1997, 22 (2) 135-137, Drugs Future, 1996, 21 (11), 1105-1108, Drugs Future, 1997,
15 22 (7), 733-737).

Meanwhile, it is known that, among the muscarinic receptors, the M2 and M3 receptors are predominant in human bladder and play a role in the regulation of bladder contraction. The M2 receptor is present in the bladder in
20 an amount that is at least three times larger than the M3 receptor, and it plays a role in inhibiting bladder relaxation by beta-receptor rather than being involved directly in bladder contraction. Thus, the M3 receptor appears to play the most important role in bladder
25 contraction. Therefore, selective antagonists against the M3 receptor exhibit excellent inhibitory effects against muscarinic bladder contraction, but inhibit salivary

secretion to cause dry mouth.

Accordingly, the present inventors have prepared novel derivatives that can exhibit functional activity by their selective binding to the muscarinic M3 receptor and
5 have minimized side effects, thereby completing the present invention.

【Disclosure】

【Technical Problem】

It is an object of the present invention to provide
10 novel biphenyl derivatives or pharmaceutically acceptable salts thereof.

Another object of the present invention is to provide methods for preparing novel biphenyl derivatives or pharmaceutically acceptable salts thereof.

15 Still another object of the present invention is to provide a muscarinic M3 receptor antagonist containing novel biphenyl derivatives, pharmaceutically acceptable salts thereof, or hydrates thereof as an active ingredient.

【Technical Solution】

20 The present invention provides novel biphenyl derivatives or pharmaceutically acceptable salts thereof.

The present invention also provides methods for preparing novel biphenyl derivatives or pharmaceutically acceptable salts thereof.

25 The present invention also provides muscarinic M3 receptor antagonists containing novel biphenyl derivatives, pharmaceutically acceptable salts thereof, or hydrates

thereof as an active ingredient.

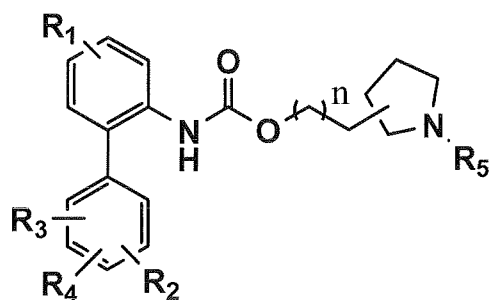
As used herein, the term "alkyl" means a straight or branched hydrocarbon radical. For example, C₁-C₆ alkyl is an aliphatic hydrocarbon having 1 to 6 carbon atoms, and is
5 intended to include all methyl, ethyl, propyl, n-butyl, n-pentyl, n-hexyl, isopropyl, isobutyl, sec-butyl, tert-butyl, neopentyl, isopentyl and the like.

As used herein, the term "alkoxy" means a radical wherein the hydrogen atom of a hydroxyl group is
10 substituted with alkyl. For example, C₁-C₆ alkoxy is intended to include all methoxy, ethoxy, propoxy, n-butoxy, n-pentyloxy, isopropoxy, sec-butoxy, tert-butoxy, neopentyloxy, isopentyloxy and the like.

Novel Biphenyl Derivatives

15 The present invention provides novel biphenyl derivatives represented by the following Formula 1, or pharmaceutically acceptable salts thereof:

[Formula 1]



20 wherein

R₁ is hydrogen, halogen, hydroxy, substituted or unsubstituted C₁-C₆ alkyl, or C₁-C₆ alkoxy;

R₂, R₃ and R₄ are each independently hydrogen, halogen, substituted or unsubstituted amino, nitro, cyano, hydroxy, substituted or unsubstituted C₁-C₆ alkyl, substituted or unsubstituted C₁-C₆ alkoxy, or -C(O)R₆;

5 R₅ is hydrogen or C₁-C₆ alkyl;

n is 0 or 1; and

R₆ is hydrogen or amino.

In a preferred embodiment of the present invention, R₁ in Formula 1 may be hydrogen or halogen; R₂, R₃ and R₄ may
10 each independently be hydrogen, halogen, or C₁-C₆ alkyl; and R₅ may be C₁-C₆ alkyl.

In another preferred embodiment of the present invention, R₁ in Formula 1 may be hydrogen; R₂, R₃ and R₄ may each independently be hydrogen or halogen; R₅ may be C₁-C₆
15 alkyl; and n may be 0 or 1.

In the present invention, the pharmaceutically acceptable salts are preferably acid addition salts formed with pharmaceutically acceptable free acids. Free acids that may be used in the present invention include organic
20 acids and inorganic acids. The inorganic acids include hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid, etc, and the organic acids include citric acid, acetic acid, lactic acid, maleic acid, coumaric acid, gluconic acid, methanesulfonic acid, glycolic acid, succinic acid, 4-toluenesulfonic acid, trifluoroacetic
25 acid, galacturonic acid, embonic acid, glutamic acid, aspartic acid, etc.

In addition, the compounds of Formula 1 or pharmaceutically acceptable salts thereof can show polymorphism, and can also exist as solvates (e.g., hydrates, etc.). Furthermore, the compounds of the present
5 invention can also exist as individual stereoisomers or mixtures of stereoisomers.

The present invention is also directed to novel biphenyl derivatives selected from the group consisting of the following compounds:

- 10 1) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 2) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 3) 2-(1-methylpyrrolidin-2-yl)ethyl (3',4',5'-
15 trifluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 4) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-fluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 5) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-methoxy-[1,1'-biphenyl]-2-yl)carbamate;
- 20 6) 2-(1-methylpyrrolidin-2-yl)ethyl [1,1'-biphenyl]-2-ylcarbamate;
- 7) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-chloro-[1,1'-biphenyl]-2-yl)carbamate;
- 8) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-[1,1'-
25 biphenyl]-2-yl)carbamate;
- 9) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl)carbamate;

- 10) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-trifluoromethoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 11) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-nitro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 12) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-trifluoromethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 13) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-trifluoromethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 14) 2-(1-methylpyrrolidin-2-yl)ethyl ((3'-fluoro-4'-methyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 10 15) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 16) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-ethoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 15 17) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 18) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 19) 2-(1-methylpyrrolidin-2-yl)ethyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 20 20) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 21) 2-(1-methylpyrrolidin-2-yl)ethyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 22) 2-(1-methylpyrrolidin-2-yl)ethyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;

- 23) 2-(1-methylpyrrolidin-2-yl)ethyl (4-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 24) 2-(1-methylpyrrolidin-2-yl)ethyl (3',4-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 25) 2-(1-methylpyrrolidin-2-yl)ethyl (4-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 26) 2-(1-methylpyrrolidin-2-yl)ethyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 27) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-10 methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 28) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-cyano-[1,1'-biphenyl]-2-yl) carbamate;
- 29) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-(3-hydroxypropyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 15 30) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-(dimethylamino)-[1,1'-biphenyl]-2-yl) carbamate;
- 31) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-(tert-butyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 32) 2-(1-methylpyrrolidin-2-yl)ethyl (2'-amino-[1,1'-20 biphenyl]-2-yl) carbamate;
- 33) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-amino-[1,1'-biphenyl]-2-yl) carbamate;
- 34) 2-(1-methylpyrrolidin-2-yl)ethyl (2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 35) 2-(1-methylpyrrolidin-2-yl)ethyl (2'-chloro-[1,1'-biphenyl]-2-yl) carbamate;

- 36) 2-(1-methylpyrrolidin-2-yl)ethyl (2'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 37) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-tert-butyl-5'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 5 38) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-fluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 39) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-amino-3'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 40) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-hydroxy-10 [1,1'-biphenyl]-2-yl) carbamate;
- 41) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 42) 2-(1-methylpyrrolidin-2-yl)ethyl (3',4',5-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 43) 2-(1-methylpyrrolidin-2-yl)ethyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 44) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-ethyl-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 45) 2-(1-methylpyrrolidin-2-yl)ethyl (5-fluoro-3',5'-20 dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 46) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-amino-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 47) 2-(1-methylpyrrolidin-2-yl)ethyl (5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 25 48) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-fluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;

- 49) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 50) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 5 51) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 52) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 53) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-4',5-10 difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 54) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-chloro-3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 55) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 56) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 57) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 58) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-20 fluoro-4'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 59) 2-(1-methylpyrrolidin-2-yl)ethyl (5-fluoro-3',4'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 60) 2-(1-methylpyrrolidin-2-yl)ethyl (5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 25 61) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;

- 62) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 63) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 5 64) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 65) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 66) 2-(1-methylpyrrolidin-2-yl)ethyl (5-chloro-[1,1'-10 biphenyl]-2-yl) carbamate;
- 67) 2-(1-methylpyrrolidin-2-yl)ethyl (5-chloro-3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 68) 2-(1-methylpyrrolidin-2-yl)ethyl (5-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 69) 2-(1-methylpyrrolidin-2-yl)ethyl (5-chloro-3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 70) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 71) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5,5'-20 trichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 72) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5-dichloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 73) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5-dichloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 74) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-4'-formyl-[1,1'-biphenyl]-2-yl) carbamate;

- 75) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 76) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 5 77) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 78) (R)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate;
- 79) (S)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate;
- 10 80) (R)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 81) (S)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 82) (S)-pyrrolidin-3-ylmethyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 83) (S)-pyrrolidin-3-ylmethyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 84) (R)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 20 85) (S)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 86) (R)-pyrrolidin-3-ylmethyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 25 87) (R)-pyrrolidin-3-ylmethyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate;

- 88) (S)-pyrrolidin-2-ylmethyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 89) (R)-(1-methylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate;
- 5 90) (S)-(1-methylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate;
- 91) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 92) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-10 difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 93) (S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 94) (S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 15 95) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 96) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 97) (R)-(1-methylpyrrolidin-3-yl)methyl (5-methyl-20 [1,1'-biphenyl]-2-yl) carbamate;
- 98) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 99) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 100) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;

- 101) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-
[1,1'-biphenyl]-2-yl) carbamate;
- 102) (R)-(1-ethylpyrrolidin-3-yl)methyl [1,1'-
biphenyl]-2-yl carbamate;
- 5 103) (S)-(1-ethylpyrrolidin-3-yl)methyl [1,1'-
biphenyl]-2-yl carbamate;
- 104) (R)-(1-ethylpyrrolidin-3-yl)methyl (3'-methyl-
[1,1'-biphenyl]-2-yl) carbamate;
- 105) (S)-(1-ethylpyrrolidin-3-yl)methyl (3'-methyl-
10 [1,1'-biphenyl]-2-yl) carbamate;
- 106) (S)-(1-ethylpyrrolidin-2-yl)methyl [1,1'-
biphenyl]-2-yl carbamate;
- 107) (S)-(1-isobutylpyrrolidin-2-yl)methyl [1,1'-
biphenyl]-2-yl carbamate;
- 15 108) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5-
difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 109) (R)-(1-methylpyrrolidin-2-yl)methyl [1,1'-
biphenyl]-2-yl carbamate;
- 110) (R)-(1-methylpyrrolidin-2-yl)methyl (3'-methyl-
20 [1,1'-biphenyl]-2-yl) carbamate;
- 111) (R)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-
3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 112) (S)-(1-isopropylpyrrolidin-2-yl)methyl [1,1'-
biphenyl]-2-yl carbamate;
- 25 113) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-
[1,1'-biphenyl]-2-yl) carbamate;

- 114) (R)-(1-methylpyrrolidin-3-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 115) (R)-(1-methylpyrrolidin-3-yl)methyl (3',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 116) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 117) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 118) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-10 [1,1'-biphenyl]-2-yl) carbamate;
- 119) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 120) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 121) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 122) (S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 123) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-20 5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 124) (S)-(1-methylpyrrolidin-3-yl)methyl (4',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 125) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 126) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 127) (S)-(1-methylpyrrolidin-3-yl)methyl (4'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 128) (S)-(1-methylpyrrolidin-3-yl)methyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 129) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 130) (R)-(1-methylpyrrolidin-3-yl)methyl (3',4'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 131) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-10 dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 132) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 133) (R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-amino-[1,1'-biphenyl]-2-yl) carbamate;
- 15 134) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 135) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 136) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-20 4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 137) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 138) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 25 139) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-methoxy-[1,1'-biphenyl]-2-yl) carbamate;

- 140) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 141) (R)-(1-methylpyrrolidin-3-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 142) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 143) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 144) (R)-(1-methylpyrrolidin-3-yl)methyl (2',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 145) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 146) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5-dichloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 147) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 148) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 149) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 150) (R)-(1-ethylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 151) (R)-(1-isopropylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 152) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-(hydroxymethyl)-[1,1'-biphenyl]-2-yl) carbamate;

- 153) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-carbamoyl-[1,1'-biphenyl]-2-yl) carbamate;
- 154) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-amino-[1,1'-biphenyl]-2-yl) carbamate;
- 5 155) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-cyano-[1,1'-biphenyl]-2-yl) carbamate;
- 156) (R)-(1-methylpyrrolidin-3-yl)methyl (2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 157) (R)-(1-methylpyrrolidin-3-yl)methyl (2',4'-10 difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 158) (R)-(1-methylpyrrolidin-3-yl)methyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 159) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-6'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 160) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 161) (S)-(1-methylpyrrolidin-2-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 162) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-20 difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 163) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4',5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 164) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 165) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate;

- 166) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 167) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 168) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 169) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-cyano-[1,1'-biphenyl]-2-yl) carbamate;
- 170) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-amino-10 [1,1'-biphenyl]-2-yl) carbamate;
- 171) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4',5-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 172) (S)-(1-methylpyrrolidin-2-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 173) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4',5,5'-tetrafluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 174) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 175) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-20 5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 176) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 177) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 178) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-cyano-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 179) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-hydroxy-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 180) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 5 181) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4,4',5-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 182) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4,5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 183) 2-(1-methylpyrrolidin-2-yl)ethyl (2',4'-10 difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 184) 2-(1-methylpyrrolidin-2-yl)ethyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 185) 2-(1-methylpyrrolidin-2-yl)ethyl (2',6'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 186) 2-(1-methylpyrrolidin-2-yl)ethyl (5'-chloro-2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 187) (S)-(1-methylpyrrolidin-2-yl)methyl (2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 188) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-20 difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 189) (S)-(1-methylpyrrolidin-2-yl)methyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 190) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-6'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 191) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;

- 192) (R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 193) (R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 5 194) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 195) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 196) (R)-(1-ethylpyrrolidin-3-yl)methyl (3'-chloro-10 4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 197) (S)-(1-methylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-yl carbamate;
- 198) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 199) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 200) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 201) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-20 3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 202) (S)-(1-methylpyrrolidin-2-yl)methyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 203) (S)-(1-methylpyrrolidin-2-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 204) (S)-(1-methylpyrrolidin-2-yl)methyl (4-fluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 205) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 206) (S)-(1-methylpyrrolidin-2-yl)methyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 5 207) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 208) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 209) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-(tert-10 butyl)-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 210) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 211) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 212) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 213) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-amino-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 214) (S)-(1-methylpyrrolidin-2-yl)methyl (2',5-20 difluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 215) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 25 216) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;

- 217) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 218) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-2',4'-bis(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 5 219) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-ethoxy-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 220) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',4'-dimethoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 221) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-10 3',5'-dimethoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 222) (S)-(1-methylpyrrolidin-2-yl)methyl (5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 223) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 15 224) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 225) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate; and
- 226) (S)-(1-methylpyrrolidin-2-yl)methyl (3',5'-20 dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate.

Methods for Preparation of Novel Biphenyl Derivatives

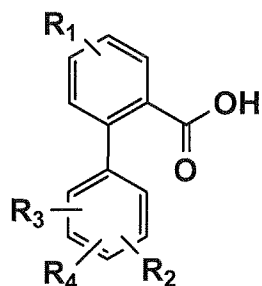
The present invention provides methods for preparing the compounds of formula 1 or pharmaceutically acceptable salts thereof (Preparation Methods 1 to 4).

25 Preparation Method 1

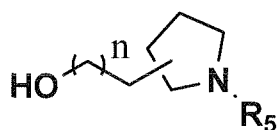
The method for preparing the compounds of formula 1 or pharmaceutically acceptable salts thereof according to

the present invention may comprise a step of reacting a compound of the following formula 2 with a compound of the following formula 3 in the presence of a carbamate synthesis reagent:

5 [Formula 2]



[Formula 3]



wherein R_1 to R_5 and n are the same as defined in formula 1.

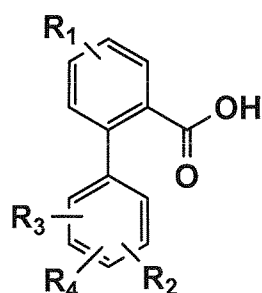
10 The carbamate synthesis reagent preferably comprises an azide compound. Specifically, the carbamate synthesis reagent that is used in the present invention may be a mixture of diphenylphosphoryl azide (DPPA) and triethylamine, a mixture of propylphosphonic anhydride
15 (T3P), trimethylsilyl azide (TMSN₃) and triethylamine, a mixture of sodium azide (NaN₃), tetrabutylammonium bromide and zinc(II) triflate, or the like.

In addition, the carbamate synthesis reaction may be performed at a temperature between 100°C and 120°C for 4 to
20 12 hours.

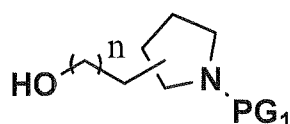
Preparation Method 2

In addition, the method for preparing the compounds of formula 1 or pharmaceutically acceptable salts thereof according to the present invention may comprise the steps of: reacting a compound of the following formula 2 with a
 5 compound of the following formula 3a in the presence of a carbamate synthesis reagent to prepare a compound of the following formula 4; removing an amine protecting group from the compound of formula 4 to prepare a compound of the following formula 1a; and introducing an R₅ substituent
 10 into the compound of formula 1a:

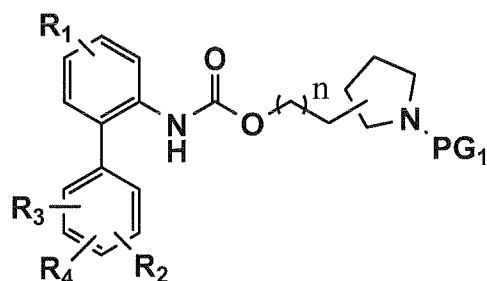
[Formula 2]



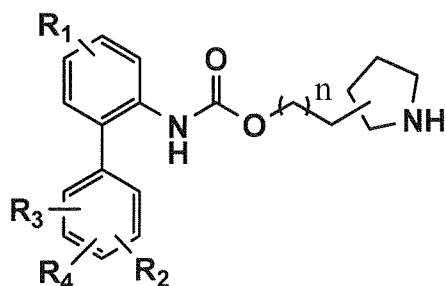
[Formula 3a]



15 [Formula 4]



[Formula 1a]



wherein R_1 to R_4 and n are the same as defined in formula 1,
 and PG_1 is an amine protecting group which may be selected
 from the group consisting of Boc (tert-butyloxycarbonyl),
 5 benzyl, tert-butyl, PMB (4-methoxybenzyl), Fmoc
 (fluorenylmethyloxycarbonyl), Ts (tosylate), MOM
 (methoxymethyl), THP (tetrahydropyranyl), TBDMS (tert-
 butyldimethylsilyl), and TBDPS (tert-butyldimethylsilyl).

The carbamate synthesis reagent and the reaction
 10 conditions are the same as described above for preparation
 method 1.

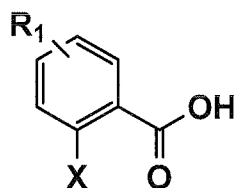
In addition, palladium-carbon (Pd-C), a strong acid
 such as trifluoroacetic acid, sulfuric acid, hydrobromic
 acid or the like; or a base such as piperidine; ammonium
 15 cerium (IV) nitrate; tetra-n-butyl ammonium fluoride or the
 like may be used in the reaction of removing amine
 protecting group. The reaction may be carried out at room
 temperature for 3 to 12 hours.

In addition, the reaction of introducing the R_5
 20 substituent may be carried out using formaldehyde solution,
 acetic acid and zinc, or may be carried out using alkyl
 halide, potassium carbonate, potassium iodide or

triethylamine. Water or dimethylformamide may be used as a solvent. The reaction may be performed at room temperature to 120°C for 5-12 hours.

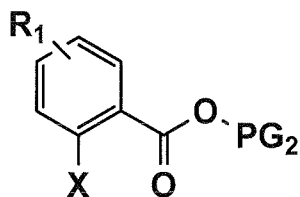
Meanwhile, the compound of formula 2 can be prepared
5 by a method comprising the steps of: reacting a compound of the following formula 5 in the presence of an acid to prepare a compound of the following formula 6, which has a carboxylic acid protecting group introduced therein; coupling the compound of formula 6 with a compound of the
10 following formula 7 to prepare a compound of the following formula 8; and de-esterifying the compound of formula 8 in the presence of a base:

[Formula 5]

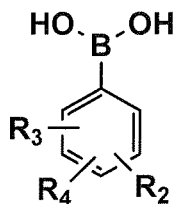


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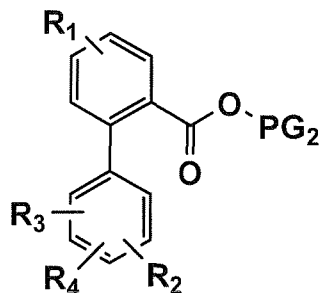
[Formula 6]



[Formula 7]



[Formula 8]



wherein R_1 to R_5 and n are the same as defined in formula 1;
X is halogen; and PG_2 is a protecting group that may be
5 selected from the group consisting of a C_1 - C_4 alkyl group,
benzyl, PMB (4-methoxybenzyl), THP (tetrahydropyranyl),
TBDMS (tert-butyldimethylsilyl), and TBDPS (tert-
butyldimethylsilyl).

In the reaction of introducing the carboxylic acid
10 protecting group, thionyl chloride or sulfuric acid is
preferably used as the acid, and ethanol or methanol may be
used as a solvent. The reaction may be performed at a
temperature between 80°C and 100°C for 4 to 24 hours.

In addition, the base that is used in the coupling
15 reaction is preferably selected from among potassium
carbonate and sodium carbonate. A catalyst that is used in
the coupling reaction may be tetrakis(triphenylphosphine)
palladium or dichlorobis(triphenylphosphine) palladium, and a
solvent that is used in the coupling reaction may be
20 toluene, a mixture of toluene and ethanol, a mixture of
ethanol and water, a mixture of acetonitrile and water, or
the like. Furthermore, the coupling reaction may be

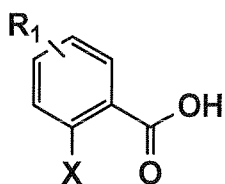
performed at a temperature between 100°C and 120°C for 10 minutes to 12 hours.

Furthermore, the base that is used in the de-esterification reaction is preferably selected from among sodium hydroxide and potassium hydroxide, and a solvent that is used in the de-esterification reaction may be ethanol or a mixture of ethanol and water. The de-esterification reaction may be performed at a temperature between 100°C and 120°C for 2 to 12 hours.

10 Preparation Method 3

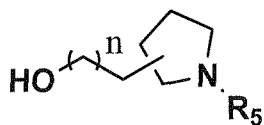
In addition, the method for preparing the compounds of formula 1 or pharmaceutically acceptable salts thereof according to the present invention may comprise the steps of: reacting a compound of the following formula 5 with a compound of the following formula 3 in the presence of a carbamate synthesis reagent to prepare a compound of the following formula 9; and coupling a compound of the following formula 7 to the compound of formula 9:

[Formula 5]

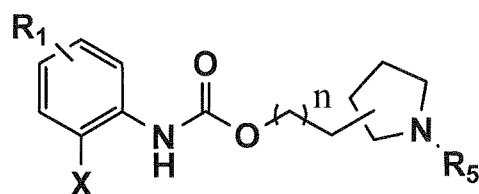


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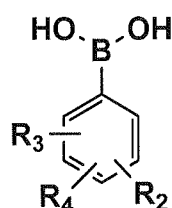
[Formula 3]



[Formula 9]



[Formula 7]



wherein R_1 to R_5 and n are the same as defined in formula 1,
 5 and X is halogen.

The carbamate synthesis reagent and the reaction conditions are the same as described above for preparation method 1.

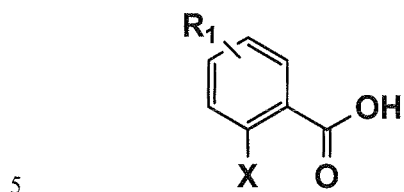
In addition, the coupling reaction reagents and the
 10 reaction conditions are the same as described above for preparation method 2.

Preparation Method 4

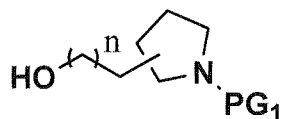
In addition, the method for preparing the compounds of formula 1 or pharmaceutically acceptable salts thereof according to the present invention may comprise the steps of: reacting a compound of the following formula 5 with a compound of the following formula 3a in the presence of a carbamate synthesis reagent to prepare a compound of the following formula 9a; deprotecting the compound of formula
 20 9a to obtain a compound of the following formula 9b; introducing an R_5 substituent into the compound of the

formula 9b to prepare a compound of the following formula 9; and coupling a compound of the following formula 7 to the compound of formula 9:

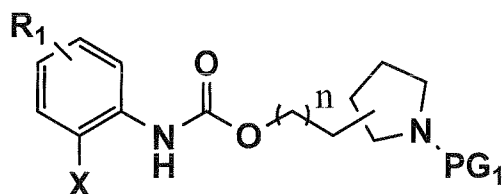
[Formula 5]



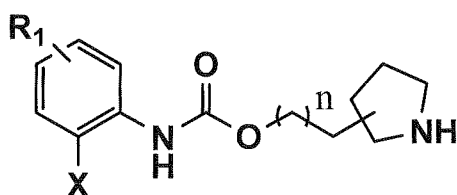
[Formula 3a]



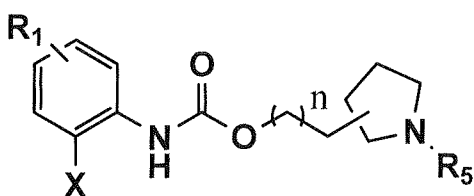
[Formula 9a]



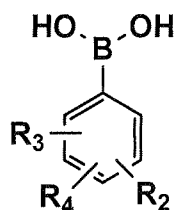
10 [Formula 9b]



[Formula 9]



[Formula 7]



wherein R_1 to R_5 and n are the same as defined in formula 1;
 X is halogen; and PG_1 is the same as defined in preparation
 method 2.

5 The carbamate synthesis reagent and the reaction
 conditions are as described above for preparation method 1.

In addition, the deprotection reaction, the reaction
 of introducing the R_5 substituent and the coupling reaction
 are as described above for preparation method 2.

10 Pharmaceutical Composition Containing Novel Biphenyl Derivatives

The present invention provides a muscarinic M3
 receptor antagonist containing the compound of formula 1,
 an isomer thereof, a pharmaceutically acceptable salt
 15 thereof, or a hydrate thereof as an active ingredient.

In the present invention, the muscarinic M3 receptor
 antagonist may be a composition for the prevention or
 treatment of a disease selected from the group consisting
 of chronic obstructive pulmonary disease, asthma, irritable
 20 bowel syndrome, urinary incontinence, rhinitis, spasmodic
 colitis, chronic cystitis, Alzheimer's disease, senile
 dementia, glaucoma, schizophrenia, gastroesophageal reflux
 disease, cardiac arrhythmia, and hyper-salivation
 syndromes.

In the present invention, the muscarinic M3 receptor antagonist may contain, in addition to the compound of formula 1 or a pharmaceutically acceptable salt thereof, one or more active ingredients showing a function equal or
5 similar to the compound of formula 1 or a pharmaceutically acceptable salt thereof.

For administration, the composition of the present invention may further comprise at least one pharmaceutically acceptable carrier. The pharmaceutically
10 acceptable carrier that is used in the composition of the present invention may be physiological saline, sterile water, Ringer's solution, buffered saline, dextrose solution, maltodextrin solution, glycerol, ethanol, or a mixture of one or more thereof. If necessary, other
15 conventional additives such as antioxidants, buffers or bacteriostatic agents may be added to the composition of the present invention. In addition, diluents, dispersants, surfactants, binders and lubricants may further be added to the composition to formulate injectable formulations such
20 as aqueous solutions, suspensions or emulsions, pills, capsules, granules or tablets. Furthermore, the composition of the present invention may preferably be formulated depending on particular diseases or their components, using a suitable method known in the art or the
25 method described in Remington's Pharmaceutical Science, Merck Publishing Company, Easton PA.

In addition, when the muscarinic M3 receptor antagonist of the present invention is for oral administration, the compound of formula 1 or a pharmaceutically acceptable salt thereof may be contained
5 in an amount of 1-95 wt%, preferably 1-70 wt%, based on the total weight of the M3 receptor antagonist.

The pharmaceutical composition of the present invention may be administered orally or may be administered parenterally in the form of injectable solutions,
10 suppositories, transdermal agents, inhalation agents or intravesical agents.

The present invention also provides a method for treating or alleviating a disease caused by decline of the activity on muscarinic M3 receptor, the method comprising
15 administering a muscarinic M3 receptor antagonist containing the compound of formula 1 or a pharmaceutically acceptable salt as an active ingredient to mammals including humans in need of muscarinic M3 receptor antagonist activity.

20 The muscarinic M3 receptor antagonist of the present invention may be used alone or in combination with surgery, hormone therapy, drug therapy and a biological response modifier in order to prevent or treat a disease caused by decline of the activity on muscarinic M3 receptor.

25 Method for Prevention or Treatment of Muscarinic M3 Receptor-Related Diseases

The present invention also provides a method for preventing or treating a muscarinic M3 receptor-related disease, for example, a disease selected from among chronic obstructive pulmonary disease, asthma, irritable bowel syndrome, urinary incontinence, rhinitis, spasmodic colitis, chronic cystitis, Alzheimer's disease, senile dementia, glaucoma, schizophrenia, gastroesophageal reflux disease, cardiac arrhythmia, and hyper-salivation syndromes, the method comprising administering to subjects
5 in need thereof a composition containing, as an active ingredient, the compound of formula 1, or an isomer thereof, a pharmaceutically acceptable salt thereof, or a hydrate thereof.

The composition that is used in the preventing or
15 treating method of the present invention includes the pharmaceutical composition as described herein.

In addition, the subjects in need of the preventing or treating method of the present invention include mammals, particularly humans.

20 **【Advantageous Effects】**

The biphenyl derivatives according to the present invention have affinity and selectivity for the muscarinic M3 receptor and less toxic. Thus, these biphenyl derivatives can be used as agents for preventing or
25 treating various diseases, particularly urinary system diseases such as enuresis, nervous pollakiuria, neurogenic bladder, unstable bladder, chronic cystitis, cystospasm,

urinary incontinence, or frequent urination, respiratory system diseases such as chronic obstructive pulmonary disease, chronic bronchitis, asthma, or rhinitis, and digestive diseases such as irritable bowel syndrome, spastic colitis or diverticulitis, in which the muscarinic M3 receptor is involved.

Particularly, because the biphenyl derivatives of the present invention have high selectivity for the muscarinic M2 receptor and the muscarinic M3 receptor that is present in smooth muscles, gland tissues and the like, these biphenyl derivatives are M3 receptor antagonists having less side effects, and thus are very useful as agents for preventing or treating urinary incontinence, frequent urination, chronic bronchitis, chronic obstructive pulmonary disease, asthma, rhinitis, and the like.

【Examples】

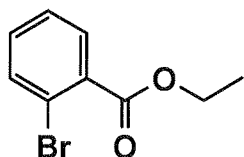
The present disclosure will be described more fully hereinafter with reference to the accompanying synthesis examples, examples and experimental examples. However, the Examples according to the present invention can be modified in various ways, and the scope of the present invention should not be interpreted as being limited to the following Examples. The Examples of the present invention are provided so that those skilled in the art can sufficiently understand the present invention.

Furthermore, agents stated hereinafter were purchased from Aldrich Korea, Acros, Lancaster, TCI unless otherwise

specified. ^1H NMR used herein was Varian 400 MHz, and Microwave oven used herein was Monowave 300 of Anton Paar company.

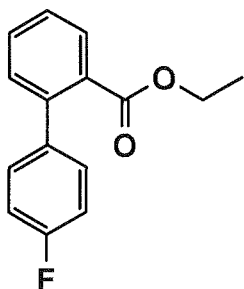
5 [Synthesis Example 1] Synthesis of 4'-fluoro-[1,1'-biphenyl]-2- carboxylic acid

[Step 1] Synthesis of ethyl-2-bromobenzoate



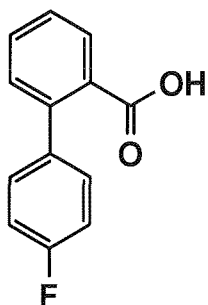
2-Bromobenzoic acid (5g, 24.87mmol) was dissolved in
10 ethanol (100mL). Sulfuric acid (5mL) was added thereto
and stirred under reflux for 24 hours. After reaction
was terminated, the reactant was cooled to room
temperature. The solvent was removed by concentrating
the reactant under reduced pressure, and extracted with
15 water and ethyl acetate. The organic layer was dried
with anhydrous magnesium sulfate, filtered and
concentrated. The resulting residue was purified with
column chromatography to prepare the titled compound
(4.9g, 86%).

20 [Step 2] Synthesis of ethyl 4'-fluoro-[1,1'-biphenyl]-2-
carboxylate



Ethyl-2-bromobenzoate (1g, 4.37mmol) prepared in Step
 1 was dissolved in a mixed solution of toluene (20mL) and
 ethanol (4mL), and then 4-fluorophenyl boronic acid (672mg,
 5 4.80mmol), potassium carbonate (1.21g, 8.73mmol) and
 tetrakis triphenylphosphine palladium (504mg, 0.44mmol)
 were added thereto. The reactant was stirred at 100°C for
 6 hours, cooled to room temperature and filtered through
 celite. The solvent was removed by concentrating the
 10 reactant under reduced pressure. The same was extracted
 with water and ethyl acetate. The organic layer was dried
 with anhydrous magnesium sulfate, filtered and
 concentrated. The resulting residue was purified with
 column chromatography to prepare the titled compound
 15 (948mg, 89%).

[Step 3] Synthesis of 4'-fluoro-[1,1'-biphenyl]-2-
carboxylic acid



Ethyl 4'-fluoro-[1,1'-biphenyl]-2-carboxylate (948mg, 3.33mmol) prepared in Step 2 was dissolved in ethanol (20mL). 2*N*-sodium hydroxide solution (5.82mL, 11.64mmol) was added thereto and stirred under reflux for 12 hours.

5 The reactant was cooled to room temperature. The solvent was removed by concentrating the reactant under reduced pressure. The same was extracted with 1*N*-hydrochloric acid and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated to

10 prepare the titled compound (747mg, 89%).

[Synthesis Examples 2-15]

2-Bromobenzoic acid as a starting material and reacting materials in Table 1 were used to prepare

15 compounds of Synthesis Examples 2-15 in the same manner as Synthesis Example 1.

[Table 1] Synthesis Examples 1-15

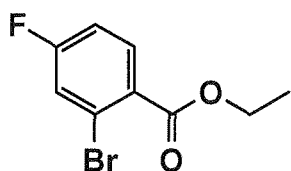
Synthesis Example	Chemical Name	Reacting Material
1	4'-Fluoro-[1,1'-biphenyl]-2-carboxylic acid	4-Fluorophenyl boronic acid
2	3',5'-Difluoro-[1,1'-biphenyl]-2-carboxylic acid	3,5-Difluorophenyl boronic acid
3	3',4',5'-Trifluoro-[1,1'-biphenyl]-2-carboxylic acid	3,4,5-Trifluorophenyl boronic acid

4	3'-Fluoro-[1,1'-biphenyl]-2-carboxylic acid	3-Fluorophenyl boronic acid
5	4'-Methoxy-[1,1'-biphenyl]-2-carboxylic acid	4-Methoxyphenyl boronic acid
6	4'-Chloro-[1,1'-biphenyl]-2-carboxylic acid	4-Chlorophenyl boronic acid
7	3'-Chloro-[1,1'-biphenyl]-2-carboxylic acid	3-Chlorophenyl boronic acid
8	3',5'-Dichloro-[1,1'-biphenyl]-2-carboxylic acid	3,5-Dichlorophenyl boronic acid
9	4'-Trifluoromethoxy-[1,1'-biphenyl]-2-carboxylic acid	4-Trifluoromethoxyphenyl boronic acid
10	4'-Nitro-[1,1'-biphenyl]-2-carboxylic acid	4-Nitrophenyl boronic acid
11	3'-Trifluoromethyl-[1,1'-biphenyl]-2-carboxylic acid	3-Trifluoromethylphenyl boronic acid
12	4'-Trifluoromethyl-[1,1'-biphenyl]-2-carboxylic acid	4-Trifluoromethylphenyl boronic acid
13	3'-Fluoro-4'-methyl-[1,1'-biphenyl]-2-carboxylic acid	3-Fluoro-4-methylphenyl boronic acid

14	3'-Methyl-[1,1'-biphenyl]-2-carboxylic acid	3-Methylphenyl boronic acid
15	3'-Ethoxy-[1,1'-biphenyl]-2-carboxylic acid	3-Ethoxyphenyl boronic acid

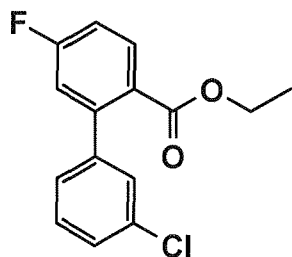
[Synthesis Example 16] Synthesis of 3'-chloro-5-fluoro-[1,1'-biphenyl]-2-carboxylic acid

[Step 1] Ethyl 2-bromo-4-fluorobenzoate



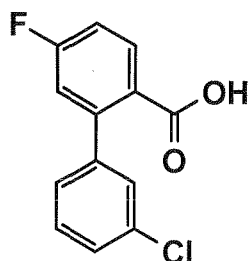
5
2-Bromo-4-fluorobenzoic acid (2.37g, 10.82mmol) was dissolved in ethanol (100mL). Thionyl chloride (1.57mL, 21.64mmol) was added thereto and stirred under reflux for 24 hours. The reactant was cooled to room temperature
10 after the reaction was terminated. The solvent was removed by concentrating the reactant under reduced pressure. The same was extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was
15 purified with column chromatography to prepare the titled compound (2.29g, 87%).

[Step 2] Ethyl 3'-chloro-5-fluoro-[1,1'-biphenyl]-2-carboxylate



Ethyl 2-bromo-4-fluorobenzoate (1.1g, 4.47mmol) prepared in Step 1 was dissolved in toluene (20mL). 3-Chlorophenyl boronic acid (766mg, 4.90mmol), potassium carbonate (1.23g, 8.90mmol) and tetrakis triphenylphosphine palladium (520mg, 0.44mmol) were added thereto. The reactant was stirred at 100°C for 6 hours and cooled to room temperature. The same was filtered through celite and the solvent was removed by concentrating the reactant under reduced pressure. The same was extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (850mg, 69%).

[Step 3] 3'-Chloro-5-fluoro-[1,1'-biphenyl]-2-carboxylic acid



Ethyl 3'-chloro-5-fluoro-[1,1'-biphenyl]-2-carboxylate (850mg, 3.05mmol) prepared in Step 2 was dissolved in ethanol (20mL). 2N-sodium hydroxide solution (4.57mL, 9.15mmol) was added thereto and stirred under reflux for 12 hours. The reactant was cooled to room

temperature. The solvent was removed by concentrating the reactant under reduced pressure and extracted with 1N-hydrochloric acid and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated to prepare the titled compound (650mg, 85%).

[Synthesis Examples 17-26]

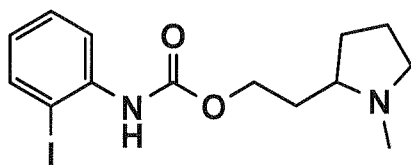
The starting materials and reacting materials in Table 2 were used to prepare compounds of Synthesis Examples 17-26 in the same manner as Synthesis Example 16.

[Table 2] Synthesis Examples 16-26

Synthesis Example	Chemical Name	Starting Material	Reacting Material
16	3'-Chloro-5-fluoro-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-4-fluorobenzoic acid	3-Chlorophenyl boronic acid
17	3',5-Difluoro-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-4-fluorobenzoic acid	3-Fluorophenyl boronic acid
18	4',5-Difluoro-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-4-fluorobenzoic acid	4-Fluorophenyl boronic acid
19	3',5,5'-Trifluoro-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-4-fluorobenzoic acid	3,5-Difluorophenyl boronic acid

20	5-Fluoro-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-4-fluorobenzoic acid	Phenyl boronic acid
21	5-Fluoro-3'-methyl-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-4-fluorobenzoic acid	3-Methylphenyl boronic acid
22	4-Fluoro-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-5-fluorobenzoic acid	Phenyl boronic acid
23	3',4-Difluoro-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-5-fluorobenzoic acid	3-Fluorophenyl boronic acid
24	4-Methoxy-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-5-methoxybenzoic acid	Phenyl boronic acid
25	5-Methyl-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-4-methylbenzoic acid	Phenyl boronic acid
26	3'-Fluoro-5-methyl-[1,1'-biphenyl]-2-carboxylic acid	2-Bromo-4-methylbenzoic acid	3-Fluorophenyl boronic acid

[Synthesis Example A] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl (2-iodophenyl)carbamate



2-Iodobenzoic acid (1g, 4.03mmol) was dissolved in toluene (50mL). Biphenylphosphoryl azide (1.04mL, 4.84mmol) and triethylamine (566uL, 4.03mmol) were added thereto. The same was stirred at room temperature for 30 minutes, and then stirred under reflux for 1 hour. The reactant was cooled to room temperature. 2-(2-Hydroxyethyl)-1-methylpyrrolidine (651uL, 4.84mmol) was added thereto and stirred under reflux for 12 hours. The reactant was cooled to room temperature. The solvent was removed by concentrating the reactant under reduced pressure and the same was extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (1.16g, 77%).

[Synthesis Examples B-E]

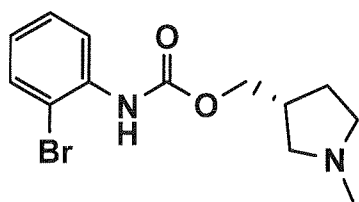
The starting materials in Table 3 were used instead of 2-iodobenzoic acid to prepare compounds of Synthesis Examples B-E in the same manner as Synthesis Example A.

[Table 3] Synthesis Examples A-E

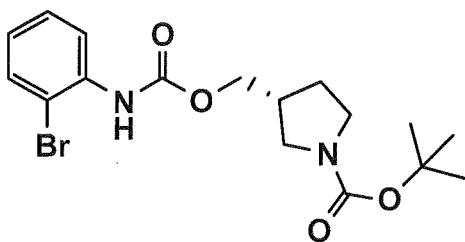
Synthesis Example	Chemical Name	Starting Material
A	2-(1-Methylpyrrolidin-2-yl)ethyl (2-iodophenyl)carbamate (1.16g, 77%)	2-Iodobenzoic acid (1g, 4.03mmol)

B	2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-fluorophenyl) carbamate (3.7g, 94%)	2-Bromo-4-fluorobenzoic acid (2.5g, 11.42mmol)
C	2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-(trifluoromethyl)phenyl) carbamate (1.72g, 94%)	2-Bromo-4-(trifluoromethyl)benzoic acid (2g, 7.43mmol)
D	2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-methoxyphenyl) carbamate (2.5g, 81%)	2-Bromo-4-methoxybenzoic acid (2g, 7.43mmol)
E	2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-chlorophenyl) carbamate (38g, 99%)	2-Bromo-4-chlorobenzoic acid (2.5g, 10.62mmol)

[Synthesis Example F] Synthesis of (R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate

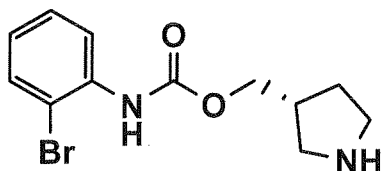


- 5 [Step 1] Synthesis of (R)-tert-butyl 3-(((2-bromophenyl) carbamoyl)oxy)methyl)pyrrolidine-1-carboxylate



2-Bromobenzoic acid (4.5g, 22.4mmol) was dissolved in toluene (100mL) and biphenylphosphoryl azide (5.8mL, 26.9mmol) and triethylamine (3.15mL, 22.4mmol) were added thereto. The same was stirred at room temperature for 30 minutes, and then stirred under reflux for 1 hour. The reactant was cooled to room temperature, (*R*)-*tert*-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (5.41g, 26.9mmol) was added thereto, and stirred under reflux for 12 hours. The reactant was cooled to room temperature. The solvent was removed by concentrating the reactant under reduced pressure. The same was extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (8.1g, 91%).

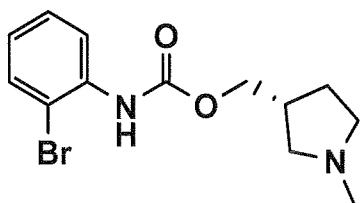
[Step 2] Synthesis of ((*R*)-pyrrolidin-3-ylmethyl (2-bromophenyl)carbamate



(*R*)-*tert*-butyl 3-((((2-bromophenyl)carbamoyl)oxy)methyl)pyrrolidine-1-carboxylate (8.1g, 20.29mmol) prepared in Step 1 was dissolved in dichloromethane (100mL). Trifluoroacetic acid (50mL) was added thereto and stirred at room temperature for 2 hours. The solvent was removed by concentrating the reactant under reduced pressure, and the same was extracted with 2*N*-sodium hydroxide solution and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with

column chromatography to prepare the titled compound (3.94g, 65%).

[Step 3] Synthesis of (R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate



5 (R)-pyrrolidin-3-ylmethyl (2-bromophenyl)carbamate (3.94g, 13.13mmol) prepared in Step 2 was dissolved in water (100mL). Acetic acid (5mL), formaldehyde solution (15mL) and zinc powder (1.5g) were sequentially added
10 thereto and stirred at room temperature for 12 hours. The reactant was filtered, neutralized with 2N-sodium hydroxide solution and extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was
15 purified with column chromatography to prepare the titled compound (3.06g, 75%).

[Synthesis Examples G-L]

The starting materials and reacting materials in
20 Table 4 were used to prepare compounds of Synthesis Examples G-L in the same manner as Synthesis Example F.

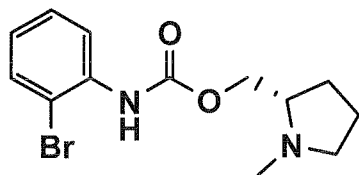
[Table 4] Synthesis Examples F-L

Synthesis Example	Chemical Name	Starting Material	Reacting Material
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F	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (3.06g, 75%)	2-Bromobenzoic acid (4.5g, 22.4mmol)	(R)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (5.41g, 26.9mmol)
G	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate	2-Bromobenzoic acid	(S)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate
H	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (2.29g, 30%)	2-Bromo-4-fluorobenzoic acid (5g, 22.83mmol)	(R)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (5.51g, 27.4mmol)
I	Synthesis of (S)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate	2-Bromo-4-fluorobenzoic acid	(S)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate
J	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-chlorophenyl) carbamate (2.5g, 34%)	2-Bromo-4-chlorobenzoic acid (5g, 21.23mmol)	(R)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (5.1g, 25.48mmol)

K	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-methoxyphenyl)carbamate (2.3g, 52%)	2-Bromo-4-methoxybenzoic acid (3g, 12.98mmol)	(R)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (3.9g, 19.47mmol)
L	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4,5-difluorophenyl)carbamate (884mg, 40%)	2-Bromo-4,5-difluorobenzoic acid (1.5g, 6.33mmol)	(R)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (2.55g, 12.65mmol)

[Synthesis Example M] Synthesis of (S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl)carbamate



5 2-Bromobenzoic acid (2g, 9.95mmol) was dissolved in toluene (75mL), and then biphenylphosphoryl azide (2.57mL, 11.94mmol) and triethylamine (1.4mL, 9.95mmol) were added thereto. The same was stirred at room temperature for 30 minutes, and then stirred under reflux for 1 hour. The reactant was cooled to room temperature. (S)-(1-methylpyrrolidin-2-yl)methanol (1.42mL, 11.94mmol) was added thereto and stirred under reflux for 4 hours. The reactant was cooled to room temperature. The solvent was removed by concentrating the reactant under reduced pressure. The same was extracted with water and

10

15

dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (1.4g, 45%).

5

[Synthesis Examples N-P]

The starting materials and reacting materials in Table 5 were used to prepare compounds of Synthesis Examples N-P in the same manner as Synthesis Example M.

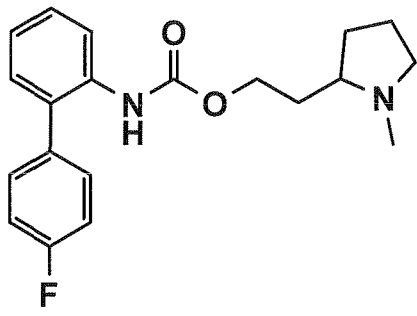
10 [Table 5] Synthesis Examples M-P

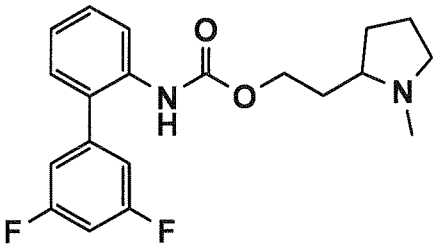
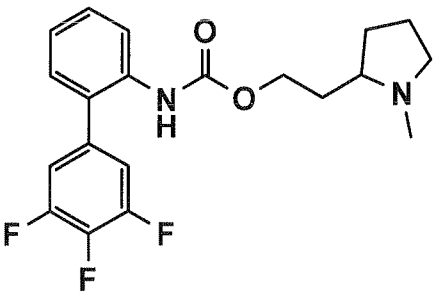
Synthesis Example	Chemical Name	Starting Material	Reacting Material
M	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (1.4g, 45%)	2-Bromobenzoic acid (2g, 9.95mmol)	(S)-(1-methylpyrrolidin-2-yl)methanol (1.42mL, 11.94mmol)
N	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (2.86g, 47%)	2-Bromo-4-fluorobenzoic acid (4g, 18.26mmol)	(S)-(1-methylpyrrolidin-2-yl)methanol (2.6mL, 21.91mmol)

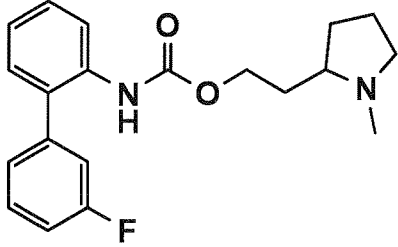
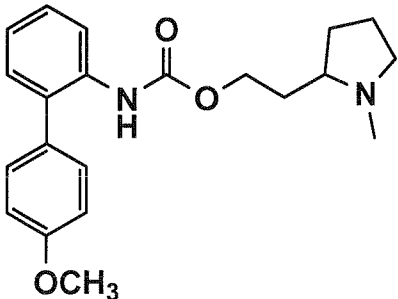
O	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-methoxyphenyl) carbamate (600mg, 67%)	2-Bromo-4-methoxybenzoic acid (600mg, 2.60mmol)	(S)-(1-methylpyrrolidin-2-yl)methanol (463uL, 3.90mmol)
P	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4,5-difluorophenyl) carbamate (737mg, 50%)	2-Bromo-4,5-difluorobenzoic acid (1g, 4.22mmol)	(S)-(1-methylpyrrolidin-2-yl)methanol (730mg, 6.33mmol)

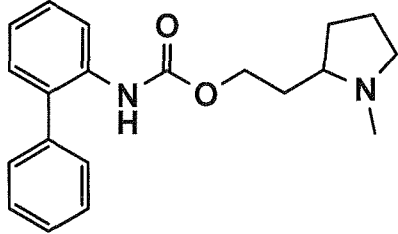
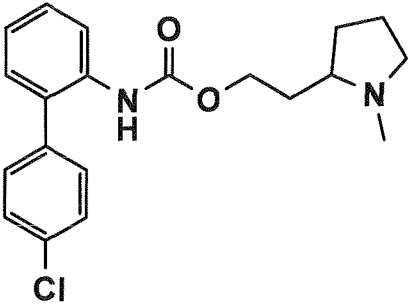
Example

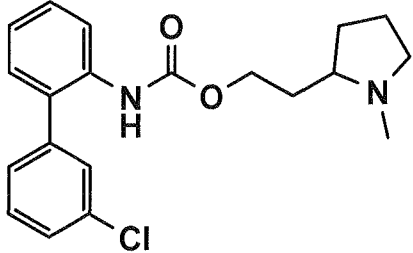
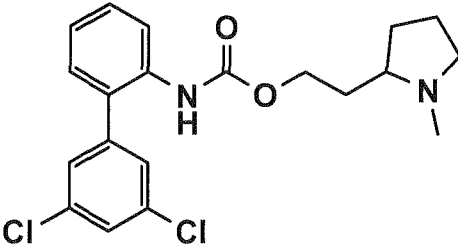
[Table 6] Compounds of Examples

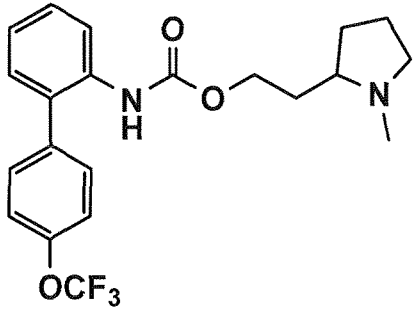
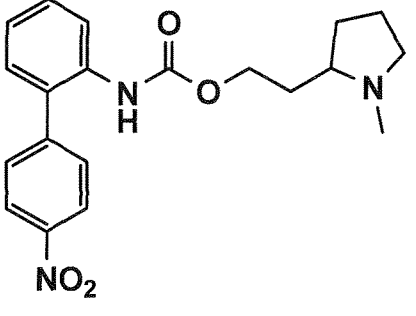
Example	Compound	NMR Value
1	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.10-7.99 (m, 1H), 7.38-7.26 (m, 3H), 7.20-7.06 (m, 4H), 6.52-6.41 (bs, 1H), 4.21-4.08 (m, 2H), 3.12-2.99 (m, 1H), 2.29 (m, 3H), 2.20- 1.87 (m, 4H), 1.83- 1.61 (m, 2H), 1.61- 1.40 (m, 2H)

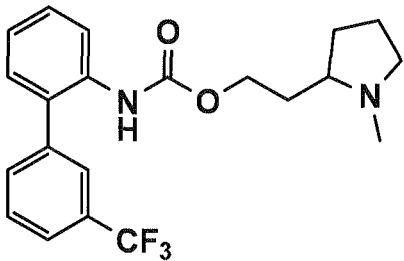
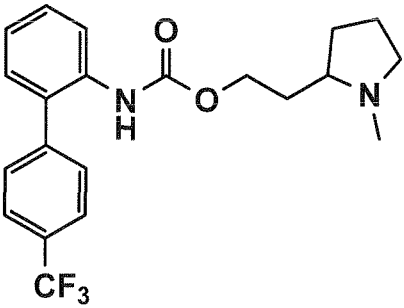
2	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR (CDCl_3): δ 8.11–7.96 (m, 1H), 7.45–7.32 (m, 1H), 7.21–7.07 (m, 2H), 6.98–6.79 (m, 3H), 6.55–6.39 (bs, 1H), 4.27–4.10 (m, 2H), 3.14–2.99 (m, 1H), 2.30 (s, 3H), 2.21– 1.85 (m, 4H), 1.85– 1.41 (m, 4H)
3	2-(1-Methylpyrrolidin-2-yl)ethyl (3',4',5'-trifluoro-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR (CDCl_3): δ 8.00–7.88 (m, 1H), 7.43–7.30 (m, 1H), 7.29–7.08 (m, 2H), 7.05–6.91 (m, 2H), 6.69–6.52 (bs, 1H), 4.25–4.06 (m, 2H), 3.25–3.08 (m, 1H), 2.47–2.17 (m, 5H), 2.14–1.91 (m, 2H), 1.90–1.45 (m, 4H)

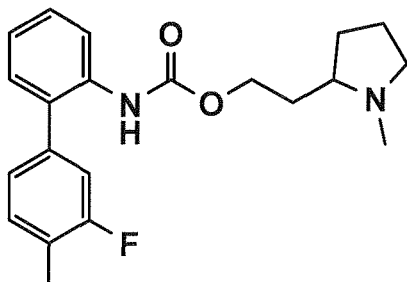
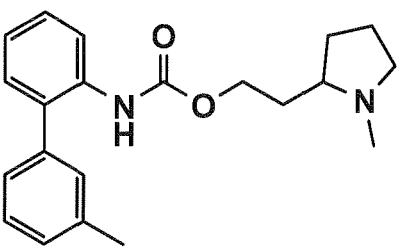
4	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-fluoro[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.13-7.96 (m, 1H), 7.50-7.28 (m, 2H), 7.22-7.00 (m, 5H), 6.60-6.45 (bs, 1H), 4.25-4.07 (m, 2H), 3.13-2.99 (m, 1H), 2.31 (s, 3H), 2.22-1.41 (m, 8H)
5	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-methoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.13-7.99 (m, 1H), 7.35-7.22 (m, 4H), 7.20-7.14 (m, 1H), 7.12-7.06 (m, 1H), 7.03-6.95 (m, 2H), 6.63-6.56 (bs, 1H), 4.23-4.10 (m, 2H), 3.85 (s, 3H), 3.10-3.01 (m, 1H), 2.28 (s, 3H) 2.17-1.88 (m, 4H), 1.84-1.62 (m, 2H), 1.62-1.41 (m, 2H)

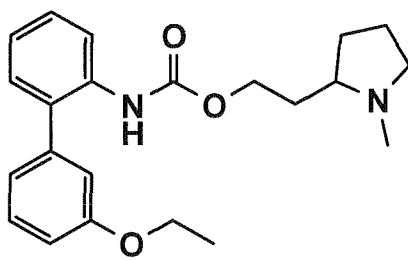
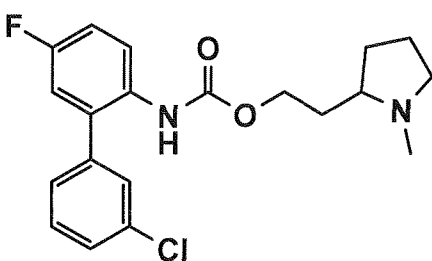
6	2-(1-Methylpyrrolidin-2-yl)ethyl [1,1'-biphenyl]-2-ylcarbamate 	¹H NMR (CDCl₃): δ 8.11 (s, 1H), 7.45 (t, 1H), 7.38 (d, 1H), 7.34 (dd, 2H), 7.21 (dd, 2H), 7.12 (t, 1H), 6.99 (t, 1H), 6.64 (s, 1H), 4.18- 4.14 (m, 2H), 3.09- 3.01 (m, 1H), 2.40 (s, 3H), 2.34 (m, 3H), 2.12- 2.06 (m, 2H), 1.91- 1.82 (m, 1H), 1.78- 1.66 (m, 2H), 1.60- 1.56 (m, 1H)
7	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-chloro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 8.11-7.94 (m, 1H), 7.55-6.97 (m, 7H), 6.55-6.35 (bs, 1H), 4.25-3.98 (m, 2H), 3.14-2.94 (m, 1H) 2.29 (s, 3H), 2.20- 1.84 (m, 4H), 1.81- 1.37 (m, 4H)

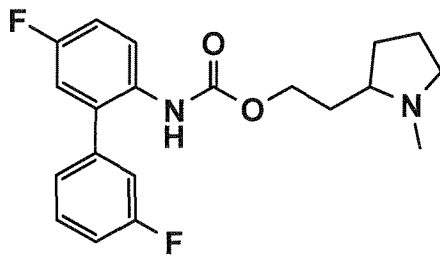
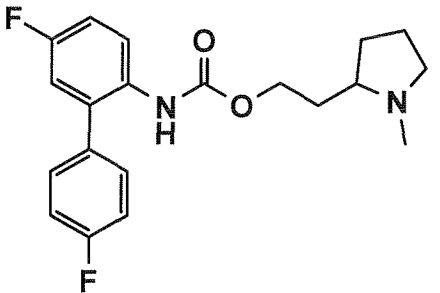
8	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.06 (s, 1H), 7.41-7.35 (m, 4H), 7.26-7.22 (m, 1H), 7.19-7.16 (m, 1H), 7.14-7.10 (m, 1H), 6.47 (s, 1H), 4.22-4.15 (m, 2H), 3.07-3.02 (m, 1H), 2.29 (s, 3H), 2.16-2.06 (m, 2H), 2.03-1.91 (m, 2H), 1.78-1.62 (m, 2H), 1.60-1.47 (m, 2H)
9	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.01 (s, 1H), 7.39-7.35 (m, 2H), 7.22-7.20 (m, 2H), 7.17-7.11 (m, 2H), 6.42 (s, 1H), 4.22-4.13 (m, 2H), 3.10-3.01 (s, 1H), 2.30 (s, 3H), 2.08-2.04 (m, 2H), 2.03-1.90 (m, 2H), 1.78-1.60 (m, 2H), 1.58-1.42 (m, 2H)

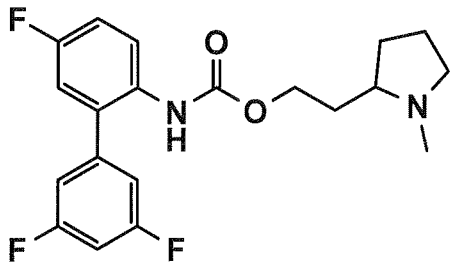
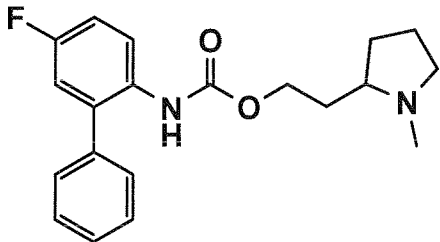
10	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-trifluoromethoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.03 (s, 1H), 7.39-7.34 (m, 3H), 7.31-7.291 (m, 2H), 7.19-7.11 (m, 2H), 6.44 (s, 1H), 4.24-4.15 (m, 2H), 3.04-3.00 (m, 1H), 2.27 (s, 3H), 2.04-2.01 (m, 2H), 2.00-1.88 (m, 2H), 1.80-1.63 (m, 2H), 1.59-1.44 (m, 2H)
11	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-nitro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.27-8.24 (m, 1H), 7.55-7.52 (m, 1H), 7.41-7.37 (m, 1H), 7.22-7.00 (m, 3H), 7.01-6.97 (m, 1H), 4.14-4.05 (m, 2H), 3.37-3.35 (m, 1H), 2.50 (s, 3H), 2.10-2.04 (m, 2H), 1.93-1.88 (m, 2H), 1.81-1.77 (m, 2H), 1.66-1.62 (m, 2H)

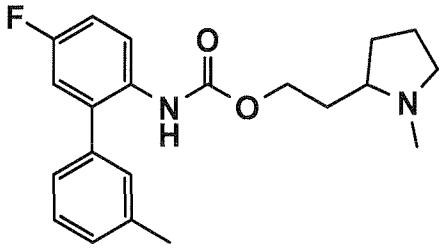
12	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-trifluoromethyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.10-7.92 (m, 1H), 7.73-7.46 (m, 3H), 7.44-7.31 (m, 1H), 7.31-7.05 (m, 2H), 6.55-6.34 (bs, 1H), 4.26-4.02 (m, 2H), 3.20-3.00 (m, 1H), 2.31 (s, 3H), 2.25- 1.88 (m, 4H) 1.86- 1.40 (m, 4H)
13	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-trifluoromethyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.04 (s, 1H), 7.72 (d, 2H, J=8.0), 7.48 (d, 2H, J=8.4), 7.41-7.36 (m, 1H), 7.20-7.13 (m, 2H), 6.41 (s, 1H), 4.18- 4.14 (m, 2H), 3.06- 3.01 (s, 1H), 2.27 (s, 3H), 2.18- 2.04 (m, 2H), 2.02- 1.87 (m, 2H), 1.77- 1.68 (m, 2H), 1.57- 1.43 (m, 2H)

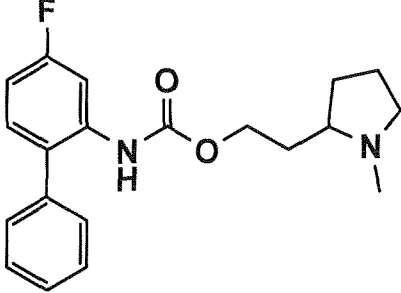
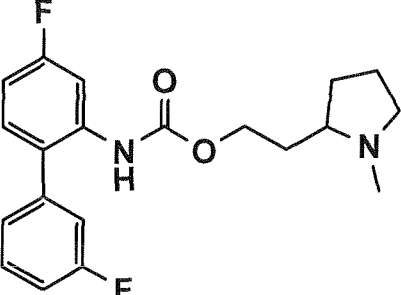
14	2-(1-Methylpyrrolidin-2-yl)ethyl ((3'-fluoro-4'-methyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.11-7.99 (m, 1H), 7.39-7.30 (m, 1H), 7.30-7.14 (m, 2H), 7.14-7.07 (m, 1H), 7.06-6.95 (m, 2H), 6.64-6.54 (bs, 1H), 4.26-4.08 (m, 2H), 3.30-3.09 (m, 1H), 2.36 (s, 3H), 2.32 (s, 3H), 2.30-2.14 (m, 2H) 2.13-1.92 (m, 2H), 1.92-1.46 (m, 4H)
15	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.10 (s, 1H), 7.38-7.33 (m, 2H), 7.26-7.17 (m, 3H), 7.15-7.09 (m, 1H), 6.66 (s, 1H), 4.19-4.16 (m, 2H), 3.21-3.01 (s, 1H), 2.41 (s, 3H), 2.28 (s, 3H), 2.23-2.12 (m, 2H), 2.10-1.91 (m, 2H), 1.83-1.63 (m, 2H), 1.60-1.43 (m, 2H)

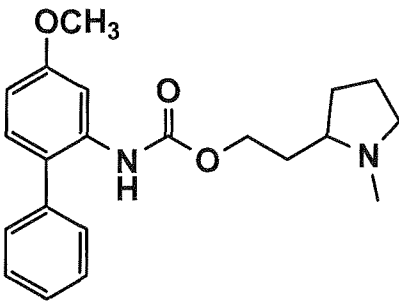
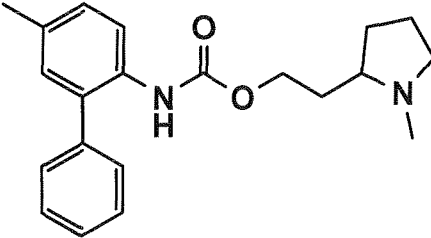
16	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-ethoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.10 (s, 1H), 7.37-7.31 (m, 2H), 7.23-7.18 (m, 2H), 7.11-7.08 (m, 1H), 7.00-6.86 (m, 2H), 6.70 (s, 1H), 4.17-4.01 (m, 4H), 3.18-3.15 (m, 1H), 2.36 (s, 3H), 2.23-2.16 (m, 2H), 2.08-1.91 (m, 2H), 1.81-1.71 (m, 2H), 1.63-1.41 (m, 2H), 1.40-1.38 (m, 3H)
17	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.94 (s, 1H), 7.41-7.36 (m, 2H), 7.32 (s, 1H), 7.22-7.20 (m, 1H), 7.07-7.02 (m, 1H), 6.92-6.89 (m, 1H), 6.38 (s, 1H), 4.17-4.13 (m, 2H), 3.04-3.00 (m, 1H), 2.27 (s, 3H), 2.15-2.03 (m, 2H), 2.00-1.87 (m, 2H), 1.80-1.64 (m, 2H), 1.56-1.40 (m, 2H)

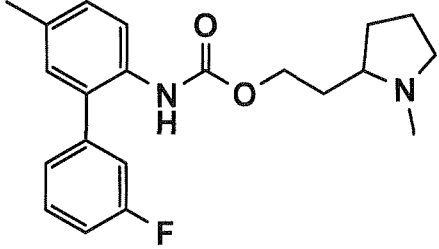
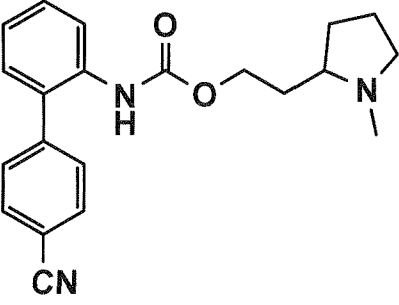
18	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.86 (s, 1H), 7.44-7.39 (m, 1H), 7.26-7.22 (m, 1H), 7.17-7.08 (m, 1H), 7.06-7.02 (m, 1H), 7.01-6.91 (m, 2H), 6.75 (s, 1H), 4.15-4.06 (m, 2H), 3.30-3.27 (m, 1H), 2.47 (s, 3H), 2.10-1.93 (m, 2H), 1.87-1.73 (m, 2H), 1.70-1.54 (m, 2H)
19	2-(1-Methylpyrrolidin-2-yl)ethyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.97 (s, 1H), 7.32-7.26 (m, 1H), 7.24-7.21 (m, 1H), 7.19-7.13 (m, 2H), 7.07-7.00 (m, 1H), 6.92-6.90 (m, 1H), 6.48 (s, 1H), 4.16-4.10 (m, 2H), 3.20-3.17 (m, 1H), 2.26 (s, 3H), 2.17-2.15 (m, 2H), 2.07-1.96 (m, 2H), 1.83-1.72 (m, 2H), 1.69-1.65 (m, 2H)

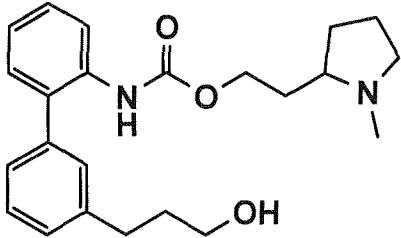
20	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.82-7.66 (bs, 1H), 7.12-6.75 (m, 5H), 4.27-3.99 (m, 2H), 3.51-3.30 (bs, 1H) 2.75-2.34 (m, 5H), 2.20-1.55 (m, 6H)
21	2-(1-Methylpyrrolidin-2-yl)ethyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.98 (s, 1H), 7.50- 7.39 (m, 3H), 7.34- 7.27 (m, 2H), 7.06- 7.01 (m, 1H), 6.98- 6.92 (m, 1H), 6.45 (s, 1H), 4.17- 4.07 (m, 2H), 3.05- 3.01 (m, 1H), 2.27 (s, 3H), 2.22- 2.02 (m, 2H), 2.01- 1.80 (m, 2H), 1.78- 1.61 (m, 2H), 1.58- 1.40 (m, 2H)

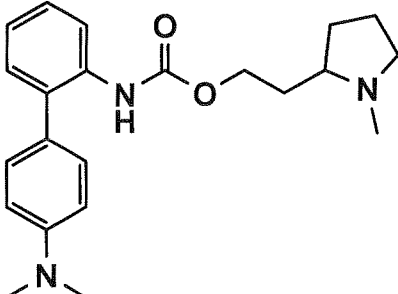
22	2-(1-Methylpyrrolidin-2-yl)ethyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.01 (s, 1H), 7.36-7.32 (m, 1H), 7.27-7.21 (m, 2H), 7.13-7.11 (m, 1H), 7.05-7.00 (m, 1H), 6.96-6.90 (m, 1H), 6.51 (s, 1H), 4.16-4.09 (m, 2H), 3.06-3.02 (m, 1H), 2.39 (s, 3H), 2.28 (s, 3H), 2.18-2.07 (m, 2H), 2.05-1.88 (m, 2H), 1.81-1.62 (m, 2H), 1.58-1.44 (m, 2H)
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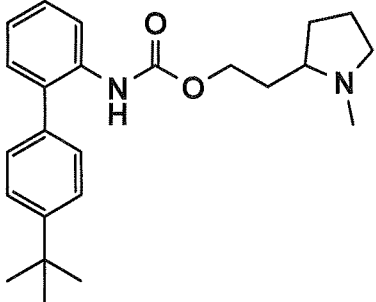
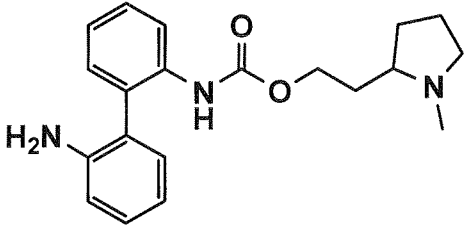
23	2-(1-Methylpyrrolidin-2-yl)ethyl (4-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.97 (s, 1H), 7.48-7.45 (m, 2H), 7.42-7.40 (m, 1H), 7.32-7.30 (m, 2H), 7.15-7.11 (m, 1H), 6.82-6.79 (m, 1H), 6.66 (s, 1H), 4.18-4.14 (m, 2H), 3.06-3.04 (m, 1H), 2.30 (s, 3H), 2.15-2.00 (m, 2H), 1.99-1.91 (m, 2H), 1.69-1.58 (m, 2H), 1.56-1.48 (m, 2H)
24	2-(1-Methylpyrrolidin-2-yl)ethyl (3',4-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.97 (s, 1H), 7.48-7.44 (m, 1H), 7.28-7.17 (m, 2H), 7.15-7.11 (m, 1H), 7.05-6.97 (m, 1H), 6.86-6.80 (m, 1H), 6.68 (s, 1H), 4.19-4.13 (m, 2H), 3.31-3.28 (m, 1H), 2.48 (s, 3H), 2.19-2.07 (m, 2H), 1.95-1.88 (m, 2H), 1.85-1.70 (m, 2H), 1.67-1.54 (m, 2H)

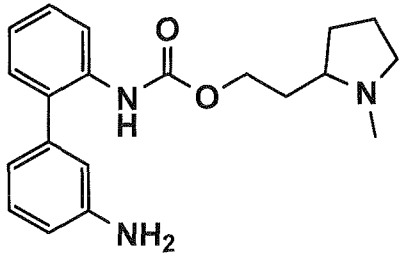
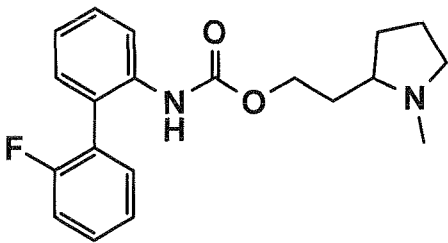
25	2-(1-Methylpyrrolidin-2-yl)ethyl (4-methoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.80 (s, 1H), 7.44-7.36 (m, 1H), 7.34-7.29 (m, 3H), 7.09-7.07 (m, 1H), 6.68-6.64 (m, 2H), 4.20-4.14 (m, 2H), 3.82 (s, 3H), 3.04-3.00 (m, 1H), 2.26 (s, 3H), 2.14-2.00 (m, 2H), 2.13-1.87 (m, 2H), 1.79-1.59 (m, 2H), 1.56-1.40 (m, 2H)
26	2-(1-Methylpyrrolidin-2-yl)ethyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.91 (s, 1H), 7.46-7.42 (m, 2H), 7.38-7.29 (m, 2H), 7.22-7.18 (m, 1H), 7.02 (s, 1H), 6.54 (s, 1H), 4.18-4.10 (m, 2H), 3.21-3.10 (m, 1H), 2.32 (s, 3H), 2.31 (s, 3H), 2.22-2.16 (m, 2H), 2.12-1.91 (m, 2H), 1.81-1.68 (m, 2H), 1.65-1.48 (m, 2H)

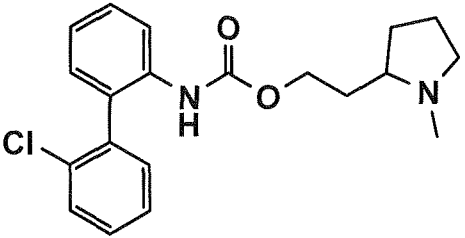
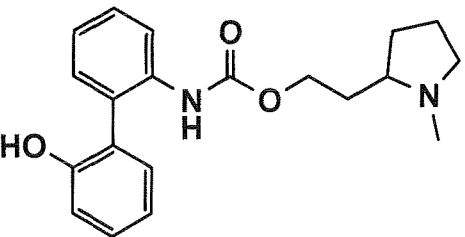
27	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.92 (s, 1H), 7.44-7.38 (m, 2H), 7.20-7.15 (m, 1H), 7.13-7.09 (m, 1H), 7.07-6.97 (m, 2H), 6.55 (s, 1H), 4.17-4.07 (m, 2H), 3.30-3.23 (m, 1H), 2.49 (s, 3H), 2.37 (s, 3H), 2.15-2.05 (m, 2H), 1.93-1.90 (m, 2H), 1.79-1.76 (m, 2H), 1.63-1.61 (m, 2H)
28	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-cyano-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.06-7.93 (m, 1H), 7.75 (d, 8.4Hz, 2H), 7.49 (d, J=8.0, 2H), 7.44-7.33 (m, 1H), 7.21-7.09 (m, 2H), 6.42-6.38 (bs, 1H), 4.22-4.07 (m, 2H), 3.11-2.98 (m, 1H), 2.29 (s, 3H), 2.19-1.85 (m, 3H), 1.85-1.39 (m, 5H)

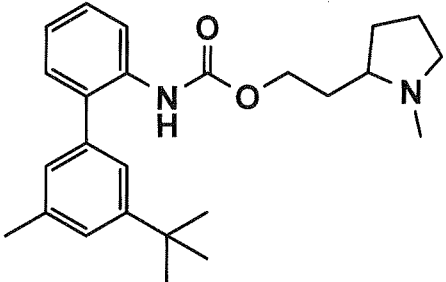
29	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-(3-hydroxypropyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.03 (s, 1H), 7.39-7.28 (m, 3H), 7.23-7.11 (m, 3H), 7.05-7.01 (m, 1H), 6.67 (s, 1H), 4.23-4.14 (m, 2H), 3.66-3.60 (m, 2H), 3.17-3.03 (m, 1H), 2.75-2.71 (m, 2H), 2.32 (s, 3H), 2.24-2.10 (m, 2H), 2.05-1.96 (m, 2H), 1.94-1.83 (m, 2H), 1.81-1.69 (m, 2H), 1.61-1.46 (m, 2H)
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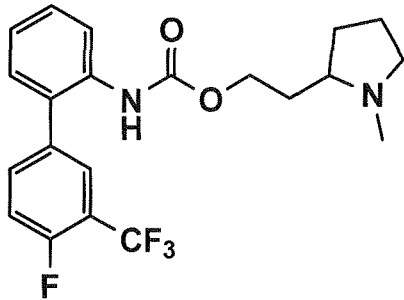
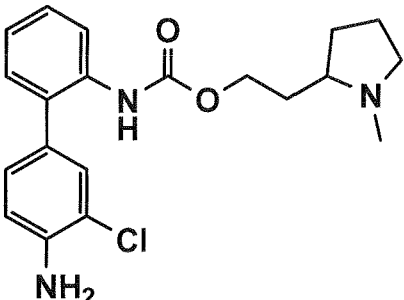
30	2-(1-Methylpyrrolidin-2-yl)ethyl (4'- (dimethylamino)-[1,1'- biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.11 (s, 1H), 7.28 (t, 1H, J=7.2), 7.23-7.19 (m, 2H), 7.19-7.17 (m, 1H), 7.07 (t, 1H, J=7.6), 6.81 (t, 2H, J=2.8), 6.74 (s, 1H), 4.18- 4.14 (m, 2H), 3.09- 3.01 (m, 1H), 3.00 (s, 9H), 2.14 (s, 3H), 2.12- 2.06 (m, 2H), 2.01- 1.92 (m, 2H), 1.79- 1.66 (m, 2H), 1.58- 1.46 (m, 2H)
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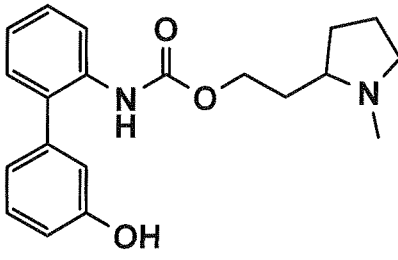
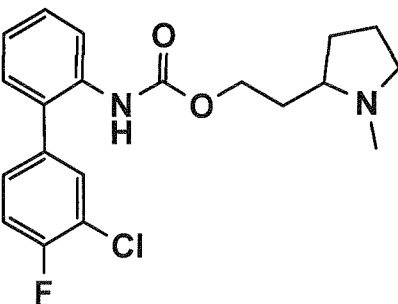
31	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-(<i>tert</i>-butyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.04 (s, 1H), 7.48-7.46 (m, 2H), 7.35-7.27 (m, 3H), 7.24-7.19 (m, 1H), 7.12-7.08 (m, 1H), 6.67 (s, 1H), 4.17-4.13 (m, 2H), 3.10-3.07 (m, 1H), 2.30 (s, 3H), 2.18-1.99 (m, 2H), 1.98-1.90 (m, 2H), 1.80-1.62 (m, 2H), 1.44-1.36 (m, 2H), 1.36 (s, 9H)
32	2-(1-Methylpyrrolidin-2-yl)ethyl (2'-amino-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.11 (s, 1H), 7.37 (t, 1H, <i>J</i>=8.0), 7.22-7.20 (m, 2H), 7.13 (t, 1H, <i>J</i>=7.6), 7.06 (d, 1H, <i>J</i>=7.6), 6.86-6.78 (m, 2H), 4.15-4.11 (m, 2H), 3.08-3.04 (s, 1H), 2.25 (s, 3H), 2.17-2.10 (m, 2H), 2.02-1.90 (m, 2H), 1.78-1.66 (m, 2H), 1.58-1.46 (m, 2H)

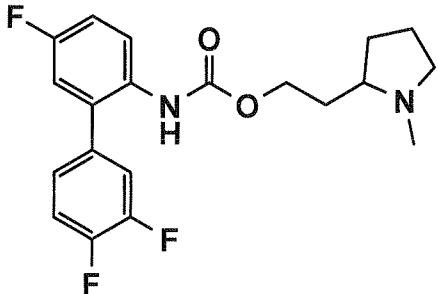
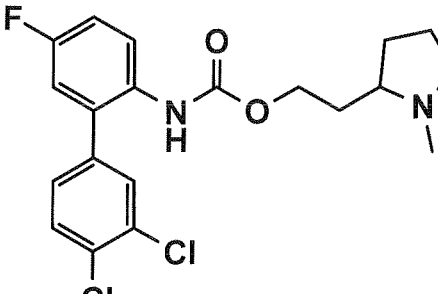
33	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-amino-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CD_3OD): δ 7.83 (s, 1H), 7.29-7.15 (m, 3H), 7.06-7.00 (m, 2H), 6.80-6.77 (m, 2H), 4.14-4.10 (m, 2H), 3.30 (s, 3H), 3.20-3.15 (m, 1H), 2.45-2.43 (m, 2H), 2.10-2.00 (m, 2H), 1.84-1.81 (m, 2H), 1.62-1.47 (m, 2H)
34	2-(1-Methylpyrrolidin-2-yl)ethyl (2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 7.96 (s, 1H), 7.42-7.36 (m, 3H), 7.31-7.14 (m, 3H), 6.99-6.97 (m, 1H), 6.45 (s, 1H), 4.15-4.08 (m, 2H), 3.26-3.22 (s, 1H), 2.39 (s, 3H), 2.35-2.25 (m, 2H), 2.09-1.96 (m, 2H), 1.88-1.64 (m, 2H), 1.60-1.53 (m, 2H)

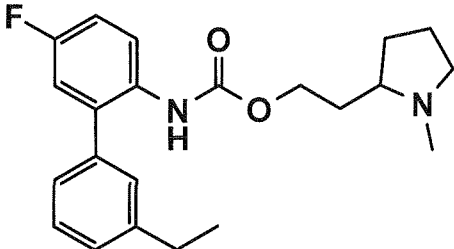
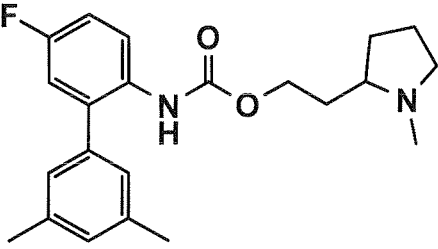
35	2-(1-Methylpyrrolidin-2-yl)ethyl (2'-chloro-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 8.01 (s, 1H), 7.51-7.48 (m, 1H), 7.41-7.34 (m, 2H), 7.28-7.13 (m, 3H), 6.96-6.93 (m, 1H), 6.26 (s, 1H), 4.18-4.05 (m, 2H), 3.22-3.20 (s, 1H), 2.37 (s, 3H), 2.35-2.28 (m, 2H), 2.07-1.93 (m, 2H), 1.84-1.63 (m, 2H), 1.57-1.52 (m, 2H)
36	2-(1-Methylpyrrolidin-2-yl)ethyl (2'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 7.84 (s, 1H), 7.39-7.33 (m, 1H), 7.31-7.12 (m, 4H), 7.05-7.01 (m, 1H), 6.96-6.90 (m, 1H), 4.21-4.09 (m, 2H), 3.21-3.14 (s, 1H), 2.40 (s, 3H), 2.36-2.26 (m, 2H), 2.13-1.96 (m, 2H), 1.84-1.66 (m, 2H), 1.64-1.53 (m, 2H)

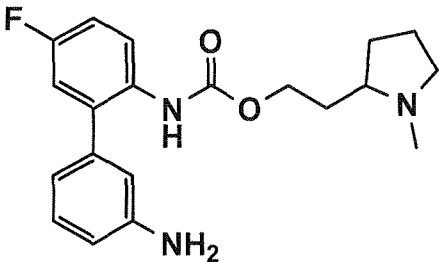
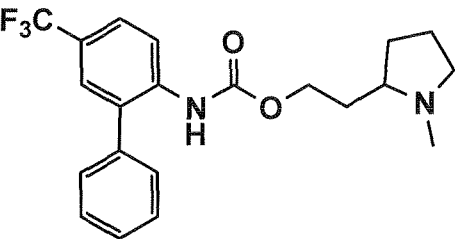
37	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-<i>tert</i>-butyl-5'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.11 (s, 1H), 7.35-7.27 (m, 1H), 7.23-7.21 (m, 2H), 7.18 (s, 1H), 7.13-7.09 (m, 1H), 6.99 (s, 1H), 6.74 (s, 1H), 4.17-4.12 (m, 2H), 3.12-3.09 (m, 1H), 2.39 (s, 3H), 2.30 (s, 3H), 2.23-2.11 (m, 2H), 2.01-1.98 (m, 2H), 1.79-1.66 (m, 2H), 1.58-1.46 (m, 2H), 1.32 (m, 9H)
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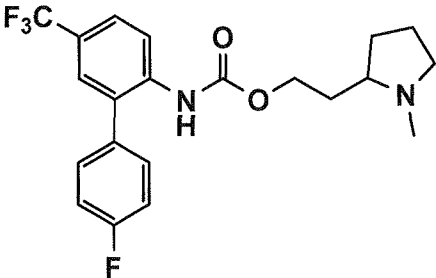
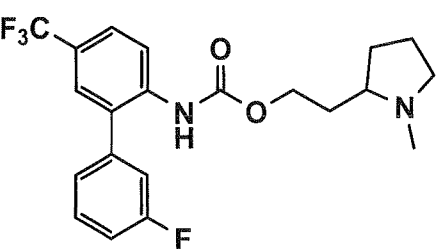
38	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-fluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.99 (s, 1H), 7.60-7.58 (m, 1H), 7.56-7.53 (m, 1H), 7.41-7.36 (m, 1H), 7.32-7.27 (m, 1H), 7.20-7.14 (m, 2H), 6.37 (s, 1H), 4.18-4.13 (m, 2H), 3.14-3.12 (m, 1H), 2.34 (s, 3H), 2.34-2.21 (m, 2H), 2.06-1.93 (m, 2H), 1.76-1.68 (m, 2H), 1.64-1.46 (m, 2H)
39	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-amino-3'-chloro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.04 (s, 1H), 7.30 (t, 1H, J=8.0), 7.15-7.12 (m, 2H), 7.07-7.03 (m, 2H), 6.82 (d, 1H, J=8.4), 6.59 (s, 1H), 4.18-4.09 (m, 2H), 3.08-3.04 (m, 1H), 2.30 (s, 3H), 2.25-2.10 (m, 2H), 2.08-1.91 (m, 2H), 1.81-1.57 (m, 2H), 1.56-1.43 (m, 2H)

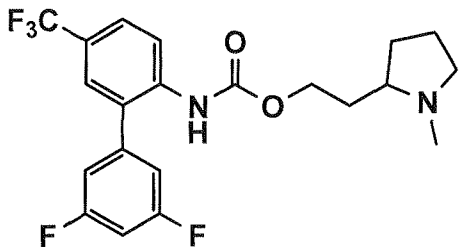
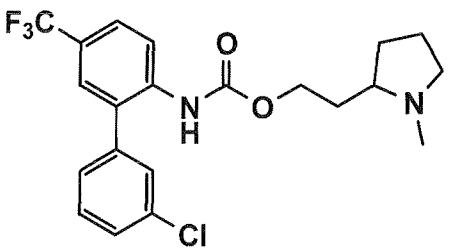
40	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CD₃OD) : δ 7.84 (s, 1H), 7.31-7.18 (m, 3H), 7.06-7.02 (m, 2H), 6.82-6.79 (m, 2H), 4.11-4.08 (m, 2H), 3.30 (s, 3H), 3.21-3.18 (m, 1H), 2.45-2.43 (m, 2H), 2.08-2.01 (m, 2H), 1.84-1.82 (m, 2H), 1.61-1.45 (m, 2H)
41	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃) : δ 8.06-7.93 (bs, 1H), 7.41-7.38 (m, 1H), 7.38-7.34 (m, 1H), 7.23-7.19 (m, 3H), 7.17-7.10 (m, 2H), 6.51-6.44 (bs, 1H), 4.20-4.12 (m, 2H), 3.16-3.07 (bs, 1H), 2.33 (s, 3H), 2.25-2.13 (m, 2H), 2.07-1.92 (m, 2H), 1.84-1.65 (m, 2H), 1.65-1.46 (m, 2H)

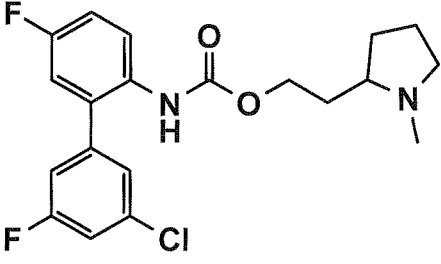
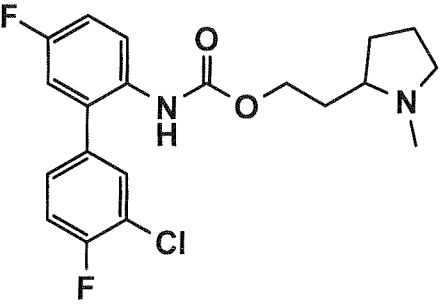
42	2-(1-Methylpyrrolidin-2-yl)ethyl (3',4',5-trifluoro-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR (CDCl_3): δ 7.98 (s, 1H), 7.29-7.28 (m, 1H), 7.17-7.14 (m, 1H), 7.08-7.03 (m, 2H), 6.90 (dd, 1H, $J=8.8$, $J=2.8$), 6.33 (s, 1H), 4.17-4.13 (m, 2H), 3.05-3.03 (m, 1H), 2.28 (s, 3H), 2.08-2.03 (m, 2H), 2.02-1.89 (m, 2H), 1.79-1.63 (m, 2H), 1.60-1.42 (m, 2H)
43	2-(1-Methylpyrrolidin-2-yl)ethyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR (CDCl_3): δ 7.94 (s, 1H), 7.54 (d, 1H, $J=8.4$), 7.44 (d, 1H, $J=2.0$), 7.19 (dd, 1H, $J=8.4$, $J=2.0$), 7.09-7.05 (m, 1H), 6.91 (dd, 1H, $J=8.4$, $J=2.8$), 6.38 (s, 1H), 4.20-4.14 (m, 2H), 3.17-3.16 (m, 1H), 2.36 (s, 3H), 2.07-1.96 (m, 2H), 1.83-1.80 (m, 2H), 1.77-1.71 (m, 2H), 1.58-1.54 (m, 2H)

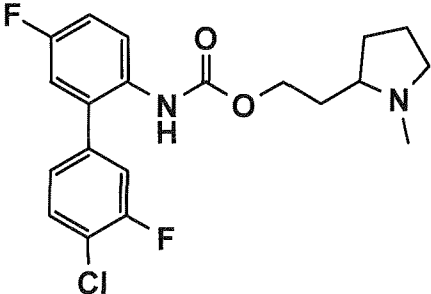
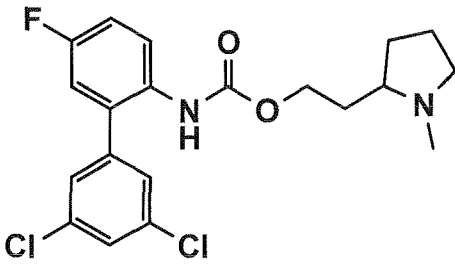
44	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-ethyl-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.01 (s, 1H), 7.38 (t, 1H, <i>J</i>=8.0), 7.25-7.23 (m, 1H), 7.16-7.13 (m, 2H), 7.05-7.00 (m, 1H), 6.95-6.92 (m, 1H), 6.53 (s, 1H), 4.17-4.12 (m, 2H), 3.05-3.03 (m, 1H), 2.68 (q, 2H, <i>J</i>=7.6), 2.28 (s, 3H), 2.16-2.02 (m, 2H), 2.00-1.88 (m, 2H), 1.78-1.62 (m, 2H), 1.59-1.41 (m, 2H), 1.25 (t, 3H, <i>J</i>=7.6)
45	2-(1-Methylpyrrolidin-2-yl)ethyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.01 (s, 1H), 7.03-6.98 (m, 2H), 6.93-6.89 (m, 2H), 6.55 (s, 1H), 4.20-4.14 (m, 2H), 3.03-3.01 (m, 1H), 2.38 (s, 6H), 2.35 (s, 3H), 2.09-2.04 (m, 2H), 2.03-1.90 (m, 2H), 1.79-1.63 (m, 2H), 1.59-1.44 (m, 2H)

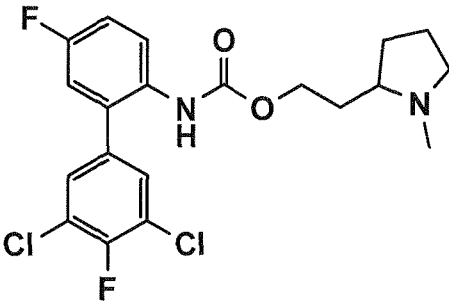
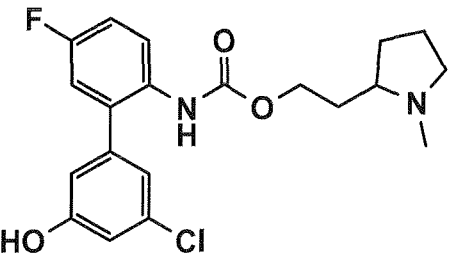
46	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-amino-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR (CDCl_3): δ 8.02 (s, 1H), 7.25-7.21 (m, 2H), 7.03-6.99 (m, 1H), 6.92-6.89 (m, 1H), 6.71-6.67 (m, 2H), 6.60 (s, 2H), 4.16-4.12 (m, 2H), 3.04-3.01 (m, 1H), 2.28 (s, 3H), 2.02-1.97 (m, 2H), 1.96-1.89 (m, 2H), 1.78-1.63 (m, 2H), 1.57-1.41 (m, 2H)
47	2-(1-Methylpyrrolidin-2-yl)ethyl (5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR (CDCl_3): δ 8.29 (d, 1H, $J=8.8$), 7.59 (d, 1H, $J=8.8$), 7.52-7.49 (m, 2H), 7.46-7.44 (m, 2H), 7.36-7.34 (m, 2H), 6.78 (s, 1H), 4.19-4.16 (m, 2H), 3.12-3.10 (m, 1H), 2.33 (s, 3H), 2.17-2.05 (m, 2H), 2.03-1.93 (m, 2H), 1.78-1.64 (m, 2H), 1.53-1.51 (m, 2H)

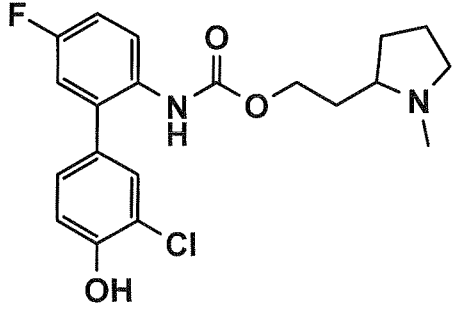
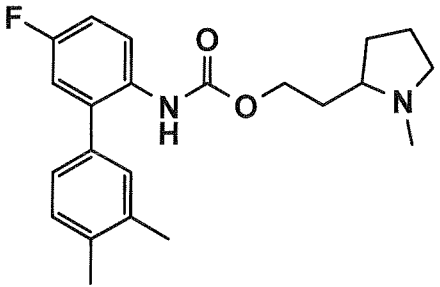
48	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-fluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.27 (d, 1H, J=8.4), 7.59 (d, 1H, J=8.8), 7.41 (d, 1H, J=1.2), 7.34-7.31 (m, 2H), 7.22-7.18 (m, 2H), 6.70 (s, 1H), 4.22- 4.16 (m, 2H), 3.26- 3.24 (m, 1H), 2.41 (s, 3H), 2.35- 2.29 (m, 2H), 2.13- 1.98 (m, 2H), 1.88- 1.77 (m, 2H), 1.62- 1.59 (m, 2H)
49	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.29 (d, 1H, J=8.8), 7.61 (d, 1H, J=8.8), 7.51-7.45 (m, 1H), 7.43 (s, 1H), 7.18- 7.13 (m, 2H), 7.08- 7.06 (m, 1H), 6.71 (s, 1H), 4.21- 4.17 (m, 2H), 3.12- 3.10 (m, 1H), 2.33 (s, 3H), 2.19- 2.15 (m, 2H), 2.07- 1.92 (m, 2H), 1.74- 1.71 (m, 2H), 1.53- 1.50 (m, 2H)

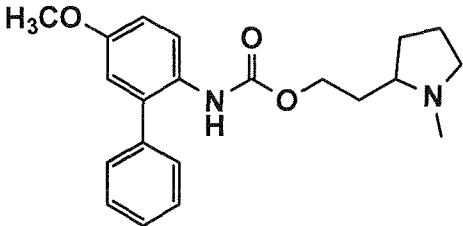
50	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 8.26(d, 1H, $J=8.8$), 7.62(d, 1H, $J=8.8$), 7.43(s, 1H), 6.93- 6.89(m, 3H), 6.78(s, 1H), 4.24- 4.19(m, 2H), 3.28- 3.21(m, 1H), 2.45(s, 3H), 2.15- 2.04(m, 2H), 1.89- 1.87(m, 2H), 1.82- 1.80(m, 2H), 1.67- 1.63(m, 2H)
51	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 8.27(d, 1H, $J=8.4$), 7.61(d, 1H, $J=8.8$), 7.47-7.43(m, 3H), 7.35(s, 1H), 7.25- 7.23(m, 1H), 6.75(s, 1H), 4.23- 4.17(m, 2H), 3.34- 3.32(m, 1H), 2.42(s, 3H), 2.11- 2.05(m, 2H), 2.02- 1.91(m, 2H), 1.90- 1.83(m, 2H), 1.83- 1.80(m, 2H)

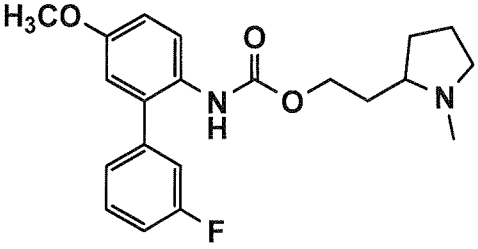
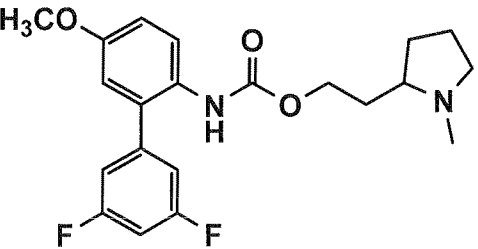
52	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.91 (s, 1H), 7.22-7.20 (m, 1H), 7.15-7.13 (m, 1H), 7.10-7.05 (m, 1H), 6.99-6.97 (m, 1H), 6.92 (dd, 1H, <i>J</i> =8.8, <i>J</i> =2.8), 6.44 (s, 1H), 4.21-4.14 (m, 2H), 3.22-3.19 (m, 1H), 2.40 (s, 3H), 2.32-2.28 (m, 2H), 2.10-2.02 (m, 2H), 1.86-1.59 (m, 2H), 1.26-1.22 (m, 2H)
53	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.91 (s, 1H), 7.39 (dd, 1H, <i>J</i> =7.2, <i>J</i> =2.0), 7.23-7.19 (m, 2H), 7.08-7.04 (m, 1H), 6.90 (dd, 1H, <i>J</i> =8.4, <i>J</i> =2.8), 6.37 (s, 1H), 4.18-4.13 (m, 2H), 3.14-3.10 (m, 1H), 2.33 (s, 3H), 2.23-2.16 (m, 2H), 2.06-1.91 (m, 2H), 1.82-1.65 (m, 2H), 1.60-1.51 (m, 2H)

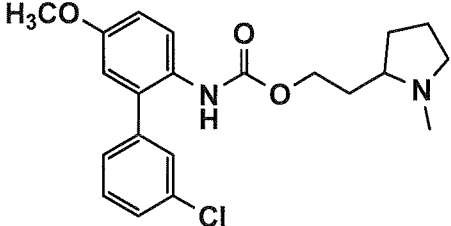
54	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-chloro-3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.81 (s, 1H), 7.47-7.43 (m, 1H), 7.19-7.11 (m, 2H), 7.11-6.95 (m, 1H), 6.90 (dd, 1H, <i>J</i> =8.8, <i>J</i> =3.2) 6.62 (s, 1H), 4.14-4.04 (m, 2H), 3.21-3.16 (m, 1H), 2.37 (s, 3H), 2.04-1.95 (m, 2H), 1.84-1.69 (m, 2H), 1.67-1.61 (m, 1H), 1.57-1.48 (m, 2H)
55	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.90 (s, 1H), 7.41-7.40 (m, 1H), 7.25-7.22 (m, 2H), 7.10-7.05 (m, 1H), 6.91 (dd, 1H, <i>J</i> =8.8, <i>J</i> =2.8), 6.38 (s, 1H), 4.20-4.16 (m, 2H), 3.16-3.12 (m, 1H), 2.36 (s, 3H), 2.23-2.21 (m, 2H), 2.09-1.94 (m, 2H), 1.80-1.64 (m, 2H), 1.56-1.52 (m, 2H)

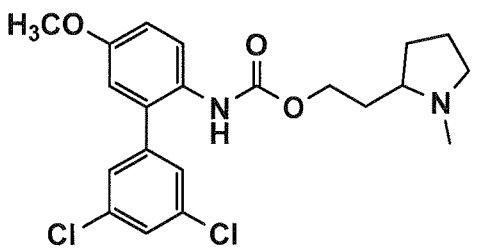
56	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 7.81 (s, 1H), 7.31-7.30 (m, 1H), 7.19-7.18 (m, 1H), 7.09-7.04 (m, 1H), 6.91-6.62 (m, 1H), 6.61 (s, 1H), 4.20-4.11 (m, 2H), 3.26-3.22 (m, 1H), 2.42-2.30 (m, 4H), 2.11-1.93 (m, 2H), 1.88-1.63 (m, 2H), 1.61-1.54 (m, 2H)
57	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 7.83 (s, 1H), 7.03-6.95 (m, 1H), 6.91-6.88 (m, 1H), 6.80 (s, 1H), 6.73-6.66 (m, 2H), 4.12-4.07 (m, 2H), 3.21-3.17 (m, 1H), 2.35 (s, 3H), 2.28-2.24 (m, 2H), 1.82-1.65 (m, 2H), 1.62-1.55 (m, 2H), 1.25-1.21 (m, 2H)

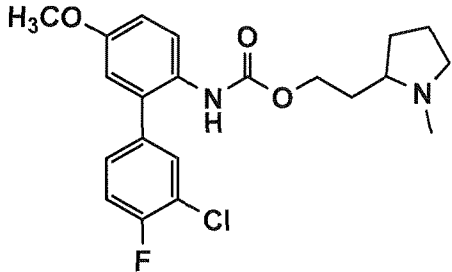
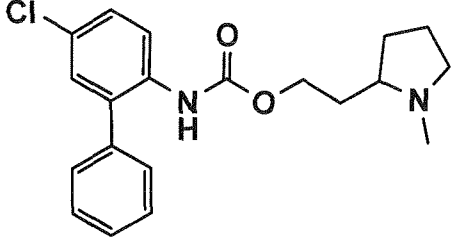
58	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-4'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.83(s, 1H), 7.25-7.20(m, 1H), 7.05-6.92(m, 3H), 6.88(dd, 1H, <i>J</i> =8.8, <i>J</i> =2.8), 6.57(s, 1H), 4.14-4.06(m, 2H), 3.22-3.17(m, 1H), 2.40(s, 3H), 2.39-2.29(m, 2H), 2.10-1.97(m, 2H), 1.86-1.66(m, 2H), 1.65-1.54(m, 2H)
59	2-(1-Methylpyrrolidin-2-yl)ethyl (5-fluoro-3',4'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.99(s, 1H), 7.22-7.20(m, 1H), 7.08-6.97(m, 3H), 6.90(dd, 1H, <i>J</i> =9.2, <i>J</i> =2.8), 6.57(s, 1H), 4.15-4.13(m, 2H), 3.16-3.12(m, 1H), 2.31(s, 3H), 2.29(s, 6H), 2.02-2.17(m, 2H), 2.00-1.89(m, 2H), 1.76-1.55(m, 2H), 1.53-1.42(m, 2H)

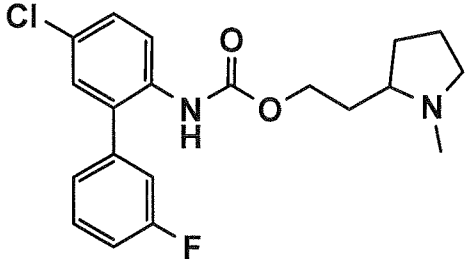
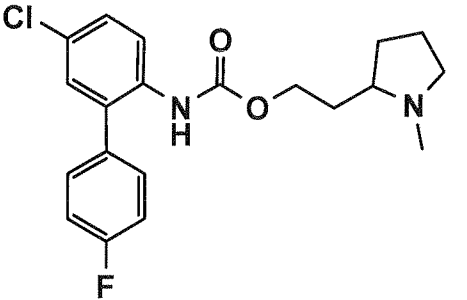
60	2-(1-Methylpyrrolidin-2-yl)ethyl (5-methoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.93 (s, 1H), 7.46-7.40 (m, 2H), 7.39-7.36 (m, 1H), 7.35-7.33 (m, 2H), 6.89 (dd, 1H, J=8.8, J=2.8), 6.77 (d, 1H, J=2.8), 6.38 (s, 1H), 4.15-4.10 (m, 2H), 3.86 (s, 3H), 3.14-3.11 (m, 1H), 2.35 (m, 3H), 2.26-2.16 (m, 2H), 2.06-1.91 (m, 2H), 1.82-1.62 (m, 2H), 1.60-1.45 (m, 2H)
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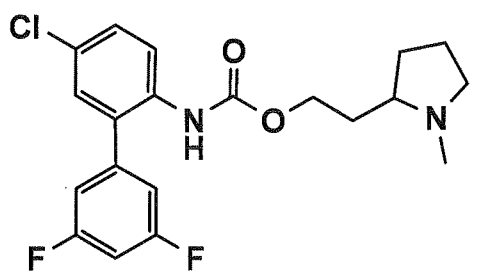
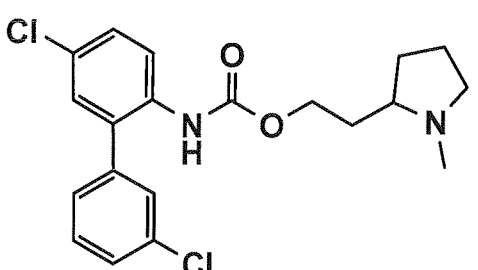
61	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.82 (s, 1H), 7.42-7.39 (m, 1H), 7.14-7.10 (m, 1H), 7.07-7.05 (m, 2H), 6.90 (dd, 1H, J=8.8, J=3.2), 6.75 (d, 1H, J=3.2), 6.37 (s, 1H), 4.17-4.13 (m, 2H), 3.79 (s, 3H), 3.21-3.18 (m, 1H), 2.38 (s, 3H), 2.30-2.26 (m, 2H), 2.09-1.99 (m, 2H), 1.74-1.70 (m, 2H), 1.56-1.53 (m, 2H)
62	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.72 (s, 1H), 7.28-7.26 (m, 1H), 6.92-6.79 (m, 3H), 6.74-6.73 (m, 1H), 6.29 (s, 1H), 4.15-4.10 (m, 2H), 3.75 (s, 3H), 3.15-3.10 (m, 1H), 2.34 (s, 3H), 2.27-2.25 (m, 2H), 2.06-1.96 (m, 2H), 1.78-1.69 (m, 2H), 1.63-1.50 (m, 2H)

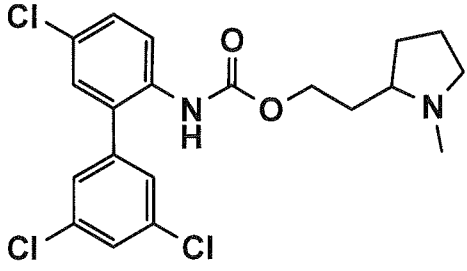
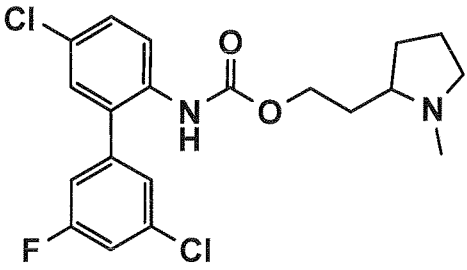
63	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.82 (s, 1H), 7.38-7.34 (m, 2H), 7.23-7.21 (m, 2H), 6.90 (dd, 1H, <i>J</i> =9.2, <i>J</i> =2.8), 6.74 (d, 1H, <i>J</i> =2.8), 6.28 (s, 1H), 4.17-4.12 (m, 2H), 3.78 (s, 3H), 3.16-3.14 (m, 1H), 2.35 (s, 3H), 2.23-2.18 (m, 2H), 2.21-1.93 (m, 2H), 1.79-1.64 (m, 2H), 1.60-1.50 (m, 2H)
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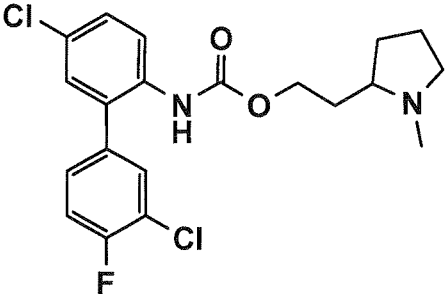
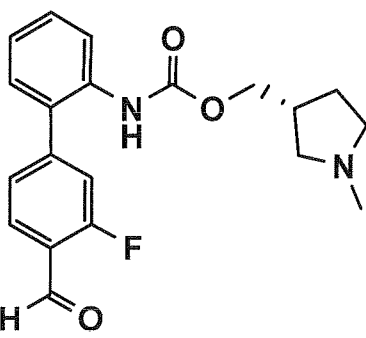
64	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.70 (s, 1H), 7.36-7.35 (m, 1H), 7.23-7.20 (m, 2H), 6.90 (dd, 1H, J=8.8, J=2.8), 6.73-6.72 (m, 1H), 6.58 (s, 1H), 4.16-4.08 (m, 2H), 3.75 (s, 3H), 3.28-3.26 (m, 1H), 2.43 (s, 3H), 2.40-2.38 (m, 2H), 2.08-2.02 (m, 2H), 1.85-1.72 (m, 2H), 1.60-1.57 (m, 2H)
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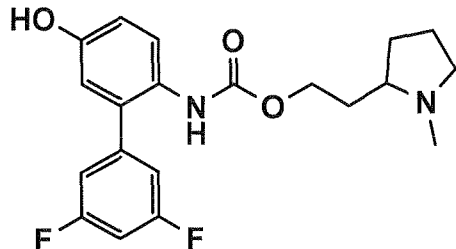
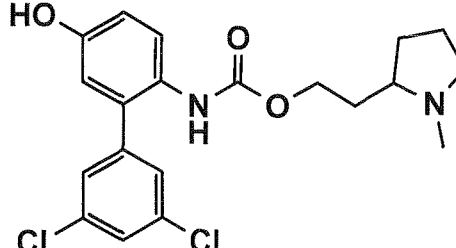
65	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.70 (s, 1H), 7.39-7.38 (m, 1H), 7.21-7.19 (m, 2H), 6.90 (dd, 1H, J=8.8, J=2.8), 6.72-6.71 (m, 1H), 6.21 (s, 1H), 4.15-4.09 (m, 2H), 3.76 (s, 3H), 3.13-3.11 (m, 1H), 2.37 (s, 3H), 2.30-2.23 (m, 2H), 2.02-1.97 (m, 2H), 1.79-1.71 (m, 2H), 1.62-1.56 (m, 2H)
66	2-(1-Methylpyrrolidin-2-yl)ethyl (5-chloro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 8.04 (s, 1H), 7.48-7.45 (m, 2H), 7.43-7.39 (m, 1H), 7.32-7.28 (m, 3H), 7.23-7.18 (m, 1H), 6.56 (s, 1H), 4.16-4.12 (m, 2H), 3.06-3.02 (m, 1H), 2.28 (s, 3H), 2.12-1.96 (m, 2H), 1.94-1.87 (m, 2H), 1.76-1.64 (m, 2H), 1.57-1.44 (m, 2H)

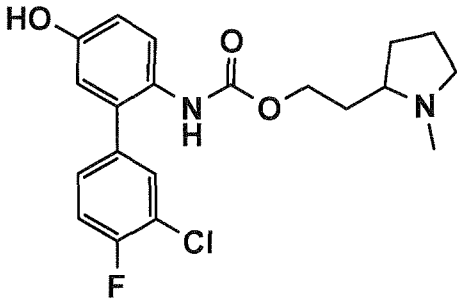
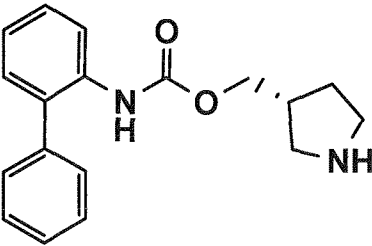
67	2-(1-Methylpyrrolidin-2-yl)ethyl (5-chloro-3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.03 (s, 1H), 7.44 (q, 1H, J=8.0), 7.31 (dd, 1H, J=8.8, J=2.4), 7.14-7.10 (m, 2H), 7.05-7.03 (m, 1H), 6.49 (s, 1H), 4.17-4.13 (m, 2H), 3.03-3.01 (m, 2H), 2.29 (s, 3H), 2.13-1.98 (m, 2H), 1.97-1.88 (m, 2H), 1.77-1.64 (m, 2H), 1.59-1.42 (m, 2H)
68	2-(1-Methylpyrrolidin-2-yl)ethyl (5-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.02 (s, 1H), 7.31-7.28 (m, 3H), 7.18-7.14 (m, 3H), 6.44 (s, 1H), 4.17-4.13 (m, 2H), 3.04-3.01 (m, 1H), 2.28 (s, 3H), 2.10-2.00 (m, 2H), 1.98-1.87 (m, 2H), 1.78-1.65 (m, 2H), 1.57-1.44 (m, 2H)

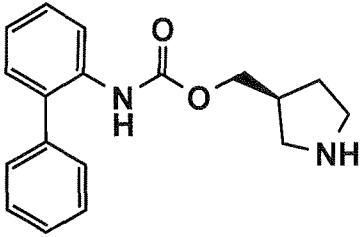
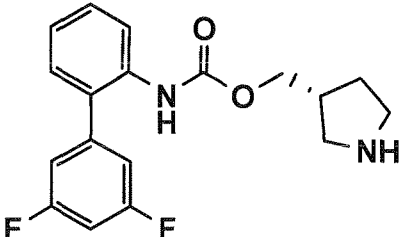
69	2-(1-Methylpyrrolidin-2-yl)ethyl (5-chloro-3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 7.99 (s, 1H), 7.34-7.31 (m, 2H), 7.17-7.16 (m, 1H), 6.88-6.84 (m, 2H), 6.51 (s, 1H), 4.18-4.10 (m, 2H), 3.16-3.13 (m, 1H), 2.36 (s, 3H), 2.32-2.29 (m, 2H), 2.08-1.96 (m, 2H), 1.82-1.61 (m, 2H), 1.57-1.49 (m, 2H)
70	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5-dichloro-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 8.01 (s, 1H), 7.43-7.38 (m, 2H), 7.32-7.30 (m, 2H), 7.23-7.21 (m, 1H), 7.17 (d, 1H, $J=2.4$), 6.47 (s, 1H), 4.18-4.13 (m, 2H), 3.06-3.04 (m, 1H), 2.25 (s, 3H), 2.19-2.06 (m, 2H), 2.05-1.90 (m, 2H), 1.80-1.59 (m, 2H), 1.58-1.44 (m, 2H)

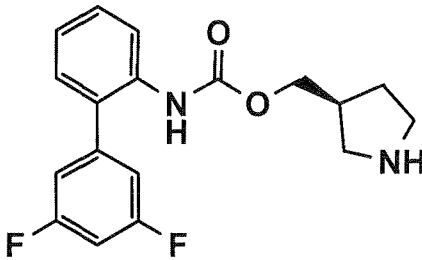
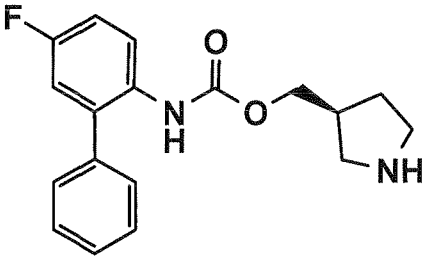
71	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5,5'-trichloro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.98 (s, 1H), 7.41 (s, 1H), 7.33 (dd, 1H, <i>J</i>=8.8, <i>J</i>=2.4), 7.23- 7.22 (m, 2H), 7.15 (d, 1H, <i>J</i>=2.4), 6.39 (s, 1H), 4.19- 4.14 (m, 2H), 3.09- 3.05 (m, 1H), 2.30 (s, 3H), 2.19- 2.07 (m, 2H), 2.04- 1.91 (m, 2H), 1.77- 1.61 (m, 2H), 1.59- 1.43 (m, 2H)
72	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5-dichloro-5'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.99 (s, 1H), 7.33 (dd, 1H, <i>J</i>=8.8, <i>J</i>=2.4), 7.21- 7.13 (m, 3H), 6.96 (dd, 1H, <i>J</i>=8.8, <i>J</i>=2.4), 6.46 (s, 1H), 4.20-4.12 (m, 2H), 3.11-3.07 (m, 1H), 2.32 (s, 3H), 2.20-2.14 (m, 2H), 2.06-1.91 (m, 2H), 1.79-1.62 (m, 2H), 1.60-1.45 (m, 2H)

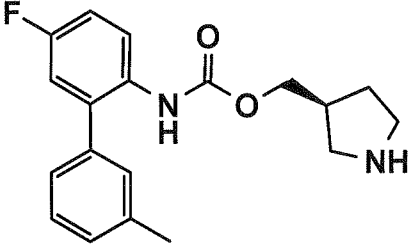
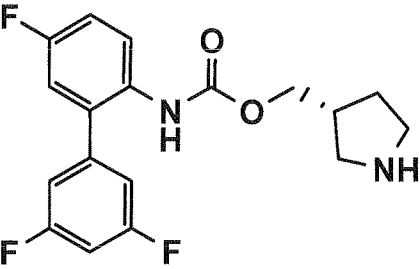
73	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5-dichloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.98 (s, 1H), 7.39-7.37 (m, 1H), 7.32-7.26 (m, 1H), 7.23-7.21 (m, 2H), 7.19 (d, 1H, <i>J</i>=2.8), 6.41 (s, 1H), 4.17-4.13 (m, 2H), 3.06-3.03 (m, 1H), 2.26 (s, 3H), 2.39-2.10 (m, 2H), 2.03-1.89 (m, 2H), 1.80-1.59 (m, 2H), 1.57-1.43 (m, 2H)
74	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-4'-formyl-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.00-7.93 (m, 2H), 7.41-7.37 (t, 1H, <i>J</i>=15.2), 7.29-7.27 (d, 1H, <i>J</i>=8.0), 7.23-7.15 (m, 3H), 6.51 (s, 1H), 4.08-3.97 (m, 2H), 2.60-2.56 (t, 1H, <i>J</i>=17.2), 2.49-2.45 (m, 3H), 2.29-2.24 (m, 4H), 1.96-1.91 (m, 1H), 1.48-1.43 (m, 1H)

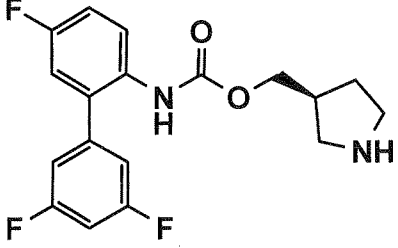
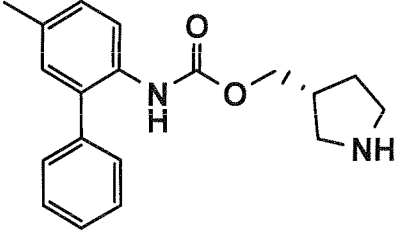
75	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CD_3OD): δ 7.19-7.17 (m, 1H), 6.92-6.90 (m, 2H), 6.85-6.76 (m, 2H), 6.72-6.71 (m, 1H), 4.10-4.02 (m, 2H), 3.70-3.61 (m, 1H), 3.16-3.10 (m, 2H), 2.83 (s, 3H), 2.27-2.13 (m, 2H), 2.13-2.02 (m, 2H), 1.77-1.72 (m, 2H)
76	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CD_3OD): δ 7.33-7.32 (m, 1H), 7.27-7.23 (m, 1H), 7.17-7.15 (m, 1H), 7.05-7.01 (m, 1H), 6.82-6.79 (m, 1H), 6.72-6.71 (m, 1H), 4.11-4.07 (m, 2H), 3.50-3.47 (m, 1H), 3.04-3.01 (m, 2H), 2.70 (s, 3H), 2.20-2.16 (m, 2H), 1.95-1.90 (m, 2H), 1.75-1.70 (m, 2H)

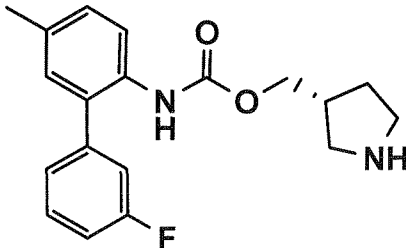
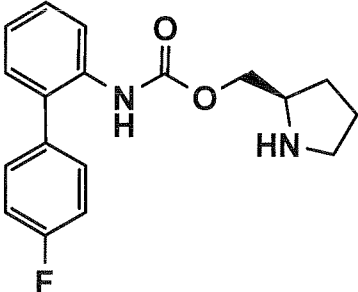
77	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CD_3OD): δ 7.44-7.42 (m, 1H), 7.27-7.22 (m, 2H), 7.16-7.14 (m, 1H), 6.77-6.75 (m, 1H), 6.70-6.69 (m, 1H), 4.08-4.02 (m, 2H), 3.64-3.57 (m, 1H), 3.13-3.09 (m, 2H), 2.86 (s, 3H), 2.27-2.22 (m, 2H), 1.97-1.93 (m, 2H), 1.75-1.70 (m, 2H)
78	(<i>R</i>)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate 	^1H NMR (CDCl_3): δ 8.17-7.98 (bs, 1H), 7.60-7.29 (m, 6H), 7.26-7.06 (m, 2H), 6.78-6.61 (bs, 1H), 4.17-3.94 (m, 2H), 3.09-2.81 (m, 3H), 2.75-2.59 (m, 1H), 2.56-2.33 (m, 2H), 1.98-1.80 (m, 1H), 1.54-1.35 (m, 1H)

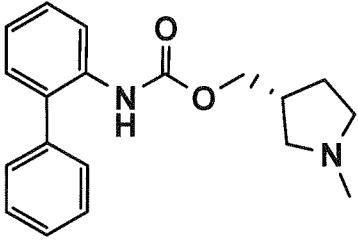
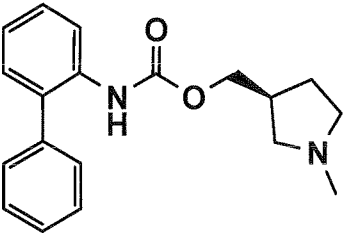
79	(<i>S</i>)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2- ylcarbamate 	¹ H NMR (CDCl ₃): δ 8.07-7.89 (bs, 1H), 7.58-7.32 (m, 6H), 7.32-7.13 (m, 2H), 7.01-6.85 (bs, 1H), 4.28-3.98 (m, 3H), 3.47-3.17 (m, 3H), 3.13-2.95 (m, 1H), 2.80-2.62 (m, 1H), 2.25-2.08 (m, 1H), 1.89-1.70 (m, 1H)
80	(<i>R</i>)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'- biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.10-7.93 (bs, 1H), 7.45-7.30 (m, 1H), 7.21-7.08 (m, 2H), 6.98-6.79 (m, 3H), 6.67-6.51 (bs, 1H), 4.15-3.90 (m, 2H), 3.11-2.76 (m, 3H), 2.71-2.53 (m, 8H), 2.48-2.29 (m, 1H), 2.02-2.72 (m, 2H), 1.49-1.29 (m, 1H)

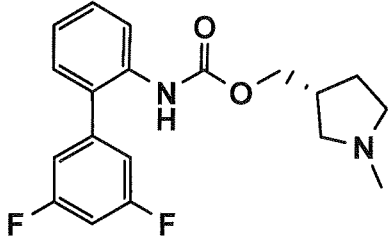
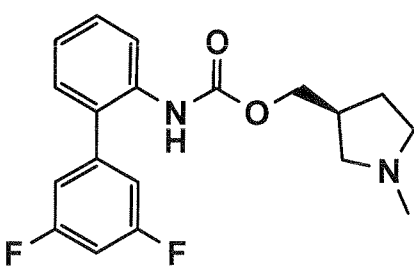
81	(S)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'- biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.10–7.89 (m, 1H), 7.49–7.30 (m, 1H), 7.22–7.04 (m, 2H), 6.98–6.75 (m, 3H), 6.68–6.50 (bs, 1H), 4.19–3.85 (m, 2H), 3.12–2.75 (m, 3H) 2.72–2.52 (bs, 1H), 2.52–2.27 (m, 1H), 2.07–1.72 (m, 2H), 1.50–1.31 (m, 1H)
82	(S)-pyrrolidin-3-ylmethyl (5-fluoro-[1,1'-biphenyl]-2- yl) carbamate 	¹H NMR (CDCl₃): δ 7.81 (s, 1H), 7.45– 7.36 (m, 3H), 7.33– 7.26 (m, 2H), 7.06– 7.01 (m, 1H), 6.97– 6.94 (m, 1H), 4.12– 4.06 (m, 2H), 3.35– 3.27 (m, 1H), 3.23– 3.16 (m, 1H), 3.05– 3.02 (m, 1H), 2.69– 2.65 (m, 1H), 2.17– 2.12 (m, 1H), 1.82– 1.78 (m, 2H)

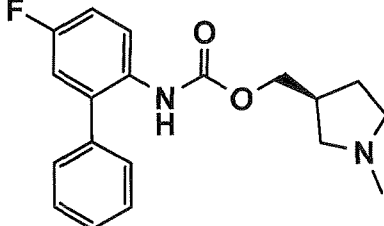
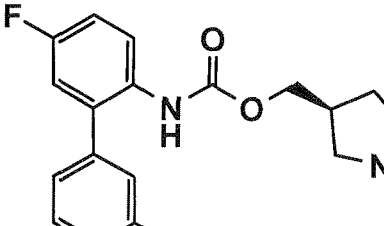
83	(S)-pyrrolidin-3-ylmethyl (5-fluoro-3'-methyl-[1,1'- biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.82 (s, 1H), 7.35- 7.31 (m, 1H), 7.20- 7.18 (m, 1H), 7.18- 7.14 (m, 1H), 7.13- 7.11 (m, 1H), 7.07- 6.98 (m, 1H), 6.95- 6.92 (m, 1H), 4.13- 4.07 (m, 2H), 3.38- 3.33 (m, 2H), 3.25- 3.22 (m, 1H), 3.09- 3.05 (m, 1H), 2.69- 2.65 (m, 1H), 2.38 (s, 3H), 2.15- 2.13 (m, 1H), 1.80- 1.76 (m, 1H)
84	(R)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'- biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.98-7.79 (bs, 1H), 7.14-7.00 (m, 1H), 7.00-6.78 (m, 4H), 6.61-6.45 (bs, 1H), 4.18-3.90 (m, 2H), 3.13-2.80 (m, 3H), 2.70-2.57 (m, 1H), 2.51-2.21 (m, 2H), 1.94-1.80 (m, 1H), 1.49-1.35 (m, 1H)

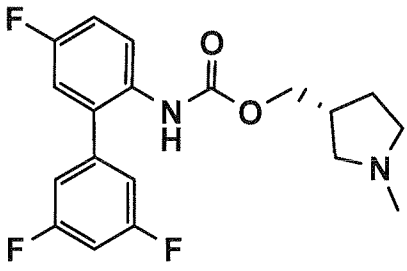
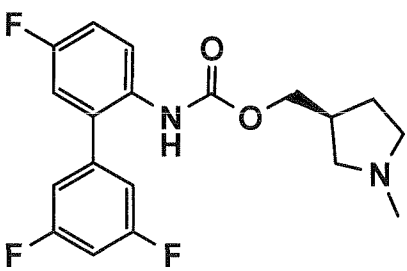
85	(S)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'- biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.96–7.77 (bs, 1H), 7.13–6.99 (m, 1H), 6.99–6.76 (m, 4H), 6.68–6.50 (bs, 1H), 4.15–3.92 (m, 2H), 3.16–2.90 (bs, 3H), 2.90–2.30 (m, 3H), 1.99–1.81 (m, 1H), 1.53–1.35 (m, 1H)
86	(R)-pyrrolidin-3-ylmethyl (5-methyl-[1,1'-biphenyl]-2- yl) carbamate 	¹H NMR (CDCl₃): δ 7.77 (s, 1H), 7.44– 7.40 (m, 2H), 7.37– 7.31 (m, 2H), 7.20– 7.13 (m, 2H), 7.04 (s, 1H), 6.85 (s, 1H), 4.13– 4.04 (m, 2H), 2.78– 2.62 (m, 3H), 2.32 (s, 3H), 2.16– 2.09 (m, 2H), 2.03 (s, 1H), 1.79– 1.70 (m, 2H)

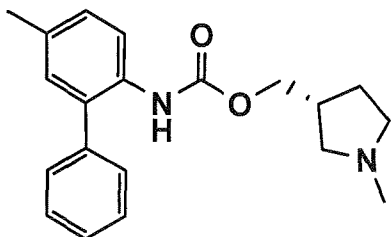
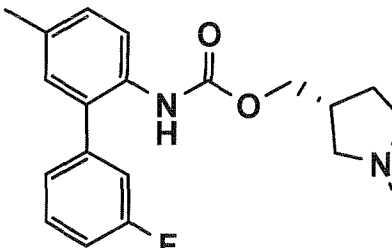
87	(<i>R</i>)-pyrrolidin-3-ylmethyl (3'-fluoro-5-methyl-[1,1'- biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.84 (s, 1H), 7.43- 7.38 (m, 1H), 7.17- 7.08 (m, 2H), 7.04- 7.02 (m, 2H), 7.01 (s, 1H), 6.55 (s, 1H), 4.08- 3.97 (m, 2H), 2.47- 2.33 (m, 3H), 2.32 (s, 3H), 1.94- 1.80 (m, 2H), 1.51- 1.40 (m, 2H)
88	(<i>S</i>)-pyrrolidin-2-ylmethyl (4'-fluoro-[1,1'-biphenyl]- 2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.13-7.94 (m, 1H), 7.41-7.23 (m, 3H), 7.20-7.02 (m, 4H), 6.75-6.57 (bs, 1H), 4.23-4.04 (m, 1H), 4.02-3.85 (m, 1H), 3.47-3.30 (m, 1H), 3.02-2.81 (m, 2H), 2.57-2.25 (bs, 1H), 1.95-1.59 (m, 3H), 1.50-1.32 (m, 1H)

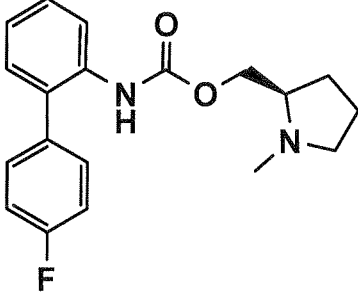
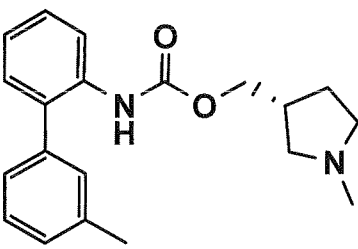
89	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate 	¹H NMR (CDCl₃): δ 8.13-7.94 (bs, 1H), 7.55-7.27 (m, 6H), 7.26-7.03 (m, 2H), 6.77-6.59 (bs, 1H), 4.18-3.94 (m, 2H), 3.00-2.57 (m, 4H), 2.54-2.49 (m, 1H), 2.47 (s, 3H), 2.10- 1.98 (m, 1H) 1.67- 1.55 (m, 1H)
90	(<i>S</i>)-(1-methylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate 	¹H NMR (CDCl₃): δ 8.09-7.94 (bs, 1H), 7.56-7.31 (m, 6H), 7.30-7.12 (m, 2H), 6.86-6.72 (bs, 1H), 4.19-4.02 (m, 1H), 3.41-3.05 (m, 3H), 2.97-2.77 (m, 2H) 2.74 (s, 3H), 2.29- 2.15 (m, 1H), 1.89- 1.74 (m, 1H)

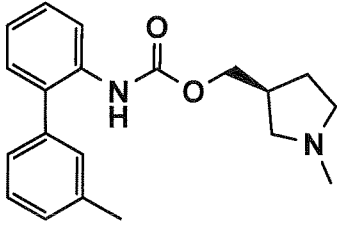
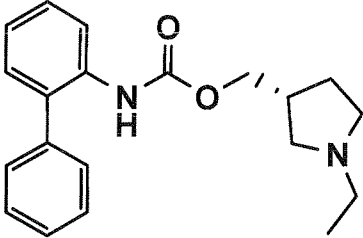
91	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR (CDCl_3): δ 8.08-7.95 (bs, 1H), 7.42-7.33 (m, 1H), 7.21-7.08 (m, 2H), 6.98-6.79 (m, 3H), 6.59-6.48 (bs, 1H), 4.13-3.95 (m, 2H), 2.69-2.43 (m, 3H), 2.40-2.14 (m, 5H), 2.05-1.90 (m, 1H), 1.57-1.42 (m, 1H)
92	(S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR (CDCl_3): δ 8.08-7.95 (bs, 1H), 7.42-7.33 (m, 1H), 7.21-7.08 (m, 2H), 6.98-6.79 (m, 3H), 6.59-6.48 (bs, 1H), 4.13-3.95 (m, 2H), 2.69-2.43 (m, 3H), 2.40-2.14 (m, 5H), 2.05-1.90 (m, 1H), 1.57-1.42 (m, 1H)

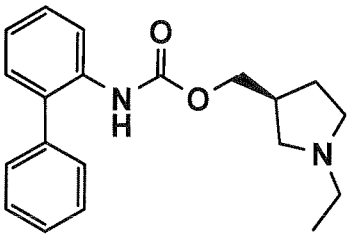
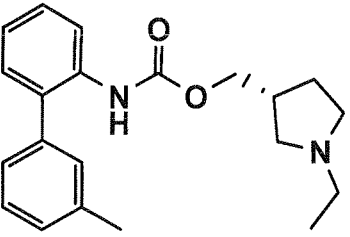
93	(S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.98 (s, 1H), 7.49-7.39 (m, 3H), 7.34-7.32 (m, 2H), 7.06-7.01 (m, 1H), 6.94-6.91 (m, 1H), 6.49 (s, 1H), 4.08-3.96 (m, 2H), 2.61-2.57 (m, 1H), 2.53-2.44 (m, 3H), 2.30 (s, 3H), 2.27-2.22 (m, 1H), 1.98-1.89 (m, 1H), 1.49-1.41 (m, 1H)
94	(S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.97 (s, 1H), 7.37-7.33 (m, 1H), 7.30-7.21 (m, 2H), 7.13-7.11 (m, 1H), 7.04-7.00 (m, 1H), 6.95-6.91 (m, 1H), 6.58 (s, 1H), 4.08-3.98 (m, 2H), 2.71-2.66 (m, 1H), 2.59-2.46 (m, 3H), 2.46-2.33 (m, 7H), 2.01-1.97 (m, 1H), 1.55-1.48 (m, 1H)

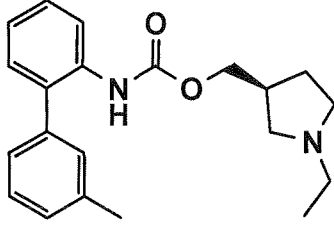
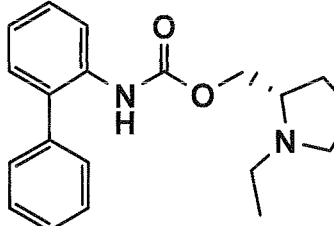
95	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.97-7.81 (bs, 1H), 7.13-7.01 (m, 1H), 6.99-6.78 (m, 4H), 6.57-6.41 (bs, 1H), 4.13-3.94 (m, 2H), 2.70-2.42 (m, 4H), 2.05-2.88 (m, 1H), 1.58-1.41 (m, 4H)
96	(<i>S</i>)-(1-methylpyrrolidin-3-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.97-7.78 (bs, 1H), 7.14-7.00 (m, 1H), 6.99-6.78 (m, 4H), 6.63-6.45 (bs, 1H), 4.14-3.93 (m, 2H), 2.71-2.42 (m, 4H), 2.40-2.23 (bs, 4H), 2.05-1.88 (m, 1H), 1.59-1.41 (m, 1H)

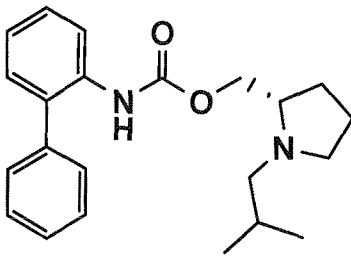
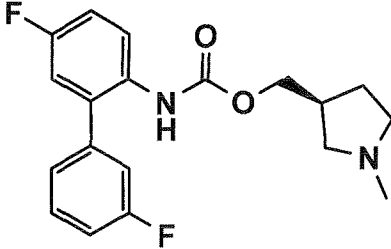
97	(R)-(1-methylpyrrolidin-3-yl)methyl (5-methyl-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.89 (s, 1H), 7.47-7.43 (m, 2H), 7.39-7.31 (m, 2H), 7.22-7.13 (m, 2H), 7.02 (s, 1H), 6.63 (s, 1H), 4.09-4.01 (m, 2H), 2.67-2.58 (m, 3H), 2.52 (s, 3H), 2.32 (s, 3H), 2.11-2.01 (m, 2H), 1.65-1.58 (m, 2H)
98	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.88 (s, 1H), 7.44-7.38 (m, 1H), 7.17-7.10 (m, 2H), 7.09-7.05 (m, 2H), 7.01 (s, 1H), 6.55 (s, 1H), 4.09-3.98 (m, 2H), 2.38 (s, 3H), 2.32 (s, 3H), 2.61-2.40 (m, 3H), 2.15-1.97 (m, 2H), 1.56-1.51 (m, 2H)

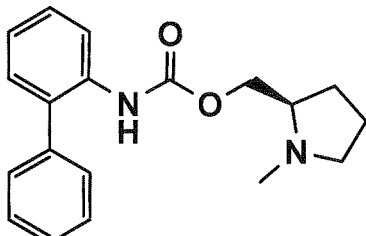
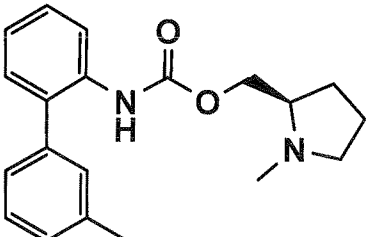
99	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.13–7.96 (m, 1H), 7.41–7.23 (m, 3H), 7.20–7.02 (m, 4H), 6.62–6.45 (bs, 1H), 4.24–3.97 (m, 2H), 3.10–2.96 (m, 1H), 2.50–2.27 (m, 4H), 2.27–2.13 (m, 1H), 1.96–1.80 (m, 1H), 1.80–1.51 (m, 3H)
100	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.13–7.96 (bs, 1H), 7.41–7.30 (m, 2H), 7.30–7.03 (m, 5H), 6.71–6.59 (bs, 1H), 4.13–3.95 (m, 2H), 2.72–2.59 (m, 1H), 2.59–2.43 (m, 3H), 2.40 (s, 3H), 2.14– 2.22 (m, 4H) 2.06– 1.87 (m, 1H), 1.55– 1.42 (m, 1H)

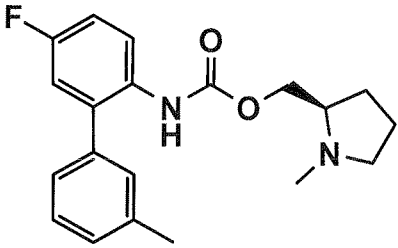
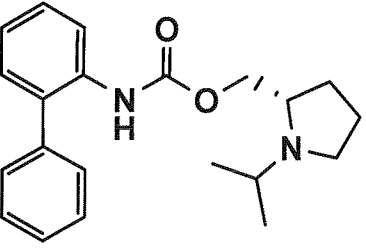
101	(<i>S</i>)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.15–7.99 (bs, 1H), 7.46–7.29 (m, 2H), 7.28–7.02 (m, 5H), 6.74–6.58 (bs, 1H), 4.15–3.93 (m, 2H), 2.70–2.43 (m, 4H), 2.40 (s, 3H), 2.31 (s, 3H), 2.15– 2.17 (m, 1H) 2.03– 1.86 (m, 1H), 1.57– 1.40 (m, 1H)
102	(<i>R</i>)-(1-ethylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate 	¹ H NMR (CDCl ₃): δ 8.13–7.96 (bs, 1H), 7.54–7.26 (m, 6H), 7.25–7.02 (m, 2H), 6.72–6.55 (bs, 1H), 4.15–3.92 (m, 2H), 2.91–2.69 (m, 1H), 2.69–2.35 (m, 5H), 2.33–2.17 (m, 1H), 2.04–1.87 (m, 1H) 1.60–1.42 (m, 1H), 1.00 (t, 3H, <i>J</i> =7.2)

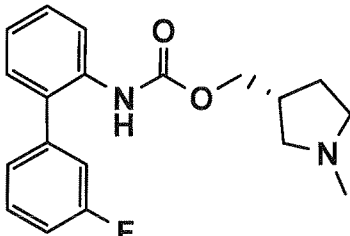
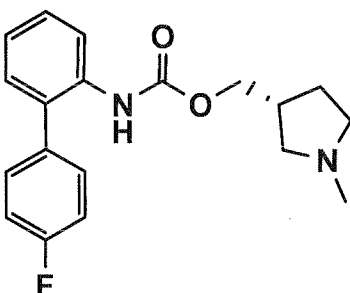
103	(<i>S</i>)-(1-ethylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate 	¹ H NMR (CDCl ₃): δ 8.15–7.97 (bs, 1H), 7.55–7.27 (m, 6H), 7.24–7.05 (m, 2H), 6.72–6.59 (bs, 1H), 4.14–3.94 (m, 2H), 2.92–2.71 (bs, 1H), 2.71–2.39 (m, 5H), 2.38–2.22 (m, 1H), 2.04–1.86 (m, 1H), 1.59–1.44 (m, 1H), 1.11 (t, 3H, <i>J</i> =7.2)
104	(<i>R</i>)-(1-ethylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.13–8.00 (bs, 1H), 7.42–7.27 (m, 2H), 7.25–7.03 (m, 5H), 6.69–6.59 (bs, 1H), 4.13–3.95 (m, 2H), 2.80–2.68 (m, 1H), 2.68–2.32 (m, 9H), 2.30–2.17 (m, 1H), 2.03–1.89 (m, 1H), 1.58–1.41 (m, 1H), 1.18–1.04 (t, 3H, <i>J</i> =7.6)

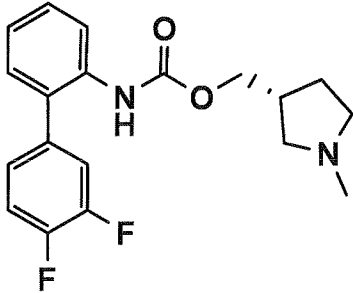
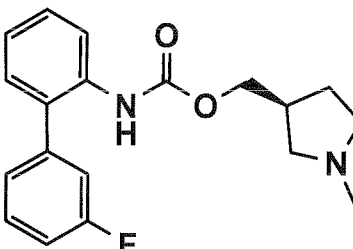
105	(S)-(1-ethylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.13-7.99 (m, 1H), 7.43-7.27 (m, 2H), 7.27-7.02 (m, 5H), 6.72-6.58 (bs, 1H), 4.13-3.94 (m, 2H), 2.89-2.66 (m, 1H), 2.66-2.15 (m, 9H), 2.06-1.87 (m, 1H), 1.57-1.40 (m, 1H), 1.09 (t, 3H, J=7.6)
106	(S)-(1-ethylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate 	¹ H NMR (CDCl ₃): δ 8.15-8.01 (m, 1H), 7.54-7.26 (m, 6H), 7.22-7.05 (m, 2H), 6.72-6.58 (bs, 1H), 4.22-4.07 (m, 1H), 4.07-3.93 (m, 1H), 3.21-3.02 (m, 1H), 2.92-2.59 (m, 2H), 2.41-2.12 (m, 2H), 1.95-1.50 (m, 5H), 1.08 (t, 3H, J=7.2)

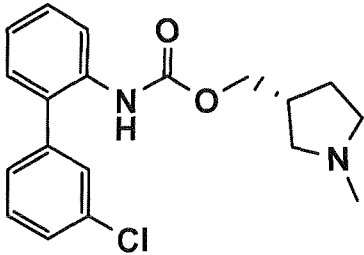
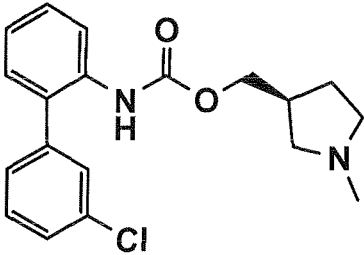
107	(S)-(1-isobutylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate 	¹ H NMR (CDCl ₃): δ 8.18-8.02 (m, 1H), 7.53-7.27 (m, 6H), 7.22-7.03 (m, 2H), 6.69-6.54 (bs, 1H), 4.18-3.83 (m, 2H), 3.15-2.95 (bs, 1H), 2.71-2.53 (bs, 1H), 2.48-2.30 (m, 1H), 2.23-2.02 (m, 2H), 1.92-1.45 (m, 5H), 0.84 (t, 6H, J=6.8)
108	(S)-(1-methylpyrrolidin-3-yl)methyl (3',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.85 (s, 1H), 7.46- 7.41 (m, 1H), 7.15- 7.03 (m, 4H), 6.96- 6.93 (m, 1H), 4.11- 4.03 (m, 2H), 2.92- 2.90 (m, 1H), 2.82- 2.68 (m, 2H), 2.42 (s, 3H), 2.12- 2.10 (m, 2H), 1.71- 1.69 (m, 2H)

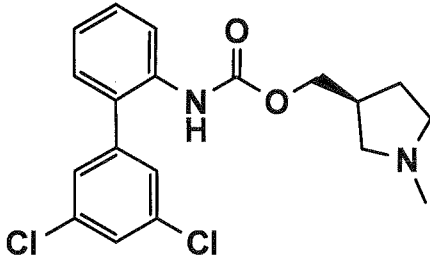
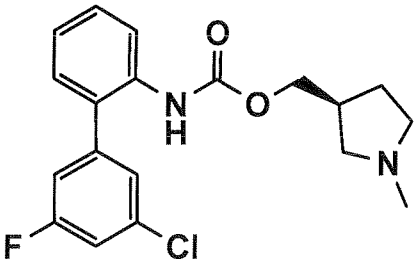
109	(R)-(1-methylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate 	¹ H NMR (CDCl ₃): δ 8.18-7.99 (m, 1H), 7.49-7.27 (m, 6H), 7.22-7.15 (m, 1H), 7.15-7.06 (m, 1H), 6.72-6.60 (bs, 1H), 4.24-3.98 (m, 2H), 3.10-2.95 (m, 1H), 2.52-2.40 (m, 1H), 2.35 (s, 3H) 2.26- 2.12 (m, 1H), 1.97- 1.50 (m, 4H)
110	(R)-(1-methylpyrrolidin-2-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.18-7.97 (bs, 1H), 7.41-7.28 (m, 2H), 7.23-7.01 (m, 5H), 6.78-6.62 (bs, 1H), 4.12-3.97 (m, 2H), 3.05-2.90 (m, 1H), 2.52-2.11 (m, 8H), 1.95-1.47 (m, 4H)

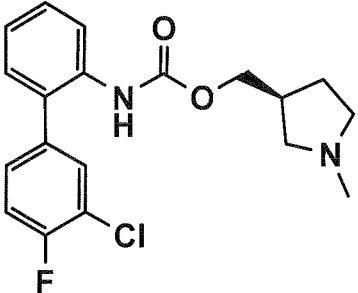
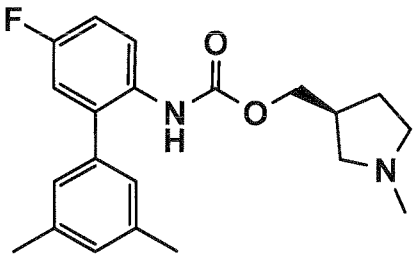
111	(<i>R</i>)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.00 (s, 1H), 7.34-7.31 (m, 1H), 7.21-7.19 (m, 1H), 7.12-7.06 (m, 2H), 7.04-6.99 (m, 1H), 6.92-6.89 (m, 1H), 6.59 (s, 1H), 4.18-4.04 (m, 2H), 3.06-3.02 (m, 1H), 2.38 (s, 3H), 2.35 (s, 3H), 2.22-2.15 (m, 2H), 1.92-1.76 (m, 2H), 1.68-1.54 (m, 2H)
112	(<i>S</i>)-(1-isopropylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate 	¹ H NMR (CDCl ₃): δ 8.15-8.01 (m, 1H), 7.51-7.27 (m, 6H), 7.21-7.06 (m, 2H), 6.69-6.56 (bs, 1H), 4.12-4.00 (m, 1H), 3.87-3.76 (m, 1H), 3.04-2.78 (m, 3H), 2.53-2.40 (m, 1H), 1.80-1.62 (m, 4H), 1.08 (d, 3H, <i>J</i> =6.4), 0.99 (d, 3H, <i>J</i> =6.4)

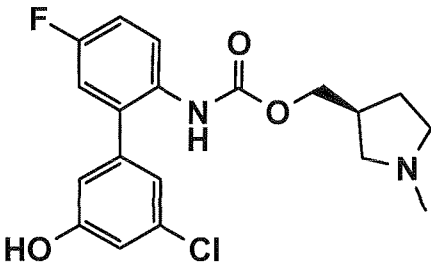
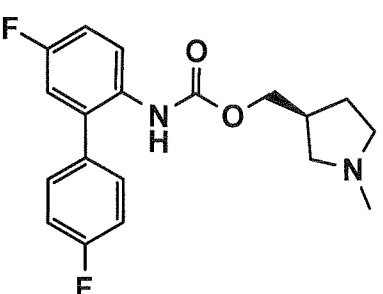
113	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 8.13-7.98 (m, 1H), 7.50-7.31 (m, 2H), 7.21-7.00 (m, 5H), 6.62-6.49 (bs, 1H), 4.14-3.95 (m, 2H), 2.75-2.42 (m, 4H), 2.42-2.22 (m, 4H), 2.03-1.87 (m, 1H), 1.58-1.42 (m, 1H)
114	(R)-(1-methylpyrrolidin-3-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 8.11-7.97 (bs, 1H), 7.42-7.27 (m, 3H), 7.01-7.03 (m, 4H), 6.57-6.42 (bs, 1H), 4.13-3.92 (m, 2H), 2.70-2.41 (m, 4H), 2.41-2.20 (m, 4H), 2.06-1.94 (m, 1H), 1.56-1.41 (m, 1H)

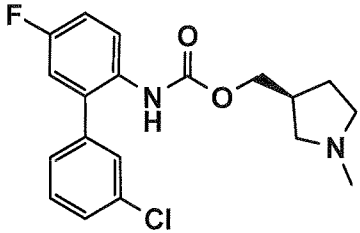
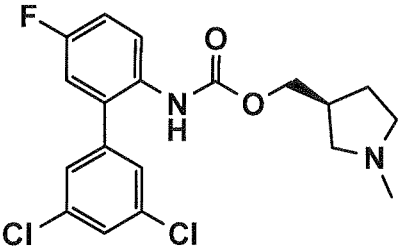
115	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3',4'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃) δ 8.02-8.01 (m, 1H), 7.38-7.06 (m, 5H), 6.47 (s, 1H), 4.09-3.98 (m, 2H), 2.62-2.58 (t, 1H, <i>J</i>=17.2), 2.55-2.46 (m, 3H), 2.37-2.25 (m, 4H), 2.04-1.91 (m, 2H), 1.51-1.43 (m, 1H)
116	(<i>S</i>)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 8.12-7.98 (bs, 1H), 7.50-7.31 (m, 2H), 7.24-7.02 (m, 5H), 6.70-6.54 (bs, 1H), 4.16-3.97 (m, 2H), 2.77-2.65 (m, 1H) 2.64-2.47 (m, 3H), 2.45-2.28 (m, 4H), 2.06-1.93 (m, 1H), 1.61-1.47 (m, 1H)

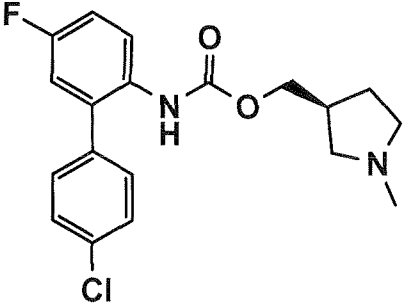
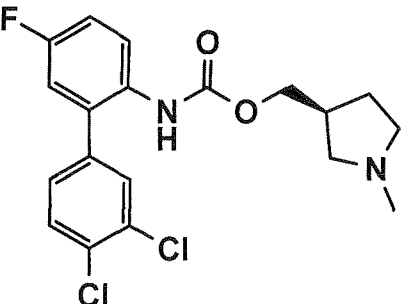
117	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.08-7.93 (bs, 1H), 7.47-7.27 (m, 4H), 7.21-7.05 (m, 3H), 6.67-6.53 (bs, 1H), 4.15-3.93 (m, 2H), 2.80-2.50 (m, 4H), 2.50-2.24 (bs, 4H), 2.09-1.92 (m, 1H), 1.62-1.46 (m, 1H)
118	(<i>S</i>)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.07-7.92 (bs, 1H), 7.42-7.31 (m, 4H), 7.27-7.21 (m, 1H), 7.20-7.09 (m, 2H), 6.66-6.56 (bs, 1H), 4.13-3.97 (m, 2H), 2.85-2.53 (m, 4H), 2.52-2.35 (m, 4H), 2.08-1.97 (m, 1H), 1.63-1.52 (m, 1H)

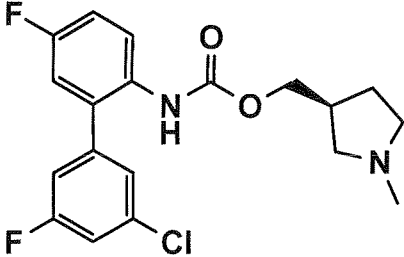
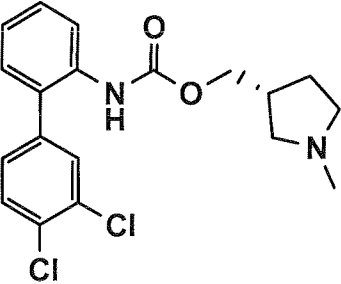
119	(S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.02–7.83 (bs, 1H), 7.48–7.32 (m, 2H), 7.33–7.21 (m, 2H), 7.20–7.08 (m, 2H), 6.77–6.56 (bs, 1H), 4.15–3.95 (m, 2H), 2.80–2.54 (m, 4H), 2.54–2.30 (m, 4H), 2.12–1.92 (m, 1H), 1.67–1.49 (m, 1H)
120	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.03–7.89 (bs, 1H), 7.45–7.33 (m, 1H), 7.23–7.07 (m, 4H), 7.05–6.95 (m, 1H), 6.72–6.56 (bs, 1H), 4.16–3.96 (m, 2H), 2.78–2.50 (m, 4H), 2.50–2.29 (m, 4H), 2.10–1.92 (m, 1H), 1.65–1.47 (m, 1H)

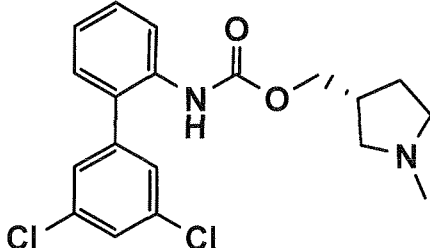
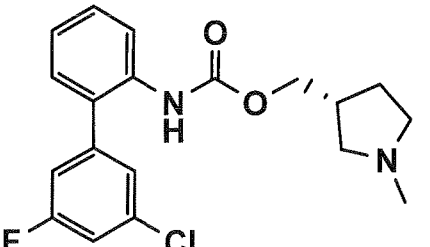
121	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.06-7.96 (bs, 1H), 7.49-7.32 (m, 2H), 7.25-7.19 (m, 2H), 7.18-7.10 (m, 2H), 6.65-6.47 (bs, 1H), 4.17-3.95 (m, 2H), 2.78-2.50 (m, 4H), 2.50-2.25 (m, 4H), 2.08-1.91 (m, 1H), 1.62-1.47 (m, 1H)
122	(S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.03-7.88 (bs, 1H), 7.05-6.96 (m, 2H), 6.95-6.87 (m, 3H), 6.64-6.58 (bs, 1H), 4.12-3.92 (m, 2H), 2.68-2.57 (m, 1H), 2.57-2.43 (m, 3H), 2.34 (s, 6H), 2.33- 2.15 (m, 4H), 2.00- 1.77 (m, 1H), 1.55- 1.45 (m, 1H)

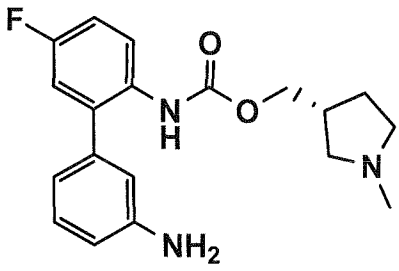
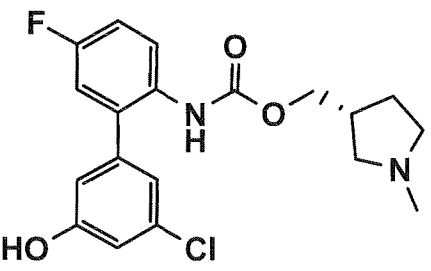
123	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.77-7.60 (bs, 1H), 7.13-6.86 (m, 3H), 6.79 (s, 1H), 6.70 (s, 1H), 6.53 (s, 1H), 5.03- 4.50 (bs, 1H), 4.33- 4.18 (m, 1H), 4.18- 3.98 (m, 1H), 3.08- 2.95 (bs, 1H), 2.95- 2.78 (bs, 1H) 2.70- 2.31 (m, 5H), 2.08- 1.90 (bs, 1H), 1.90- 1.70 (bs, 1H)
124	(S)-(1-methylpyrrolidin-3-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 8.00-7.85 (bs, 1H), 7.38-7.25 (m, 2H), 7.20-7.19 (m, 2H), 7.03 (td, 1H, J=8.4, 2.8), 6.90 (dd, 1H, J=8.8, 2.8), 6.51- 6.39 (bs, 1H), 4.12- 3.90 (m, 2H), 2.63- 2.55 (m, 1H) 2.55- 2.39 (m, 3H), 2.37- 2.18 (m, 4H), 1.99- 1.85 (m, 1H), 1.54- 1.38 (m, 1H)

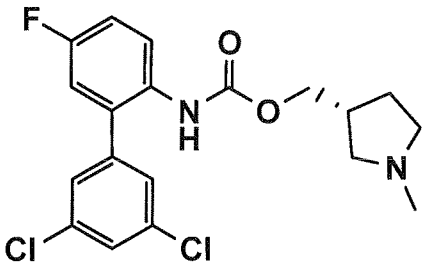
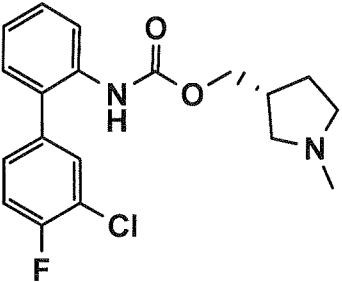
125	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR(CDCl_3): δ 8.02-7.81(bs, 1H), 7.53-7.30(m, 3H), 7.26-7.19(m, 1H), 7.05(td, 1H, $J=8.0$, 2.8), 6.91(dd, 1H, $J=8.8$, 2.8), 6.54- 6.45(bs, 1H), 4.13- 3.86(m, 2H), 2.65- 2.54(m, 1H) 2.54- 2.42(m, 3H), 2.37- 2.19(m, 4H), 2.00- 1.86(m, 1H), 1.55- 1.37(m, 1H)
126	(S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	^1H NMR(CDCl_3): δ 7.92-7.76(bs, 1H), 7.42-7.36(m, 1H), 7.28-7.17(m, 2H), 7.06(td, 1h, $J=8.8$, 2.8), 6.90(dd, 1H, $J=8.8$, 2.8), 6.51- 6.39(bs, 1H), 4.12- 3.90(m, 2H), 2.63- 2.55(m, 1H) 2.55- 2.39(m, 3H), 2.37- 2.18(m, 4H), 2.00- 1.85(m, 1H), 1.54- 1.38(m, 1H)

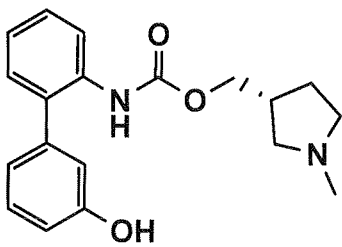
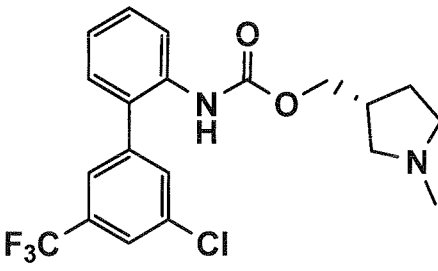
127	(S)-(1-methylpyrrolidin-3-yl)methyl (4'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.98-7.82 (bs, 1H), 7.49-7.38 (m, 2H), 7.34-7.20 (m, 2H), 7.03 (td, 1H, J=8.4, 2.8), 6.90 (dd, 1H, J=8.8, 2.8), 6.60-6.49 (bs, 1H), 4.14-3.87 (m, 2H), 2.66-2.59 (m, 1H) 2.59-2.45 (m, 3H), 2.42-2.15 (m, 4H), 2.04-1.89 (m, 1H), 1.57-1.42 (m, 1H)
128	(S)-(1-methylpyrrolidin-3-yl)methyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.86-7.65 (bs, 1H), 7.58-7.39 (m, 2H), 7.26-7.16 (m, 1H), 7.04 (td, 1H, J=8.4, 3.2), 6.89 (dd, 1H, J=8.8, 3.2), 6.89-6.79 (bs, 1H), 4.15-3.94 (m, 2H), 2.90-2.73 (m, 2H) 2.73-2.54 (m, 3H), 2.52-2.19 (m, 3H), 2.14-1.96 (m, 1H), 1.70-1.54 (m, 1H)

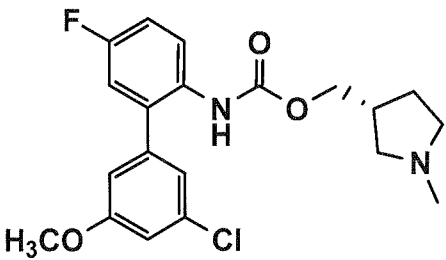
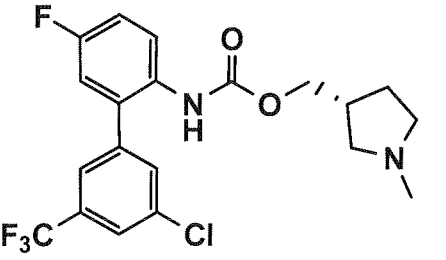
129	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR(CDCl ₃): δ 7.97-7.76(bs, 1H), 7.18-7.02(m, 3H), 7.03-6.86(m, 2H), 6.54-6.42(bs, 1H), 4.03-3.85(m, 2H), 2.65-2.57(m, 1H), 2.57-2.41(m, 3H), 2.37-2.18(m, 4H), 2.02-1.87(m, 1H), 1.55-1.41(m, 1H)
130	(R)-(1-methylpyrrolidin-3-yl)methyl (3',4'-dichloro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR(CDCl ₃) δ 8.01-7.99(m, 1H), 7.54-7.51(d, 1H, J=8Hz), 7.46(m, 1H), 7.38-7.34(m, 1H), 7.21-7.11(m, 2H), 6.46(s, 1H), 4.09-3.98(m, 2H), 2.63-2.59(t, 1H, J=17.2), 2.54-2.47(m, 3H), 2.36-2.26(m, 4H), 2.00-1.93(m, 1H), 1.50-1.45(m, 1H)

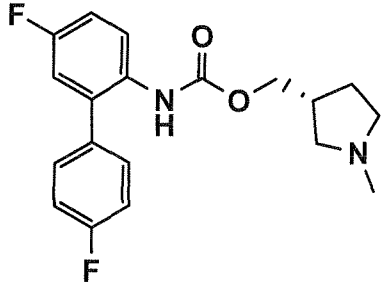
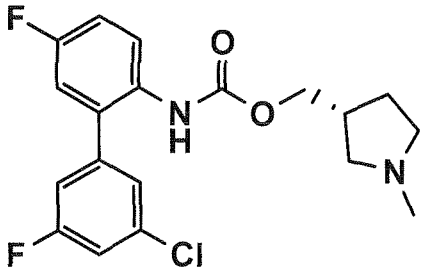
131	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃) δ 8.01-7.97 (m, 1H), 7.43-7.35 (m, 2H), 7.26-7.25 (m, 2H), 7.18-7.11 (m, 2H), 6.46 (s, 1H), 4.10- 3.99 (m, 2H), 2.67- 2.61 (t, 1H, <i>J</i> =17.2), 2.57- 2.50 (m, 3H), 2.38- 2.28 (m, 4H), 2.01- 1.93 (m, 1H), 1.52- 1.48 (m, 1H)
132	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃) δ 8.01-7.99 (m, 1H), 7.39-7.35 (m, 1H), 7.18-7.11 (m, 3H), 6.99-6.97 (m, 1H), 6.48 (s, 1H), 4.10- 3.99 (m, 2H), 2.63- 2.59 (t, 1H, <i>J</i> =17.2), 2.53- 2.48 (m, 3H), 2.36- 2.27 (m, 4H), 2.00- 1.92 (m, 1H), 1.51- 1.46 (m, 1H)

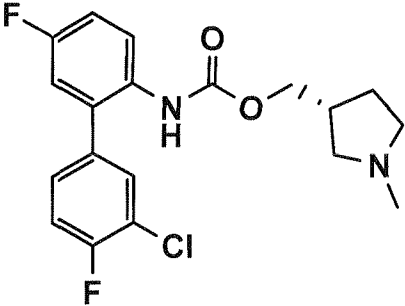
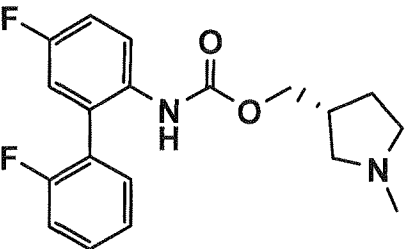
133	(R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-amino-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃) δ 8.03 (m, 1H), 7.25-7.21 (m, 1H), 7.03-6.98 (m, 1H), 6.92-6.90 (m, 1H), 6.72-6.61 (m, 3H), 4.08-3.97 (m, 2H), 3.80 (s, 1H), 2.66-2.62 (t, 1H, J=17.2), 2.53-2.46 (m, 3H), 2.33-2.28 (m, 4H), 2.01-1.93 (m, 1H), 1.51-1.48 (m, 1H)
134	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃) δ 7.67 (m, 1H), 7.06-7.01 (m, 1H), 6.97-6.94 (m, 3H), 6.73-6.72 (m, 1H), 6.54 (s, 1H), 4.35-4.05 (m, 2H), 3.01-3.00 (m, 1H), 2.89-2.88 (m, 1H), 2.59-2.57 (m, 2H), 2.47-2.41 (m, 4H), 1.97-1.96 (m, 1H), 1.80 (m, 1H)

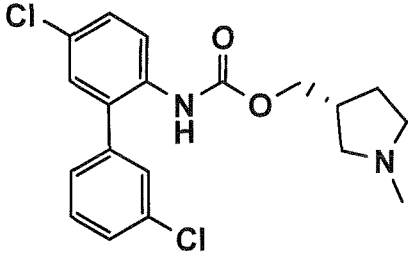
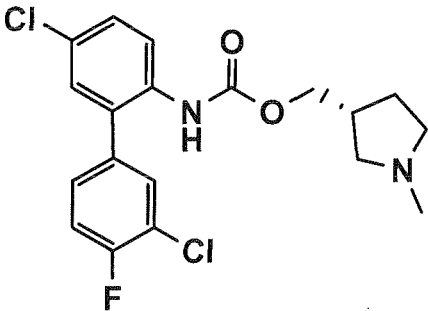
135	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃) δ 7.85 (s, 1H), 7.41-7.40 (t, 1H, J=4.0), 7.23 (s, 2H), 7.10-7.05 (m, 2H), 6.93-6.90 (m, 2H), 6.36 (s, 1H), 4.09-3.99 (m, 2H), 2.63-2.59 (t, 1H, J=17.2), 2.56-2.45 (m, 3H), 2.32-2.28 (m, 4H), 2.01-1.93 (m, 1H), 1.50-1.46 (m, 1H)
136	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃) δ 8.03-7.98 (m, 1H), 7.41-7.34 (m, 2H), 7.26-7.21 (m, 2H), 7.17-7.10 (m, 2H), 6.49 (s, 1H), 4.09-3.98 (m, 2H), 2.63-2.59 (t, 1H, J=17.2), 2.51-2.46 (m, 3H), 2.36-2.26 (m, 4H), 2.00-1.91 (m, 1H), 1.51-1.46 (m, 1H)

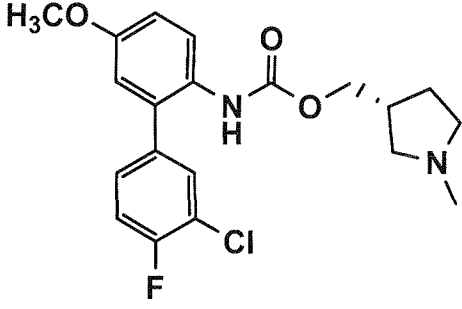
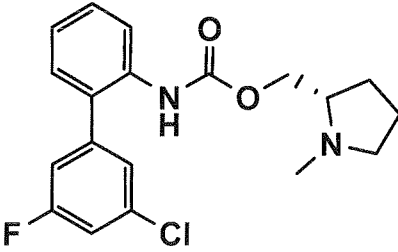
137	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.95–7.81 (m, 1H), 7.40–7.19 (m, 3H), 7.18–7.06 (m, 1H), 6.89–6.65 (m, 4H), 4.34–4.18 (m, 1H), 4.09–3.94 (m, 1H), 2.89–2.51 (m, 5H), 2.42 (s, 3H), 2.07– 1.95 (m, 1H), 1.78– 1.60 (m, 1H)
138	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃) δ 7.96–7.94 (m, 1H), 7.63 (s, 1H), 7.55– 7.52 (m, 2H), 7.42– 7.37 (m, 2H), 7.21– 7.17 (m, 2H), 6.40 (s, 1H), 4.09– 3.99 (m, 2H), 2.64– 2.60 (t, 1H, <i>J</i> =17.2), 2.55– 2.47 (m, 3H), 2.36– 2.31 (m, 4H), 2.00– 1.91 (m, 1H), 1.51– 1.46 (m, 1H)

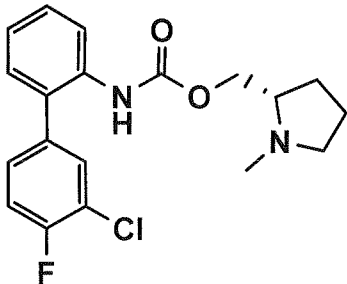
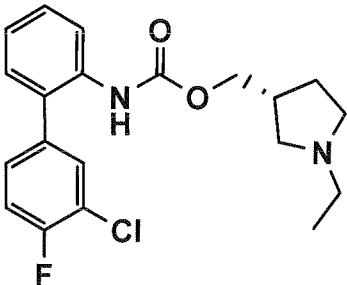
139	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-methoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃) δ 7.97 (m, 1H), 7.07-7.03 (m, 1H), 6.94-6.89 (m, 2H), 6.74-6.73 (m, 1H), 6.45 (s, 1H), 4.08-3.99 (m, 2H), 3.83-3.79 (m, 3H), 2.63-2.59 (t, 1H, <i>J</i> =17.2), 2.54-2.47 (m, 3H), 2.36-2.27 (m, 4H), 2.00-1.91 (m, 1H), 1.49-1.45 (m, 1H)
140	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃) δ 7.82 (m, 1H), 7.65 (s, 1H), 7.54-7.51 (m, 2H), 7.13-7.08 (m, 1H), 6.96-6.93 (m, 2H), 6.34 (s, 1H), 4.07-3.97 (m, 2H), 2.60-2.56 (t, 1H, <i>J</i> =17.2), 2.53-2.43 (m, 3H), 2.34-2.35 (m, 4H), 1.98-1.90 (m, 1H), 1.49-1.44 (m, 1H)

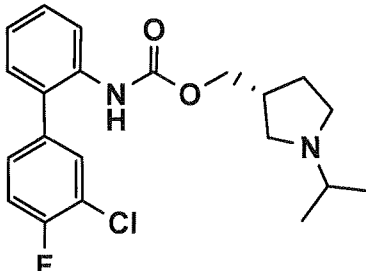
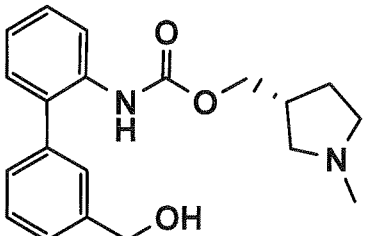
141	(R)-(1-methylpyrrolidin-3-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃) δ 7.93 (m, 1H), 7.31-7.29 (m, 2H), 7.23-7.13 (m, 2H), 7.06-7.01 (m, 1H), 6.91-6.89 (m, 1H), 6.42 (s, 1H), 4.07-3.96 (m, 2H), 2.61-2.56 (t, 1H, J=17.2), 2.53-2.43 (m, 3H), 2.35-2.25 (m, 4H), 2.00-1.89 (m, 1H), 1.51-1.41 (m, 1H)
142	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃) δ 7.85 (m, 1H), 7.14-7.13 (m, 2H), 7.10-7.05 (m, 1H), 6.98-6.96 (m, 1H), 6.93-6.90 (m, 1H), 6.43 (s, 1H), 4.09-3.99 (m, 2H), 2.65-2.60 (t, 1H, J=17.2), 2.55-2.47 (m, 3H), 2.36-2.31 (m, 4H), 2.02-1.95 (m, 1H), 1.52-1.47 (m, 1H)

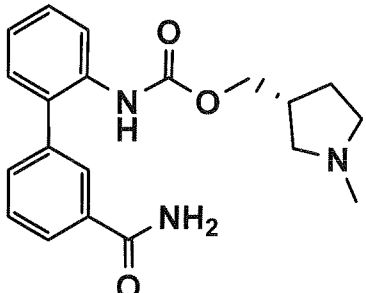
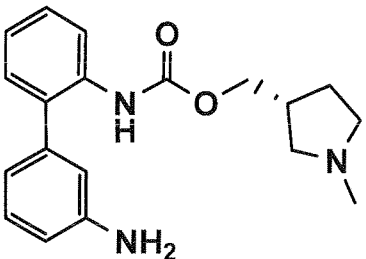
143	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃) δ 7.85 (m, 1H), 7.40-7.38 (m, 1H), 7.26-7.19 (m, 2H), 7.08-7.03 (m, 1H), 6.91-6.88 (m, 1H), 6.34 (s, 1H), 4.08-3.97 (m, 2H), 2.61-2.57 (t, 1H, J=17.2), 2.55-2.47 (m, 3H), 2.36-2.25 (m, 4H), 2.00-1.90 (m, 1H), 1.51-1.44 (m, 1H)
144	(R)-(1-methylpyrrolidin-3-yl)methyl (2',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃) δ 8.05 (m, 1H), 7.44-7.40 (m, 1H), 7.31-7.23 (m, 2H), 7.21-7.17 (m, 2H), 6.98-6.96 (m, 1H), 4.13-4.07 (m, 2H), 3.10-3.08 (m, 1H), 2.49-2.45 (m, 1H), 2.39 (s, 3H), 2.29-2.21 (m, 1H), 1.95-1.59 (m, 4H)

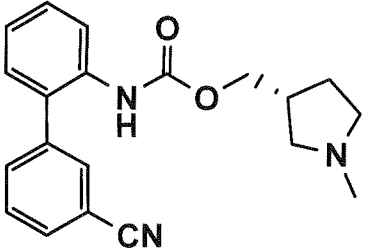
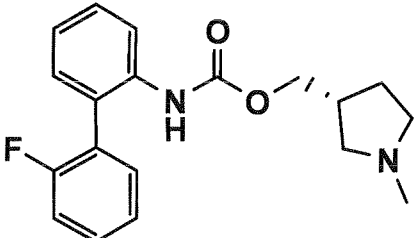
145	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5-dichloro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃) δ 7.87-7.85 (m, 1H), 7.55-7.17 (m, 5H), 6.99 (m, 1H), 6.55 (s, 1H), 4.11- 4.02 (m, 2H), 3.06- 3.02 (m, 2H), 2.95- 2.89 (m, 1H), 2.85- 2.81 (m, 1H), 2.76- 2.66 (m, 1H), 2.62 (s, 3H), 2.18- 2.09 (m, 1H), 1.78- 1.69 (m, 1H)
146	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5-dichloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃) δ 7.86-7.83 (m, 1H), 7.53-7.15 (m, 4H), 6.99 (m, 1H), 6.50 (s, 1H), 4.10- 4.02 (m, 2H), 3.05- 3.02 (m, 2H), 2.97- 2.90 (m, 1H), 2.84- 2.82 (m, 1H), 2.77- 2.67 (m, 1H), 2.60 (s, 3H), 2.18- 2.10 (m, 1H), 1.79- 1.69 (m, 1H)

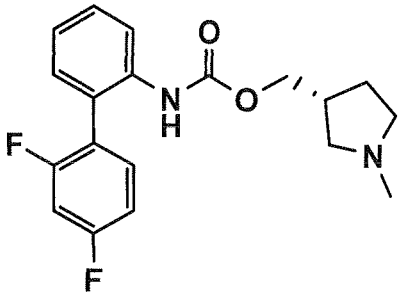
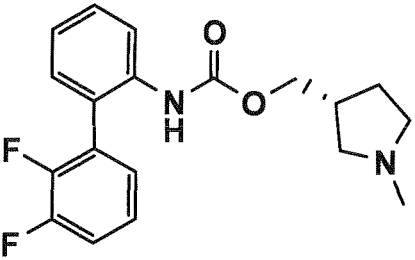
147	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃) δ 7.70 (s, 1H), 7.44-7.42 (d, 1H, J=7.2), 7.26-7.20 (m, 2H), 6.93-6.90 (m, 1H), 6.75 (m, 1H), 6.66 (s, 1H), 4.15-4.00 (m, 2H), 3.81 (s, 3H), 3.42-3.40 (m, 1H), 2.81-2.47 (m, 2H), 2.34 (s, 3H), 2.06-1.60 (m, 4H)
148	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃) δ 7.92 (s, 1H), 7.43-7.27 (m, 2H), 7.23-7.08 (m, 3H), 7.03-6.95 (m, 1H), 6.79 (s, 1H), 4.33-4.19 (m, 2H), 3.28-3.26 (m, 1H), 2.75 (m, 1H), 2.49-2.28 (m, 4H), 1.98-1.59 (m, 4H)

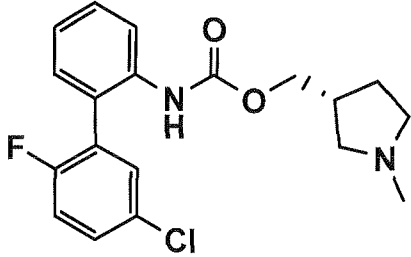
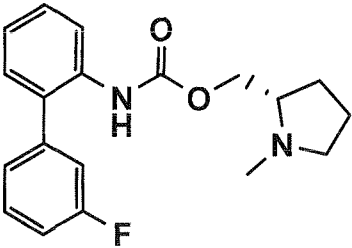
149	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃) δ 7.90 (s, 1H), 7.39- 7.31 (m, 2H), 7.22- 7.05 (m, 3H), 7.03- 6.97 (m, 1H), 6.72 (s, 1H), 4.26- 4.11 (m, 2H), 3.19- 3.14 (m, 1H), 2.70- 2.64 (m, 1H), 2.42- 2.30 (m, 4H), 1.99- 1.58 (m, 4H)
150	(R)-(1-ethylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.97 (s, 1H), 7.41- 7.33 (m, 2H), 7.23- 7.21 (m, 2H), 7.16- 7.10 (m, 2H), 6.60 (s, 1H), 4.10- 4.01 (m, 2H), 2.74- 2.72 (m, 1H), 2.65- 2.45 (m, 5H), 2.37- 2.34 (m, 1H), 2.02- 1.93 (m, 1H), 1.57- 1.49 (m, 1H), 1.11 (t, 3H, J=7.2)

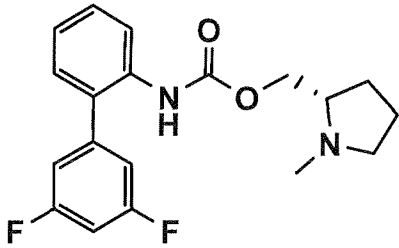
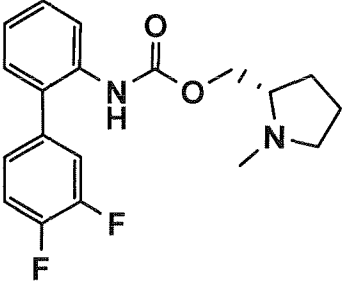
151	(R)-(1-isopropylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.95 (s, 1H), 7.41-7.34 (m, 2H), 7.23-7.21 (m, 2H), 7.18-7.12 (m, 2H), 6.68 (s, 1H), 4.14-4.04 (m, 2H), 3.07-3.05 (m, 1H), 2.93-2.90 (m, 1H), 2.76-2.74 (m, 1H), 2.67-2.64 (m, 2H), 2.09-2.02 (m, 1H), 1.70-1.65 (m, 2H), 1.23 (s, 6H)
152	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-(hydroxymethyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.10-7.92 (bs, 1H), 7.57-6.90 (m, 7H), 4.71 (s, 1H), 4.21-3.91 (m, 3H), 2.73-2.16 (m, 9H), 2.08-1.84 (m, 1H), 1.64-1.39 (m, 1H)

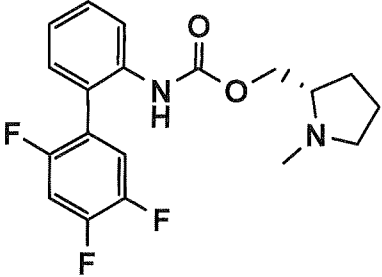
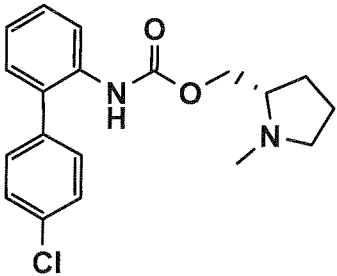
153	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-carbamoyl-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (DMSO): δ 8.78 (s, 1H), 8.20-7.78 (m, 3H), 7.78-7.20 (m, 7H), 3.99-3.65 (bs, 2H), 3.55-3.26 (bs, 1H), 2.60-1.97 (m, 7H), 1.88-1.63 (bs, 1H), 1.41-1.14 (bs, 1H)
154	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-amino-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.15-8.00 (bs, 1H), 7.43-7.13 (m, 3H), 7.12-6.99 (m, 1H), 6.82-6.55 (m, 4H), 4.18-3.93 (m, 2H), 3.87-3.67 (bs, 2H), 2.72-2.41 (m, 4H), 2.41-2.19 (m, 4H), 2.03-1.83 (m, 1H), 1.55-1.40 (m, 1H)

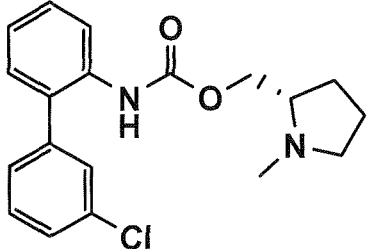
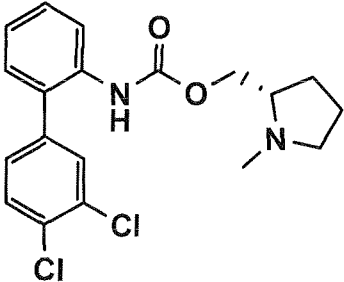
155	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-cyano-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.03–7.85 (m, 1H), 7.74–7.50 (m, 4H), 7.47–7.32 (m, 1H), 7.26–7.08 (m, 2H), 6.71–6.47 (bs, 1H), 4.15–3.90 (m, 2H), 2.77–2.48 (m, 4H), 2.48–2.25 (bs, 4H), 2.09–1.88 (m, 1H), 1.63–1.44 (m, 1H)
156	(R)-(1-methylpyrrolidin-3-yl)methyl (2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.98 (m, 1H), 7.43– 7.38 (m, 3H), 7.31– 7.29 (m, 1H), 7.26– 7.25 (m, 1H), 7.23– 7.16 (m, 2H), 6.48 (s, 1H), 4.11– 4.02 (m, 2H), 2.94– 2.80 (m, 1H), 2.51– 2.48 (m, 1H), 2.44 (s, 3H), 2.14– 2.01 (m, 1H), 1.89– 1.55 (m, 4H)

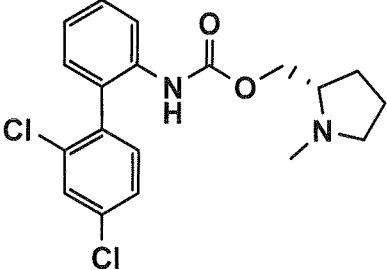
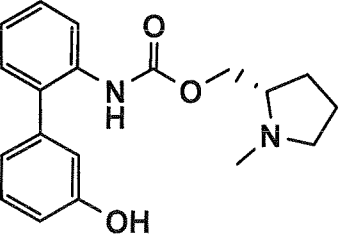
157	(R)-(1-methylpyrrolidin-3-yl)methyl (2',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.91 (m, 1H), 7.39-7.36 (m, 1H), 7.30-7.26 (m, 1H), 7.19-7.17 (m, 2H), 7.00-6.97 (m, 2H), 6.95-6.92 (m, 1H), 6.70 (s, 1H), 4.12-4.06 (m, 2H), 3.00-2.97 (m, 1H), 2.75-2.70 (m, 1H), 2.60 (s, 3H), 2.18-2.14 (m, 1H), 1.90-1.52 (m, 4H)
158	(R)-(1-methylpyrrolidin-3-yl)methyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.84 (m, 1H), 7.41-7.39 (m, 1H), 7.23-7.17 (m, 4H), 7.09-7.07 (m, 1H), 4.18-4.11 (m, 2H), 3.27-3.14 (m, 1H), 2.89-2.85 (m, 1H), 2.74 (s, 3H), 2.28-2.23 (m, 1H), 1.93-1.48 (m, 4H)

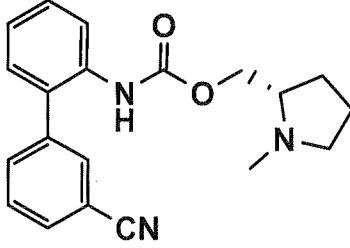
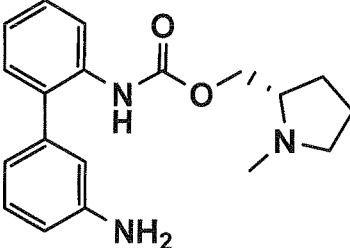
159	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-6'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.94 (m, 1H), 7.55-7.42 (m, 1H), 7.30-7.22 (m, 2H), 7.19-7.15 (m, 2H), 7.04-7.00 (m, 1H), 4.20-4.08 (m, 2H), 3.29-3.17 (m, 1H), 2.88-2.85 (m, 1H), 2.54 (s, 3H), 2.33-2.28 (m, 1H), 2.01-1.66 (m, 4H)
160	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.10-8.03 (m, 1H), 7.36-7.02 (m, 6H), 6.89-6.85 (m, 1H), 6.63 (s, 1H), 4.22-4.02 (m, 2H), 3.07-2.98 (m, 1H), 2.51-2.41 (m, 1H), 2.39 (s, 3H), 2.49-2.14 (m, 1H), 1.96-1.52 (m, 4H)

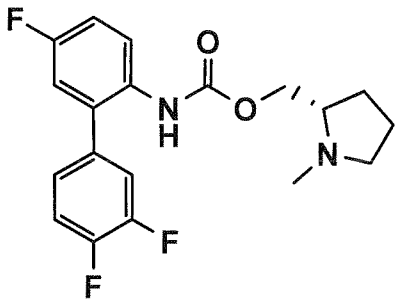
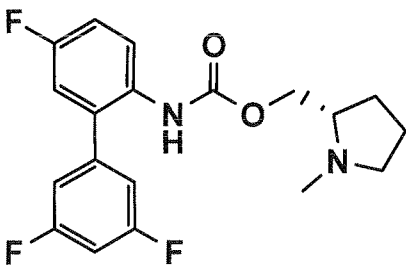
161	(S)-(1-methylpyrrolidin-2-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.02-8.00 (m, 1H), 7.37-7.25 (m, 2H), 7.17-7.08 (m, 2H), 6.90-6.78 (m, 2H), 6.60 (s, 1H), 4.23- 4.03 (m, 2H), 3.08- 2.99 (m, 1H), 2.51- 2.36 (m, 1H), 2.34 (s, 3H), 2.29- 2.15 (m, 1H), 1.99- 1.54 (m, 4H)
162	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.10-8.08 (d, 1H, J=8.0), 7.39- 7.10 (m, 3H), 6.92- 6.83 (m, 1H), 6.66- 6.61 (m, 1H), 6.59 (s, 1H), 6.52- 6.48 (m, 1H), 4.28- 4.08 (m, 2H), 3.14- 3.07 (m, 1H), 2.59- 2.47 (m, 1H), 2.38 (s, 3H), 2.33- 2.21 (m, 1H), 2.02- 1.58 (m, 4H)

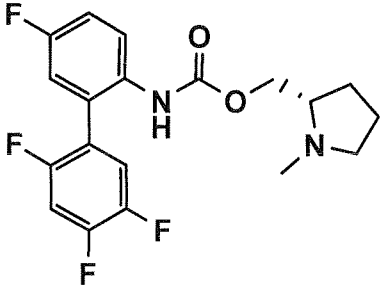
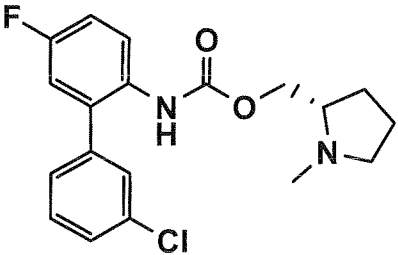
163	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (2',4',5'-trifluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.11-8.09 (d, 1H, <i>J</i> =8.0), 7.33-7.23 (m, 2H), 7.18-7.14 (m, 1H), 7.13-7.10 (m, 1H), 6.91-6.87 (m, 1H), 6.48 (s, 1H), 4.26-4.06 (m, 2H), 3.12-3.08 (m, 1H), 2.53-2.43 (m, 1H), 2.37 (s, 3H), 2.30-2.20 (m, 1H), 1.98-1.63 (m, 4H)
164	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.02-8.00 (d, 1H, <i>J</i> =7.6), 7.30-7.23 (m, 2H), 7.21-7.09 (m, 1H), 7.06-7.04 (d, 2H, <i>J</i> =8.8), 6.77-6.75 (d, 2H, <i>J</i> =8.8), 6.60 (s, 1H), 4.28-4.08 (m, 2H), 3.13-3.06 (m, 1H), 2.57-2.45 (m, 1H), 2.38 (s, 3H), 2.33-2.22 (m, 1H), 1.99-1.59 (m, 4H)

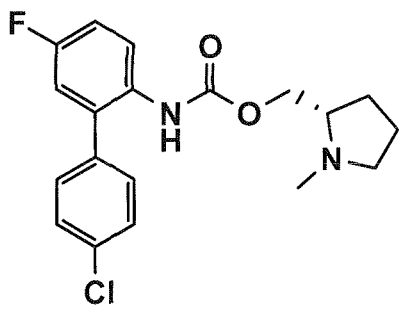
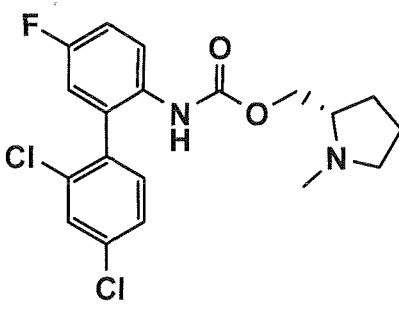
165	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.12-7.99 (m, 1H), 7.49-7.28 (m, 4H), 7.28-7.02 (m, 3H), 6.62-6.49 (bs, 1H), 4.26-3.99 (m, 2H), 3.12-2.98 (m, 1H), 2.53-2.40 (m, 1H), 2.36 (s, 3H), 2.27- 2.14 (m, 1H), 1.98- 1.81 (m, 1H) 1.80- 1.55 (m, 2H)
166	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.10-8.08 (d, 1H, J=8.0), 7.65- 7.61 (dd, 2H, J=12.0), 7.55- 7.42 (m, 3H), 7.19- 7.10 (m, 1H), 6.57 (s, 1H), 4.27- 4.07 (m, 2H), 3.13- 3.05 (m, 1H), 2.57- 2.47 (m, 1H), 2.38 (s, 3H), 2.33- 2.21 (m, 1H), 2.01- 1.60 (m, 4H)

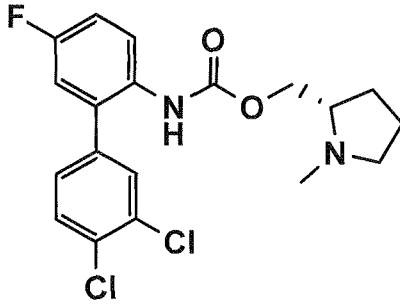
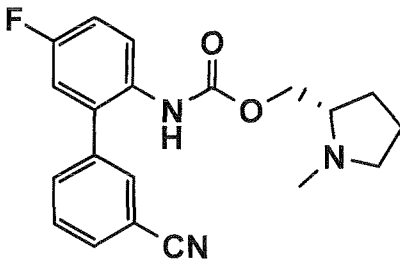
167	(S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-dichloro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.11-8.09 (d, 1H, J=8.0), 7.39-7.08 (m, 5H), 6.92-6.88 (m, 1H), 6.32 (s, 1H), 4.27-4.12 (m, 2H), 3.14-3.08 (m, 1H), 2.57-2.53 (m, 1H), 2.44 (s, 3H), 2.31-2.21 (m, 1H), 2.01-1.58 (m, 4H)
168	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.98-7.96 (d, 1H, J=7.6), 7.30-7.26 (m, 1H), 7.22-7.14 (m, 2H), 7.11-7.05 (m, 1H), 6.81-6.77 (t, 2H, J=16.8), 6.73-6.71 (t, 1H, J=4.4), 4.23-4.08 (m, 2H), 3.09-3.05 (m, 1H), 2.57-2.50 (m, 1H), 2.38 (s, 3H), 2.36-2.22 (m, 1H), 1.99-1.59 (m, 4H)

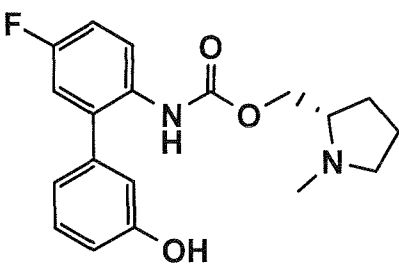
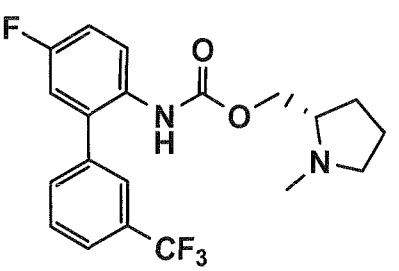
169	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-cyano-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.02-8.00 (d, 1H, J=7.2), 7.68-7.65 (m, 2H), 7.60-7.54 (m, 2H), 7.41-7.37 (m, 1H), 7.17-7.16 (d, 2H, J=4.4), 6.42 (s, 1H), 4.22-4.04 (m, 2H), 3.06-3.02 (m, 1H), 2.35 (s, 3H), 2.30-2.24 (q, 1H, J=16.0), 2.02-1.55 (m, 4H)
170	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-amino-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.09-8.07 (d, 1H, J=7.6), 7.41-7.15 (m, 4H), 7.08-7.00 (m, 1H), 6.94 (s, 2H), 6.82 (s, 1H), 6.42 (s, 1H), 6.69-6.66 (t, 1H, J=14.8), 6.61 (s, 1H), 4.24-4.03 (m, 2H), 3.11-3.02 (m, 1H), 2.56-2.44 (m, 1H), 2.40 (s, 3H), 2.30-2.17 (m, 1H), 1.96-1.58 (m, 4H)

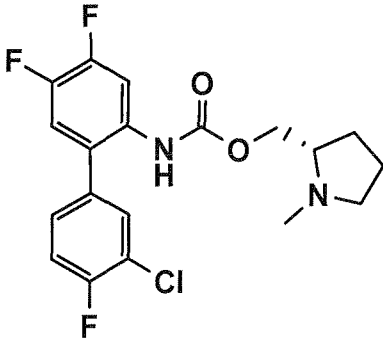
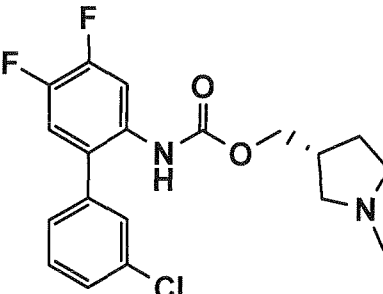
171	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4',5-trifluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.75 (s, 1H), 7.23– 6.97 (m, 4H), 6.90– 6.85 (m, 1H), 6.83 (s, 1H), 4.31– 4.15 (m, 2H), 3.26 (m, 1H), 2.81 (m, 1H), 2.54 (m, 1H), 2.47 (s, 3H), 2.03– 1.64 (m, 4H)
172	(S)-(1-methylpyrrolidin-2-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.88 (s, 1H), 7.06– 7.01 (m, 2H), 6.90– 6.78 (m, 3H), 6.61 (s, 1H), 4.18– 3.94 (m, 2H), 3.05– 3.00 (m, 1H), 2.45– 2.36 (m, 1H), 2.33 (s, 3H), 2.28– 2.12 (m, 1H), 1.90– 1.52 (m, 4H)

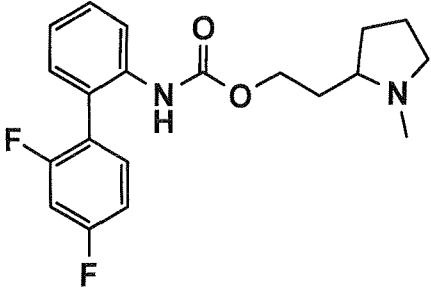
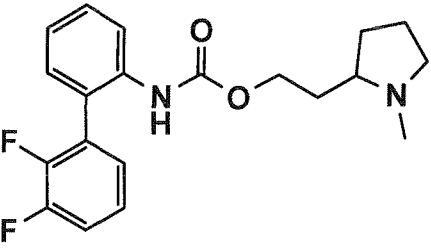
173	(S)-(1-methylpyrrolidin-2-yl)methyl (2',4',5,5'-tetrafluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.82 (s, 1H), 7.16- 6.98 (m, 3H), 6.93- 6.90 (m, 1H), 6.60 (s, 1H), 4.29- 4.07 (m, 2H), 3.24 (m, 1H), 2.51- 2.32 (m, 2H), 2.15 (s, 3H), 2.07- 1.69 (m, 4H)
174	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.94 (s, 1H), 7.23- 7.16 (m, 2H), 7.07- 7.02 (m, 2H), 6.92- 6.89 (m, 2H), 6.56 (s, 1H), 4.20- 4.04 (m, 2H), 3.07- 3.03 (m, 1H), 2.48- 2.39 (m, 1H), 2.36 (s, 3H), 2.31- 2.19 (m, 1H), 1.93- 1.55 (m, 4H)

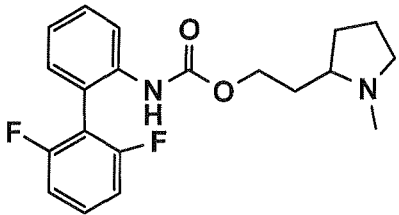
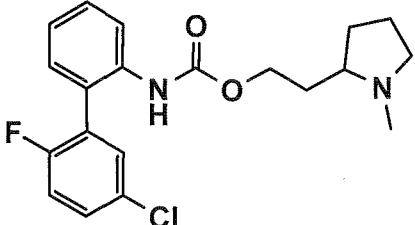
175	(S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.89 (s, 1H), 7.24 (s, 1H), 7.22 (s, 1H), 7.03- 6.98 (m, 2H), 6.88- 6.85 (m, 2H), 6.55 (s, 1H), 4.16- 4.00 (m, 2H), 3.04- 3.00 (m, 1H), 2.47- 2.35 (m, 1H), 2.32 (s, 3H), 2.27- 2.16 (m, 1H), 1.90- 1.51 (m, 4H)
176	(S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.89 (s, 1H), 7.31- 7.28 (m, 1H), 7.18 (s, 1H), 7.16 (s, 1H), 7.13- 7.04 (m, 1H), 6.83- 6.81 (m, 1H), 6.30 (s, 1H), 4.16- 4.00 (m, 2H), 3.04- 3.00 (m, 1H), 2.47- 2.35 (m, 1H), 2.32 (s, 3H), 2.27- 2.16 (m, 1H), 1.90- 1.51 (m, 4H)

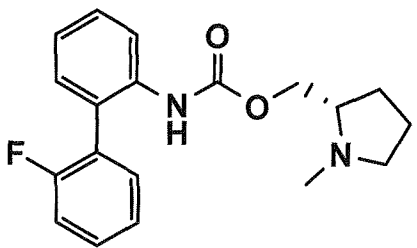
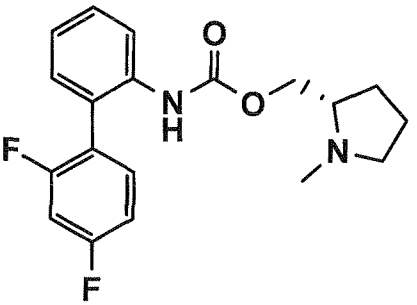
177	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃) δ 7.88 (s, 1H), 7.41- 7.37 (m, 1H), 7.21- 7.16 (m, 1H), 7.08- 7.01 (m, 2H), 6.91- 6.88 (m, 1H), 6.52 (s, 1H), 4.24- 4.05 (m, 2H), 3.12- 3.07 (m, 1H), 2.53- 2.44 (m, 1H), 2.38 (s, 3H), 2.36- 2.22 (m, 1H), 1.94- 1.56 (m, 4H)
178	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-cyano-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.86 (s, 1H), 7.53- 7.49 (m, 1H), 7.45- 7.40 (m, 2H), 7.11- 7.05 (m, 2H), 6.91- 6.88 (m, 1H), 6.42 (s, 1H), 4.18- 4.02 (m, 2H), 3.06- 3.02 (m, 1H), 2.45- 2.39 (m, 1H), 2.34 (s, 3H), 2.28- 2.13 (m, 1H), 1.91- 1.53 (m, 4H)

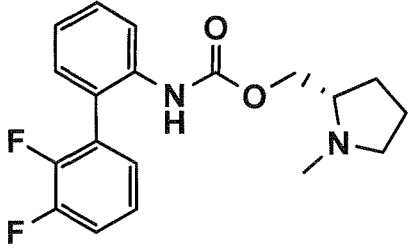
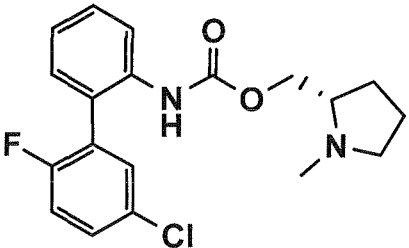
179	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-hydroxy-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.85 (s, 1H), 7.26- 7.19 (m, 1H), 7.02- 6.96 (m, 1H), 6.93- 6.90 (m, 1H), 6.78- 6.74 (m, 3H), 6.71 (s, 1H), 4.21- 4.18 (m, 2H), 3.15- 3.11 (m, 1H), 2.62- 2.56 (m, 1H), 2.41 (s, 3H), 2.34- 2.27 (m, 1H), 1.98- 1.62 (m, 4H)
180	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.81 (s, 1H), 7.25- 7.22 (m, 1H), 7.11 (s, 1H), 7.07- 6.91 (m, 4H), 6.67 (s, 1H), 4.30- 4.09 (m, 2H), 3.21- 3.13 (m, 1H), 2.71- 2.58 (m, 1H), 2.39 (s, 3H), 2.03- 1.56 (m, 4H)

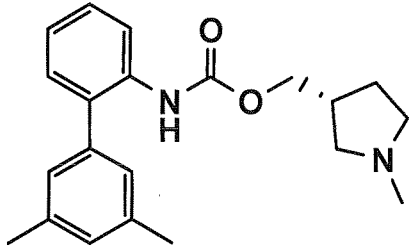
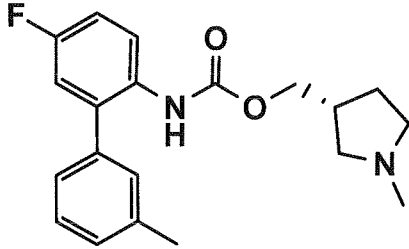
181	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4,4',5-trifluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.02 (m, 1H), 7.39-7.38 (dd, 1H, J=4.4), 7.27-7.25 (m, 1H), 7.21-7.18 (m, 1H), 7.01-6.98 (dd, 1H, J=7.2), 6.50 (s, 1H), 4.23-4.10 (m, 2H), 3.10-3.07 (m, 1H), 2.50-2.46 (m, 1H), 2.39 (s, 3H), 2.28-2.23 (m, 1H), 1.95-1.60 (m, 4H)
182	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4,5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.00 (m, 1H), 7.41-7.39 (m, 1H), 7.28-7.23 (m, 1H), 7.20-7.19 (m, 1H), 7.00-6.96 (dd, 1H, J=7.2), 6.61 (s, 1H), 4.22-4.10 (m, 2H), 3.11-3.09 (m, 1H), 2.50-2.46 (m, 1H), 2.38 (s, 3H), 2.29-2.21 (m, 1H), 1.95-1.59 (m, 4H)

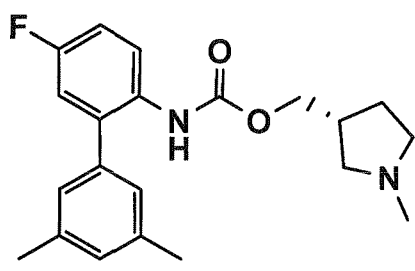
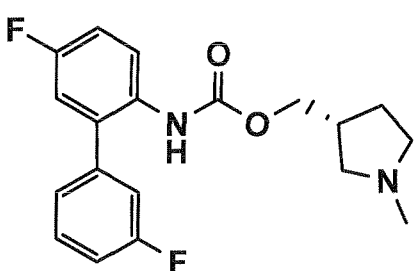
183	2-(1-Methylpyrrolidin-2-yl)ethyl (2',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 7.96 (m, 1H), 7.41-7.38 (m, 1H), 7.30-7.26 (m, 2H), 7.19-7.15 (m, 2H), 7.01-6.93 (m, 2H), 6.38 (s, 1H), 4.21-4.14 (m, 2H), 3.35 (m, 1H), 3.00-2.64 (m, 1H), 2.48 (s, 3H), 2.26-2.03 (m, 3H), 1.94-1.67 (m, 4H)
184	2-(1-Methylpyrrolidin-2-yl)ethyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	^1H NMR (CDCl_3): δ 7.90 (m, 1H), 7.44-7.41 (m, 1H), 7.26-7.19 (m, 4H), 7.09-7.06 (m, 1H), 6.46 (s, 1H), 4.25 (m, 2H), 3.80 (m, 1H), 2.98 (m, 1H), 2.73 (s, 3H), 2.29-2.15 (m, 3H), 2.02-1.57 (m, 4H)

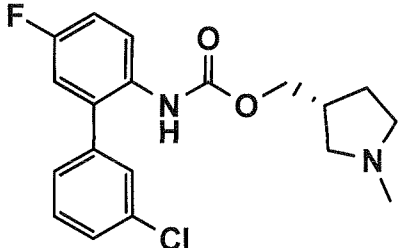
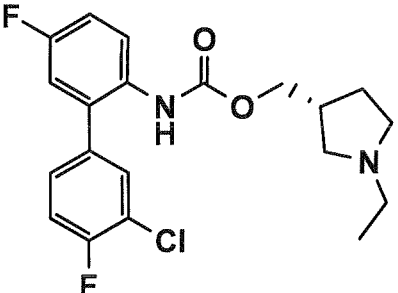
185	2-(1-Methylpyrrolidin-2-yl)ethyl (2',6'-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.94 (m, 1H), 7.60-7.37 (m, 2H), 7.26-7.21 (m, 2H), 7.06-6.99 (m, 2H), 6.40 (s, 1H), 4.22-4.20 (m, 2H), 3.83 (m, 1H), 2.99 (m, 1H), 2.73 (s, 3H), 2.31-2.15 (m, 3H), 2.02-1.59 (m, 4H)
186	2-(1-Methylpyrrolidin-2-yl)ethyl (5'-chloro-2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.92 (m, 1H), 7.42-7.39 (m, 1H), 7.37-7.34 (m, 1H), 7.29-7.28 (m, 1H), 7.22-7.17 (m, 2H), 7.14-7.11 (m, 1H), 6.45 (s, 1H), 4.22-4.14 (m, 2H), 3.80 (m, 1H), 3.47-3.45 (m, 1H), 2.53 (s, 3H), 2.16-2.11 (m, 3H), 1.98-1.72 (m, 4H)

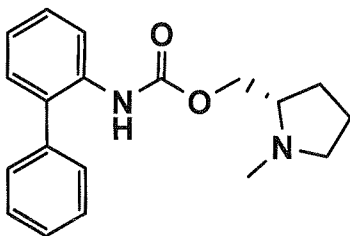
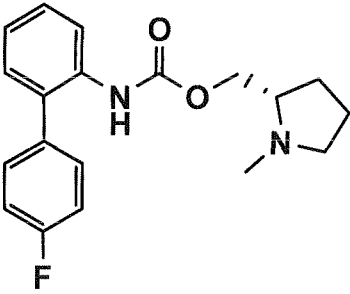
187	(S)-(1-methylpyrrolidin-2-yl)methyl (2'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.00 (m, 1H), 7.41-7.37 (m, 3H), 7.33-7.27 (m, 1H), 7.25-7.20 (m, 1H), 7.19-7.14 (m, 2H), 6.61 (s, 1H), 4.08-4.01 (m, 2H), 2.88-2.79 (m, 1H), 2.49-2.45 (m, 1H), 2.40 (s, 3H), 2.28-2.14 (m, 1H), 1.94-1.61 (m, 4H)
188	(S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.98 (m, 1H), 7.41-7.37 (m, 1H), 7.29-7.23 (m, 1H), 7.17-7.14 (m, 2H), 6.99-6.89 (m, 2H), 6.44 (s, 1H), 4.23-4.05 (m, 2H), 3.10-3.07 (m, 1H), 2.49 (m, 1H), 2.38 (s, 3H), 2.28-2.22 (m, 3H), 1.93-1.60 (m, 4H)

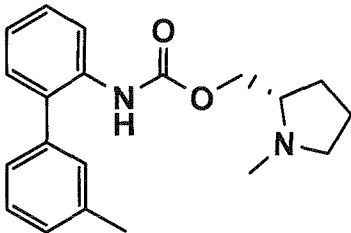
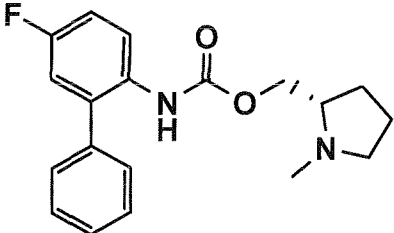
189	(S)-(1-methylpyrrolidin-2-yl)methyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.00 (m, 1H), 7.38-7.34 (m, 1H), 7.29-7.23 (m, 2H), 7.20-7.14 (m, 2H), 7.02-6.89 (m, 1H), 6.51 (s, 1H), 4.20-4.05 (m, 2H), 3.08-3.05 (m, 1H), 2.58-2.44 (m, 1H), 2.39 (s, 3H), 2.30-2.24 (m, 3H), 1.99-1.64 (m, 4H)
190	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-6'-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.97 (m, 1H), 7.43-7.39 (m, 1H), 7.23-7.08 (m, 4H), 7.04-6.98 (m, 1H), 6.52 (s, 1H), 4.27-4.15 (m, 2H), 3.17-3.07 (m, 1H), 2.62 (m, 1H), 2.44 (s, 3H), 2.34-2.30 (m, 3H), 1.95-1.58 (m, 4H)

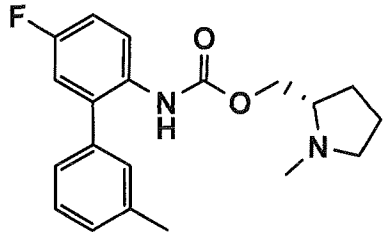
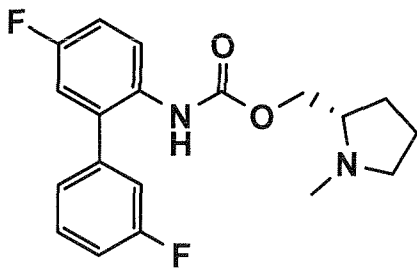
191	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dimethyl-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.07-8.05 (m, 1H), 7.33-7.30 (m, 1H), 7.18-7.16 (m, 1H), 7.10-7.06 (m, 1H), 7.03 (s, 1H), 6.95 (s, 2H), 6.69 (s, 1H), 4.09- 3.99 (m, 2H), 2.69- 2.65 (t, 1H, <i>J</i> =17.2), 2.59- 2.40 (m, 3H), 2.35- 2.27 (m, 4H), 2.01- 1.95 (m, 1H), 1.54- 1.48 (m, 1H)
192	(R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.07-7.89 (bs, 1H), 7.40-7.29 (m, 1H), 7.29-7.19 (m, 1H), 7.19-7.07 (m, 2H), 7.07-6.97 (m, 1H), 6.97-6.86 (m, 1H), 6.61-6.45 (bs, 1H), 4.13-3.92 (m, 2H), 2.68-2.43 (m, 4H), 2.39 (s, 3H), 2.36- 2.20 (m, 4H), 2.04- 1.88 (m, 1H), 1.53- 1.39 (m, 1H)

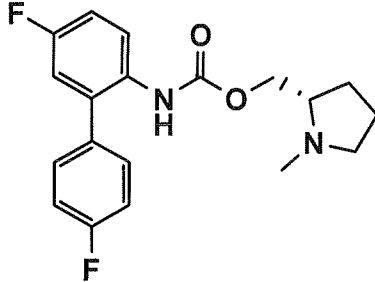
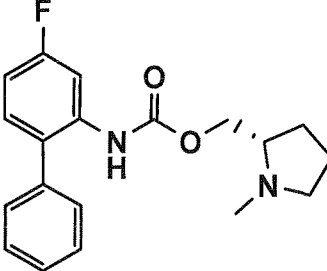
193	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.98 (m, 1H), 7.89-7.04 (m, 6H), 6.55 (s, 1H), 4.08-3.97 (m, 2H), 2.63-2.59 (t, 1H, <i>J</i> =17.2), 2.53-2.40 (m, 2H), 2.35-2.31 (m, 3H), 2.31 (s, 1H), 2.27-2.23 (m, 1H), 1.99-1.92 (m, 1H), 1.51-1.44 (m, 1H)
194	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.95 (m, 1H), 7.47-7.41 (m, 2H), 7.12-7.04 (m, 4H), 6.93-6.91 (m, 1H), 6.48 (s, 1H), 4.08-3.97 (m, 2H), 2.63-2.59 (t, 1H, <i>J</i> =17.2), 2.52-2.49 (m, 3H), 2.34-2.27 (m, 4H), 2.00-1.93 (m, 1H), 1.50-1.46 (m, 1H)

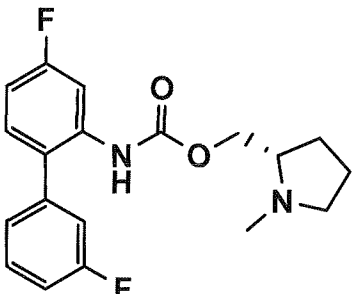
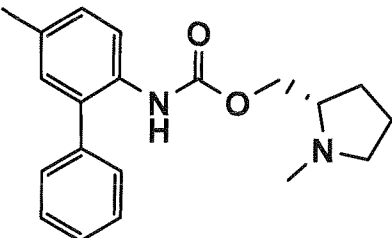
195	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.92 (m, 1H), 7.42-7.33 (m, 2H), 7.23-7.21 (m, 2H), 7.07-7.03 (m, 1H), 6.93-6.90 (m, 1H), 6.27 (s, 1H), 4.08-3.97 (m, 2H), 2.65-2.60 (t, 1H, J=17.2), 2.53-2.45 (m, 3H), 2.35-2.29 (m, 4H), 2.01-1.93 (m, 1H), 1.53-1.46 (m, 1H)
196	(R)-(1-ethylpyrrolidin-3-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.87 (s, 1H), 7.40-7.38 (m, 1H), 7.25-7.21 (m, 2H), 7.08-7.03 (m, 1H), 6.90 (dd, 1H, J=8.8, J=2.8), 6.50 (s, 1H), 4.09-3.98 (m, 2H), 2.72 (t, 1H, J=8.8), 2.64-2.44 (m, 5H), 2.36-2.33 (m, 1H), 2.02-1.92 (m, 1H), 1.55-1.47 (m, 1H), 1.09 (t, 3H, J=7.2)

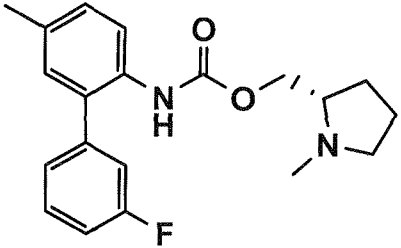
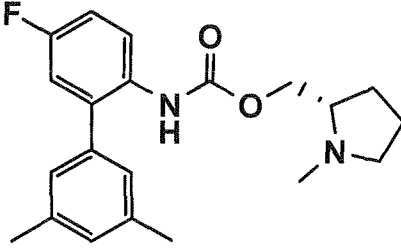
197	(S)-(1-methylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate 	¹ H NMR (CDCl ₃): δ 8.14-8.01 (m, 1H), 7.51-7.29 (m, 6H), 7.23-7.05 (m, 2H), 6.75-6.60 (bs, 1H), 4.24-4.00 (m, 2H), 3.10-2.98 (m, 1H), 2.53-2.29 (m, 4H), 2.28-2.15 (m, 1H), 1.97-1.52 (m, 4H)
198	(S)-(1-methylpyrrolidin-2-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.14-8.01 (m, 1H), 7.51-7.29 (m, 5H), 7.23-7.05 (m, 2H), 6.75-6.60 (bs, 1H), 4.24-4.00 (m, 2H), 3.10-2.98 (m, 1H), 2.53-2.29 (m, 4H), 2.28-2.15 (m, 1H), 1.97-1.52 (m, 4H)

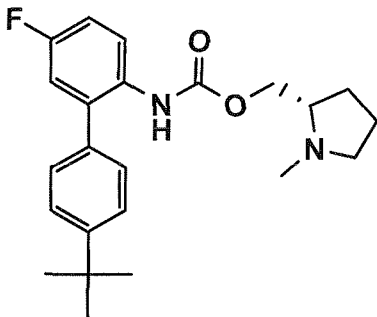
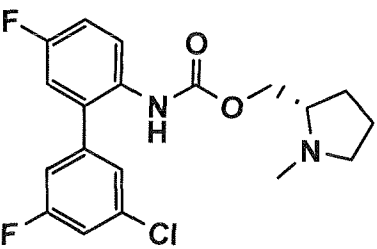
199	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 8.17-8.01 (m, 1H), 7.41-7.27 (m, 2H), 7.22-7.02 (m, 5H), 6.76-6.63 (bs, 1H), 4.22-4.00 (m, 2H), 3.09-2.98 (m, 1H), 2.52-2.30 (m, 7H), 2.29-2.12 (m, 1H), 1.97-1.80 (m, 1H), 1.80-1.50 (m, 3H)
200	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.97 (s, 1H), 7.45-7.37 (m, 3H), 7.32-7.25 (m, 3H), 7.05-7.00 (m, 1H), 6.94-6.91 (m, 1H), 6.59 (s, 1H), 4.19-4.04 (m, 2H), 3.06-3.04 (m, 1H), 2.35 (s, 3H), 2.28-2.18 (m, 2H), 1.90-1.76 (m, 2H), 1.61-1.57 (m, 2H)

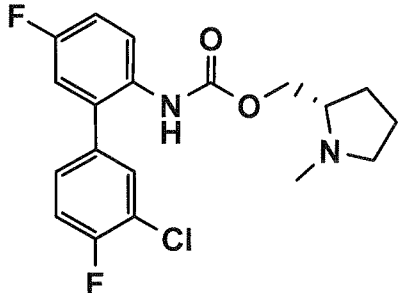
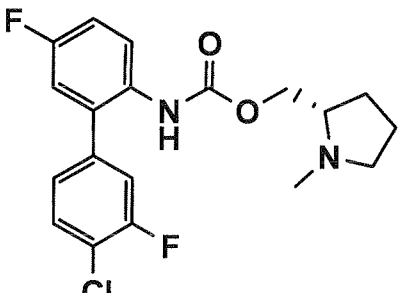
201	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.82 (s, 1H), 7.30-7.11 (m, 3H), 7.01-6.85 (m, 3H), 4.30-4.07 (m, 2H), 3.24-3.21 (m, 1H), 2.43 (s, 3H), 2.35 (s, 3H), 1.96-1.84 (m, 2H), 1.79-1.72 (m, 2H), 1.67-1.51 (m, 2H)
202	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.97 (s, 1H), 7.43-7.39 (m, 1H), 7.11-7.03 (m, 4H), 6.91 (d, 1H, <i>J</i> =8.4), 6.48 (s, 1H), 4.19-4.04 (m, 2H), 3.05-3.02 (m, 1H), 2.35 (s, 3H), 2.26-2.17 (m, 2H), 1.88-1.83 (m, 2H), 1.71-1.69 (m, 2H)

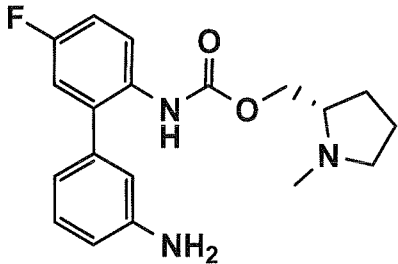
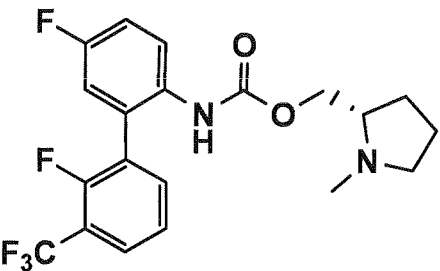
203	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.97 (s, 1H), 7.31-7.26 (m, 1H), 7.22-7.12 (m, 2H), 7.06-7.00 (m, 2H), 6.91-6.88 (m, 1H), 6.43 (s, 1H), 4.21-4.03 (m, 2H), 3.06-3.02 (m, 1H), 2.35 (s, 3H), 2.28-2.15 (m, 2H), 1.95-1.83 (m, 2H), 1.70-1.67 (m, 2H)
204	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (4-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.96 (s, 1H), 7.47-7.43 (m, 2H), 7.40-7.36 (m, 1H), 7.33-7.25 (m, 2H), 7.18-7.10 (m, 1H), 6.81-6.75 (m, 2H), 4.18-4.05 (m, 2H), 3.03-3.01 (m, 1H), 2.35 (s, 3H), 2.22-2.17 (m, 2H), 1.93-1.86 (m, 2H), 1.61-1.57 (m, 2H)

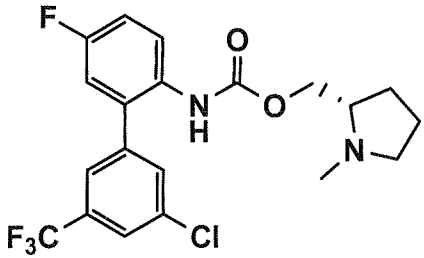
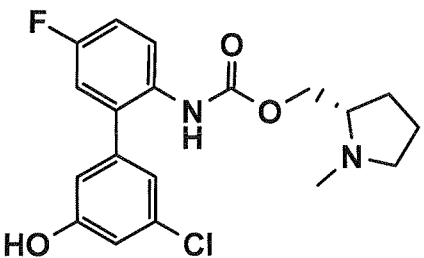
205	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.96 (s, 1H), 7.45-7.39 (m, 2H), 7.25-7.23 (m, 1H), 7.16-7.07 (m, 2H), 7.03-7.01 (m, 1H), 6.83-6.78 (m, 1H), 6.65 (s, 1H), 4.19-4.06 (m, 2H), 3.05-3.02 (m, 1H), 2.36 (s, 3H), 2.26-2.18 (m, 2H), 1.93-1.84 (m, 2H), 1.59-1.50 (m, 2H)
206	(S)-(1-methylpyrrolidin-2-yl)methyl (5-methyl-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.92 (s, 1H), 7.45-7.41 (m, 2H), 7.33-7.25 (m, 2H), 7.16-7.13 (m, 1H), 7.02 (s, 1H), 6.59 (s, 1H), 4.21-4.05 (m, 2H), 3.09-3.07 (m, 1H), 2.38 (s, 3H), 2.32 (s, 3H), 2.27-2.23 (m, 2H), 1.90-1.87 (m, 2H), 1.78-1.72 (m, 2H)

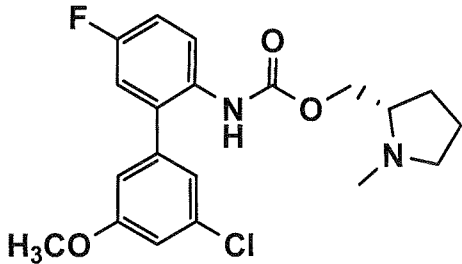
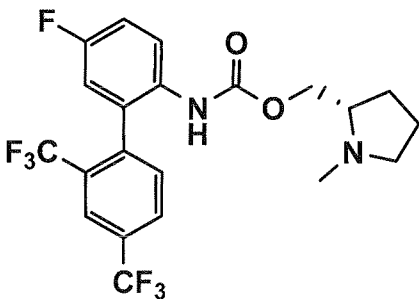
207	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.88 (s, 1H), 7.42-7.36 (m, 1H), 7.21-7.20 (m, 1H), 7.17-7.15 (m, 1H), 7.10-7.03 (m, 2H), 7.00 (m, 1H), 6.55 (s, 1H), 4.22-4.06 (m, 2H), 3.10-3.06 (m, 1H), 2.38 (s, 3H), 2.31 (s, 3H), 2.27-2.21 (m, 2H), 1.94-1.85 (m, 2H), 1.78-1.69 (m, 2H)
208	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.95 (s, 1H), 7.15 (m, 2H), 7.04-6.98 (m, 2H), 6.93-6.90 (m, 2H), 6.72 (s, 1H), 4.31-4.17 (m, 2H), 3.14 (m, 1H), 2.82 (m, 1H), 2.61-2.03 (m, 10H), 1.99-1.62 (m, 4H)

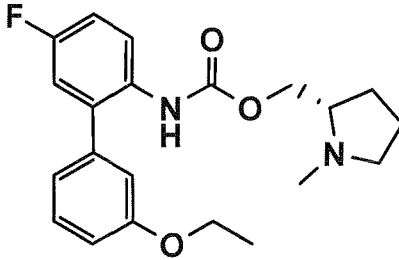
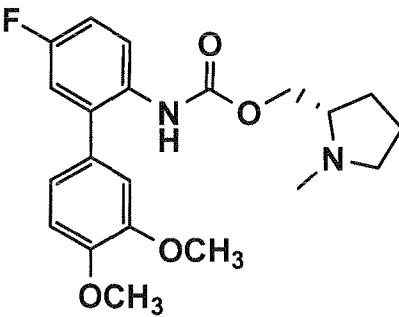
209	(S)-(1-methylpyrrolidin-2-yl)methyl (4'-(tert-butyl)-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.83 (s, 1H), 7.72-7.70 (m, 2H), 7.67-7.62 (m, 2H), 7.03-6.91 (m, 2H), 6.76 (s, 1H), 4.35-4.22 (m, 2H), 3.20 (m, 1H), 2.96 (m, 1H), 2.68-2.65 (m, 1H), 2.48 (s, 3H), 1.99-1.63 (m, 4H), 1.51-1.29 (m, 9H)
210	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.84 (s, 1H), 7.24-7.15 (m, 1H), 7.12-6.89 (m, 4H), 6.64 (s, 1H), 4.26-4.10 (m, 2H), 3.16-3.15 (m, 1H), 2.62 (m, 1H), 2.42 (s, 3H), 2.38-2.32 (m, 1H), 1.99-1.60 (m, 4H)

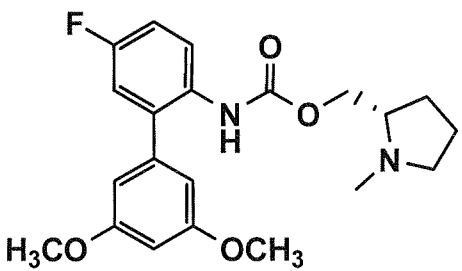
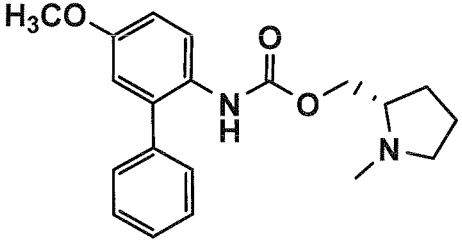
211	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 8.05 (m, 1H), 7.57-7.48 (m, 1H), 7.22-7.14 (m, 2H), 7.12-7.00 (m, 2H), 6.61 (s, 1H), 4.23-4.16 (m, 2H), 3.22-3.10 (m, 1H), 2.58-2.47 (m, 1H), 2.38 (s, 3H), 2.35-2.30 (m, 3H), 1.98-1.60 (m, 4H)
212	(S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-3',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.39-7.31 (m, 3H), 7.20-7.00 (m, 2H), 6.98-6.88 (d, 1H, J=2.8), 4.34-4.23 (m, 2H), 3.45 (m, 1H), 3.16 (m, 1H), 2.57-2.54 (m, 4H), 2.11-1.70 (m, 4H).

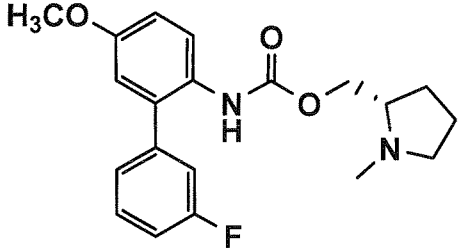
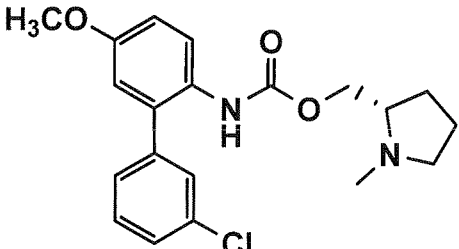
213	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-amino-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.99 (s, 1H), 7.23-7.19 (m, 1H), 7.03-6.98 (m, 1H), 6.93-6.90 (m, 1H), 6.74 (m, 1H), 6.70-6.66 (m, 1H), 6.63 (s, 1H), 4.24-4.07 (m, 2H), 3.46 (s, 1H), 3.14 (m, 1H), 2.59 (m, 1H), 2.42 (s, 3H), 2.33-2.29 (m, 1H), 1.98-1.63 (m, 4H)
214	(S)-(1-methylpyrrolidin-2-yl)methyl (2',5-difluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.84 (s, 1H), 7.69-7.66 (m, 1H), 7.53-7.50 (m, 1H), 7.37-7.33 (m, 1H), 7.15-7.10 (m, 1H), 6.98-6.95 (m, 1H), 6.61 (s, 1H), 4.29-4.15 (m, 2H), 3.27 (s, 1H), 2.78-2.70 (m, 1H), 2.48-2.35 (m, 4H), 1.98-1.70 (m, 4H)

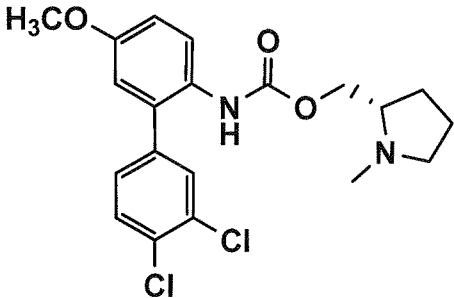
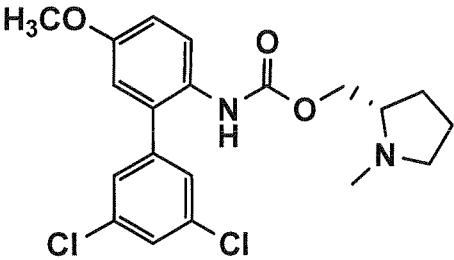
215	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.96 (s, 1H), 7.79 (s, 1H), 7.61 (s, 1H), 7.50- 7.47 (d, 1H, <i>J</i> =11.6), 7.11- 7.06 (m, 1H), 6.94- 6.91 (m, 1H), 6.58 (s, 1H), 4.27- 4.11 (m, 2H), 3.22- 3.17 (m, 1H), 2.67- 2.66 (m, 1H), 2.42- 2.32 (m, 4H), 2.02- 1.60 (m, 4H)
216	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.82 (s, 1H), 7.02- 6.64 (m, 5H), 4.17- 4.09 (m, 2H), 3.10- 3.06 (m, 1H), 2.53 (m, 1H), 2.37 (s, 3H), 2.34- 2.21 (m, 1H), 1.96- 1.62 (m, 4H)

217	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-methoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 7.94 (s, 1H), 7.66-7.44 (m, 4H), 6.91-6.89 (d, 1H, J=8.4), 6.62 (s, 1H), 4.23-4.08 (m, 2H), 3.86-3.85 (m, 3H), 3.11 (m, 1H), 2.53 (m, 1H), 2.34 (s, 3H), 2.29-2.28 (m, 1H), 1.93-1.63 (m, 4H)
218	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-2',4'-bis(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate 	¹H NMR (CDCl₃): δ 8.11 (m, 1H), 7.44-7.36 (m, 1H), 7.20-7.17 (m, 2H), 7.10-6.99 (m, 2H), 6.54 (s, 1H), 4.27-4.21 (m, 2H), 3.31-3.15 (m, 1H), 2.44-2.40 (m, 1H), 2.39 (s, 3H), 2.30-2.25 (m, 3H), 2.01-1.55 (m, 4H)

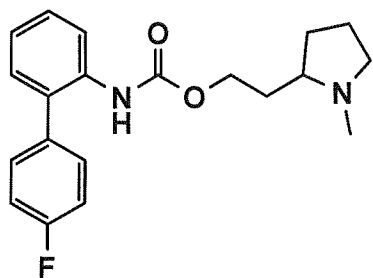
219	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (3'-ethoxy-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.58–7.53 (m, 1H), 7.48–7.44 (m, 2H), 7.29–7.15 (m, 2H), 6.95–6.92 (m, 1H), 6.84–6.79 (m, 1H), 4.27–4.23 (m, 2H), 4.14–4.07 (q, 2H, <i>J</i>=6.8), 3.28 (m, 1H), 2.89 (m, 1H), 2.50 (m, 4H), 1.98–1.59 (m, 4H), 1.46–1.40 (t, 3H, <i>J</i>=14.0)
220	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',4'-dimethoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.65–7.61 (m, 1H), 7.54–7.52 (m, 1H), 7.47–7.43 (m, 2H), 7.33 (m, 1H), 6.68–6.65 (m, 1H), 4.29–4.15 (m, 2H), 3.87 (s, 6H), 3.28–3.25 (m, 1H), 2.78–2.70 (m, 1H), 2.48–2.35 (m, 4H), 1.98–1.63 (m, 4H)

221	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',5'-dimethoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.93 (s, 1H), 7.03–6.91 (m, 4H), 6.46–6.42 (m, 1H), 6.38 (s, 1H), 4.22–4.08 (m, 2H), 3.77 (s, 6H), 3.15 (m, 1H), 2.61 (m, 1H), 2.41 (s, 3H), 2.36–2.24 (m, 1H), 1.93–1.58 (m, 4H)
222	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (5-methoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹H NMR (CDCl₃): δ 7.81 (s, 1H), 7.43–7.28 (m, 4H), 7.20–7.19 (d, 1H, <i>J</i>=4.4), 6.87–6.86 (dd, 1H, <i>J</i>=9.2), 6.76–6.75 (d, 1H, <i>J</i>=2.8), 6.61 (s, 1H), 4.20–4.06 (m, 2H), 3.77 (s, 3H), 3.13–3.10 (m, 1H), 2.58–2.43 (m, 1H), 2.38 (s, 3H), 2.32–2.25 (m, 1H), 1.92–1.56 (m, 4H)

223	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.74 (s, 1H), 7.39-7.33 (m, 1H), 7.10-7.01 (m, 2H), 6.88-6.85 (m, 1H), 6.73-6.72 (m, 1H), 6.59 (s, 1H), 4.17-4.03 (m, 2H), 3.76 (s, 3H), 3.76 (m, 1H), 2.49 (m, 1H), 2.36 (s, 3H), 2.28-2.21 (m, 1H), 1.99-1.56 (m, 4H)
224	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate 	¹ H NMR (CDCl ₃): δ 7.79 (s, 1H), 7.37-7.33 (m, 2H), 7.26-7.20 (m, 2H), 6.91-6.88 (m, 1H), 6.73-6.72 (m, 1H), 6.38 (s, 1H), 4.22-4.05 (m, 2H), 3.79 (s, 3H), 3.11-3.07 (m, 1H), 2.50-2.38 (m, 1H), 2.33 (s, 3H), 2.29-2.22 (m, 1H), 1.94-1.57 (m, 4H)

225	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.69 (s, 1H), 7.48–7.43 (m, 2H), 7.21–7.17 (m, 1H), 6.90–6.87 (m, 1H), 6.71–6.70 (m, 1H), 6.51 (s, 1H), 4.21–4.05 (m, 2H), 3.78 (s, 3H), 3.13 (m, 1H), 2.52–2.45 (m, 1H), 2.32 (s, 3H), 2.30–2.22 (m, 1H), 1.97–1.59 (m, 4H)
226	(S)-(1-methylpyrrolidin-2-yl)methyl (3',5'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate 	¹ H NMR (CDCl ₃): δ 7.79 (s, 1H), 7.64 (m, 1H), 7.35–7.34 (m, 1H), 7.23–7.22 (m, 1H), 7.07–7.02 (m, 1H), 6.90–6.87 (m, 1H), 6.63 (s, 1H), 4.26–4.05 (m, 2H), 3.20–3.15 (m, 1H), 2.66 (m, 1H), 2.42–2.32 (m, 4H), 1.99–1.61 (m, 4H)

[Example 1] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate



4'-Fluoro-[1,1'-biphenyl]-2-carboxylic acid (747mg, 3.46mmol) (Synthesis Example 1) was dissolved in toluene (20mL), and then biphenylphosphoryl azide (958uL, 4.15mmol) and triethylamine (486uL, 3.46mmol) were added thereto. The same was stirred at room temperature for 30 minutes, and then stirred again under reflux for 1 hour. The reactant was cooled to room temperature. 2-(2-Hydroxyethyl)-1-methylpyrrolidine (558uL, 4.15mmol) was added thereto and stirred under reflux for 12 hours. The reactant was cooled to room temperature. The solvent was removed by concentrating under reduced pressure, and then the same was extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (280mg, 24%).

[Examples 2-16]

The starting materials in Table 7 were used instead of 4'-fluoro-[1,1'-biphenyl]-2-carboxylic acid (747mg, 3.46mmol) (Synthesis Example 1) to prepare compounds of Examples 2-16 in the same manner as Example 1.

[Table 7] Examples 2-16

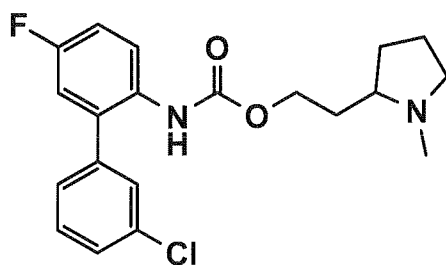
Example	Chemical Name	Starting Material
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2	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (290mg, 23%)	3',5'-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (820mg) (Synthesis Example 2)
3	2-(1-Methylpyrrolidin-2-yl)ethyl (3',4',5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate (300mg, 41%)	3',4',5'-Trifluoro-[1,1'-biphenyl]-2-carboxylic acid (492mg) (Synthesis Example 3)
4	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (326mg, 41%)	3'-Fluoro-[1,1'-biphenyl]-2-carboxylic acid (500mg) (Synthesis Example 4)
5	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-methoxy-[1,1'-biphenyl]-2-yl) carbamate (350mg, 36%)	4'-Methoxy-[1,1'-biphenyl]-2-carboxylic acid (630mg) (Synthesis Example 5)
6	2-(1-Methylpyrrolidin-2-yl)ethyl [1,1'-biphenyl]-2-yl carbamate (400mg, 50%)	[1,1'-Biphenyl]-2-carboxylic acid (500mg)
7	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-chloro-[1,1'-biphenyl]-2-yl) carbamate (230mg, 30%)	4'-Chloro-[1,1'-biphenyl]-2-carboxylic acid (500mg) (Synthesis Example 6)

8	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-[1,1'-biphenyl]-2-yl)carbamate (170mg, 22%)	3'-Chloro-[1,1'-biphenyl]-2-carboxylic acid (500mg) (Synthesis Example 7)
9	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl)carbamate (125mg, 28%)	3',5'-Dichloro-[1,1'-biphenyl]-2-carboxylic acid (300mg) (Synthesis Example 8)
10	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-trifluoromethoxy-[1,1'-biphenyl]-2-yl)carbamate (370mg, 57%)	4'-Trifluoromethoxy-[1,1'-biphenyl]-2-carboxylic acid (450mg) (Synthesis Example 9)
11	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-nitro-[1,1'-biphenyl]-2-yl)carbamate (410mg, 82%)	4'-Nitro-[1,1'-biphenyl]-2-carboxylic acid (330mg) (Synthesis Example 10)
12	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-trifluoromethyl-[1,1'-biphenyl]-2-yl)carbamate (476mg, 65%)	3'-Trifluoromethyl-[1,1'-biphenyl]-2-carboxylic acid (500mg) (Synthesis Example 11)
13	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-trifluoromethyl-[1,1'-biphenyl]-2-yl)carbamate (45mg, 6%)	4'-Trifluoromethyl-[1,1'-biphenyl]-2-carboxylic acid (500mg) (Synthesis Example 12)

14	2-(1-Methylpyrrolidin-2-yl)ethyl ((3'-fluoro-4'-methyl)-[1,1'-biphenyl]-2-yl)carbamate (306mg, 46%)	3'-Fluoro-4'-methyl-[1,1'-biphenyl]-2-carboxylic acid (430mg) (Synthesis Example 13)
15	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate (105mg, 16%)	3'-Methyl-[1,1'-biphenyl]-2-carboxylic acid (400mg) (Synthesis Example 14)
16	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-ethoxy-[1,1'-biphenyl]-2-yl)carbamate (250mg, 52%)	3'-Ethoxy-[1,1'-biphenyl]-2-carboxylic acid (315mg) (Synthesis Example 15)

[Example 17] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate



5 3'-Chloro-5-fluoro-[1,1'-biphenyl]-2-carboxylic acid (300mg, 1.20mmol) (Synthesis Example 16) was dissolved in toluene (20mL), and then biphenylphosphoryl azide (310uL, 1.44mmol) and triethylamine (202uL, 1.44mmol) was added thereto. The same was stirred at room temperature for 30

10 minutes, and then stirred again under reflux for 1 hour. The reactant was cooled to room temperature. 2-(2-

Hydroxyethyl)-1-methylpyrrolidine (194uL, 1.44mmol) were added thereto and then stirred under reflux for 12 hours. The reactant was cooled to room temperature. The solvent was removed by concentrating under reduced pressure, and then the same was extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (93mg, 21%).

10

[Examples 18-27]

The starting materials in Table 7 were used instead of 3'-chloro-5-fluoro-[1,1'-biphenyl]-2-carboxylic acid (300mg, 1.20mmol) (Synthesis Example 16) to prepare compounds of Examples 18-27 in the same manner as Example 17.

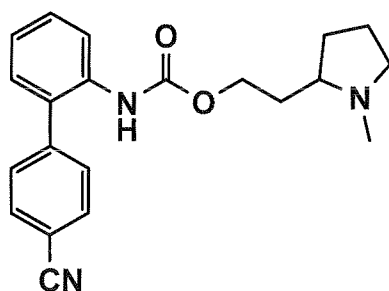
[Table 8] Examples 18-27

Example	Chemical Name	Starting Material
18	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate (465mg, 76%)	3',5-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (400mg, 1.71mmol) (Synthesis Example 17)
19	2-(1-Methylpyrrolidin-2-yl)ethyl (4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate (184mg, 30%)	4',5-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (400mg, 1.71mmol) (Synthesis Example 18)

20	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate (362mg, 48%)	3',5,5'-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (500mg, 1.98mmol) (Synthesis Example 19)
21	2-(1-Methylpyrrolidin-2-yl)ethyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (297mg, 19%)	5-Fluoro-[1,1'-biphenyl]-2-carboxylic acid (1g, 4.63mmol) (Synthesis Example 20)
22	2-(1-Methylpyrrolidin-2-yl)ethyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate (152mg, 26%)	5-Fluoro-3'-methyl-[1,1'-biphenyl]-2-carboxylic acid (380mg, 1.65mmol) (Synthesis Example 21)
23	2-(1-Methylpyrrolidin-2-yl)ethyl (4-fluoro-[1,1'-biphenyl]-2-yl) carbamate (400mg, 51%)	4-Fluoro-[1,1'-biphenyl]-2-carboxylic acid (500mg, 2.31mmol) (Synthesis Example 22)
24	2-(1-Methylpyrrolidin-2-yl)ethyl (3',4-difluoro-[1,1'-biphenyl]-2-yl) carbamate (84mg, 14%)	3',4-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (400mg, 1.71mmol) (Synthesis Example 23)
25	2-(1-Methylpyrrolidin-2-yl)ethyl (4-methoxy-[1,1'-biphenyl]-2-yl) carbamate (170mg, 34%)	4-Methoxy-[1,1'-biphenyl]-2-carboxylic acid (320mg, 1.40mmol) (Synthesis Example 24)

26	2-(1-Methylpyrrolidin-2-yl)ethyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate (123mg, 26%)	5-Methyl-[1,1'-biphenyl]-2-carboxylic acid (300mg, 1.41mmol) (Synthesis Example 25)
27	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate (279mg, 90%)	3'-Fluoro-5-methyl-[1,1'-biphenyl]-2-carboxylic acid (200mg, 0.87mmol) (Synthesis Example 26)

[Example 28] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl (4'-cyano-[1,1'-biphenyl]-2-yl) carbamate



5 2-(1-Methylpyrrolidin-2-yl)ethyl (2-iodophenyl) carbamate (600mg, 1.6mmol) (Synthesis Example A) was dissolved in a mixed solution of toluene (20mL) and ethanol (4mL). 4-Cyanophenyl boronic acid (259mg, 1.76mmol), potassium carbonate (442mg, 3.2mmol) and

10 tetrakis triphenylphosphine palladium (370mg, 0.32mmol) were added thereto. The reactant was stirred at 110°C for 12 hours and cooled to room temperature. The same was filtered through celite and the solvent was removed by concentrating under reduced pressure. The same was

15 extracted with water and ethyl acetate, and then the organic layer was dried with anhydrous magnesium sulfate,

filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (193mg, 35%).

5 **[Examples 29-32]**

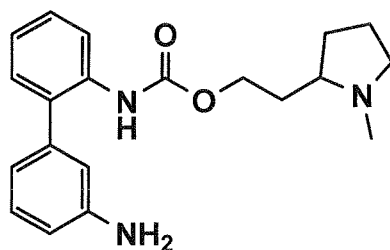
2-(1-Methylpyrrolidin-2-yl)ethyl (2-iodophenyl)carbamate of Synthesis Example A as a starting material and reaction materials in Table 9 were used to prepare compounds of Examples 29-32 in the same manner as Example 28.

[Table 9] Examples 29-32

Example	Chemical Name	Starting Material (Synthesis Example A)	Reacting Material
29	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-(3-hydroxypropyl)-[1,1'-biphenyl]-2-yl)carbamate (52mg, 5%)	1g, 2.67mmol	3-(3-Hydroxypropyl)phenyl boronic acid (530mg, 2.94mmol)
30	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-(dimethylamino)-[1,1'-biphenyl]-2-yl)carbamate (71mg, 36%)	200mg, 0.53mmol	4-(Dimethylamino)phenyl boronic acid (131mg, 0.80mmol)

31	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-(<i>tert</i> -butyl)-[1,1'-biphenyl]-2-yl) carbamate (33mg, 22%)	150mg, 0.40mmol	4- <i>Tert</i> -butylphenyl boronic acid (110mg, 0.60mmol)
32	2-(1-Methylpyrrolidin-2-yl)ethyl (2'-amino-[1,1'-biphenyl]-2-yl) carbamate (37mg, 10%)	400mg, 1.07mmol	2-Aminophenyl boronic acid pinacol ester (353mg, 1.61mmol)

[Example 33] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl (3'-amino-[1,1'-biphenyl]-2-yl) carbamate



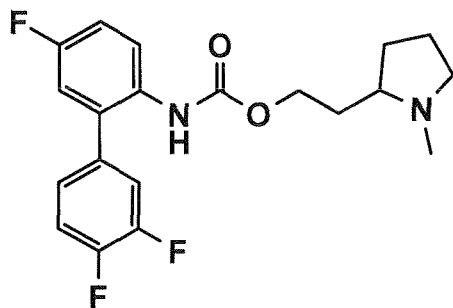
5 2-(1-Methylpyrrolidin-2-yl)ethyl (2-iodophenyl)carbamate (1.36g, 3.63mmol) (Synthesis Example A) was dissolved in a mixed solution of acetonitrile (15mL) and water (15mL). 3-Aminophenyl boronic acid (995mg, 7.26mmol), sodium carbonate (772mg, 7.26mmol) and

10 dichlorobis triphenylphosphine palladium (127mg, 0.18mmol) were added thereto. The reactant was stirred at 110°C in a microwave oven for 10 minutes and cooled to room

35	2-(1-Methylpyrrolidin-2-yl)ethyl (2'-chloro-[1,1'-biphenyl]-2-yl) carbamate (80mg, 18%)	400mg, 1.07mmol	2-Chlorophenylboronic acid (335mg, 2.14mmol)
36	2-(1-Methylpyrrolidin-2-yl)ethyl (2'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate (65mg, 16%)	400mg, 1.07mmol	2-Hydroxyphenyl boronic acid pinacol ester (471mg, 2.14mmol)
37	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-tert-butyl-5'-methyl-[1,1'-biphenyl]-2-yl) carbamate (155mg, 49%)	300mg, 0.80mmol	(3-tert-Butyl-5-methyl)phenylboronic acid (307mg, 1.60mmol)
38	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-fluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate (66mg, 20%)	297mg, 0.79mmol	(4-Fluoro-3-(trifluoromethyl)phenyl)boronic acid (330mg, 1.58mmol)

39	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-amino-3'-chloro-[1,1'-biphenyl]-2-yl) carbamate (81mg, 27%)	300mg, 0.80mmol	(4-Amino-3-chlorophenyl)boronic acid pinacol ester (406mg, 1.6mmol)
40	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate (48mg, 9%)	300mg, 0.80mmol	3-Hydroxyphenyl boronic acid (221mg, 1.6mmol)
41	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (150mg, 43%)	300mg, 0.80mmol	3-Chloro-4-fluorophenylboronic acid (240mg, 1.38mmol)

[Example 42] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl (3',4',5-trifluoro-[1,1'-biphenyl]-2-yl) carbamate



2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-fluorophenyl)carbamate (400mg, 1.16mmol) (Synthesis Example B) was dissolved in toluene (20mL). 3,4-Fluorophenyl diboronic acid (280mg, 1.74mmol), potassium carbonate (321mg, 2.32mmol) and tetrakis triphenylphosphine palladium (140mg, 0.12mmol) were added thereto. The reactant was stirred at 120 °C for 12 hours and cooled to room temperature. The same was filtered through celite and the solvent was removed by concentrating under reduced pressure. The same was extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (15mg, 3%).

15

[Examples 43-46]

2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-fluorophenyl)carbamate of Synthesis Example B as a starting material and reacting materials in Table 11 were used to prepare compounds of Examples 43-46 in the same manner as Example 42.

[Table 11] Examples 43-46

Example	Chemical Name	Starting Material (Synthesis Example B)	Reacting Material
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43	2-(1-Methylpyrrolidin-2-yl)ethyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (24mg, 5%)	400mg, 1.16mmol	3,4-Dichlorophenyl boronic acid (332mg, 1.74mmol)
44	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-ethyl-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (40mg, 12%)	300mg, 0.87mmol	3-Ethylphenyl boronic acid (200mg, 1.31mmol)
45	2-(1-Methylpyrrolidin-2-yl)ethyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl)carbamate (18mg, 4%)	400mg, 1.16mmol	3,5-Dimethylphenyl boronic acid (261mg, 1.74mmol)
46	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-amino-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (50mg, 5%)	1g, 2.90mmol	3-Aminophenyl boronic acid (600mg, 4.35mmol)

[Examples 47-51]

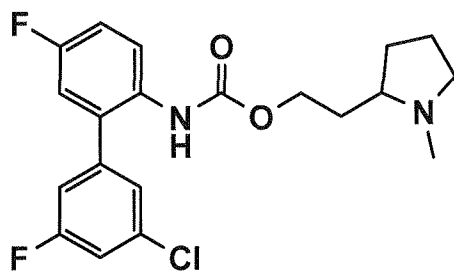
2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-(trifluoromethyl)phenyl)carbamate of Synthesis Example C as a starting material instead of 2-(1-methylpyrrolidin-2-yl)ethyl (2-bromo-4-fluorophenyl)carbamate of Synthesis Example B and reacting materials in Table 12 were used to prepare compounds of Examples 47-51 in the same manner as Example 42.

[Table 12] Examples 47-51

Example	Chemical Name	Starting Material (Synthesis Example C)	Reacting Material
47	2-(1-Methylpyrrolidin-2-yl)ethyl (5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate (26mg, 9%)	300mg, 0.76mmol	Phenylboronic acid (102mg, 0.84mmol)
48	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-fluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate (14mg, 4%)	300mg, 0.76mmol	4-Fluorophenylboronic acid (118mg, 0.84mmol)

49	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate (19mg, 6%)	300mg, 0.76mmol	3-Fluorophenylboronic acid (118mg, 0.84mmol)
50	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate (12mg, 4%)	260mg, 0.66mmol	3,5-Difluorophenylboronic acid (115mg, 0.73mmol)
51	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate (14mg, 4%)	300mg, 0.76mmol	3-Chlorophenylboronic acid (131mg, 0.84mmol)

[Example 52] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate



2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-fluorophenyl)carbamate (300mg, 0.87mmol) (Synthesis Example B) was dissolved in a mixed solution of acetonitrile (10mL) and water (10mL). (3-Chloro-5-fluorophenyl)boronic acid (303mg, 1.74mmol), sodium carbonate (184mg, 1.74mmol) and dichlorobis triphenylphosphine palladium (31mg, 0.04mmol) were added thereto. The reactant was stirred at 110°C in a microwave oven for 10 minutes and cooled to room temperature. The same was filtered through celite and the solvent was removed by concentrating under reduced pressure. The same was extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (51mg, 15%).

[Examples 53-59]

2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-fluorophenyl)carbamate of Synthesis Example B as a starting material and reacting materials in Table 13 were used to used to prepare compounds of Examples 53-59 in the same manner as Example 52.

[Table 13] Examples 53-59

Example	Chemical Name	Starting Material (Synthesis Example B)	Reacting Material
53	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate (81mg, 24%)	300mg, 0.87mmol	(3-Chloro-4-fluorophenyl)boronic acid (303mg, 1.74mmol)
54	2-(1-Methylpyrrolidin-2-yl)ethyl (4'-chloro-3',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate (173mg, 38%)	400mg, 1.16mmol	(3-Fluoro-4-chlorophenyl)boronic acid (405mg, 2.32mmol)
55	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (71mg, 15%)	400mg, 1.16mmol	3,5-Dichlorophenyl boronic acid (443mg, 2.32mmol)

56	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (99mg, 20%)	400mg, 1.16mmol	3,5-Dichloro-4-fluorophenyl boronic acid (484mg, 2.32mmol)
57	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate (97mg, 28%)	300mg, 0.87mmol	(3-Chloro-5-hydroxyphenyl)boronic acid (300mg, 1.74mmol)
58	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-4'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate (176mg, 39%)	400mg, 1.16mmol	(3-Chloro-4-hydroxyphenyl)boronic acid (400mg, 2.32mmol)

59	2-(1-Methylpyrrolidin-2-yl)ethyl (5-fluoro-3',4'-dimethyl-[1,1'-biphenyl]-2-yl)carbamate (129mg, 30%)	400mg, 1.16mmol	(3,4-Dimethylphenyl)boronic acid (348mg, 2.32mmol)
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[Examples 60-65]

2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-methoxyphenyl)carbamate of Synthesis Example D instead of
5 2-(1-methylpyrrolidin-2-yl)ethyl (2-bromo-4-fluorophenyl)carbamate of Synthesis Example B as a starting material and reacting materials in Table 14 were used to prepare compounds of Examples 60-65 in the same manner as Example 52.

10 [Table 14] Examples 60-65

Example	Chemical Name	Starting Material (Synthesis Example D)	Reacting Material
60	2-(1-Methylpyrrolidin-2-yl)ethyl (5-methoxy-[1,1'-biphenyl]-2-yl)carbamate (25mg, 8%)	300mg, 0.84mmol	Phenylboronic acid (154mg, 1.26mmol)

61	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate (112mg, 36%)	300mg, 0.84mmol	3-Fluorophenylboronic acid (176mg, 1.26mmol)
62	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate (161mg, 37%)	400mg, 1.12mmol	3,5-Difluorophenylboronic acid (354mg, 2.24mmol)
63	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate (112mg, 31%)	330mg, 0.92mmol	3-Chlorophenylboronic acid (289mg, 1.85mmol)
64	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate (92mg, 19%)	400mg, 1.12mmol	3,5-Dichlorophenylboronic acid (427mg, 2.24mmol)

65	2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate (155mg, 34%)	400mg, 1.12mmol	(3-Chloro-4-fluoro)phenylboronic acid (390mg, 2.24mmol)
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[Examples 66-73]

- 2-(1-Methylpyrrolidin-2-yl)ethyl (2-bromo-4-chlorophenyl) carbamate of Synthesis Example E instead of 2-(1-methylpyrrolidin-2-yl)ethyl (2-bromo-4-fluorophenyl) carbamate of Synthesis Example B as a starting material and reacting materials in Table 15 were used to prepare compounds of Examples 66-73 in the same manner as Example 52.
- 10 [Table 15] Examples 66-73

Example	Chemical Name	Starting Material (Synthesis Example E)	Reacting Material
66	2-(1-Methylpyrrolidin-2-yl)ethyl (5-chloro-[1,1'-biphenyl]-2-yl) carbamate (94mg, 24%)	400mg, 1.11mmol	Phenylboronic acid (271mg, 2.22mmol)

67	2-(1-Methylpyrrolidin-2-yl)ethyl (5-chloro-3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (187mg, 45%)	400mg, 1.11mmol	3-Fluorophenylboronic acid (311mg, 2.22mmol)
68	2-(1-Methylpyrrolidin-2-yl)ethyl (5-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (38mg, 9%)	400mg, 1.11mmol	4-Fluorophenylboronic acid (311mg, 2.22mmol)
69	2-(1-Methylpyrrolidin-2-yl)ethyl (5-chloro-3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (162mg, 37%)	400mg, 1.11mmol	3,5-Difluorophenyl boronic acid (351mg, 2.22mmol)
70	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5-dichloro-[1,1'-biphenyl]-2-yl) carbamate (111mg, 25%)	400mg, 1.11mmol	3-Chlorophenylboronic acid (347mg, 2.22mmol)

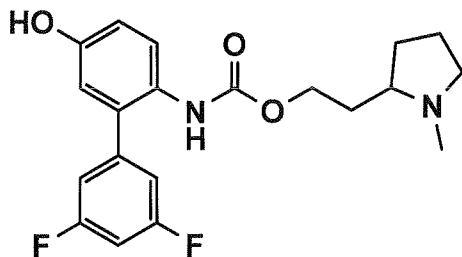
71	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5,5'-trichloro-[1,1'-biphenyl]-2-yl) carbamate (58mg, 12%)	400mg, 1.11mmol	3,5-Dichlorophenyl boronic acid (424mg, 2.22mmol)
72	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5-dichloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (119mg, 26%)	400mg, 1.11mmol	(3-Chloro-5-fluorophenyl)boronic acid (387mg, 2.22mmol)
73	2-(1-Methylpyrrolidin-2-yl)ethyl (3',5-dichloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (88mg, 19%)	400mg, 1.11mmol	(3-Chloro-4-fluorophenyl)boronic acid (387mg, 2.22mmol)

[Example 74] Synthesis of (R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-4'-formyl-[1,1'-biphenyl]-2-yl) carbamate

5 (R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (220mg, 0.70mmol) (Synthesis Example F) and 3-fluoro-4-formylphenylboronic acid (237mg,

1.41mmol) were used as starting materials to prepare titled compound (124mg, 50%) in the same manner as Example 52.

[Example 75] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl
5 **(3',5'-difluoro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate**



2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate (130mg, 0.33mmol) (Example 62) was dissolved in dichloromethane
10 (10mL). A boron trichloride solution (1.0M dichloromethane, 0.99ml, 0.99mmol) was added thereto and stirred at room temperature for 2 hours. After reaction was terminated, the reactant was extracted with water and dichloromethane. The organic layer was dried with
15 anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (68mg, 55%).

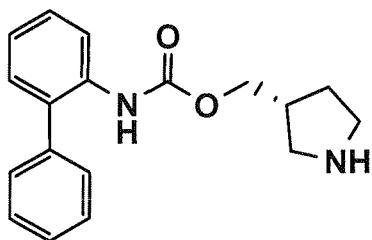
[Example 76] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl
20 **(3',5'-dichloro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate**

2-(1-Methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate (90mg, 0.21mmol) (Example 64) was used instead of Example 62 to prepare titled compound (10mg, 12%) in the same manner as
25 Example 75.

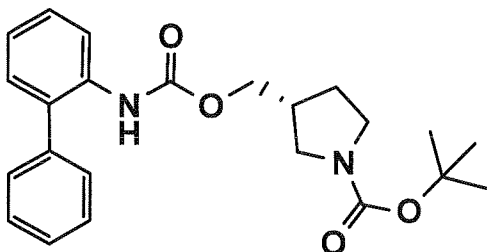
[Example 77] Synthesis of 2-(1-methylpyrrolidin-2-yl)ethyl
(3'-chloro-4'-fluoro-5-hydroxy-[1,1'-biphenyl]-2-
yl)carbamate

2-(1-Methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-
 5 fluoro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate (140mg,
 0.34mmol) (Example 65) was used instead of Example 62 to
 prepare titled compound (130mg, 96%) in the same manner as
 Example 75.

10 **[Example 78] Synthesis of (R)-pyrrolidin-3-ylmethyl [1,1'-**
biphenyl]-2-ylcarbamate



[Step 1] (R)-tert-butyl 3-((([1,1'-biphenyl]-2-ylcarbamoyl)oxy)methyl)pyrrolidine-1-carboxylate

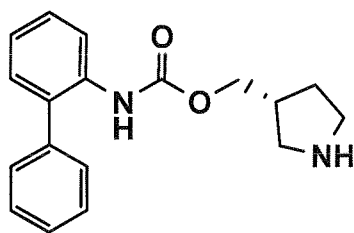


15 [1,1'-Biphenyl]-2-carboxylic acid (2g, 10.09mmol) was
 dissolved in toluene (50mL), and then biphenylphosphoryl
 azide (2.61mL, 12.11mmol) and triethylamine (1.42mL,
 10.09mmol) were added thereto. The same was stirred at
 20 room temperature for 30 minutes and then stirred again
 under reflux for 1 hour. The reactant was cooled to room
 temperature. (R)-tert-butyl 3-(hydroxymethyl)pyrrolidine-

1-carboxylate (2.44g, 12.11mmol) was added thereto and stirred under reflux for 12 hours. The reactant was cooled to room temperature. The solvent was removed by concentrating under reduced pressure, and then the same was
 5 extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (3g, 75%).

10 ^1H NMR(CDCl_3): δ 8.15-7.97(bs, 1H), 7.55-7.26(m, 6H), 7.26-7.05(m, 2H), 6.67-6.52(bs, 1H), 4.19-3.90(m, 2H), 3.57-3.18(m, 2H), 3.13-2.73(bs, 1H), 2.57-2.38(m, 1H), 2.00-1.83(m, 1H), 1.70-1.53(m, 2H) 1.43(s, 9H)

[Step 2] Synthesis of (R)-pyrrolidin-3-ylmethyl [1,1'-
 15 biphenyl]-2-ylcarbamate



(R)-tert-butyl 3-(((([1,1'-biphenyl]-2-ylcarbamoyl)oxy)methyl)pyrrolidine-1-carboxylate (3g, 7.57mmol) was dissolved in dichloromethane (80mL).
 20 Trifluoroacetic acid (40mL) was added thereto and stirred at room temperature for 2 hours. The solvent was removed by concentrating the reactant under reduced pressure and the same was extracted with 2N-sodium hydroxide solution and dichloromethane. The organic layer was dried with
 25 anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (1.73g, 77%).

[Examples 79-88]

Starting materials and reacting materials in Table 16 were used to prepare compounds of Examples 79-88 in the same manner as Example 78.

[Table 16] Examples 79-88

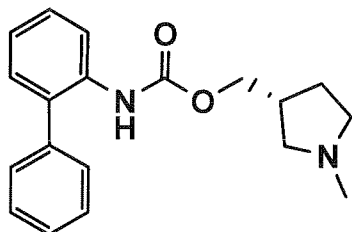
Example	Chemical Name	Starting Material	Reacting Material
79	(S)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate (1.53g, 51%)	[1,1'-Biphenyl]-2-carboxylic acid (2g, 10.09mmol)	(S)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (2.44g, 12.11mmol)
80	(R)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate (435mg, 63%)	3',5'-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (500mg, 2.13mmol) (Synthesis Example 2)	(R)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (516mg, 2.56mmol)

81	(S)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (416mg, 59%)	3',5'-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (500mg, 2.13mmol) (Synthesis Example 2)	(S)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (516mg, 2.56mmol)
82	(S)-pyrrolidin-3-ylmethyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (712mg, 51%)	5-Fluoro-[1,1'-biphenyl]-2-carboxylic acid (1g, 4.63mmol) (Synthesis Example 20)	(S)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (1,12g, 5.56mmol)
83	(S)-pyrrolidin-3-ylmethyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate (260mg, 18%)	5-Fluoro-3'-methyl-[1,1'-biphenyl]-2-carboxylic acid (1g, 4.34mmol) (Synthesis Example 21)	(S)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (1,05g, 5.21mmol)

84	(R)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate (470mg, 67%)	3',5,5'-Trifluoro-[1,1'-biphenyl]-2-carboxylic acid (500mg, 1.98mmol) (Synthesis Example 19)	(R)- <i>tert</i> -butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (479mg, 2.38mmol)
85	(S)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate (400mg, 58%)	3',5,5'-Trifluoro-[1,1'-biphenyl]-2-carboxylic acid (500mg, 1.98mmol) (Synthesis Example 19)	(S)- <i>tert</i> -butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (479mg, 2.38mmol)
86	(R)-pyrrolidin-3-ylmethyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate (222mg, 25%)	5-Methyl-[1,1'-biphenyl]-2-carboxylic acid (600mg, 2.83mmol) (Synthesis Example 25)	(R)- <i>tert</i> -butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (684mg, 3.40mmol)

87	(R)-pyrrolidin-3-ylmethyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl)carbamate (346mg, 61%)	3'-Fluoro-5-methyl-[1,1'-biphenyl]-2-carboxylic acid (400mg, 1.74mmol) (Synthesis Example 26)	(R)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (420mg, 2.09mmol)
88	(S)-pyrrolidin-2-ylmethyl (4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate (915mg, 84%)	4'-Fluoro-[1,1'-biphenyl]-2-carboxylic acid (750mg, 3.47mmol) (Synthesis Example 1)	(S)-tert-butyl 2-(hydroxymethyl)pyrrolidine-1-carboxylate (837mg, 4.16mmol)

[Example 89] Synthesis of (R)-(1-methylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate



5 (R)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate (727mg, 2.45mmol) (Example 78) was dissolved in water (50mL). Acetic acid (1mL), formaldehyde solution (3mL) and zinc powder (300mg) were sequentially added thereto and stirred at room temperature for 12 hours. The

10 reactant was filtered, neutralized with 2N-sodium hydroxide and extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered

and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (209mg, 28%).

5 **Examples 90-99**

Starting materials in Table 17 were used instead of (*R*)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate to prepare compounds of Examples 90-99 in the same manner as Example 89.

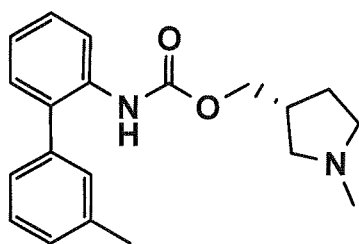
10 [Table 17] Examples 90-99

Example	Chemical Name	Starting Material
90	(<i>S</i>)-(1-methylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate (285mg, 52%)	(<i>S</i>)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate (523mg, 1.76mmol) (Example 79)
91	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate (138mg, 33%)	(<i>R</i>)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate (400mg, 1.2mmol) (Example 80)
92	(<i>S</i>)-(1-methylpyrrolidin-3-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate (78mg, 19%)	(<i>S</i>)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate (377mg, 1.13mmol) (Example 81)

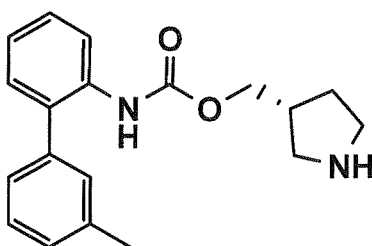
93	(S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (230mg, 67%)	(S)-pyrrolidin-3-ylmethyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (330mg, 1.05mmol) (Example 82)
94	(S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate (24mg, 9%)	(S)-pyrrolidin-3-ylmethyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate (260mg, 0.79mmol) (Example 83)
95	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate (58mg, 14%)	(R)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate (400mg, 1.14mmol) (Example 84)
96	(S)-(1-methylpyrrolidin-3-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate (144mg, 35%)	(S)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate (400mg, 1.14mmol) (Example 85)
97	(R)-(1-methylpyrrolidin-3-yl)methyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate (24mg, 16%)	(R)-pyrrolidin-3-ylmethyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate (145mg, 0.47mmol) (Example 86)

98	(<i>R</i>)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate (15mg, 5%)	(<i>R</i>)-pyrrolidin-3-ylmethyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate (320mg, 0.97mmol) (Example 87)
99	(<i>S</i>)-(1-methylpyrrolidin-2-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (87mg, 10%)	(<i>S</i>)-pyrrolidin-2-ylmethyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (850mg, 2.70mmol) (Example 88)

[Example 100] Synthesis of (*R*)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate



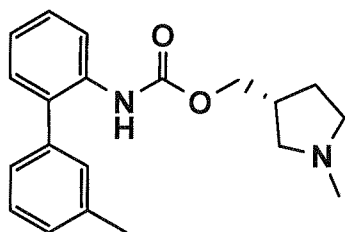
5 [Step 1] Synthesis of (*R*)-pyrrolidin-3-ylmethyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate



3'-Methyl-[1,1'-biphenyl]-2-carboxylic acid
(Synthesis Example 14) and (*R*)-*tert*-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate were used as
10 starting materials to prepare the titled compound in the same manner as Example 78.

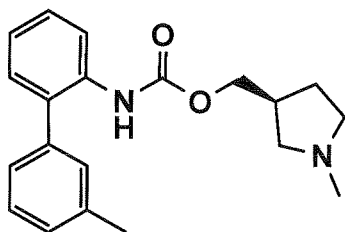
^1H NMR(CDCl_3): δ 8.13–7.97 (bs, 1H), 7.41–7.28 (m, 2H), 7.26–7.02 (m, 5H), 6.77–6.62 (bs, 1H), 4.13–3.92 (m, 2H), 3.09–2.82 (m, 3H), 2.72–2.49 (m, 2H), 2.47–2.30 (m, 4H), 1.97–1.81 (m, 1H), 1.50–1.36 (m, 1H)

5 [Step 2] Synthesis of (*R*)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate

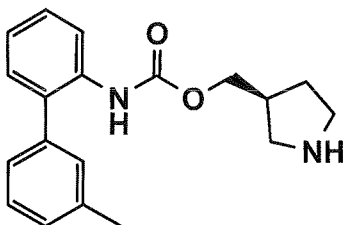


(*R*)-pyrrolidin-3-ylmethyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate (600mg, 1.93mmol) prepared in Step 1 was
10 used to prepare the titled compound (30mg, 5%) in the same manner as Example 89.

[Example 101] Synthesis of (*S*)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate



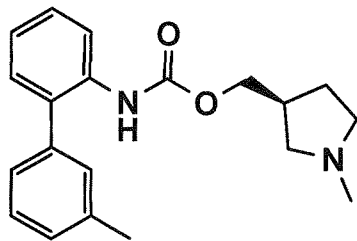
15 [Step 1] Synthesis of (*S*)-pyrrolidin-3-ylmethyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate



3'-Methyl-[1,1'-biphenyl]-2-carboxylic acid
(Synthesis Example 14) and (S)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate were used as starting materials to prepare the titled compound in the same manner as Example 78.

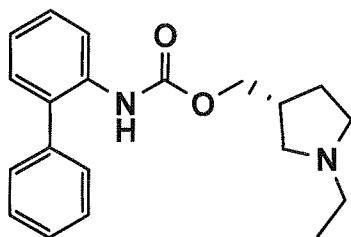
^1H NMR(CDCl_3): δ 8.15-7.99(bs, 1H), 7.45-7.29(m, 2H), 7.27-7.06(m, 5H), 6.74-6.59(bs, 1H), 4.15-3.92(m, 2H), 3.07-2.79(m, 4H), 2.69-2.57(m, 1H), 2.39(s, 3H), 2.07-1.92(bs, 1H) 1.92-1.79(m, 1H), 1.48-1.33(m, 1H)

[Step 2] Synthesis of (S)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate



(S)-pyrrolidin-3-ylmethyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate (900mg, 2.90mmol) prepared in Step 1 was used to prepare the titled compound (208mg, 22%) in the same manner as Example 89.

[Example 102] Synthesis of (R)-(1-ethylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate



(R)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate (1g, 3.37mmol) (Example 78) was dissolved in dimethylformamide (20mL). Potassium carbamate (652mg,

4.72mmol), potassium iodide (112mg, 0.67mmol), triethylamine (1.42mL, 10.11mmol) and iodoethane (323uL, 4.04mmol) were sequentially added thereto and stirred at 120°C for 12 hours. The reactant was cooled to room temperature and extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (142mg, 13%).

10

[Examples 103-105]

Starting materials in Table 18 were used instead of (R)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate to prepare compounds of Examples 103-105 in the same manner as Example 102.

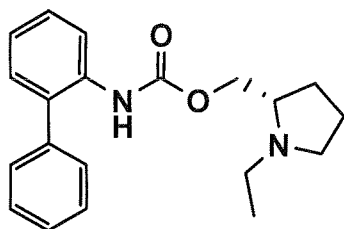
15

[Table 18] Examples 103-105

Example	Chemical Name	Starting Material
103	(S)-(1-ethylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-ylcarbamate (89mg, 8%)	(S)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-ylcarbamate (1g, 3.37mmol) (Example 79)
104	(R)-(1-ethylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate (109mg, 16%)	(R)-pyrrolidin-3-ylmethyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate (623mg, 2.01mmol) (Example 100, Step 1)

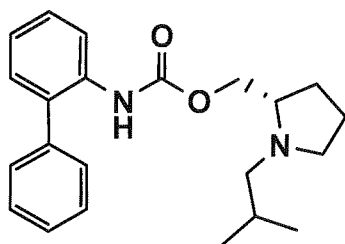
105	(S)-(1-ethylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate (40mg, 6%)	(S)-pyrrolidin-3-ylmethyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate (600mg, 1.93mmol) (Example 101, Step 1)
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[Example 106] Synthesis of (S)-(1-ethylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate



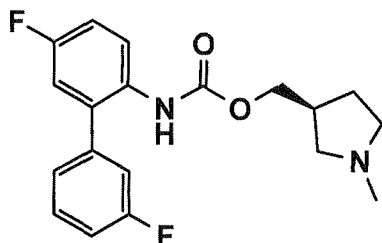
5 (S)-pyrrolidin-2-ylmethyl [1,1'-biphenyl]-2-ylcarbamate (1g, 3.37mmol) and 2-iodoethane (323uL, 4.04mmol) were used as starting materials to prepare titled compound (385mg, 35%) in the same manner as Example 102.

10 **[Example 107] Synthesis of (S)-(1-isobutylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate**



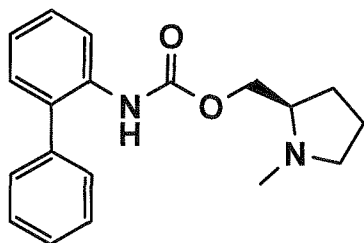
(S)-pyrrolidin-2-ylmethyl [1,1'-biphenyl]-2-ylcarbamate (940mg, 3.17mmol) and 1-iodo-2-methylpropane
 15 (438uL, 3.08mmol) were used as starting materials to prepare titled compound (47mg, 4%) in the same manner as Example 102.

[Example 108] Synthesis of (S)-(1-methylpyrrolidin-3-yl)methyl (3',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate

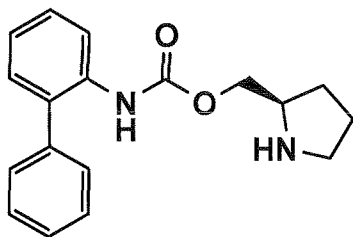


5 3',5-Difluoro-[1,1'-biphenyl]-2-carboxylic acid
(800mg, 3.42mmol) (Synthesis Example 17) and (S)-tert-butyl
3-(hydroxymethyl)pyrrolidine-1-carboxylate (825mg,
4.10mmol) were used as starting materials to prepare titled
compound (50mg, 5%) in the same manner as Example 78 and
10 Example 89.

[Example 109] Synthesis of (R)-(1-methylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate



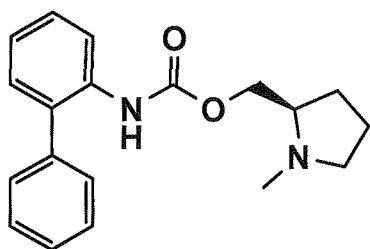
15 [Step 1] Synthesis of (R)-pyrrolidin-2-ylmethyl [1,1'-
biphenyl]-2-ylcarbamate



[1,1'-Biphenyl]-2-carboxylic acid (821mg, 4.14mmol) and (*R*)-*tert*-butyl 2-(hydroxymethyl)pyrrolidine-1-carboxylate (1g, 4.97mmol) were used as starting materials to prepare titled compound (730mg, 60%) in the same manner as Example 78.

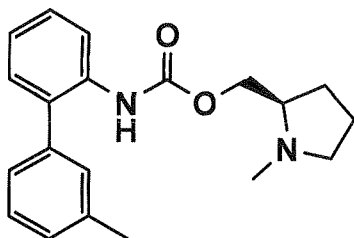
¹H NMR (CDCl₃): δ 8.09-8.08(m, 1H), 7.49-7.47(m, 1H), 7.29-7.26(m, 1H), 7.17(m, 1H), 6.92-6.89(m, 1H), 4.15-4.04(m, 2H), 3.12-3.08(m, 1H), 2.99-2.94(m, 2H), 2.74-2.72(m, 1H), 2.51-2.44(m, 1H), 1.98-1.89(m, 1H), 1.51-1.44(m, 1H)

[Step 2] Synthesis of (*R*)-(1-methylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate



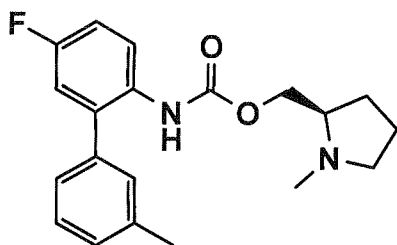
(*R*)-pyrrolidin-2-ylmethyl [1,1'-biphenyl]-2-ylcarbamate (730mg, 2.46mmol) was used as a starting material to prepare titled compound (183mg, 24%) in the same manner as Example 89.

[Example 110] Synthesis of (*R*)-(1-methylpyrrolidin-2-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl)carbamate



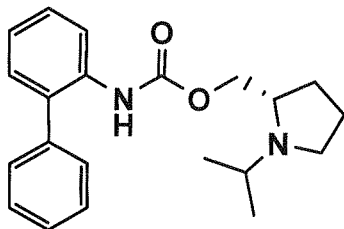
3'-Methyl-[1,1'-biphenyl]-2-carboxylic acid (700mg, 3.3mmol) (Synthesis Example 14) and (*R*)-*tert*-butyl 2-(hydroxymethyl)pyrrolidine-1-carboxylate (797mg, 3.96mmol) were used as starting materials to prepare titled compound
5 (258mg, 24%) in the same manner as Example 78 and Example 89.

[Example 111] Synthesis of (*R*)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl)carbamate
10



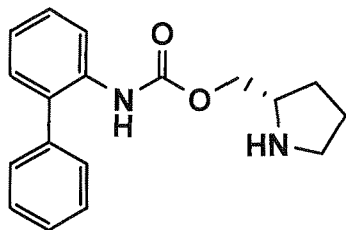
5-Fluoro-3'-methyl-[1,1'-biphenyl]-2-carboxylic acid (1g, 4.34mmol) (Synthesis Example 21) and (*R*)-*tert*-butyl 2-(hydroxymethyl)pyrrolidine-1-carboxylate (1.05g, 5.21mmol)
15 were used as starting materials to prepare titled compound (52mg, 4%) in the same manner as Example 78 and Example 89.

[Example 112] Synthesis of (*S*)-(1-isopropylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate



20

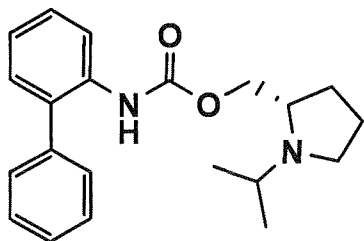
[Step 1] Synthesis of (*S*)-pyrrolidin-2-ylmethyl [1,1'-biphenyl]-2-ylcarbamate



[1,1'-Biphenyl]-2-carboxylic acid (2.5g, 12.61mmol) and (S)-tert-butyl 2-(hydroxymethyl)pyrrolidine-1-carboxylate (3.05g, 15.14mmol) were used as starting materials to prepare titled compound (3.06g, 82%) in the same manner as Example 78.

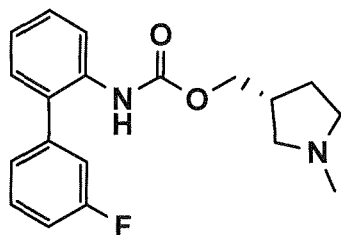
¹H NMR (CDCl₃) δ 7.88(m, 1H), 7.48–7.42(m, 1H), 7.15–7.05(m, 4H), 7.04–6.92(m, 1H), 6.40(s, 1H), 4.78–4.76(m, 1H), 3.23–3.21(m, 1H), 2.87–2.73(m, 4H), 2.06–2.05(m, 3H), 2.04–1.67(m, 1H), 1.66–1.54(m, 1H), 1.53–1.35(m, 1H)

[Step 2] Synthesis of (S)-(1-isopropylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate



(S)-pyrrolidin-2-ylmethyl [1,1'-biphenyl]-2-ylcarbamate (1g, 3.37mmol) and 2-iodopropyl (404uL, 4.04mmol) were used as starting materials to prepare titled compound (78mg, 7%) in the same manner as Example 102.

[Example 113] Synthesis of (R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-[1,1'-biphenyl]-2-yl)carbamate



(*R*)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (230mg, 0.73mmol) (Synthesis Example F) was dissolved in a mixed solution of ethanol (5mL) and water (5mL). 3-Fluorophenylboronic acid (123mg, 0.88mmol), potassium carbonate (203mg, 1.47mmol), di(acetato)dicyclohexylphenylphosphine palladium(II) and Polymer-bound FibreCat[™] (30mg) were added thereto. The reactant was stirred at 110°C for 12 hours and then cooled to room temperature. The same was filtered through celite and the solvent was removed by concentrating under reduced pressure. The same was extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (60mg, 25%).

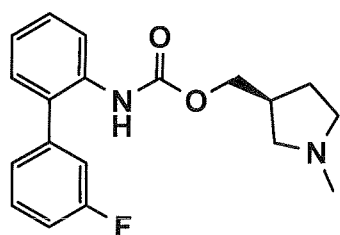
[Examples 114-115]

Reacting materials in Table 19 was used instead of 3-fluorophenylboronic acid to prepare compounds of Examples 114-115.

[Table 19] Example 114-115

Example	Chemical Name	Starting Material (Synthesis Example F)	Reacting Material
114	(R)-(1-methylpyrrolidin-3-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (58mg, 24%)	230mg, 0.73mmol	4-Fluorophenylboronic acid (123mg, 0.88mmol)
115	(R)-(1-methylpyrrolidin-3-yl)methyl (3',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (132mg, 55%)	220mg, 0.70mmol	3,4-Difluorophenylboronic acid (222mg, 1.40mmol)

[Examples 116] Synthesis of (S)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate



5 (S)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (200mg, 0.64mmol) (Synthesis Example

G) was dissolved in toluene (10mL). 3-Fluorophenylboronic acid (179mg, 1.28mmol), potassium carbonate (177mg, 1.28mmol) and tetrakis triphenylphosphine palladium (74mg, 0.064mmol) were added thereto. The reactant was stirred at 110°C for 12 hours and cooled to room temperature. The same was filtered through celite and the solvent was removed by concentrating under reduced pressure. The same was extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (102mg, 49%).

[Examples 117-129]

Starting materials and reacting materials in Table 20 were used to prepare compounds of Examples 117-129 in the same manner as Example 116.

[Table 20] Examples 117-129

Example	Chemical Name	Starting Material	Reacting Material
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117	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate (160mg, 63%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (230mg, 0.73mmol) (Synthesis Example F)	3-Chlorophenylboronic acid (138mg, 0.88mmol)
118	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate (130mg, 39%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (305mg, 0.97mmol) (Synthesis Example G)	3-Chlorophenylboronic acid (305mg, 1.95mmol)
119	(S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl) carbamate (170mg, 51%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (274mg, 0.88mmol) (Synthesis Example G)	3,5-Dichlorophenylboronic acid (334mg, 1.75mmol)

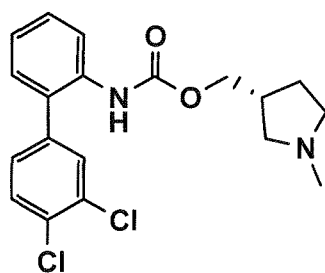
120	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (66mg, 18%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (312mg, 1.00mmol) (Synthesis Example G)	3-Chloro-5-fluorophenylboronic acid (348mg, 1.99mmol)
121	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (107mg, 47%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (200mg, 0.63mmol) (Synthesis Example G)	(3-Chloro-4-fluoro)phenylboronic acid (223mg, 1.28mmol)
122	(S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate (160mg, 73%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (190mg, 0.57mmol) (Synthesis Example I)	3,5-Dimethylphenylboronic acid (172mg, 1.15mmol)

123	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate (150mg, 64%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (205mg, 0.62mmol) (Synthesis Example I)	(3-Chloro-5-hydroxyphenyl)boronic acid (213mg, 1.24mmol)
124	(S)-(1-methylpyrrolidin-3-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (78mg, 33%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (225mg, 0.68mmol) (Synthesis Example I)	4-Fluorophenylboronic acid (114mg, 0.82mmol)
125	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (153mg, 64%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (220mg, 0.66mmol) (Synthesis Example I)	3-Chlorophenylboronic acid (125mg, 0.80mmol)

126	(S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (74mg, 22%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (280mg, 0.85mmol) (Synthesis Example I)	3,5-Dichlorophenylboronic acid (460mg, 1.69mmol)
127	(S)-(1-methylpyrrolidin-3-yl)methyl (4'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (37mg, 17%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (195mg, 0.59mmol) (Synthesis Example I)	4-Chlorophenylboronic acid (111mg, 0.71mmol)
128	(S)-(1-methylpyrrolidin-3-yl)methyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (50mg, 19%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (220mg, 0.66mmol) (Synthesis Example I)	3,4-Dichlorophenylboronic acid (152mg, 0.80mmol)

129	(S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (130mg, 54%)	(S)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (210mg, 0.63mmol) (Synthesis Example I)	(3-Chloro-5-fluorophenyl)boronic acid (221mg, 1.27mmol)
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[Example 130] Synthesis of (R)-(1-methylpyrrolidin-3-yl)methyl (3',4'-dichloro-[1,1'-biphenyl]-2-yl) carbamate



5 (R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (225mg, 0.72mmol) (Synthesis Example F) was dissolved in a mixed solution of ethanol (5mL) and water (5mL). 3,4-Dichlorophenylboronic acid (274mg, 1.44mmol), potassium carbonate (199mg, 1.44mmol) and

10 tetrakis triphenylphosphine palladium (83mg, 0.072mmol) were added thereto. The reactant was stirred at 110°C for 6 hours and cooled to room temperature. The same was filtered through celite and the solvent was removed by

concentrating under reduced pressure. The same was extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (151mg, 56%).

[Examples 131-135]

Starting materials and reacting materials in Table 21 were used to prepare compounds of Examples 131-135 in the same manner as Example 130.

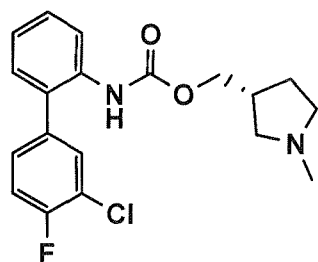
[Table 21] Examples 131-135

Example	Chemical Name	Starting Material	Reacting Material
131	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl) carbamate (101mg, 40%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (206mg, 0.66mmol) (Synthesis Example F)	3,5-Dichlorophenylboronic acid (251mg, 1.32mmol)

132	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (206mg, 0.66mmol) (Synthesis Example F)	3-Chloro-5-fluorophenylboronic acid (251mg, 1.32mmol)
133	(R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-amino-[1,1'-biphenyl]-2-yl) carbamate (63mg, 28%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (215mg, 0.65mmol) (Synthesis Example H)	3-Aminophenylboronic acid (178mg, 1.30mmol)
134	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate (143mg, 53%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (236mg, 0.71mmol) (Synthesis Example H)	(3-Chloro-5-hydroxyphenyl)boronic acid (246mg, 1.43mmol)

135	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (65mg, 25%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (220mg, 0.66mmol) (Synthesis Example H)	3,5-Dichlorophenylboronic acid (254mg, 1.33mmol)
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[Example 136] Synthesis of (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate



5

(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (250mg, 0.80mmol) (Synthesis Example F) was dissolved in a mixed solution of acetonitrile (6mL) and water (6mL). (3-Chloro-4-fluorophenyl)boronic acid (279mg, 1.60mmol), sodium carbonate (170mg, 1.60mmol) and dichlorobis(triphenyl)phosphine palladium (28mg, 0.04mmol) were added thereto. The reactant was stirred in a microwave oven at 110°C for 30 minutes and cooled to room

temperature. The same was filtered through celite and the solvent was removed by concentrating under reduced pressure. The same was extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (23mg, 70%).

[Examples 137-149]

Starting materials and reacting materials in Table 22 were used to prepare compounds of Examples 137-149 in the same manner as Example 136.

[Table 22] Examples 137-149

Example	Chemical Name	Starting Material	Reacting Material
137	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate (156mg, 65%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (230mg, 0.73mmol) (Synthesis Example F)	3-Hydroxyphenylboronic acid (111mg, 0.81mmol)

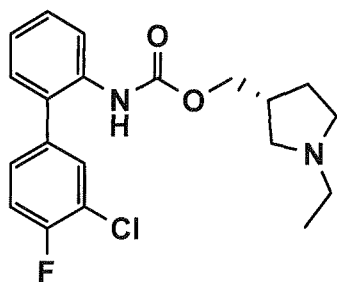
138	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate (208mg, 43%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (365mg, 0.17mmol) (Synthesis Example F)	(3-Chloro-5-(trifluoromethyl)phenyl)boronic acid (523mg, 2.33mmol)
139	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-methoxy-[1,1'-biphenyl]-2-yl) carbamate (184mg, 73%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (213mg, 0.64mmol) (Synthesis Example H)	(3-Chloro-5-methoxyphenyl)boronic acid (240mg, 1.29mmol)
140	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate (135mg, 47%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (227mg, 0.69mmol) (Synthesis Example H)	(3-Chloro-5-(trifluoromethyl)phenyl)boronic acid (307mg, 1.37mmol)

141	(R)-(1-methylpyrrolidin-3-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (208mg, 62%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (320mg, 0.97mmol) (Synthesis Example H)	4-Fluorophenylboronic acid (270mg, 1.93mmol)
142	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (108mg, 42%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (226mg, 0.68mmol) (Synthesis Example H)	(3-Chloro-5-fluorophenyl)boronic acid (238mg, 1.37mmol)
143	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (150mg, 54%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (240mg, 0.73mmol) (Synthesis Example H)	(3-Chloro-4-fluorophenyl)boronic acid (253mg, 1.45mmol)

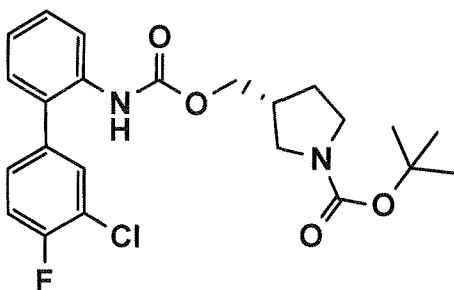
144	(R)-(1-methylpyrrolidin-3-yl)methyl (2',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (134mg, 43%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (300mg, 0.91mmol) (Synthesis Example H)	2-Fluorophenyl boronic acid (254mg, 1.812mmol)
145	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5-dichloro-[1,1'-biphenyl]-2-yl) carbamate (69mg, 22%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-chlorophenyl) carbamate (290mg, 0.84mmol) (Synthesis Example J)	3-Chlorophenylboronic acid (197mg, 1.26mmol)
146	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5-dichloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-chlorophenyl) carbamate (300mg, 0.84mmol) (Synthesis Example J)	(3-Chloro-4-fluorophenyl)boronic acid (300mg, 1.72mmol)

147	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-methoxyphenyl) carbamate (270mg, 0.78mmol) (Synthesis Example K)	(3-Chloro-4-fluorophenyl)boronic acid (274mg, 1.57mmol)
148	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (150mg, 65%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (200mg, 0.64mmol) (Synthesis Example M)	(3-Chloro-5-fluorophenyl)boronic acid (223mg, 1.28)
149	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (151mg, 26%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (500mg, 1.59mmol) (Synthesis Example M)	(3-Chloro-4-fluorophenyl)boronic acid (555mg, 3.18mmol)

[Example 150] Synthesis of (R)-(1-ethylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate



[Step 1] Synthesis of (R)-tert-butyl 3-((((3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamoyl)oxy)methyl)pyrrolidine-1-carboxylate



5

(R)-tert-butyl

3-((((2-

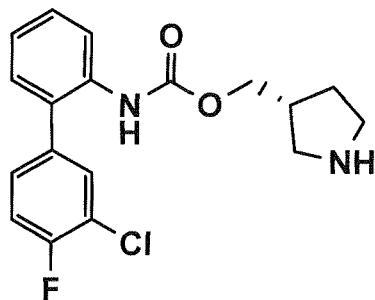
bromophenyl)carbamoyl)oxy)methyl)pyrrolidine-1-carboxylate

(4g, 10.02mmol) (Synthesis Example F, Step 1) and (3-chloro-4-fluoro)phenylboronic acid (3.5g, 20.04mmol) were used as

10 starting materials to prepare titled compound (3.4g, 76%) in the same manner as Example 42.

¹H NMR (CDCl₃): δ 8.01(s, 1H), 7.41-7.35(m, 2H), 7.31-7.22(m, 2H), 7.20-7.13(m, 2H), 6.34(s, 1H), 4.15-4.07(m, 2H), 3.48-3.29(m, 3H), 3.15-2.99(s, 1H), 2.51-2.48(m, 1H),
15 1.98-1.94(m, 1H), 1.44-1.38(m, 10H)

[Step 2] Synthesis of (R)-pyrrolidin-3-ylmethyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate



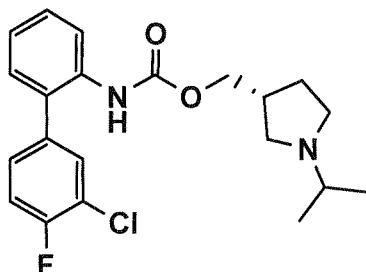
(*R*)-*tert*-butyl 3-((((3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamoyl)oxy)methyl)pyrrolidine-1-carboxylate (3.4g, 7.57mmol) prepared in Step 1 was used as a starting material to prepare titled compound (2.3g, 87%) in the same manner as Example 78.

¹H NMR (CDCl₃): δ 7.98(s, 1H), 7.41-7.34(m, 2H), 7.23-7.17(m, 2H), 7.16-7.11(m, 2H), 6.55(s, 1H), 4.10-4.01(m, 2H), 3.99-2.86(m, 3H), 2.70-2.66(s, 1H), 2.45-2.39(m, 1H), 1.95-1.86 (m, 1H), 1.47-1.41(m, 1H)

[Step 3] Synthesis of (*R*)-pyrrolidin-3-ylmethyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate

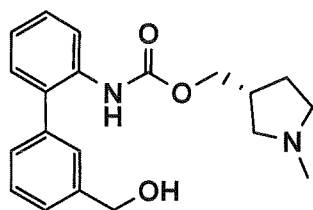
(*R*)-pyrrolidin-3-ylmethyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate (345mg, 0.99mmol) prepared in Step 2 was dissolved in tetrahydrofuran (20mL). Triethylamine (150uL, 1.09mmol) and bromoethane (118uL, 1.58mmol) were sequentially added thereto and stirred at room temperature for 3 days. The reactant was concentrated under reduced pressure and extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (74mg, 20%).

[Example 151] Synthesis of (R)-(1-isopropyl pyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate



5 (R)-pyrrolidin-3-ylmethyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate (347mg, 1.00mmol) (Example 150, Step 2) was dissolved in tetrahydrofuran (20mL). Triethylamine (150uL, 1.10mmol) and 2-bromopropane (100uL, 1.10mmol) were sequentially added thereto and stirred at
10 room temperature for 3 days. The reactant was concentrated under reduced pressure and extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column
15 chromatography to prepare the titled compound (17mg, 4%).

[Example 152] Synthesis of (R)-(1-methylpyrrolidin-3-yl)methyl (3'-(hydroxymethyl)-[1,1'-biphenyl]-2-yl)carbamate



20

(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (395mg, 1.26mmol) (Synthesis Example F) was dissolved in a mixed solution of toluene (15mL) and

ethanol (2mL). 3-(Hydroxymethyl)phenylboronic acid (211mg, 1.39mmol), potassium carbonate (348mg, 2.52mmol) and tetrakis triphenylphosphine palladium (146mg, 0.13mmol) were added thereto. The reactant was stirred at 110°C for 5 12 hours and cooled to room temperature. The same was filtered through celite and the solvent was removed by concentrating under reduced pressure. The same was extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered 10 and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (126mg, 29%).

[Examples 153-190]

15 Starting materials and reacting materials in Table 23 were used to prepare compounds of Examples 153-190 in the same manner as Example 152.

[Table 23] Examples 153-190

Example	Chemical Name	Starting Material	Reacting Material
153	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-carbamoyl-[1,1'-biphenyl]-2-yl)carbamate (125mg, 28%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (395mg, 1.26mmol) (Synthesis Example F)	(3-Carbamoylphenyl)boronic acid (229mg, 1.39mmol)

154	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-amino-[1,1'-biphenyl]-2-yl)carbamate (102mg, 45%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (220mg, 0.70mmol) (Synthesis Example F)	3-Aminophenylboronic acid (115mg, 0.84mmol)
155	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-cyano-[1,1'-biphenyl]-2-yl)carbamate (77mg, 34%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (210mg, 0.67mmol) (Synthesis Example F)	3-Cyanophenylboronic acid (118mg, 0.80mmol)
156	(R)-(1-methylpyrrolidin-3-yl)methyl (2'-fluoro-[1,1'-biphenyl]-2-yl)carbamate (210mg, 67%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (300mg, 0.958mmol) (Synthesis Example F)	2-Fluorophenylboronic acid (201mg, 1.437mmol)

157	(R)-(1-methylpyrrolidin-3-yl)methyl (2',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (115mg, 52%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (200mg, 0.639mmol) (Synthesis Example F)	2,4-Difluorophenyl boronic acid (202mg, 1.277mmol)
158	(R)-(1-methylpyrrolidin-3-yl)methyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (145mg, 66%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (200mg, 0.639mmol) (Synthesis Example F)	2,3-Difluorophenyl boronic acid (202mg, 1.277mmol)
159	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-6'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (130mg, 56%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl) carbamate (200mg, 0.639mmol) (Synthesis Example F)	3-Chloro-6-fluorophenyl boronic acid (223mg, 1.277mmol)

160	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (183mg, 87%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (200mg, 0.64mmol) (Synthesis Example M)	3-Fluorophenylboronic acid (107mg, 0.77mmol)
161	(S)-(1-methylpyrrolidin-2-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (163mg, 74%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (200mg, 0.64mmol) (Synthesis Example M)	3,5-Difluorophenylboronic acid (121mg, 0.77mmol)
162	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (105mg, 95%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (100mg, 0.32mmol) (Synthesis Example M)	3,4-Difluorophenylboronic acid (101mg, 0.64mmol)

163	(S)-(1-methylpyrrolidin-2-yl)methyl (2',4',5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate (79mg, 68%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (100mg, 0.32mmol) (Synthesis Example M)	2,4,5-Trifluorophenylboronic acid (113mg, 0.64mmol)
164	(S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-[1,1'-biphenyl]-2-yl) carbamate (103mg, 94%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (100mg, 0.32mmol) (Synthesis Example M)	4-Chlorophenylboronic acid (100mg, 0.64mmol)
165	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate (70mg, 64%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (100mg, 0.32mmol) (Synthesis Example M)	3-Chlorophenylboronic acid (100mg, 0.64mmol)

166	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-[1,1'-biphenyl]-2-yl)carbamate (96mg, 79%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl)carbamate (100mg, 0.32mmol) (Synthesis Example M)	3,4-Dichlorophenylboronic acid (122mg, 0.64mmol)
167	(S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-dichloro-[1,1'-biphenyl]-2-yl)carbamate (83mg, 69%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl)carbamate (100mg, 0.32mmol) (Synthesis Example M)	2,4-Dichlorophenylboronic acid (122mg, 0.64mmol)
168	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-hydroxy-[1,1'-biphenyl]-2-yl)carbamate (160mg, 77%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl)carbamate (200mg, 0.64mmol) (Synthesis Example M)	3-Hydroxyphenylboronic acid (106mg, 0.77mmol)

169	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-cyano-[1,1'-biphenyl]-2-yl)carbamate (17mg, 13%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl)carbamate (200mg, 0.64mmol) (Synthesis Example M)	3-Cyanophenylboronic acid (113mg, 0.77mmol)
170	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-amino-[1,1'-biphenyl]-2-yl)carbamate (78mg, 38%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl)carbamate (200mg, 0.64mmol) (Synthesis Example M)	3-Aminophenylboronic acid (105mg, 0.77mmol)
171	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4',5-trifluoro-[1,1'-biphenyl]-2-yl)carbamate (88mg, 81%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (100mg, 0.30mmol) (Synthesis Example N)	3,4-Difluorophenylboronic acid (95mg, 0.60mmol)

172	(S)-(1-methylpyrrolidin-2-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl)carbamate (180mg, 83%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (200mg, 0.60mmol) (Synthesis Example N)	3,5-Difluorophenylboronic acid (190mg, 1.20mmol)
173	(S)-(1-methylpyrrolidin-2-yl)methyl (2',4',5,5'-tetrafluoro-[1,1'-biphenyl]-2-yl)carbamate (188mg, 82%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (200mg, 0.60mmol) (Synthesis Example N)	2,4,5-Trifluorophenylboronic acid (211mg, 1.20mmol)
174	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (171mg, 79%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (200mg, 0.60mmol) (Synthesis Example N)	3-Chlorophenylboronic acid (188mg, 1.20mmol)

175	(S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (198mg, 91%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (200mg, 0.60mmol) (Synthesis Example N)	4-Chlorophenylboronic acid (188mg, 1.20mmol)
176	(S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (146mg, 61%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (200mg, 0.60mmol) (Synthesis Example N)	2,4-Dichlorophenylboronic acid (230mg, 1.20mmol)
177	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (76mg, 64%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (100mg, 0.30mmol) (Synthesis Example N)	3,4-Dichlorophenylboronic acid (115mg, 0.60mmol)

178	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-cyano-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (117mg, 55%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (200mg, 0.60mmol) (Synthesis Example N)	3-Cyanophenylboronic acid (176mg, 1.20mmol)
179	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-hydroxy-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate (66mg, 64%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (100mg, 0.30mmol) (Synthesis Example N)	3-Hydroxyphenylboronic acid (83mg, 0.60mmol)
180	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate (43mg, 36%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl)carbamate (100mg, 0.30mmol) (Synthesis Example N)	3-(Trifluoromethyl)phenylboronic acid (115mg, 0.60mmol)

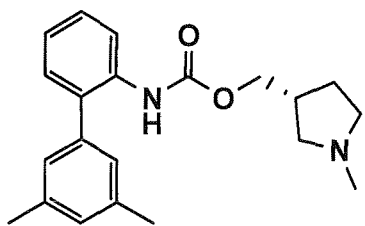
181	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4,4',5-trifluoro-[1,1'-biphenyl]-2-yl)carbamate (57mg, 25%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4,5-difluorophenyl)carbamate (200mg, 0.57mmol) (Synthesis Example P)	3-Chloro-4-fluorophenyl boronic acid (200mg, 1.15mmol)
182	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4,5-difluoro-[1,1'-biphenyl]-2-yl)carbamate (50mg, 25%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4,5-difluorophenyl)carbamate (180mg, 1.52mmol) (Synthesis Example L)	3-Chlorophenyl boronic acid (161mg, 1.03mmol)
183	2-(1-Methylpyrrolidin-2-yl)ethyl (2',4'-difluoro-[1,1'-biphenyl]-2-yl)carbamate (50mg, 15%)	2-(1-Methylpyrrolidin-2-yl)ethyl (2-iodophenyl)carbamate (300mg, 0.917mmol) (Synthesis Example A)	2,4-Difluorophenyl boronic acid (290mg, 1.834mmol)

184	2-(1-Methylpyrrolidin-2-yl)ethyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (50mg, 15%)	2-(1-Methylpyrrolidin-2-yl)ethyl (2-iodophenyl) carbamate (300mg, 0.917mmol) (Synthesis Example A)	2,3-Difluorophenyl boronic acid (290mg, 1.834mmol)
185	2-(1-Methylpyrrolidin-2-yl)ethyl (2',6'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (50mg, 15%)	2-(1-Methylpyrrolidin-2-yl)ethyl (2-iodophenyl) carbamate (300mg, 0.917mmol) (Synthesis Example A)	2,6-Difluorophenyl boronic acid (290mg, 1.834mmol)
186	2-(1-Methylpyrrolidin-2-yl)ethyl (5'-chloro-2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (160mg, 46%)	2-(1-Methylpyrrolidin-2-yl)ethyl (2-iodophenyl) carbamate (300mg, 0.917mmol) (Synthesis Example A)	5-Chloro-2-fluorophenyl boronic acid (320mg, 1.834mmol)

187	(S)-(1-methylpyrrolidin-2-yl)methyl (2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate (205mg, 65%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (300mg, 0.958mmol) (Synthesis Example M)	2-Fluorophenyl boronic acid (268mg, 1.916mmol)
188	(S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (250mg, 75%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (300mg, 0.958mmol) (Synthesis Example M)	2,4-Difluorophenyl boronic acid (303mg, 1.916mmol)
189	(S)-(1-methylpyrrolidin-2-yl)methyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (100mg, 30%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl) carbamate (300mg, 0.958mmol) (Synthesis Example M)	2,3-Difluorophenyl boronic acid (303mg, 1.916mmol)

190	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-6'-fluoro-[1,1'-biphenyl]-2-yl)carbamate (150mg, 43%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromophenyl)carbamate (300mg, 0.958mmol) (Synthesis Example M)	3-Chloro-6-fluorophenyl boronic acid (334mg, 1.916mmol)
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[Example 191] Synthesis of (R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dimethyl-[1,1'-biphenyl]-2-yl)carbamate



5 (R)-(1-methylpyrrolidin-3-yl)methyl (2-bromophenyl)carbamate (220mg, 0.70mmol) (Synthesis Example F) was dissolved in a mixed solution of ethanol (5mL) and water (5mL). 3,5-Dimethylboronic acid (211mg, 1.41mmol), potassium carbonate (194mg, 1.41mmol),

10 di(acetato)dicyclohexylphenylphosphine palladium(II) and Polymer-bound FibreCatTM (28mg) were added thereto. The reactant was stirred in a microwave oven at 110°C for 30 minutes and cooled to room temperature. The same was filtering through celite and the solvent was removed by

15 concentrating under reduced pressure. The same was

extracted with water and dichloromethane. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound
 5 (134mg, 56%).

[Examples 192-195]

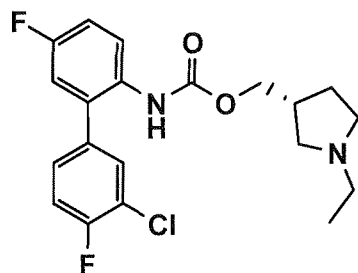
Starting materials and reacting materials in Table 24 were used to prepare compounds of Examples 192-195 in
 10 the same manner as Example 191.

[Table 24] Examples 192-195

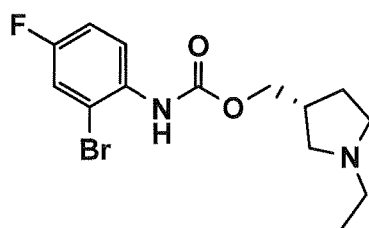
Example	Chemical Name	Starting Material	Reacting Material
192	(R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate (158mg, 73%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (210mg, 0.63mmol) (Synthesis Example H)	3-Methylphenylboronic acid (172mg, 1.27mmol)

193	(R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate (82mg, 39%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (206mg, 0.62mmol) (Synthesis Example H)	3,5-Dimethylphenylboronic acid (187mg, 1.24mmol)
194	(R)-(1-methylpyrrolidin-3-yl)methyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (124mg, 55%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (215mg, 0.65mmol) (Synthesis Example H)	3-Fluorophenylboronic acid (182mg, 1.30mmol)
195	(R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (151mg, 66%)	(R)-(1-methylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate (210mg, 0.63mmol) (Synthesis Example H)	3-Chlorophenylboronic acid (198mg, 1.27mmol)

[Example 196] Synthesis of (R)-(1-ethylpyrrolidin-3-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate



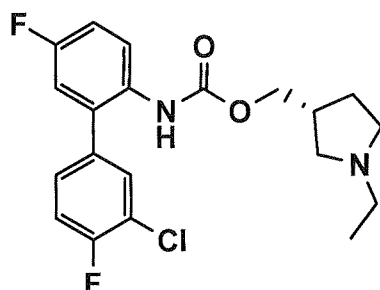
5 [Step 1] Synthesis of (R)-(1-ethylpyrrolidin-3-yl)methyl (2-bromo-4-fluorophenyl) carbamate



2-Bromo-4-fluorobenzoic acid (3g, 13.70mmol) and (R)-tert-butyl 3-(hydroxymethyl)pyrrolidine-1-carboxylate (3.31g, 16.44mmol) were used as starting materials to prepare titled compound (4.5g, 79%) in the same manner as Synthesis Example F.

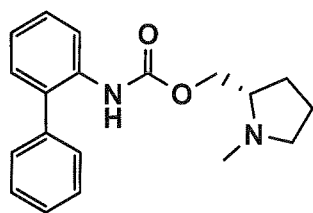
¹H NMR (CDCl₃): δ 8.00(s, 1H), 7.28-7.24(m, 1H), 7.05-7.00(m, 1H), 4.21-4.10(m, 2H), 3.06-3.03(m, 1H), 2.90-
15 2.87(m, 1H), 2.84-2.71(m, 5H), 2.17-2.12(m, 1H), 1.76-1.71(m, 1H), 1.24(t, 3H, J=7.2)

[Step 2] Synthesis of (R)-(1-ethylpyrrolidin-3-yl)methyl
(3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate



(R)-(1-ethylpyrrolidin-3-yl)methyl (2-bromo-4-
5 fluorophenyl)carbamate (165mg, 0.48mmol) and (3-chloro-4-
fluorophenyl)boronic acid (167mg, 0.96mmol) were used as
starting materials to prepare titled compound (143mg, 76%)
in the same manner as Example 136.

10 [Example 197] Synthesis of (S)-(1-methylpyrrolidin-2-yl)methyl
[1,1'-biphenyl]-2-ylcarbamate



[1,1'-Biphenyl]-2-carboxylic acid (1g, 5.05mmol) was
dissolved in toluene (20mL). Biphenylphosphoryl azide
15 (1.4mL, 6.05mmol) and triethylamine (0.71mL, 5.05mmol) were
added thereto. The same was stirred at room temperature
for 30 minutes, and then stirred again under reflux at room

temperature for 1 hour. The reactant was cooled to room temperature and (S)-(1-methylpyrrolidin-2-yl)methanol (0.72mL, 6.05mmol) was added thereto, and then stirred under reflux for 12 hours. The reactant was cooled to room temperature. The solvent was removed by concentrating under reduced pressure. The same was extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (458mg, 29%).

[Examples 198-207]

Starting materials and reacting materials in Table 25 were used to prepare compounds of Examples 198-207 in the same manner as Example 197.

[Table 25] Examples 198-207

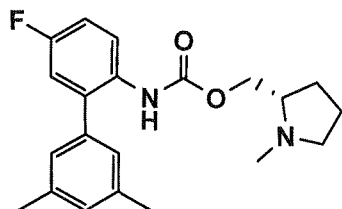
Example	Chemical Name	Starting Material	Reacting Material
198	(S)-(1-methylpyrrolidin-2-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl)carbamate (97mg, 13%)	4'-Fluoro-[1,1'-biphenyl]-2-carboxylic acid (482mg, 2.23mmol) (Synthesis Example 1)	(S)-(1-methylpyrrolidin-2-yl)methanol (318uL, 2.68mmol)

199	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate (379mg, 51%)	3'-Methyl-[1,1'-biphenyl]-2-carboxylic acid (488mg, 2.3mmol) (Synthesis Example 14)	(S)-(1-methylpyrrolidin-2-yl)methanol (328uL, 2.76mmol)
200	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (42mg, 7%)	5-Fluoro-[1,1'-biphenyl]-2-carboxylic acid (400mg, 1.85mmol) (Synthesis Example 20)	(S)-(1-methylpyrrolidin-2-yl)methanol (0.26mL, 2.22mmol)
201	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate (98mg, 14%)	5-Fluoro-3'-methyl-[1,1'-biphenyl]-2-carboxylic acid (460mg, 2.0mmol) (Synthesis Example 21)	(S)-(1-methylpyrrolidin-2-yl)methanol (0.29mL, 2.4mmol)

202	(S)-(1-methylpyrrolidin-2-yl)methyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (280mg, 47%)	3',5-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (400mg, 1.71mmol) (Synthesis Example 17)	(S)-(1-methylpyrrolidin-2-yl)methanol (0.24mL, 2.05mmol)
203	(S)-(1-methylpyrrolidin-2-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (312mg, 53%)	4',5-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (400mg, 1.71mmol) (Synthesis Example 18)	(S)-(1-methylpyrrolidin-2-yl)methanol (0.24mL, 2.05mmol)
204	(S)-(1-methylpyrrolidin-2-yl)methyl (4-fluoro-[1,1'-biphenyl]-2-yl) carbamate (140mg, 51%)	4-Fluoro-[1,1'-biphenyl]-2-carboxylic acid (180mg, 0.83mmol) (Synthesis Example 22)	(S)-(1-methylpyrrolidin-2-yl)methanol (0.12mL, 1.0mmol)

205	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4-difluoro-[1,1'-biphenyl]-2-yl) carbamate (200mg, 34%)	3',4-Difluoro-[1,1'-biphenyl]-2-carboxylic acid (400mg, 1.71mmol) (Synthesis Example 23)	(S)-(1-methylpyrrolidin-2-yl)methanol (0.24mL, 2.05mmol)
206	(S)-(1-methylpyrrolidin-2-yl)methyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate (189mg, 41%)	5-Methyl-[1,1'-biphenyl]-2-carboxylic acid (300mg, 1.41mmol) (Synthesis Example 25)	(S)-(1-methylpyrrolidin-2-yl)methanol (201uL, 1.7mmol)
207	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate (265mg, 89%)	3'-Fluoro-5-methyl-[1,1'-biphenyl]-2-carboxylic acid (200mg, 0.87mmol) (Synthesis Example 26)	(S)-(1-methylpyrrolidin-2-yl)methanol (124uL, 1.04mmol)

[Example 208] Synthesis of (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate



(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-

fluorophenyl)carbamate (200mg, 0.60mmol) (Synthesis Example N) was dissolved in a mixed solution of acetonitrile (3mL) and water (3mL). 3,5-Dimethylphenylboronic acid (181mg, 1.20mmol), sodium carbonate (95mg, 0.90mmol) and dichlorobistriphenylphosphine palladium (2mg, 0.003mmol) were added thereto. The reactant was stirred in a microwave oven at 150°C for 10 minutes and cooled to room temperature. The same was filtered through celite and the solvent was removed by concentrating under reduced pressure. The same was extracted with water and ethyl acetate. The organic layer was dried with anhydrous magnesium sulfate, filtered and concentrated. The resulting residue was purified with column chromatography to prepare the titled compound (98mg, 46%).

[Examples 209-226]

Starting materials and reacting materials in Table 26 were used to prepare compounds of Examples 209-226 in the same manner as Example 208.

[Table 26] Examples 209-226

Example	Chemical Name	Starting Material	Reacting Material
209	(S)-(1-methylpyrrolidin-2-yl)methyl (4'-(tert-butyl)-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (68mg, 30%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (200mg, 0.60mmol) (Synthesis Example N)	4-tert-Butylphenylboronic acid (213mg, 1.20mmol)
210	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate (55mg, 32%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (150mg, 0.45mmol) (Synthesis Example N)	(3-Chloro-5-fluoro)phenylboronic acid (158mg, 0.90mmol)

211	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (56mg, 16%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (300mg, 0.91mmol) (Synthesis Example N)	(3-Chloro-4-fluoro)phenylboronic acid (316mg, 1.81mmol)
212	(S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate (140mg, 40%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (300mg, 0.91mmol) (Synthesis Example N)	(3-Fluoro-4-chloro)phenylboronic acid (316mg, 1.81mmol)

213	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-amino-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (46mg, 45%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (150mg, 0.45mmol) (Synthesis Example N)	3-Aminophenylboronic acid (68mg, 0.50mmol)
214	(S)-(1-methylpyrrolidin-2-yl)methyl (2',5-difluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate (17mg, 10%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (150mg, 0.45mmol) (Synthesis Example N)	(2-Fluoro-3-(trifluoromethyl)phenyl)boronic acid (187mg, 0.90mmol)

215	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate (80mg, 41%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (150mg, 0.45mmol) (Synthesis Example N)	(3-Chloro-5-(trifluoromethyl)phenyl)boronic acid (202mg, 0.90mmol)
216	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate (35mg, 24%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (130mg, 0.39mmol) (Synthesis Example N)	(3-Chloro-5-hydroxyphenyl)boronic acid (135mg, 0.79mmol)

217	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-methoxy-[1,1'-biphenyl]-2-yl) carbamate (55mg, 31%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (150mg, 0.45mmol) (Synthesis Example N)	(3-Chloro-5-methoxyphenyl)boronic acid (168mg, 0.90mmol)
218	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-2',4'-bis(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate (85mg, 41%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (150mg, 0.45mmol) (Synthesis Example N)	(2,4-Bis(trifluoromethyl)phenyl)boronic acid (230mg, 0.90mmol)

219	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-ethoxy-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate (94mg, 42%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (200mg, 0.60mmol) (Synthesis Example N)	3-Ethoxyphenylboronic acid (200mg, 1.20mmol)
220	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',4'-dimethoxy-[1,1'-biphenyl]-2-yl) carbamate (54mg, 23%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (200mg, 0.60mmol) (Synthesis Example N)	3,4-Dimethoxyphenylboronic acid (218mg, 1.20mmol)
221	(S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',5'-dimethoxy-[1,1'-biphenyl]-2-yl) carbamate (140mg, 60%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-fluorophenyl) carbamate (200mg, 0.60mmol) (Synthesis Example N)	3,5-Dimethoxyphenylboronic acid (218mg, 1.20mmol)

222	(S)-(1-methylpyrrolidin-2-yl)methyl (5-methoxy-[1,1'-biphenyl]-2-yl)carbamate (66mg, 34%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-methoxyphenyl)carbamate (200mg, 0.58mmol) (Synthesis Example 0)	Phenylboronic acid (142mg, 1.16mmol)
223	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate (99mg, 55%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-methoxyphenyl)carbamate (200mg, 0.58mmol) (Synthesis Example 0)	3-Fluorophenylboronic acid (162mg, 1.16mmol)
224	(S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-methoxy-[1,1'-biphenyl]-2-yl)carbamate (117mg, 54%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-methoxyphenyl)carbamate (200mg, 0.58mmol) (Synthesis Example 0)	3-Chlorophenylboronic acid (181mg, 1.16mmol)

225	(S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate (90mg, 38%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-methoxyphenyl) carbamate (200mg, 0.58mmol) (Synthesis Example 0)	3,4-Dichlorophenylboronic acid (221mg, 1.16mmol)
226	(S)-(1-methylpyrrolidin-2-yl)methyl (3',5'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate (110mg, 46%)	(S)-(1-methylpyrrolidin-2-yl)methyl (2-bromo-4-methoxyphenyl) carbamate (200mg, 0.58mmol) (Synthesis Example 0)	3,5-Dichlorophenylboronic acid (221mg, 1.16mmol)

[Experimental Example 1] Binding assay on human muscarinic M3 receptor

Cell membrane proteins (Perkin Elmer) wherein human
5 muscarinic M3 receptor was overexpressed, [³H]-methyl scopolamine and test compounds in various concentration

were cultured in 0.2 ml of Tris-HCl buffer at 25°C for 120 minutes. The same was filtered under suction through glass fiber filter (Whatman GF/B), and then the filter was washed 5 times with 1ml of Tris-HCl buffer. The radioactivity of [3H]-methyl scopolamine adsorbed on the filter was measured by a liquid scintillation counter. Non-specific binding was evaluated under existence of 5 uM of atropine. Affinity of the compound of the present invention to muscarinic M3 receptor was calculated as the dissociation constant (K_i), which can be calculated from concentration (IC_{50}) of test compounds inhibiting 50% of binding of [3H]-methyl scopolamine (i.e. labeled ligand) according to Cheng and Prusoff [Cheng and Prusoff, Biochem. Pharmacol., 22, 3099, 1973]. In following Table, compounds having stronger binding affinity to human muscarinic M3 receptor have lower dissociation constant (K_i).

[Table 27] Binding affinity to human muscarine M3 receptor

Example	Binding Affinity to M3 Receptor, K_i (nM)	Example	Binding Affinity to M3 Receptor, K_i (nM)
1	4.42	115	7.49
2	8.69	116	12.60
3	11.58	117	1.60
4	2.93	118	2.42
5	1101.45	119	42.34
6	2.47	120	9.70

7	31.84	121	1.75
8	1.33	122	87.80
9	9.10	123	52.84
10	401.05	124	8.12
11	467.04	125	2.67
12	88.00	126	24.79
13	80.10	127	69.36
14	12.39	128	3.41
15	2.27	129	12.56
16	1056.28	130	2.10
17	1.00	131	12.01
18	6.98	132	4.64
19	4.17	133	34.48
20	20.72	134	46.90
21	2.25	135	24.15
22	3.79	136	1.59
23	6.40	137	27.02
24	31.01	138	>1000
25	115.46	139	82.67
26	18.52	140	>1000
27	56.72	141	7.57
28	844.79	142	4.88
29	931.06	143	1.12
30	830.16	144	17.16
31	311.47	145	14.27
32	>1000	146	6.85
33	16.84	147	77.41
34	19.64	148	10.20
35	434.72	149	1.57
36	>1000	150	5.60

37	>1000	151	14.95
38	574.03	152	147.11
39	28.04	153	>1000
40	118.89	154	16.67
41	2.45	155	>1000
42	9.21	156	10.63
43	1.48	157	29.63
44	95.47	158	119.82
45	69.57	159	5.13
46	37.51	160	4.29
47	136.47	161	8.92
48	257.54	162	5.34
49	303.01	163	16.13
50	>1000	164	36.92
51	101.48	165	0.63
52	10.02	166	9.04
53	1.34	167	67.35
54	125.95	168	22.86
55	38.76	169	282.30
56	12.52	170	9.23
57	34.83	171	16.93
58	26.31	172	6.15
59	6.42	173	42.74
60	118.72	174	0.61
61	217.94	175	22.49
62	>1000	176	>1000
63	58.09	177	6.32
64	>1000	178	>1000
65	71.32	179	241.05
66	6.98	180	9.15

67	16.32	181	3.29
68	13.23	182	>1000
69	108.98	183	18.91
70	8.17	184	63.46
71	134.09	185	46.09
72	58.83	186	4.68
73	4.84	187	10.66
74	>1000	188	13.73
75	471.30	189	65.59
76	>1000	190	2.17
77	22.00	191	30.78
78	4.62	192	4.60
80	27.38	193	45.83
81	30.35	194	6.30
82	18.89	195	1.08
83	18.29	196	7.67
84	34.94	197	0.78
86	111.04	198	1.87
87	94.38	199	0.80
88	99.67	200	2.03
89	2.43	201	2.70
90	1.97	202	2.18
91	4.50	203	2.36
92	10.66	204	3.53
93	4.12	205	7.95
94	6.18	206	7.32
95	6.27	207	13.45
96	17.57	208	110.05
97	35.17	209	>1000
98	46.18	210	4.60

99	8.10	211	9.91
100	2.43	212	>1000
101	3.79	213	53.03
102	12.86	214	>1000
103	12.96	215	>1000
104	14.18	216	60.13
105	19.55	217	222.89
106	0.80	218	>1000
107	752.18	219	>1000
108	3.95	220	>1000
109	5.33	221	>1000
110	9.13	222	28.27
111	10.79	223	120.66
112	3.77	224	15.14
113	1.92	225	53.65
114	4.23	226	16.71

[Experimental Example 2] Antagonism assay on human muscarinic M3 receptor

The antagonism assay for various compounds of the present invention was conducted on antagonism to human M3 receptor in Cos-7 cells that was transfected with plasmid coding human muscarinic M3 receptor. Test compounds in various concentrations were pre-treated to the cells for 3 minutes, and then the changes of intracellular calcium were measured after treating the same with carbachol (i.e. muscarinic receptor agonist). The FLIPR[®] Calcium 5 assay

(Molecular Devices) and Flex3 device (Molecular Devices) were used to measure concentration of calcium. Amounts of calcium before and after carbachol treatment were set as 0% and 100% respectively. Inhibition rates (%) by the compounds for increase in intracellular calcium by carbachol were calculated. The antagonistic potency of the test compounds on human muscarinic M3 receptor was calculated as the functional binding constant (K_b), which can be calculated from concentration (IC_{50}) of compound inhibiting 50% of activity of carbachol according to Cheng and Prusoff equation. The compounds used in the experiment were identified as antagonists for human muscarinic M3 receptor, and lower K_b value means superior antagonistic potency.

[Table 28] Antagonistic potency for human muscarinic M3 receptor

Example	Antagonism for M3 receptor, K_b (nM)	Example	Antagonism for M3 receptor, K_b (nM)
2	6.02	128	1.20
4	3.41	129	6.24
8	3.02	130	1.14
15	4.10	131	1.86
19	1.90	132	0.75
21	0.49	135	16.53
22	2.39	136	0.25

34	2.64	141	0.35
41	0.18	142	1.04
42	1.19	143	0.68
52	1.22	144	1.42
53	0.57	145	2.97
56	10.00	146	1.57
58	4.70	148	2.22
59	2.38	149	0.10
66	3.06	150	1.34
67	11.85	151	2.67
68	13.22	156	1.15
70	1.95	157	3.25
73	4.75	159	0.46
77	10.00	166	1.33
89	0.16	181	0.29
90	0.17	183	2.57
91	1.32	186	0.34
95	0.75	187	0.48
100	0.64	188	2.23
114	0.58	190	0.95
115	0.32	194	0.58
116	1.21	195	0.43
117	0.34	196	1.54
118	0.77	199	0.26
120	1.03	207	3.52
124	2.86	211	10.00
125	0.33	224	7.5
126	17.47	226	4.99

[Experimental Example 3] Experiment on rhythmic bladder
contractions in rats (in vivo)

Female Sprague-Dawley rat was halothane-anesthetized, and a polyethylene catheter was inserted through urethra lay down straight and fixed. Urine in bladder was excreted through the catheter by gently massaging abdomen of the rat, and then removed. A three-way stopcock was connected to the catheter and a pressure transducer was connected to one side of the three-way stopcock to measure pressure, and a syringe was installed at the other side to inject 37°C of saline solution. The saline solution was slowly injected until regular bladder contractions occurred repeatedly. When regular bladder contractions occurred stably, test compounds were administered intravenously through the tail vein. Inhibitory effect of the test compounds was evaluated by measuring degree of amplitude reduction of bladder contractions. The compounds of the present invention significantly reduced amplitude of bladder contractions when the compounds were administered at least 0.3 mg/kg or more.

[Table 29] Rhythmic bladder contractility of rats

Example	Rhythmic bladder contractility of rats (% , 0.3 mpk)	Example	Rhythmic bladder contractility of rats (% , 0.3 mpk)
1	26.1±5.1	117	15.4±0.1
2	20.1±3.1	121	31.4±6.1
3	15.9±0.9	124	21.2±0.7
4	22.3±4.9	125	22.6±5.8
6	28.5±4.6	128	15.1±3.4
8	23.2±2.3	129	15.7±1.4
9	9.6±1.6	131	17.8±2.5
15	25.6±2.2	136	33.2±4.0
17	27.9±6.1	142	15.1±3.4
19	12.8±3.0	143	24.3±5.5
22	16.7±1.7	145	13.1±3.0
26	11.0±2.5	146	8.2±2.9
34	20.1±1.8	150	25.1±2.5
43	8.9±2.3	160	15.5±2.4
52	10.8±0.8	165	34.5±2.5
53	28.0±5.0	166	10.2±1.7
59	11.6±1.9	172	12.4±2.7
66	12.0±1.4	177	11.3±2.2
70	9.7±4.1	180	6.3±1.3
73	10.0±1.0	181	18.1±2.6
78	17.9±2.1	192	18.6±3.6
89	33.9±3.5	194	24.6±2.6
90	27.4±1.9	195	20.3±2.6
91	25.2±2.5	197	32.8±9.7
93	27.3±1.9	198	26.3±2.4
95	15.7±0.8	199	27.8±4.5
99	16.3±1.0	201	9.1±3.0

100	26.0±6.0	202	17.3±1.3
101	20.1±1.7	203	19.4±4.0
108	18.1±1.4	204	23.3±6.6
109	18.1±1.7	205	11.9±3.7
106	32.7±5.2	207	18.2±3.7
112	34.8±2.9		

[Experimental Example 4] Acute toxicity test for oral administration on rats

In order to confirm acute toxicity of the compounds of the present invention, following experiment was conducted. A low-dose group, a medi-dose group and a high-dose group, wherein the compounds of Examples were administered 100 mg/kg, 300 mg/kg and 1000 mg/kg respectively, were prepared. Methyl cellulose solution (0.5%) was prepared and orally administered to 3 rats of each group (i.e. both sexes of 6-week old Sprague-Dawley (SD) rats; male rats in 142-143 g; female rats in 126.3-127.3 g) in a volume of 10 mL/kg. Mortality, clinical signs and weight and the like were measured for 4 days, and discovered approximate lethal dose (ALD) therefrom were explained in Table 30 below. As shown in Table 30, approximate lethal dose of the test compounds were 1000

mg/kg or more, therefore the compounds were determined as safe drugs.

[Table 30] Approximate lethal dose

Example	Approximate Lethal Dose (ALD)	Example	Approximate Lethal Dose (ALD)
15	>1000	100	>1000
53	>1000	136	>1000
89	>1000	143	>1000
90	>1000	150	>1000
91	>1000	199	>1000

5 **【Industrial Applicability】**

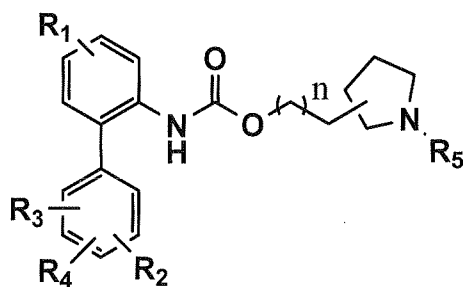
The novel biphenyl derivatives, the isomers or pharmaceutically acceptable salts thereof according to the present invention acts as a muscarinic M3 receptor antagonist, and thus can be useful for the prevention or
10 treatment of a disease selected from the group consisting of chronic obstructive pulmonary disease, asthma, irritable bowel syndrome, urinary incontinence, rhinitis, spasmodic colitis, chronic cystitis, Alzheimer's disease, senile dementia, glaucoma, schizophrenia, gastroesophageal reflux
15 disease, cardiac arrhythmia, and hyper salivation syndrome.

【CLAIMS】

【Claim 1】

A novel biphenyl derivative represented by the following formula 1, an isomer thereof, or a
5 pharmaceutically acceptable salt thereof:

[Formula 1]



wherein

R₁ is hydrogen, halogen, hydroxy, substituted or
10 unsubstituted C₁-C₆ alkyl, or C₁-C₆ alkoxy;

R₂, R₃ and R₄ are each independently hydrogen, halogen,
substituted or unsubstituted amino, nitro, cyano, hydroxy,
substituted or unsubstituted C₁-C₆ alkyl, substituted or
unsubstituted C₁-C₆ alkoxy, or -C(O)R₆;

15 R₅ is hydrogen or C₁-C₆ alkyl;

n is 0 or 1; and

R₆ is hydrogen or amino.

【Claim 2】

The novel biphenyl derivative, isomer thereof or
20 pharmaceutically acceptable salt thereof according to claim
1, wherein R₁ is hydrogen or halogen; R₂, R₃ and R₄ are each

independently hydrogen, halogen, or C₁-C₆ alkyl; and R₅ is C₁-C₆ alkyl.

【Claim 3】

The novel biphenyl derivative, isomer thereof or
5 pharmaceutically acceptable salt thereof according to claim
1, wherein R₁ is hydrogen; R₂, R₃ and R₄ are independently
hydrogen or halogen; R₅ is C₁-C₆ alkyl; and n is 0 or 1.

【Claim 4】

The novel biphenyl derivative, isomer thereof or
10 pharmaceutically acceptable salt thereof according to claim
1, wherein the novel biphenyl derivative is selected from
the group consisting of the following compounds:

- 1) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-fluoro-[1,1'-
biphenyl]-2-yl)carbamate;
- 15 2) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-
[1,1'-biphenyl]-2-yl)carbamate;
- 3) 2-(1-methylpyrrolidin-2-yl)ethyl (3',4',5'-
trifluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 4) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-fluoro-[1,1'-
20 biphenyl]-2-yl)carbamate;
- 5) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-methoxy-
[1,1'-biphenyl]-2-yl)carbamate;
- 6) 2-(1-methylpyrrolidin-2-yl)ethyl [1,1'-biphenyl]-
2-ylcarbamate;
- 25 7) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-chloro-[1,1'-
biphenyl]-2-yl)carbamate;

- 8) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 9) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 10) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-trifluoromethoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 11) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-nitro-[1,1'-biphenyl]-2-yl) carbamate;
- 12) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-trifluoromethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 10 13) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-trifluoromethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 14) 2-(1-methylpyrrolidin-2-yl)ethyl ((3'-fluoro-4'-methyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 15 15) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 16) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-ethoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 17) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 20 18) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 19) 2-(1-methylpyrrolidin-2-yl)ethyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 20) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 21) 2-(1-methylpyrrolidin-2-yl)ethyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 22) 2-(1-methylpyrrolidin-2-yl)ethyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 5 23) 2-(1-methylpyrrolidin-2-yl)ethyl (4-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 24) 2-(1-methylpyrrolidin-2-yl)ethyl (3',4-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25) 2-(1-methylpyrrolidin-2-yl)ethyl (4-methoxy-10 [1,1'-biphenyl]-2-yl) carbamate;
- 26) 2-(1-methylpyrrolidin-2-yl)ethyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 27) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 15 28) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-cyano-[1,1'-biphenyl]-2-yl) carbamate;
- 29) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-(3-hydroxypropyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 30) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-(dimethylamino)-[1,1'-biphenyl]-2-yl) carbamate;
- 20 31) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-(tert-butyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 32) 2-(1-methylpyrrolidin-2-yl)ethyl (2'-amino-[1,1'-biphenyl]-2-yl) carbamate;
- 25 33) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-amino-[1,1'-biphenyl]-2-yl) carbamate;

- 34) 2-(1-methylpyrrolidin-2-yl)ethyl (2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 35) 2-(1-methylpyrrolidin-2-yl)ethyl (2'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 36) 2-(1-methylpyrrolidin-2-yl)ethyl (2'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 37) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-tert-butyl-5'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 38) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-fluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 10 39) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-amino-3'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 40) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 15 41) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 42) 2-(1-methylpyrrolidin-2-yl)ethyl (3',4',5-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 43) 2-(1-methylpyrrolidin-2-yl)ethyl (3',4'-dichloro-20 5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 44) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-ethyl-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 45) 2-(1-methylpyrrolidin-2-yl)ethyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 25 46) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-amino-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 47) 2-(1-methylpyrrolidin-2-yl)ethyl (5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate;
- 48) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-fluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate;
- 5 49) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate;
- 50) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate;
- 51) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-(trifluoromethyl)-[1,1'-biphenyl]-2-yl)carbamate;
- 10 52) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 53) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 15 54) 2-(1-methylpyrrolidin-2-yl)ethyl (4'-chloro-3',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 55) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 56) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-20 4',5-difluoro-[1,1'-biphenyl]-2-yl)carbamate;
- 57) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl)carbamate;
- 58) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-fluoro-4'-hydroxy-[1,1'-biphenyl]-2-yl)carbamate;
- 25 59) 2-(1-methylpyrrolidin-2-yl)ethyl (5-fluoro-3',4'-dimethyl-[1,1'-biphenyl]-2-yl)carbamate;

- 60) 2-(1-methylpyrrolidin-2-yl)ethyl (5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 61) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 5 62) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 63) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 64) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-10 5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 65) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 66) 2-(1-methylpyrrolidin-2-yl)ethyl (5-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 67) 2-(1-methylpyrrolidin-2-yl)ethyl (5-chloro-3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 68) 2-(1-methylpyrrolidin-2-yl)ethyl (5-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 69) 2-(1-methylpyrrolidin-2-yl)ethyl (5-chloro-3',5'-20 difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 70) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 71) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5,5'-trichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 72) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5-dichloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 73) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5-dichloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 74) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-4'-formyl-[1,1'-biphenyl]-2-yl) carbamate;
- 5 75) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-difluoro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 76) 2-(1-methylpyrrolidin-2-yl)ethyl (3',5'-dichloro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 77) 2-(1-methylpyrrolidin-2-yl)ethyl (3'-chloro-4'-fluoro-5-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 10 78) (R)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-yl carbamate;
- 79) (S)-pyrrolidin-3-ylmethyl [1,1'-biphenyl]-2-yl carbamate;
- 15 80) (R)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 81) (S)-pyrrolidin-3-ylmethyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 82) (S)-pyrrolidin-3-ylmethyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 20 83) (S)-pyrrolidin-3-ylmethyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 84) (R)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 85) (S)-pyrrolidin-3-ylmethyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 86) (R)-pyrrolidin-3-ylmethyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 87) (R)-pyrrolidin-3-ylmethyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 5 88) (S)-pyrrolidin-2-ylmethyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 89) (R)-(1-methylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-yl carbamate;
- 90) (S)-(1-methylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-yl carbamate;
- 10 91) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 92) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 93) (S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 94) (S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 95) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 20 96) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 97) (R)-(1-methylpyrrolidin-3-yl)methyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 25 98) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-5-methyl-[1,1'-biphenyl]-2-yl) carbamate;

- 99) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 100) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 5 101) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 102) (R)-(1-ethylpyrrolidin-3-yl)methyl [1,1'-biphenyl]-2-yl carbamate;
- 103) (S)-(1-ethylpyrrolidin-3-yl)methyl [1,1'-10 biphenyl]-2-yl carbamate;
- 104) (R)-(1-ethylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 105) (S)-(1-ethylpyrrolidin-3-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 15 106) (S)-(1-ethylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-yl carbamate;
- 107) (S)-(1-isobutylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-yl carbamate;
- 108) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5-20 difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 109) (R)-(1-methylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-yl carbamate;
- 110) (R)-(1-methylpyrrolidin-2-yl)methyl (3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 25 111) (R)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;

- 112) (S)-(1-isopropylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-ylcarbamate;
- 113) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 114) (R)-(1-methylpyrrolidin-3-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 115) (R)-(1-methylpyrrolidin-3-yl)methyl (3',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 116) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-fluoro-10 [1,1'-biphenyl]-2-yl) carbamate;
- 117) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 118) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 119) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 120) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 121) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-20 4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 122) (S)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 123) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 25 124) (S)-(1-methylpyrrolidin-3-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 125) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 126) (S)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 127) (S)-(1-methylpyrrolidin-3-yl)methyl (4'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 128) (S)-(1-methylpyrrolidin-3-yl)methyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 129) (S)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-10 5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 130) (R)-(1-methylpyrrolidin-3-yl)methyl (3',4'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 131) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 132) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 133) (R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-amino-[1,1'-biphenyl]-2-yl) carbamate;
- 134) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-20 5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 135) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 136) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 137) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;

- 138) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 139) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 5 140) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 141) (R)-(1-methylpyrrolidin-3-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 10 142) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 143) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 144) (R)-(1-methylpyrrolidin-3-yl)methyl (2',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 145) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 146) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5-dichloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 20 147) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 148) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 149) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 150) (R)-(1-ethylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 151) (R)-(1-isopropylpyrrolidin-3-yl)methyl (3'-chloro-4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 152) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-(hydroxymethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 5 153) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-carbamoyl-[1,1'-biphenyl]-2-yl) carbamate;
- 154) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-amino-[1,1'-biphenyl]-2-yl) carbamate;
- 155) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-cyano-10 [1,1'-biphenyl]-2-yl) carbamate;
- 156) (R)-(1-methylpyrrolidin-3-yl)methyl (2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 157) (R)-(1-methylpyrrolidin-3-yl)methyl (2',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 158) (R)-(1-methylpyrrolidin-3-yl)methyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 159) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-6'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 160) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-20 [1,1'-biphenyl]-2-yl) carbamate;
- 161) (S)-(1-methylpyrrolidin-2-yl)methyl (3',5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 162) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 163) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4',5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 164) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 165) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 166) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 167) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-dichloro-[1,1'-biphenyl]-2-yl) carbamate;
- 168) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-hydroxy-10 [1,1'-biphenyl]-2-yl) carbamate;
- 169) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-cyano-[1,1'-biphenyl]-2-yl) carbamate;
- 170) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-amino-[1,1'-biphenyl]-2-yl) carbamate;
- 15 171) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4',5-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 172) (S)-(1-methylpyrrolidin-2-yl)methyl (3',5,5'-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 173) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4',5,5'-20 tetrafluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 174) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 175) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 176) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 177) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 178) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-cyano-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 179) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-hydroxy-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 180) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 181) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-10 4,4',5-trifluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 182) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-4,5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 183) 2-(1-methylpyrrolidin-2-yl)ethyl (2',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 184) 2-(1-methylpyrrolidin-2-yl)ethyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 185) 2-(1-methylpyrrolidin-2-yl)ethyl (2',6'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 186) 2-(1-methylpyrrolidin-2-yl)ethyl (5'-chloro-2'-20 fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 187) (S)-(1-methylpyrrolidin-2-yl)methyl (2'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 188) (S)-(1-methylpyrrolidin-2-yl)methyl (2',4'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 25 189) (S)-(1-methylpyrrolidin-2-yl)methyl (2',3'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;

- 190) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-6'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 191) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 5 192) (R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 193) (R)-(1-methylpyrrolidin-3-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 194) (R)-(1-methylpyrrolidin-3-yl)methyl (3',5-10 difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 195) (R)-(1-methylpyrrolidin-3-yl)methyl (3'-chloro-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 196) (R)-(1-ethylpyrrolidin-3-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 197) (S)-(1-methylpyrrolidin-2-yl)methyl [1,1'-biphenyl]-2-yl carbamate;
- 198) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 199) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-methyl-20 [1,1'-biphenyl]-2-yl) carbamate;
- 200) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 201) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3'-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 25 202) (S)-(1-methylpyrrolidin-2-yl)methyl (3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;

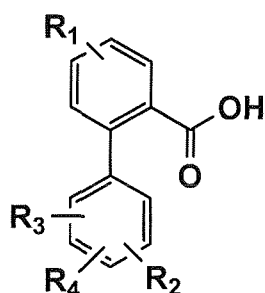
- 203) (S)-(1-methylpyrrolidin-2-yl)methyl (4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 204) (S)-(1-methylpyrrolidin-2-yl)methyl (4-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 5 205) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 206) (S)-(1-methylpyrrolidin-2-yl)methyl (5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 207) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-10 5-methyl-[1,1'-biphenyl]-2-yl) carbamate;
- 208) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',5'-dimethyl-[1,1'-biphenyl]-2-yl) carbamate;
- 209) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-(tert-butyl)-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 15 210) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5,5'-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 211) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-4',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 212) (S)-(1-methylpyrrolidin-2-yl)methyl (4'-chloro-20 3',5-difluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 213) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-amino-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 214) (S)-(1-methylpyrrolidin-2-yl)methyl (2',5-difluoro-3'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 25

- 215) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 216) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-hydroxy-[1,1'-biphenyl]-2-yl) carbamate;
- 217) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-fluoro-5'-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 218) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-2',4'-bis(trifluoromethyl)-[1,1'-biphenyl]-2-yl) carbamate;
- 10 219) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-ethoxy-5-fluoro-[1,1'-biphenyl]-2-yl) carbamate;
- 220) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',4'-dimethoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 221) (S)-(1-methylpyrrolidin-2-yl)methyl (5-fluoro-3',5'-dimethoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 15 222) (S)-(1-methylpyrrolidin-2-yl)methyl (5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 223) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-fluoro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 20 224) (S)-(1-methylpyrrolidin-2-yl)methyl (3'-chloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate;
- 225) (S)-(1-methylpyrrolidin-2-yl)methyl (3',4'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate; and
- 226) (S)-(1-methylpyrrolidin-2-yl)methyl (3',5'-dichloro-5-methoxy-[1,1'-biphenyl]-2-yl) carbamate.
- 25

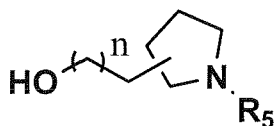
【Claim 5】

A method for preparing a compound of the following formula 1 or a pharmaceutically acceptable salt thereof, the method comprising a step of reacting a compound of the following formula 2 with a compound of the following formula 3 in the presence of a carbamate synthesis reagent:

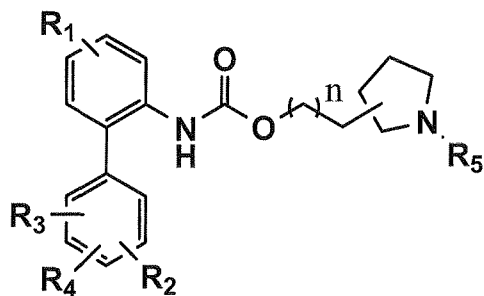
[Formula 2]



[Formula 3]



10 [Formula 1]



wherein R_1 to R_5 and n are the same as defined in claim 1.

【Claim 6】

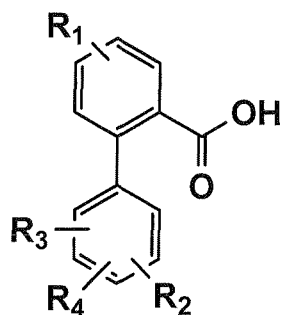
A method for preparing a compound of the following formula 1 or a pharmaceutically acceptable salt thereof, the method comprising the steps of:

reacting a compound of the following formula 2 with a compound of the following formula 3a in the presence of a carbamate synthesis reagent to prepare a compound of the following formula 4;

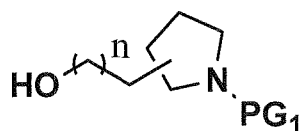
5 removing an amine protecting group from the compound of formula 4 to prepare a compound of the following formula 1a; and

introducing an R_5 substituent into the compound of formula 1a:

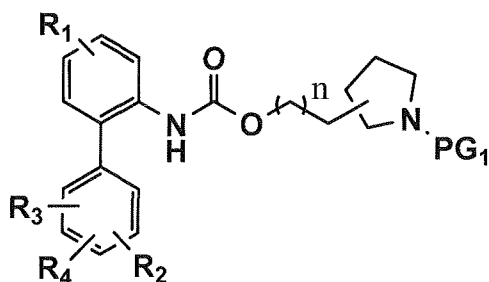
10 [Formula 2]



[Formula 3a]

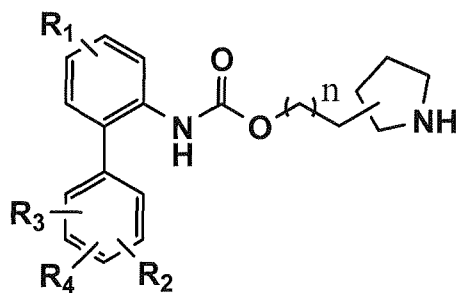


[Formula 4]

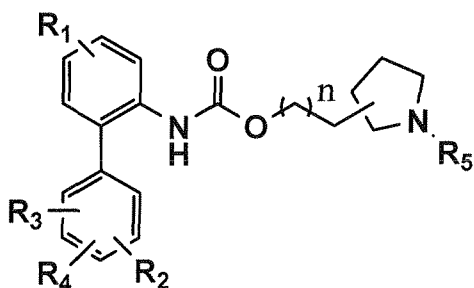


15

[Formula 1a]



[Formula 1]



wherein R_1 to R_5 and n are the same as defined in claim 1,
 5 and PG_1 is an amine protecting group selected from the
 group consisting of Boc (tert-butyloxycarbonyl), benzyl,
 tert-butyl, PMB (4-methoxybenzyl), Fmoc
 (fluorenylmethyloxycarbonyl), Ts (tosylate), MOM
 (methoxymethyl), THP (tetrahydropyranyl), TBDMS (tert-
 10 butyldimethylsilyl), and TBDPS (tert-butyldimethylsilyl).

【Claim 7】

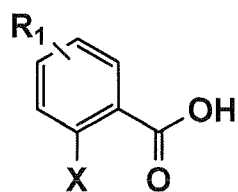
The method of claim 5 or 6, wherein the compound of
 formula 2 is prepared by the steps of:

reacting a compound of the following formula 5 in the
 15 presence of an acid to prepare a compound of the following
 formula 6, which has a carboxylic acid protecting group
 introduced therein;

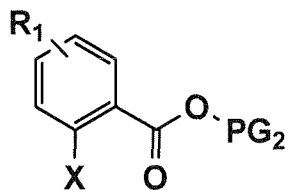
coupling the compound of formula 6 with a compound of the following formula 7 to prepare a compound of the following formula 8; and

de-esterifying the compound of formula 8 in the presence of a base:

[Formula 5]

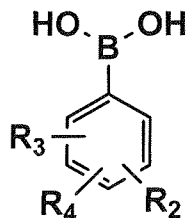


[Formula 6]

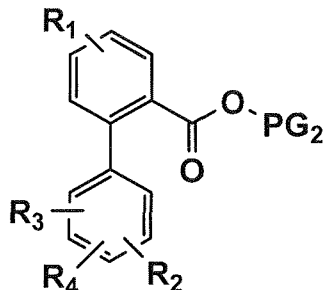


10

[Formula 7]



[Formula 8]



wherein R₁ to R₅ and n are the same as defined in claim 1; X is halogen; and PG₂ is a protecting group selected from the group consisting of a C₁-C₄ alkyl group, benzyl, PMB (4-methoxybenzyl), THP (tetrahydropyranyl), TBDMS (tert-butyl-
5 dimethylsilyl), and TBDPS (tert-butyl dimethylsilyl).

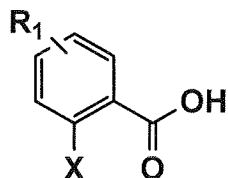
【Claim 8】

A method for preparing a compound of the following formula 1 or a pharmaceutically acceptable salt thereof, the method comprising the steps of:

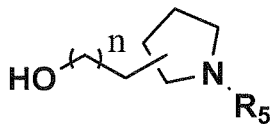
10 reacting a compound of the following formula 5 with a compound of the following formula 3 in the presence of a carbamate synthesis reagent to prepare a compound of the following formula 9; and

coupling a compound of the following formula 7 to the
15 compound of formula 9:

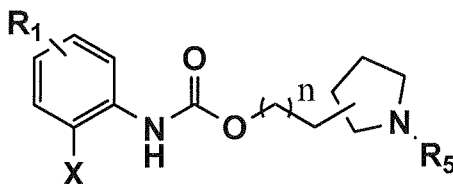
[Formula 5]



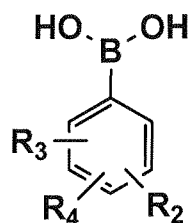
[Formula 3]



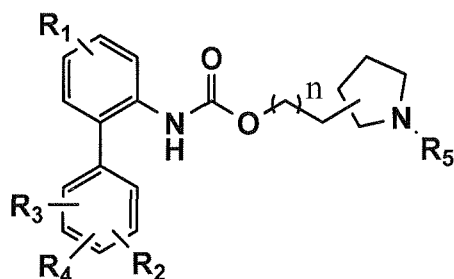
20 [Formula 9]



[Formula 7]



[Formula 1]



5 wherein R₁ to R₅ and n are the same as defined in claim 1,
and X is halogen.

【Claim 9】

A method for preparing a compound of the following
formula 1 or a pharmaceutically acceptable salt thereof,
10 the method comprising the steps of:

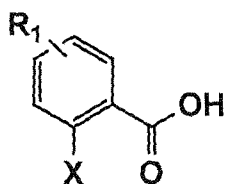
reacting a compound of the following formula 5 with a
compound of the following formula 3a in the presence of a
carbamate synthesis reagent to prepare a compound of the
following formula 9a;

15 deprotecting the compound of formula 9a to prepare a
compound of the following formula 9b;

introducing an R₅ substituent into the compound of
formula 9b to prepare a compound of the following formula
9; and

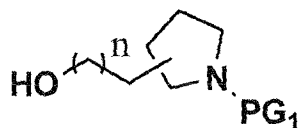
coupling a compound of the following formula 7 to the
compound of formula 9:

[Formula 5]

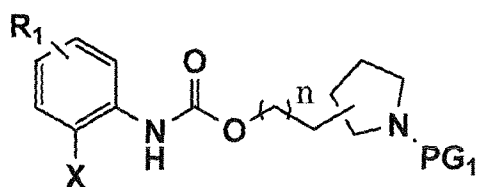


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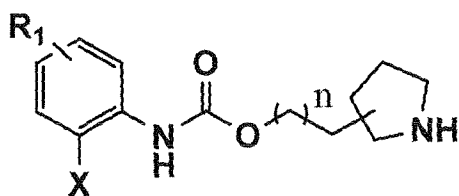
[Formula 3a]



[Formula 9a]

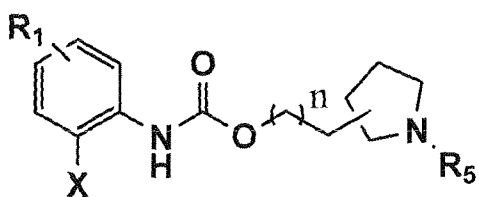


[Formula 9b]

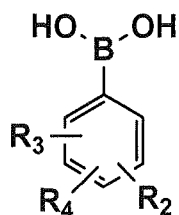


10

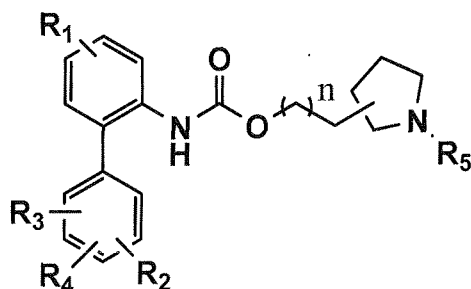
[Formula 9]



[Formula 7]



[Formula 1]



wherein R_1 to R_5 and n are the same as defined in claim 1; X
 5 is halogen; and PG_1 is the same as defined in claim 6.

【Claim 10】

The method of any one of claims 5, 6, 8 and 9,
 wherein the carbamate synthesis reagent comprises an azide
 compound.

10 **【Claim 11】**

The method of claim 10, wherein the carbamate
 synthesis reagent is a mixture of diphenylphosphoryl azide
 (DPPA) and triethylamine, a mixture of propylphosphonic
 anhydride (T3P), trimethylsilyl azide ($TMSN_3$) and
 15 triethylamine, or a mixture of sodium azide (NaN_3),
 tetrabutylammonium bromide and zinc(II) triflate.

【Claim 12】

A muscarinic M3 receptor antagonist containing the
 compound of claim 1, an isomer thereof, or a

pharmaceutically acceptable salt thereof as an active ingredient.

【Claim 13】

The muscarinic M3 receptor antagonist of claim 12,
5 which is for preventing or treating a disease selected from
the group consisting of chronic obstructive pulmonary
disease, asthma, irritable bowel syndrome, urinary
incontinence, rhinitis, spasmodic colitis, chronic
cystitis, Alzheimer's disease, senile dementia, glaucoma,
10 schizophrenia, gastroesophageal reflux disease, cardiac
arrhythmia, and hyper-salivation syndromes.

【Claim 14】

A method for preventing or treating a muscarinic M3
receptor-related disease, the method comprising
15 administering a composition containing the compound of
claim 1, an isomer thereof, or a pharmaceutically
acceptable salt thereof as an active ingredient to mammals
including humans in need thereof.

【Claim 15】

20 Use of a composition containing the compound of claim
1, an isomer thereof, or a pharmaceutically acceptable salt
thereof as an active ingredient for preparation of a
medicament for preventing or treating a muscarinic M3
receptor-related disease.

25