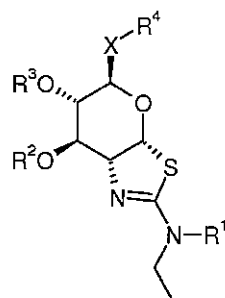


CLAIMS

1. A compound of formula (I)



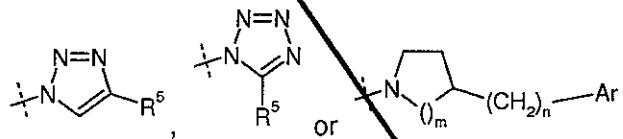
(I)

wherein

R^1 denotes Y, COA, COOA, COO-(CH₂)_n-Ar, COO-(CH₂)_n-Cyc;

10 R^2, R^3 denote independently from one another Y or SO₂Y;

R^4 denotes Cl, Br, I, COOY, SO₂Y, CN, CAr₃, (CH₂)_m-Ar,



15 R^5 denotes (CH₂)_n-Ar, (CH₂)_n-Cyc, (CH₂)_n-Het, (CH₂)_n-O-Ar, (CH₂)_n-CY(OH)-Ar, (CH₂)_n-CO-Ar or (CH₂)_n-NY-Ar;

X denotes CH₂, CO or CH(OH);

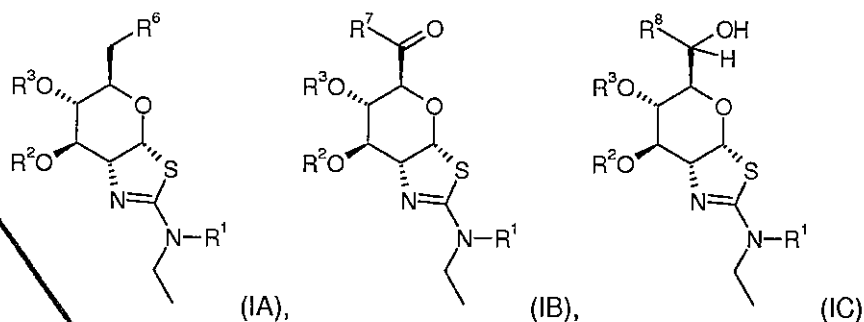
20 Y denotes H or A;

A denotes unbranched or branched alkyl having 1-10 C atoms, in which 1-7 H atoms can be replaced independently from one another by Hal and/or in which one CH₂ group can be replaced by a -CH=CH- group;

25

- Cyc denotes cycloalkyl having 3-7 C atoms,
in which 1-4 H atoms can be replaced independently from one another
by Hal and/or which can be substituted by Ar;
- 5 Ar denotes an unsaturated or aromatic mono- or bicyclic carbocycle having
3-12 C atoms,
which can be substituted by at least one substituent selected from the
group of Hal, A, (CY₂)_n-OY, (CY₂)_n-NYY, COOY, CONYY, NHCOY,
SO₂Y, CN and phenoxy;
- 10 Het denotes an unsaturated or aromatic mono-, bi- or tricyclic heterocycle
having 1-12 C atoms and 1-4 N atoms,
which can be substituted by at least one substituent selected from the
group of Hal, A, (CY₂)_n-OY, (CY₂)_n-NYY, COOY, CONYY, NHCOY,
15 SO₂Y, SO₂Ar, CN and thiophenyl;
- Hal denotes F, Cl, Br or I;
- m denotes 1, 2 or 3; and
- 20 n denotes 0, 1, 2, 3, 4, 5 or 6;
- and/or a physiologically acceptable salt thereof.
- 25 2. The compound according to claim 1, wherein
R¹, R², R³ denote independently from one another H or A, preferably H.
3. The compound according to claim 1 or 2, wherein
R⁵ denotes (CH₂)_n-Ar, (CH₂)_n-Cyc, (CH₂)_n-Het, (CH₂)_n-O-Ar or CY(OH)-Ar.
- 30 4. The compound according to any of claims 1 to 3, having sub-formula (IA), (IB) or (IC)

- 106 -



wherein

R^6 denotes Cl, Br, I, COOY, CAr_3 or

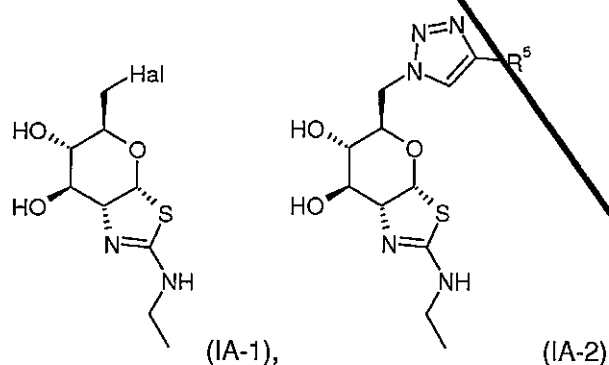
5 R^7 denotes $(CH_2)_m-Ar$ or

R^8 denotes $(CH_2)_m-Ar$; and

10 $R^1, R^2, R^3, R^5, Y, Ar, Het, m$ and n have the meaning as defined in any of claims 1 to 3;

and/or a physiologically acceptable salt thereof.

5. The compound according to claim 4, having sub-formula (IA-1) or (IA-2)



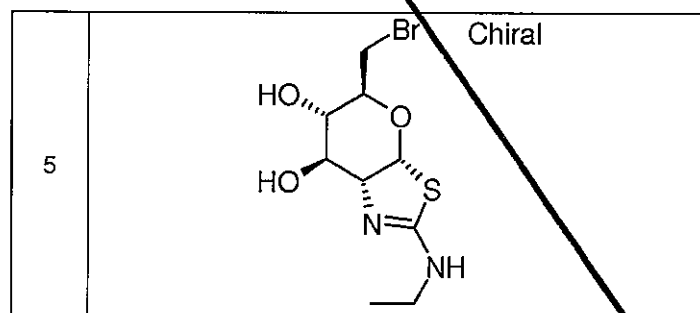
wherein

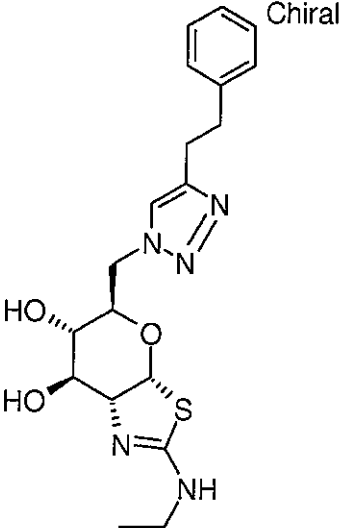
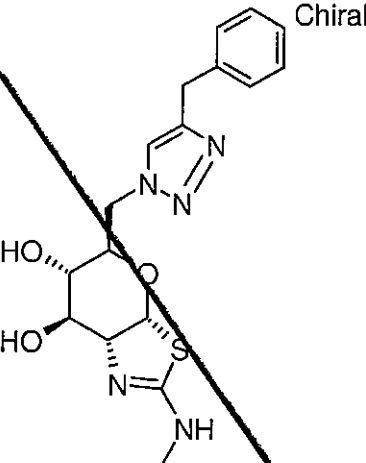
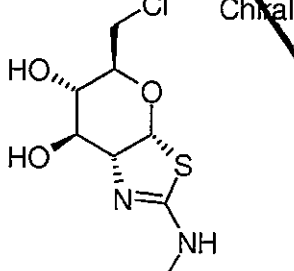
Hal denotes Cl, Br or I; and

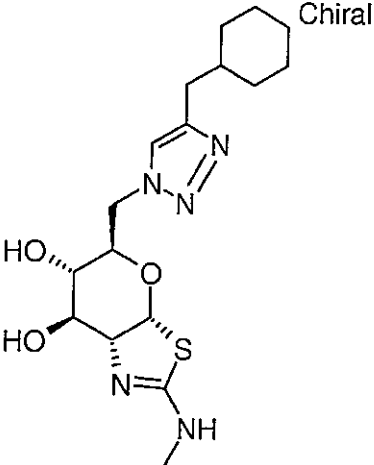
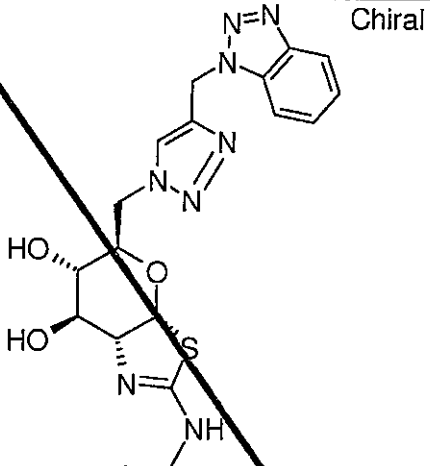
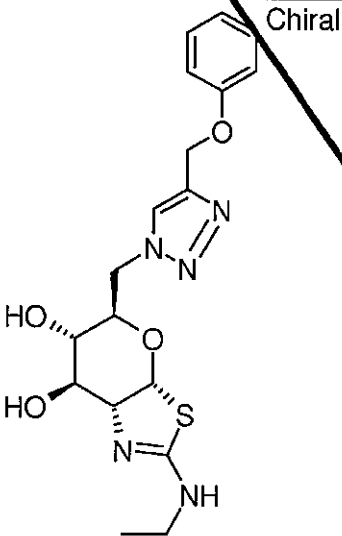
R^5 and Y have the meaning as defined in claim 4;

20 and/or a physiologically acceptable salt thereof.

6. The compound according to any of claims 1 to 5, wherein
- 5 A denotes unbranched or branched alkyl having 1-6 C atoms,
 in which 1-4 H atoms can be replaced independently from one another
 by Hal;
- Ar denotes an aromatic mono- or bicyclic carbocycle having 3-12 C atoms,
 which can be substituted by at least one substituent selected from the
 group of Hal, A, $(\text{CY}_2)_n\text{-OY}$, $(\text{CY}_2)_n\text{-NYY}$, SO_2Y , CN and phenoxy;
- 10 Het denotes an unsaturated or aromatic mono-, bi- or tricyclic heterocycle
 having 2-12 C atoms and 1-3 N atoms,
 which can be mono-, di- or trisubstituted by at least one substituent
 selected from the group of Hal, A, $(\text{CH}_2)_n\text{-OY}$, $(\text{CY}_2)_n\text{-NYY}$, SO_2Y , SO_2Ar ,
 CN and thiophenyl;
- 15 and/or
- n denotes 0, 1, 2, 3 or 4.
- 20 7. The compound according to claim 1, which is selected from the group of

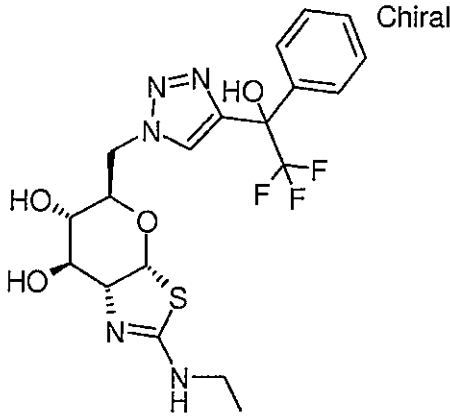
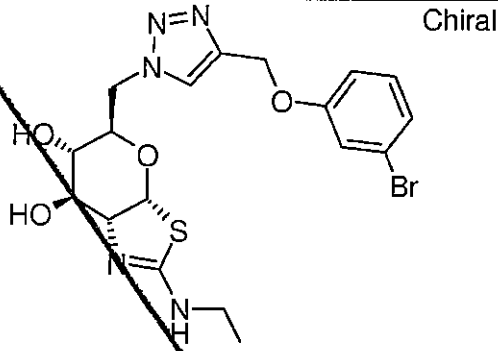
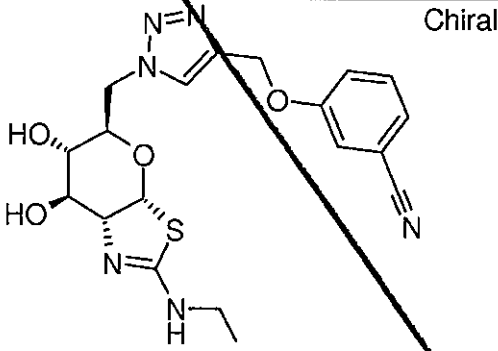
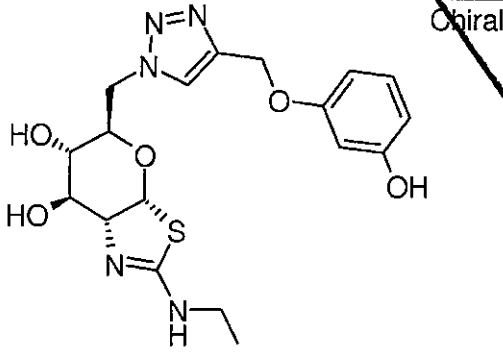


6	 <p>Chemical structure 6: A 1,3-dioxane ring with hydroxyl groups at positions 2 and 4. At position 5, there is a 1-ethyl-4-phenyl-1H-1,2,4-triazol-3-ylmethyl group. The phenyl ring is labeled "Chiral".</p>
14	 <p>Chemical structure 14: A 1,3-dioxane ring with hydroxyl groups at positions 2 and 4. At position 5, there is a 1-ethyl-4-phenyl-1H-1,2,4-triazol-3-ylmethyl group. The phenyl ring is labeled "Chiral".</p>
32	 <p>Chemical structure 32: A 1,3-dioxane ring with hydroxyl groups at positions 2 and 4. At position 5, there is a 1-ethyl-4-(chloromethyl)-1H-1,2,4-triazol-3-ylmethyl group. The chloromethyl group is labeled "Chiral".</p>

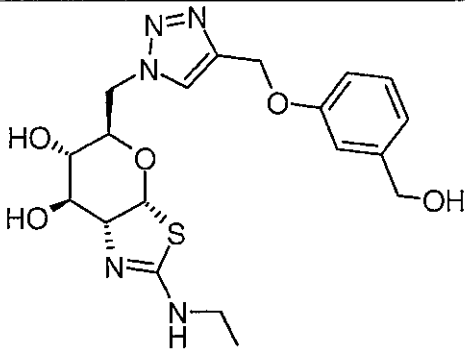
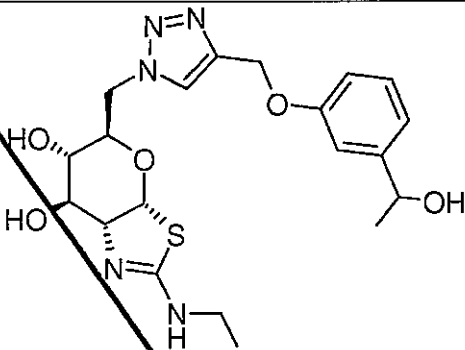
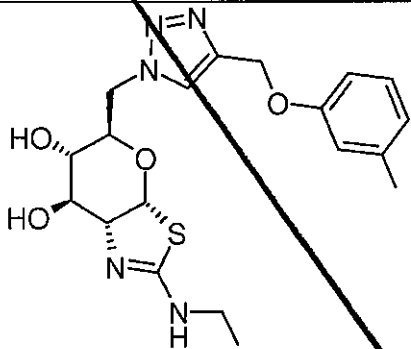
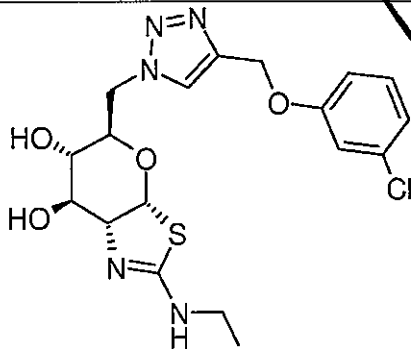
50	 Chiral
57	 Chiral
58	 Chiral

- 110 -

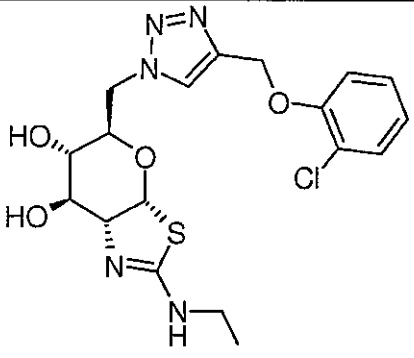
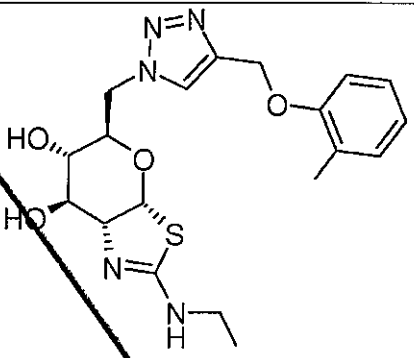
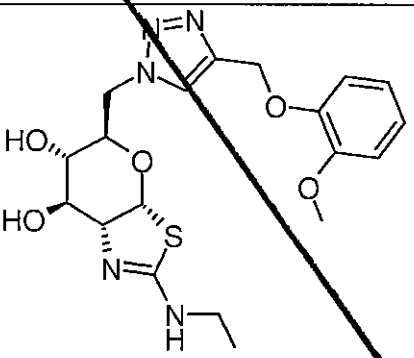
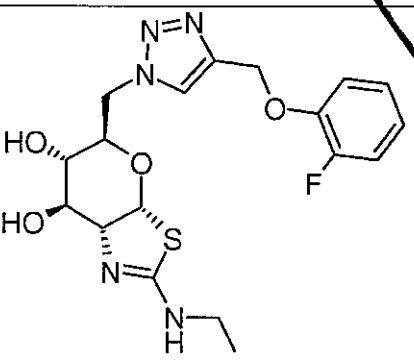
65	<p>Chiral</p>
66	<p>Chiral</p>
67	<p>Chiral</p>
68	<p>Chiral</p>

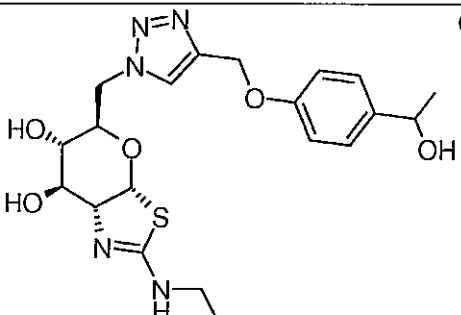
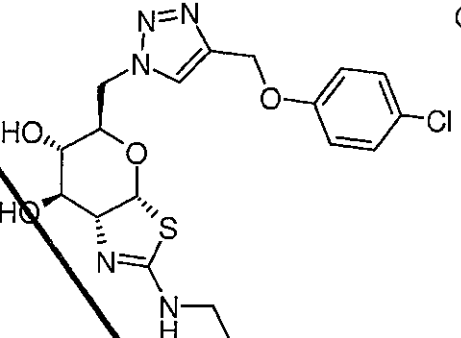
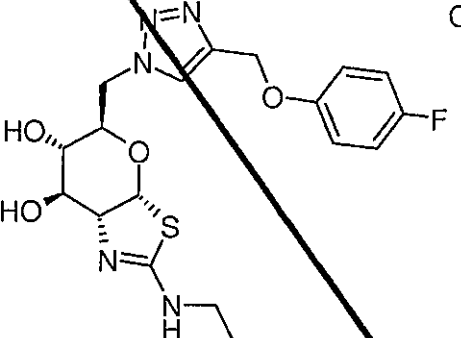
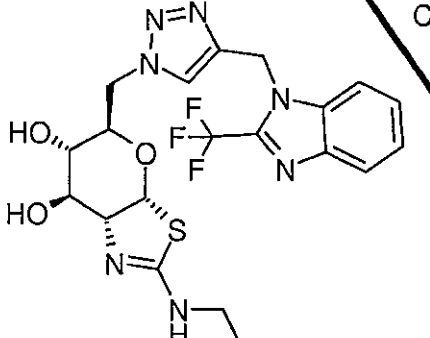
70	 <p>Chiral</p>
72	 <p>Chiral</p>
73	 <p>Chiral</p>
74	 <p>Chiral</p>

- 112 -

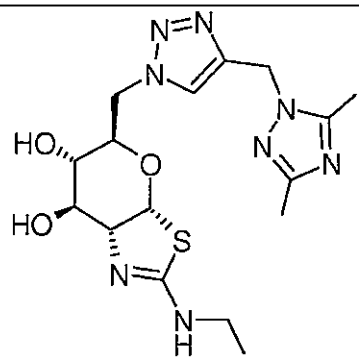
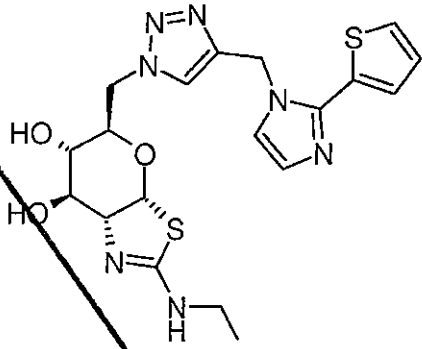
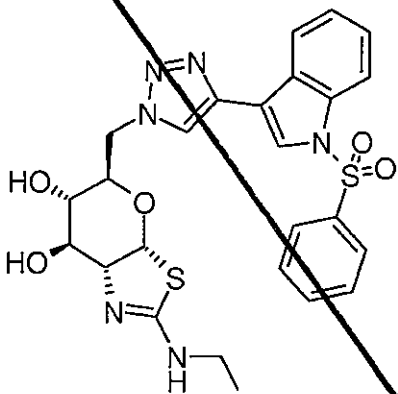
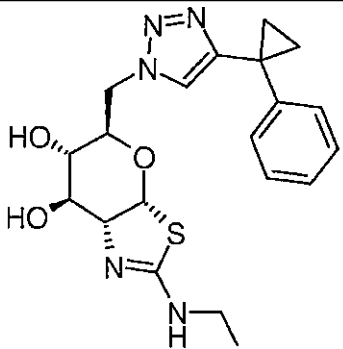
75	 <p>Chiral</p>
76	 <p>Chiral</p>
77	 <p>Chiral</p>
78	 <p>Chiral</p>

79	 <chem>CCNC1=CN(C1)C2=CC=C(C=C2)COCC3C(O)C(O)OC(C3)CN4C=NNC4</chem> Chiral
80	 <chem>CCNC1=CN(C1)C2=CC=C(C=C2)COCC3C(O)C(O)OC(C3)CN4C=NNC4</chem> Chiral
81	 <chem>CCNC1=CN(C1)C2=CC=C(C=C2)COCC3C(O)C(O)OC(C3)CN4C=NNC4</chem> Chiral
82	 <chem>CCNC1=CN(C1)C2=CC(=C(C=C2)C#N)C(F)=CC2=CC=C(C=C2)COCC3C(O)C(O)OC(C3)CN4C=NNC4</chem> Chiral

86	 <p>Chiral</p>
87	 <p>Chiral</p>
88	 <p>Chiral</p>
89	 <p>Chiral</p>

90	 <p>Chiral</p>
92	 <p>Chiral</p>
93	 <p>Chiral</p>
95	 <p>Chiral</p>

- 116 -

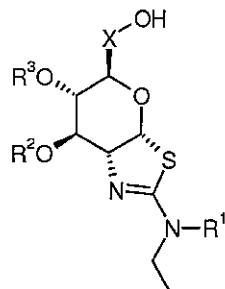
96	 Chiral
97	 Chiral
98	 Chiral
99	 Chiral

and/or a physiologically acceptable salt thereof.

8. A process for manufacturing a compound of formula (I) comprising the steps of:

- 117 -

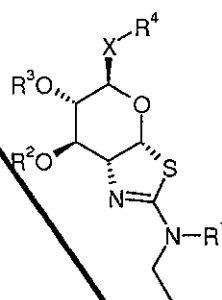
- (a) performing a one-pot or multiple-pot synthesis by reacting a compound of formula (II), in the presence of a solvent,



(II)

wherein R¹ to R³ and X have the meaning as defined in claim 1,

to yield a compound of formula (I)



(I)

wherein R¹ to R⁴ and X have the meaning as defined in claim 1,

and optionally

- (b) converting a base or an acid of the compound of formula (I) into a salt thereof.

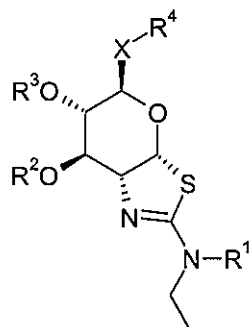
9. A medicament comprising at least one compound according to any of claims 1 to 7 and/or a physiologically acceptable salt thereof.
10. A pharmaceutical composition comprising as active ingredient an effective amount of at least one compound according to any of claims 1 to 7 and/or a physiologically acceptable salt thereof together with pharmaceutically tolerable adjuvants, optionally in combination with at least a second active pharmaceutical ingredient.
11. The compound according to any of claims 1 to 7 and/or a physiologically acceptable salt thereof for use in a prophylactic or therapeutic treatment and/or monitoring of a

condition selected from the group of neurodegenerative diseases, diabetes, cancer and stress.

12. The compound for use according to claim 11, wherein the condition is selected from the group of Alzheimer's disease, Amyotrophic lateral sclerosis (ALS), Amyotrophic lateral sclerosis with cognitive impairment (ALSci), Argyrophilic grain dementia, Bluit disease, Corticobasal degeneration (CBP), Dementia pugilistica, Diffuse neurofibrillary tangles with calcification, Down's syndrome, Familial British dementia, Familial Danish dementia, Frontotemporal dementia with parkinsonism linked to chromosome 17 (FTDP-17), Gerstmann-Straussler-Scheinker disease, Guadeloupean parkinsonism, Hallevorden-Spatz disease (neurodegeneration with brain iron accumulation type 1), Multiple system atrophy, Myotonic dystrophy, Niemann-Pick disease (type C), Pallido-ponto-nigral degeneration, Parkinsonism-dementia complex of Guam, Pick's disease (PiD), Postencephalitic parkinsonism (PEP), Prion diseases (including Creutzfeldt-Jakob Disease (GJD), Variant Creutzfeldt-Jakob Disease (vCJD), Fatal Familial Insomnia, Kuru, Progressive supracortical gliosis, Progressive supranuclear palsy (PSP), Richardson's syndrome, Subacute sclerosing panencephalitis, Tangle-only dementia, Huntington's disease and Parkinson's disease, preferably Alzheimer's disease.
13. A method for treating a tauopathy, wherein an effective amount of at least one compound according to any of claims 1 to 7 and/or a physiologically acceptable salt thereof is administered to a mammal in need of such treatment.
14. A method for inhibiting a glycosidase, wherein a cell expressing said glycosidase is contacted with at least one compound according to any of claims 1 to 7 and/or a physiologically acceptable salt thereof under conditions such that said glycosidase is inhibited.
15. The method according to claim 14, wherein the glycosidase is contacted with at least one compound selectively inhibiting O-GlcNAcase and preferably having an IC_{50} of less than 0.1 μM .

CLAIMS

1. A compound of formula (I)



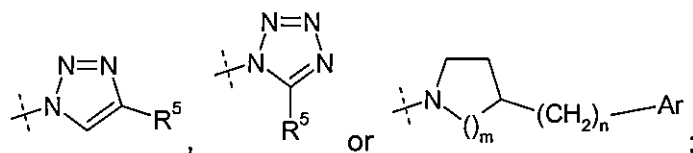
(I)

wherein

R¹ denotes Y, COA, COOA, COO-(CH₂)_n-Ar or COO-(CH₂)_n-Cyc;

R², R³ denote independently from one another Y or SO₂Y;

R⁴ denotes Cl, Br, I, COOY, SO₂Y, CN, CAr₃, (CH₂)_m-Ar,



R⁵ denotes (CH₂)_n-Ar, (CH₂)_n-Cyc, (CH₂)_n-Het, (CH₂)_n-O-Ar, (CH₂)_n-CY(OH)-Ar, (CH₂)_n-CO-Ar or (CH₂)_n-NY-Ar;

X denotes CH₂, CO or CH(OH);

Y denotes H or A;

A denotes unbranched or branched alkyl having 1-10 C atoms, in which 1-7 H atoms can be replaced independently from one another by Hal or in which one CH₂ group can be replaced by a -CH=CH- group;

Cyc denotes cycloalkyl having 3-7 C atoms, in which 1-4 H atoms can be replaced independently from one another by Hal or which can be substituted by Ar;

Ar denotes an unsaturated or aromatic mono- or bicyclic carbocycle having 3-12 C atoms,
which can be substituted by at least one substituent selected from the group of Hal, A, $(\text{CY}_2)_n\text{-OY}$, $(\text{CY}_2)_n\text{-NYY}$, COOY , CONYY , NHCOY , SO_2Y , CN and phenoxy;

Het denotes an unsaturated or aromatic mono-, bi- or tricyclic heterocycle having 1-12 C atoms and 1-4 N atoms,
which can be substituted by at least one substituent selected from the group of Hal, A, $(\text{CY}_2)_n\text{-OY}$, $(\text{CY}_2)_n\text{-NYY}$, COOY , CONYY , NHCOY , SO_2Y , SO_2Ar , CN and thiophenyl;

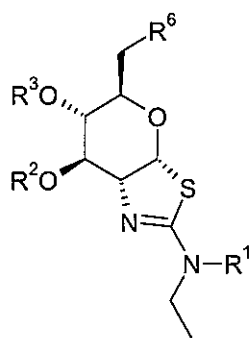
Hal denotes F, Cl, Br or I;

m denotes 1, 2 or 3; and

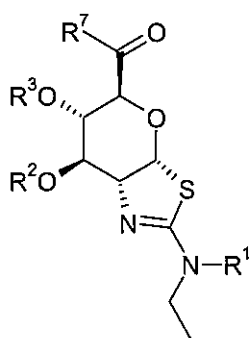
n denotes 0, 1, 2, 3, 4, 5 or 6;

or a physiologically acceptable salt thereof.

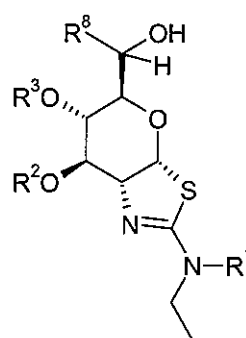
2. The compound according to claim 1, wherein R^1 , R^2 , R^3 denote independently from one another H or A.
3. The compound according to claim 1, wherein R^5 denotes $(\text{CH}_2)_n\text{-Ar}$, $(\text{CH}_2)_n\text{-Cyc}$, $(\text{CH}_2)_n\text{-Het}$, $(\text{CH}_2)_n\text{-O-Ar}$ or $\text{CY}(\text{OH})\text{-Ar}$.
4. The compound according to claim 1, having sub-formula (IA), (IB) or (IC)



(IA),

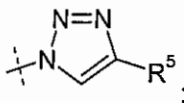


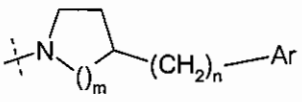
(IB),



(IC)

wherein

R^6 denotes Cl, Br, I, COOY, $C\text{Ar}_3$ or ;

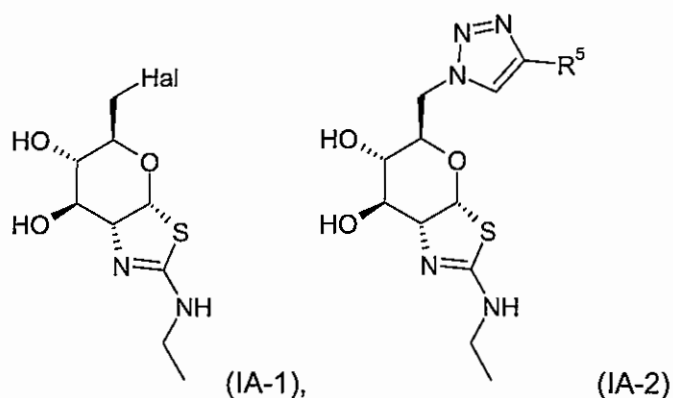
R^7 denotes $(\text{CH}_2)_m\text{-Ar}$ or ;

R^8 denotes $(\text{CH}_2)_m\text{-Ar}$; and

R^1 , R^2 , R^3 , R^5 , Y, Ar, Het, m and n have the meaning as defined in claim 1;

or a physiologically acceptable salt thereof.

5. The compound according to claim 4, having sub-formula (IA-1) or (IA-2)



wherein

Hal denotes Cl, Br or I; and

R^5 and Y have the meaning as defined in claim 4;

or a physiologically acceptable salt thereof.

6. The compound according to claim 1, wherein

A denotes unbranched or branched alkyl having 1-6 C atoms,
in which 1-4 H atoms can be replaced independently from one another by
Hal;

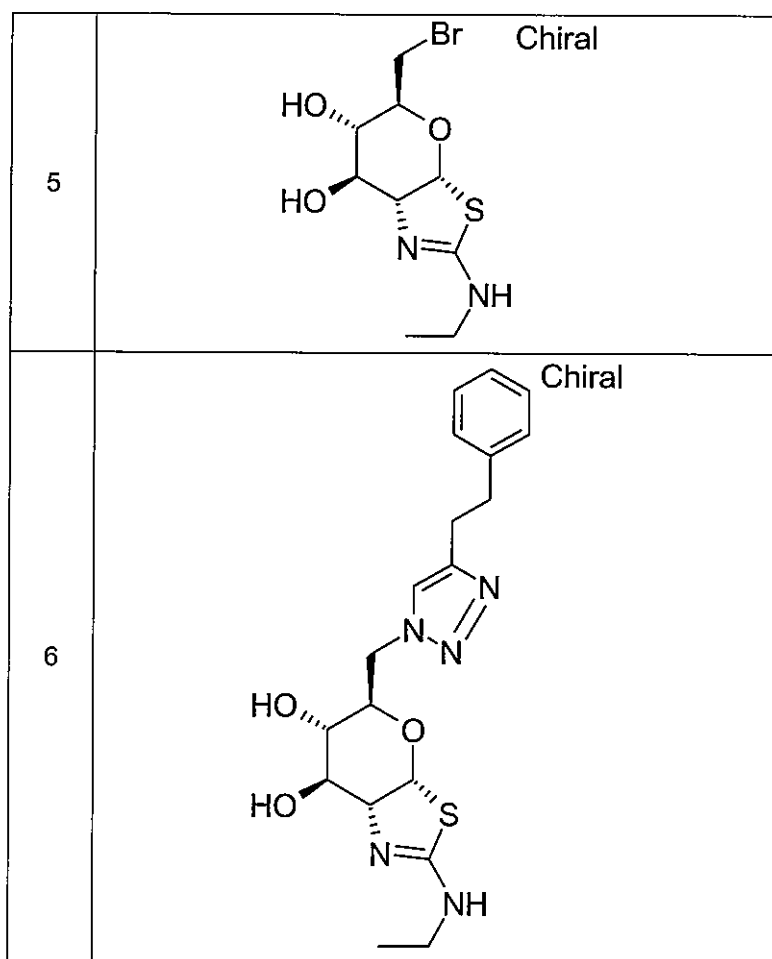
Ar denotes an aromatic mono- or bicyclic carbocycle having 3-12 C atoms, which can be substituted by at least one substituent selected from the group of Hal, A, $(CY_2)_n-OY$, $(CY_2)_n-NYY$, SO_2Y , CN and phenoxy;

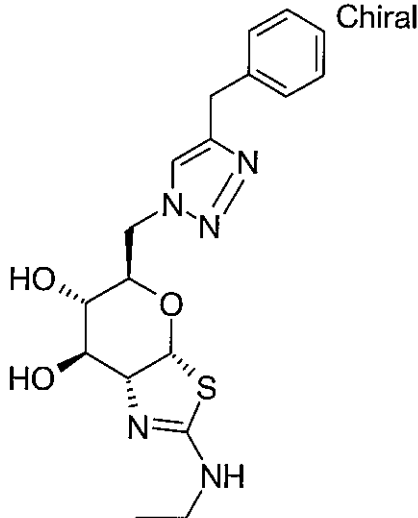
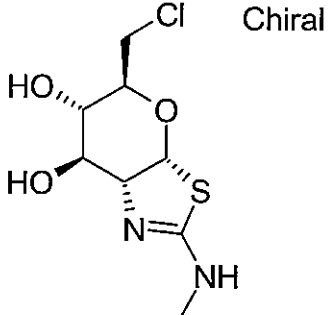
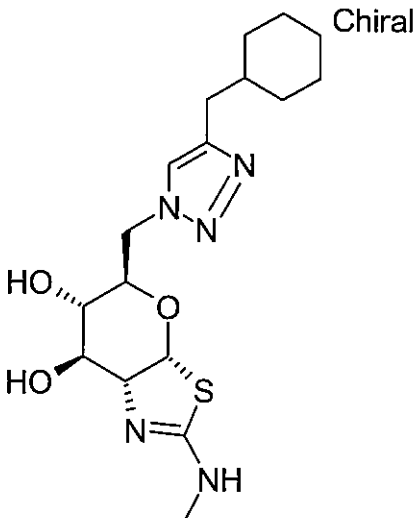
Het denotes an unsaturated or aromatic mono-, bi- or tricyclic heterocycle having 2-12 C atoms and 1-3 N atoms, which can be mono-, di- or trisubstituted by at least one substituent selected from the group of Hal, A, $(CH_2)_n-OY$, $(CY_2)_n-NYY$, SO_2Y , SO_2Ar , CN and thiophenyl;

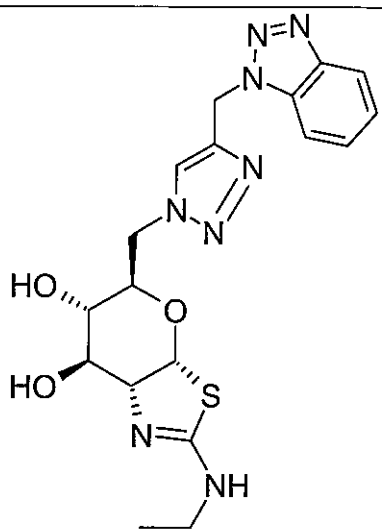
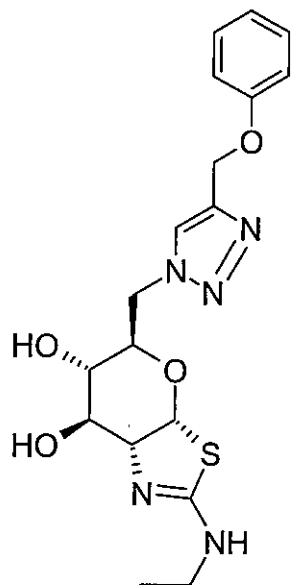
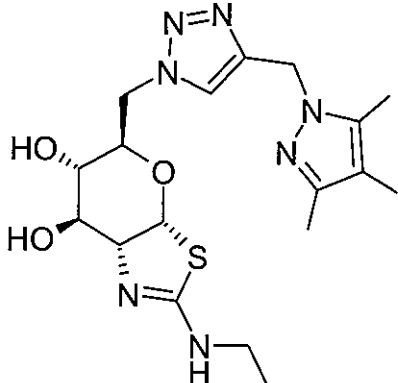
or

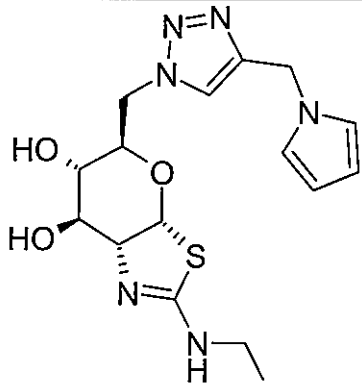
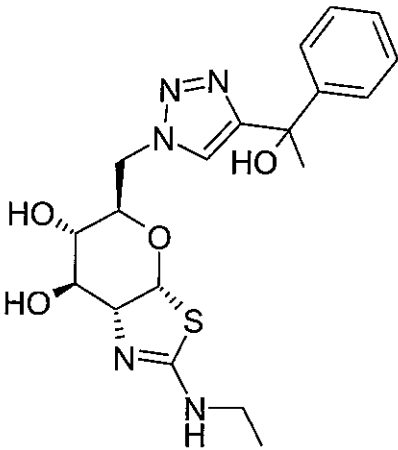
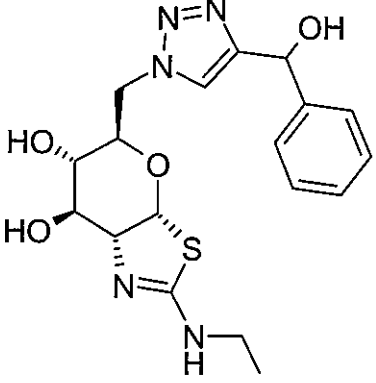
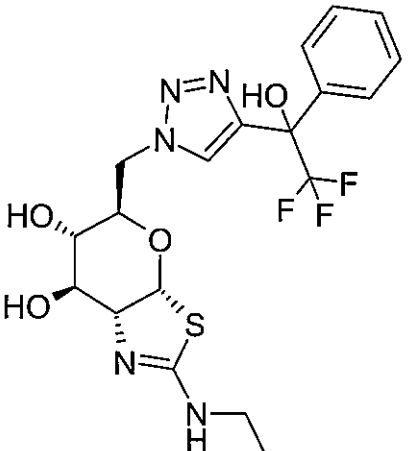
n denotes 0, 1, 2, 3 or 4.

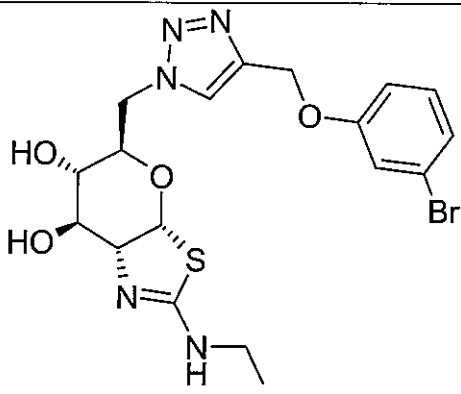
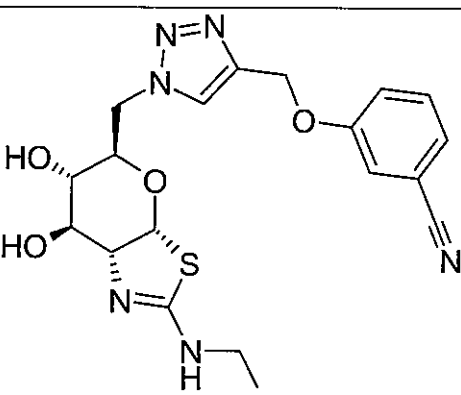
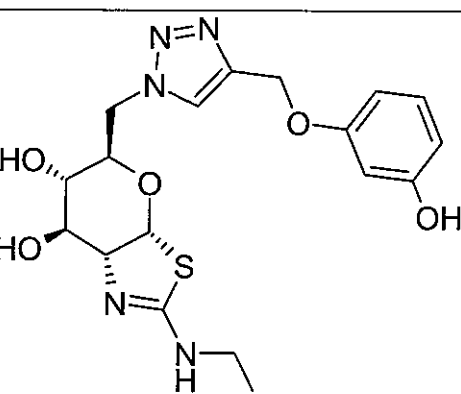
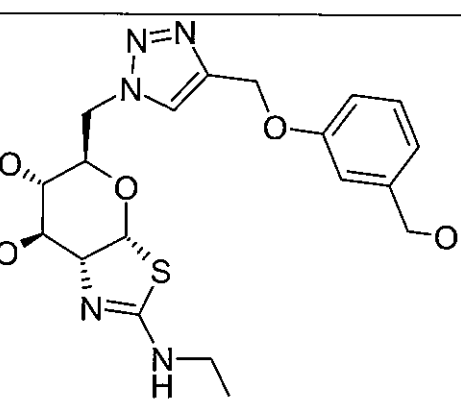
7. The compound according to claim 1, which is selected from the group consisting of:



14	 <p>Chiral</p>
32	 <p>Chiral</p>
50	 <p>Chiral</p>

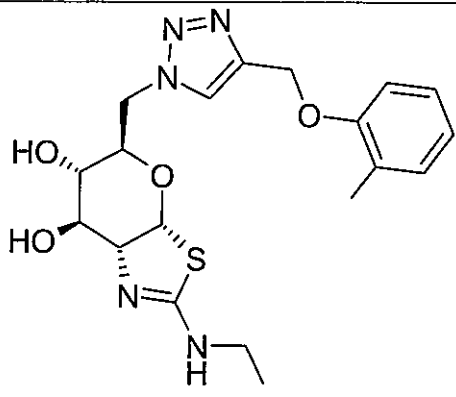
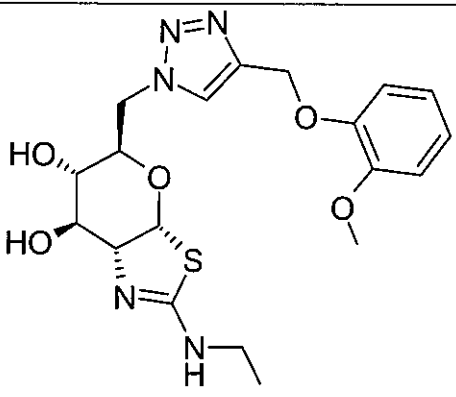
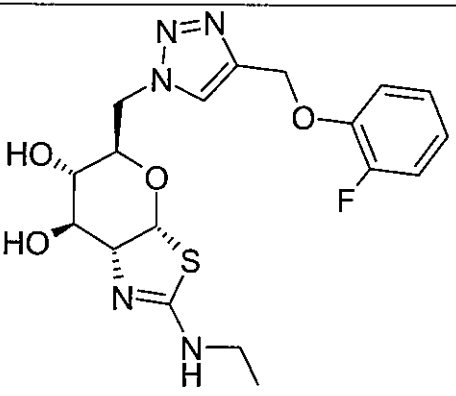
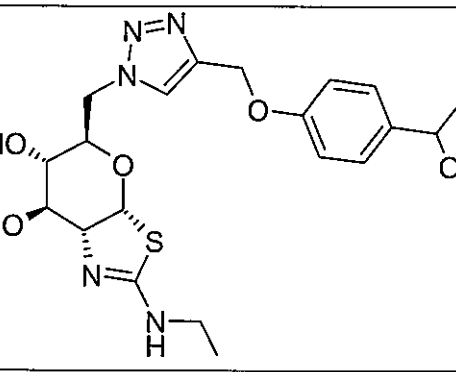
57	<p>Chiral</p> 
58	<p>Chiral</p> 
65	<p>Chiral</p> 

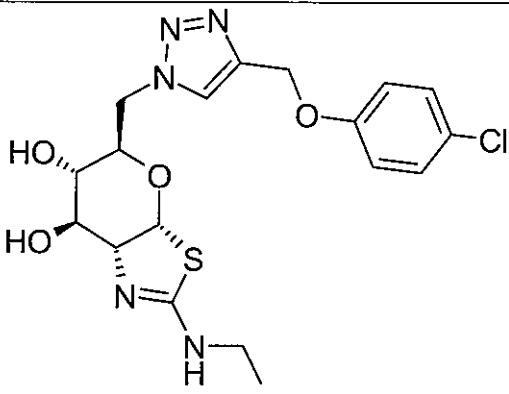
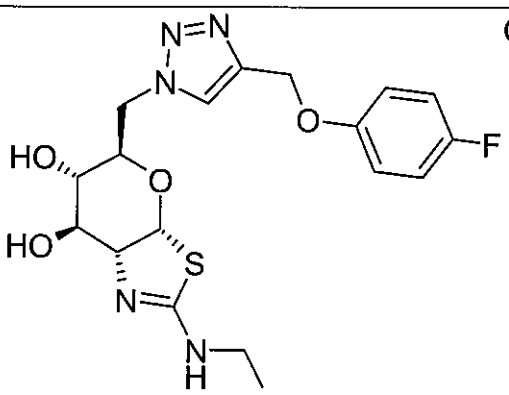
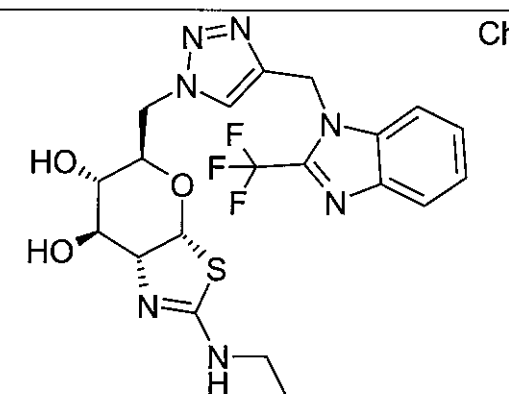
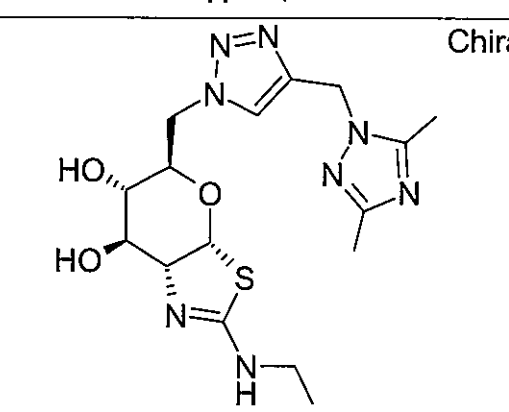
66	<p>Chiral</p> 
67	<p>Chiral</p> 
68	<p>Chiral</p> 
70	<p>Chiral</p> 

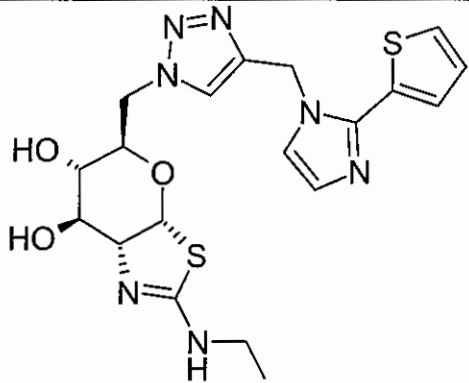
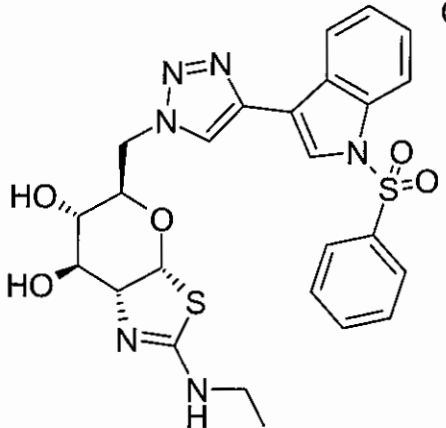
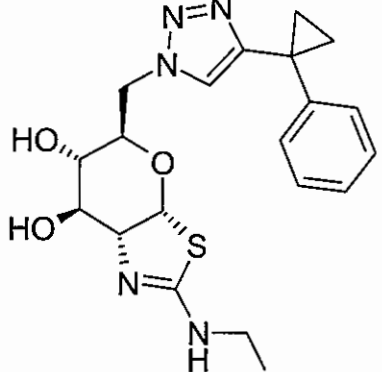
72	<p>Chiral</p> 
73	<p>Chiral</p> 
74	<p>Chiral</p> 
75	<p>Chiral</p> 

76	<p>Chiral</p>
77	<p>Chiral</p>
78	<p>Chiral</p>
79	<p>Chiral</p>

80	<p>Chemical structure of compound 80: A chiral 1,3-dioxane-2-thione derivative. The dioxane ring has hydroxyl groups at positions 4 and 5. The sulfur atom is part of a 2-ethylamino-1,3,4-dihydro-2H-1,3-dithiazin-4-ylidene group. The dioxane ring is substituted with a 4-methoxyphenyl group via a methylene bridge.</p> <p>Chiral</p>
81	<p>Chemical structure of compound 81: A chiral 1,3-dioxane-2-thione derivative. The dioxane ring has hydroxyl groups at positions 4 and 5. The sulfur atom is part of a 2-ethylamino-1,3,4-dihydro-2H-1,3-dithiazin-4-ylidene group. The dioxane ring is substituted with a 4-sulfonylphenyl group via a methylene bridge.</p> <p>Chiral</p>
82	<p>Chemical structure of compound 82: A chiral 1,3-dioxane-2-thione derivative. The dioxane ring has hydroxyl groups at positions 4 and 5. The sulfur atom is part of a 2-ethylamino-1,3,4-dihydro-2H-1,3-dithiazin-4-ylidene group. The dioxane ring is substituted with a 3-cyanophenyl group via a methylene bridge.</p> <p>Chiral</p>
86	<p>Chemical structure of compound 86: A chiral 1,3-dioxane-2-thione derivative. The dioxane ring has hydroxyl groups at positions 4 and 5. The sulfur atom is part of a 2-ethylamino-1,3,4-dihydro-2H-1,3-dithiazin-4-ylidene group. The dioxane ring is substituted with a 3-chlorophenyl group via a methylene bridge.</p> <p>Chiral</p>

87	 <p>Chiral</p>
88	 <p>Chiral</p>
89	 <p>Chiral</p>
90	 <p>Chiral</p>

92	<p>Chiral</p> 
93	<p>Chiral</p> 
95	<p>Chiral</p> 
96	<p>Chiral</p> 

97	 <p>Chiral</p>
98	 <p>Chiral</p>
99	 <p>Chiral</p>

and

or a physiologically acceptable salt thereof.

8. A medicament comprising at least one compound according to claim 1 or a physiologically acceptable salt thereof.
9. A pharmaceutical composition comprising as active ingredient an effective amount of at least one compound according to claim 1 or a physiologically acceptable salt thereof together with pharmaceutically tolerable adjuvants.

10. A method for inhibiting a glycosidase, wherein a cell expressing said glycosidase is contacted with at least one compound according to claim 1 or a physiologically acceptable salt thereof under conditions such that said glycosidase is inhibited.
11. The method according to claim 10, wherein the glycosidase is contacted with at least one compound selectively inhibiting O-GlcNAcase.
12. The compound according to claim 2, wherein
R¹, R², R³ denote H.
13. The pharmaceutical composition according to claim 9, additionally comprising at least a second active pharmaceutical ingredient.
14. The method according to claim 11, wherein the compound has an IC₅₀ of less than 0.1 μM.