~~Amended~~ Claims

1. A method for diagnosis of type II diabetes or determining the predisposition of an individual for developing type II diabetes comprising the steps of:

measuring in a tissue sample of the individual a level of Olfactomedin 4 (OLFM4) polypeptide,

wherein an decreased level OLFM4 polypeptide in the sample of the individual compared to a level of OLFM4 polypeptide representative for a healthy population is indicative for type II diabetes or a predisposition for developing type II diabetes and

wherein the tissue sample is blood, preferably plasma.

~~2. A method for the identification of a compound for the treatment of type II diabetes comprising the steps of:~~

~~a) administering the compound to a non-human animal suffering from type II diabetes,~~

~~b) measuring in a tissue sample of the non-human animal of step a) a level of OLFM4 polypeptide, wherein an altered level of OLFM4 polypeptide in the tissue sample of the non-human animal of step a) compared to the level of OLFM4 polypeptide in a tissue sample of an non-human animal suffering from type II diabetes to which no compound has been administered is indicative for a compound for the treatment of type II diabetes, wherein the tissue sample is blood, preferably plasma.~~

~~3. The method of claim 2, wherein the non-human animal is a rodent, preferably a mouse or rat.~~

~~4. The method of claim 3, wherein the rodent is a ZDF rat or an ob/ob mouse.~~

~~5. A kit for carrying out the method of claim 1 comprising:~~

~~a) an antibody specific for a OLFM4 polypeptide, preferably an antibody of claims 7-10;~~

~~b) a labeled antibody binding the antibody of a) or a labeled antibody binding the captured OLFM4 polypeptide of a) and~~

~~c) reagents for performing a diagnostic assay.~~

~~6. The kit of claim 5, wherein the specific antibody for the OLFM4 polypeptide binds the human OLFM4 polypeptide.~~

~~7. A monoclonal antibody directed to human OLFM4 polypeptide for use in diagnosing of type II diabetes or determining the predisposition of an individual for developing type II diabetes.~~

~~8~~2. ~~The~~ A monoclonal antibody ~~of claim 8~~for diagnosis of type II diabetes or determining the preposition of an individual for developing type II diabetes, wherein the antibody comprises a CDR1 to CDR3 of a V_H domain of an antibody obtainable from a hybridoma cell line selected from the group consisting of OLFM4 2/3 (DSM ACC3012), OLFM4 1/46 (DSM ACC3011), OLFM4 2/1 (DSM ACC3013), OLFM4 2/14 (DSM ACC3014), OLFM4 2/28 (DSM ACC3015) and OLFM4 1/23 (DSM ACC3010) and a CDR1 to CDR3 of a V_L domain of an antibody obtainable from a hybridoma cell line selected from the group consisting of OLFM4 2/3 (DSM ACC3012), OLFM4 1/46 (DSM ACC3011), OLFM4 2/1 (DSM ACC3013), OLFM4 2/14 (DSM ACC3014), OLFM4 2/28 (DSM ACC3015) and OLFM4 1/23 (DSM ACC3010).

~~9~~3. The antibody of claim ~~7 or 8~~2 for the use defined in said claim, wherein the antibody comprises a V_H domain and a V_L domain of an antibody obtainable from a hybridoma cell line selected from the group consisting of OLFM4 2/3 (DSM ACC3012), OLFM4 1/46 (DSM ACC3011), OLFM4 2/1 (DSM ACC3013), OLFM4 2/14 (DSM ACC3014), OLFM4 2/28 (DSM ACC3015) and OLFM4 1/23 (DSM ACC3010).

~~10~~4. The antibody of claims ~~7~~ 2 to ~~9~~3 for the use defined in said claims, wherein the antibody is produced by hybridoma cell line selected from the group consisting of OLFM4 2/3 (DSM ACC3012), OLFM4 1/46 (DSM ACC3011), OLFM4 2/1 (DSM ACC3013), OLFM4 2/14 (DSM ACC3014), OLFM4 2/28 (DSM ACC3015) and OLFM4 1/23 (DSM ACC3010).

11. Use of an OLFM4 polypeptide as a marker for β-cells of the pancreas.

12. A method for the detection of pancreatic β-cells in a tissue sample comprising:

a) providing a pancreatic tissue sample of an individual or a non-human animal,

b) detecting OLFM4 positive cells in the tissue sample of a), wherein the OLFM4 positive cells are β-cells.

13. The method of claim 15, wherein the OLFM4 positive cells are detected by an antibody specific for OLFM4, preferably an antibody of claims 7-10.

14. A kit for carrying out the method of claim 12 comprising:

a) an antibody specific for an OLFM4 polypeptide, preferably an antibody of claims 7-10,

b) a labeled antibody binding the antibody of a) and

c) reagents for performing an immunohistochemistry assay.