CLAIMS

1. Use of a conjugate comprising:

i) a polypeptide comprising the sequence SEQ ID NO: 1 or a functionally equivalent variant thereof selected from the group consisting of SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9 and SEQ ID NO: 10, and

ii) a detectable label,

in the manufacture of a diagnostic reagent for diagnosing lung cancer, wherein the diagnostic reagent is to be administered by pulmonary administration.

2. The use according to claim 1, wherein the detectable label is selected from the group consisting of ^{18}F, ^{32}P, ^{33}P, ^{45}Ti, ^{47}Sc, ^{52}Fe, ^{59}Fe, ^{62}Cu, ^{64}Cu, ^{67}Ga, ^{68}Ga, ^{75}Sc, ^{77}As, ^{86}Y, ^{89}Sr, ^{89}Zr, ^{94}Tc, ^{94}Tc, ^{99}mTc, ^{99}Mo, ^{105}Pd, ^{105}Rh, ^{111}Ag, ^{123}I, ^{124}I, ^{142}Pr, ^{143}Pr, ^{149}Pm, ^{153}Sm, ^{154}-^{1581}Gd, ^{161}Tb, ^{166}Dy, ^{166}Ho, ^{169}Er, ^{175}Lu, ^{186}Re, ^{189}Re, ^{194}Ir. ^{198}Au, ^{199}Au, ^{211}Pb, ^{212}Bi, ^{212}Pb, ^{223}Ra and ^{225}Ac and ^{89}Zr.

3. The use according to any one of claims 1 to 2, wherein the detection of the cancer cells after the administration of the diagnostic reagent is to be carried out via mPET/mCT imaging.

4. The use according to any one of claims 1 to 3, wherein the lung cancer is a primary tumor selected from small cell lung cancer (SCLC) and non- small cell lung cancer (NSCLC), or is a cancer metastasis.

5. The use according to any one of claims 1 to 4, wherein the lung cancer is adenocarcinoma.

6. The use according to claim 5, wherein the lung adenocarcinoma is a KRAS-mutant adenocarcinoma.

7. The use according to any one of claims 1 to 6, wherein the detection of the conjugate is to be carried out between 30 minutes and 96 hours after the administration of the diagnostic reagent to a subject in need thereof.

8. The use according to any one of claims 1 to 7, wherein the pulmonary administration is to be carried out by nasal instillation, nasal inhalation or oral inhalation.

9. The use according to any one of claims 1 to 8, wherein the dose of the conjugate ranges from 0.04 to 0.8 mg/Kg, or from 1.48 to 30 mg/m^2, more preferably 0.19 mg/kg or 7 mg/m^2.

10. The use according to any one of claims 1 to 9, wherein after the diagnosis step, the diagnostic reagent is to be administered at least one more time for monitoring the progression of the lung cancer or the effect of a therapy administered to a subject suffering from lung cancer.

11. Use of a conjugate comprising a polypeptide comprising sequence SEQ ID NO: 1 or a functionally equivalent variant thereof selected from the group consisting of SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9 and SEQ ID NO: 10, and a detectable label, in the manufacture of a reagent for monitoring the progression of lung cancer or for monitoring the response to a therapy in a subject suffering from lung cancer, wherein the reagent is to be administered by pulmonary administration.