

CLAIMS

1. A splice-switching oligonucleotide (SSO) that binds to a IL-4R α pre-mRNA, wherein
5 the SSO comprises a sequence selected from the group consisting of SEQ ID NOs 1 to 8, and
wherein binding of the SSO induces the exclusion of an exon during splicing of the IL-4R α
pre-mRNA to a IL-4R α mature mRNA.
2. The SSO according to claim 1, wherein at least one of the nucleotides of the SSO is
10 chemically modified and wherein the chemical modification is 2'-O-methyl RNA modification,
2'-O-methoxyethyl RNA modification or phosphorothioate linkage.
3. The SSO according to claim 1 or 2, wherein each nucleotide of the SSO comprises
either a 2'-O-methyl RNA modification or a 2'-O-methoxyethyl RNA modification.
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4. The SSO according to any one of the preceding claims, comprising phosphorothioate
linkages between all nucleotides of the SSO.
5. An SSO according to any one of the preceding claims for use as a medicament or in
20 therapy.
6. The SSO according to claim 5 for use in the treatment of a Th2-mediated inflammatory
disease.
- 25 7. The SSO according to claim 6, wherein the Th2-mediated inflammatory disease is
selected from the group consisting of atopic dermatitis, asthma, allergic rhinitis, allergic
conjunctivitis and ulcerative colitis.
8. Use of an SSO according to any one of claims 1 to 4 in the manufacture of a
30 medicament for treating a Th2-mediated inflammatory disease.
9. The use according to claim 8, wherein the Th2-mediated inflammatory disease is
selected from the group consisting of atopic dermatitis, asthma, allergic rhinitis, allergic
conjunctivitis and ulcerative colitis.

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10. A pharmaceutical composition comprising (a) a therapeutically effective amount of an SSO according to any one of claims 1 to 4 and (b) one or more pharmaceutically acceptable carriers and/or diluents.
- 5 11. An in vitro method for inducing skipping of an exon of a IL-4R α pre-mRNA in a cell, the method comprising providing the cell with an SSO having a sequence selected from the group consisting of SEQ ID NOs 1 to 8, wherein the binding of the SSO to the IL-4R α pre-mRNA induces the exclusion of the exon during splicing of the IL-4R α pre-mRNA to a IL-4R α mature mRNA.
- 10 12. The in vitro method according to claim 11, wherein the SSO has a sequence selected from the group consisting of SEQ ID NOs 7 and 8, and wherein the exclusion of the exon causes a reduction in the levels of the IL-4R α mature mRNA or functional protein.
- 15 13. The in vitro method according to claim 11 or 12, comprising providing the cell with an SSO with at least one of the nucleotides of the SSO being chemically modified and wherein the chemical modification is 2'-O-methyl RNA modification, 2'-O-methoxyethyl RNA modification or phosphorothioate linkage.
- 20 14. The in vitro method according to any one of claims 11 to 13, comprising providing the cell with an SSO in which each nucleotide of the SSO comprises either a 2'-O-methyl RNA modification or a 2'-O-methoxyethyl RNA modification.
- 25 15. The in vitro method according to any one of claims 11 to 14, comprising providing the cell with an SSO comprising phosphorothioate linkages between all nucleotides of the SSO.