Claims

1. A carbonic anhydrase IX (CAIX) targeting compound for use in the treatment of cancer, wherein the use comprises quantifying CAIX expression in at least one tumor sample provided from a subject to be treated, determining a CAIX score based on the CAIX expression in the tumor sample, and the subject is treated if a predefined CAIX score is reached.

2. The CAIX targeting compound according to claim 1, wherein CAIX expression is quantified by tumor cell staining, preferably immunohistochemical staining.

3. The CAIX targeting compound for use according to claims 1-2, wherein the expressed CAIX comprises a CAIX polypeptide or a fragment of a CAIX polypeptide.

4. The CAIX targeting compound for use according to claims 1-3, wherein the expressed CAIX comprises an mRNA that encodes a CAIX polypeptide.

5. The CAIX targeting compound for use according to claim 1-4, wherein the CAIX score is determined and/or calculated CAIX expression described by a combination of tumor cell extent and staining intensity.

6. The CAIX targeting compound for use according to claims 1-5, wherein the CAIX score is determined and/or calculated by the formula: CAIX Score = (0 x percentage of viable tumor cells with no staining intensity) + (1 x percentage of viable tumor cells with faint staining intensity) + (2 x percentage of viable tumor cells with moderate staining

intensity) + (3 x percentage of viable tumor cells with strong staining intensity).

7. The CAIX targeting compound for use according to claims 1-6, wherein the predefined CAIX score is ≥ 2.0.

8. The CAIX targeting compound for use according to claims 1-7, wherein the predefined CAIX score is ≥ 2.6.

9. The CAIX targeting compound for use according to claims 1-8, wherein the targeting compound is an anti-CAIX antibody.

10. The CAIX targeting compound for use according to claims 1-9, wherein the targeting compound binds to the amino acid sequence LSTAFARV and/or ALGPGREYRAL.

11. The CAIX targeting compound for use according to claims 1-10, wherein the targeting compound is the antibody girentuximab and/or a fragment thereof.

12. The CAIX targeting compound for use according to claims 1-11, wherein the cancer is selected from the group comprising cervical carcinomas, esophageal carcinomas, gastric carcinomas, colorectal carcinomas, liver carcinomas, bladder carcinomas, lung carcinomas, head and neck cancer, billary carcinomas and renal cell carcinomas.

13. The CAIX targeting compound for use according to claims 1-12, wherein the cancer is renal clear cell carcinoma (RCC).

14. The CAIX targeting compound for use according to claims 1-13, wherein the targeting compound is to be used after the subject to be treated has undergone primary tumor resection.

15. The CAIX targeting compound for use according to claims 1-14 in an adjuvant therapy.

16. A CAIX targeting compound for use in the treatment of cancer expressing CAIX, wherein cancer cells are characterized by a CAIX score ≥ 2.0, in particular ≥ 2.6.

17. A CAIX targeting compound according to claim 16, wherein the CAIX targeting compound is G250 and/or an epitope binding fragment thereof.

18. A CAIX targeting compound according to claims 16-17, wherein the cancer is renal clear cell carcinoma.

19. A CAIX targeting compound according to any of claims 1-18, wherein the subject to be treated is human and/or has an age of less than 65 years.

20. A method for diagnosing, prognosing and/or classifying a cancer disease comprising
(a) quantifying the expression of CAIX in a cancer sample by staining and
(b) classifying the cancer disease according to the extent and staining intensity of stained cancer cells.

21. A method for diagnosing a cancer disease according to claim 20, wherein a CAIX score is determined.

22. A method for diagnosing a cancer disease according to claims 20-21, wherein the cancer is renal clear cell carcinoma, in particular having a CAIX score ≥ 2.0.

23. A method of treatment of a cancer, said method comprising:
    (a) defining the expression of a CAIX in a cancer cell obtained from a subject to be treated by staining,
    (b) determining a CAIX score according to the extent and staining intensity of the cancer cells
    (c) administering a CAIX targeting compound if in step (b) a predefined CAIX threshold value has been exceeded.

24. The method of claim 23, wherein the subject to be treated is human and/or has an age of less than 65 years.

Claims:

1. Use of a carbonic anhydrase IX (CAIX) targeting compound in the manufacture of a medicament for the treatment of cancer, wherein the use comprises quantifying CAIX expression in at least one tumor sample provided from a subject to be treated, determining a CAIX score based on the CAIX expression in the tumor sample, and the subject is treated if a predefined CAIX score is reached, wherein the CAIX score is determined and/or calculated on the basis of CAIX expression described by a combination of tumor cell extent and staining intensity and wherein CAIX expression is quantified by tumor cell staining, preferably immunohistochemical staining.

2. The use according to Clam 1, wherein the expressed CAIX comprises a CAIX polypeptide or a fragment of a CAIX polypeptide.

3. The use according to Clam 1 or 2, wherein the expressed CAIX comprises an mRNA that encodes a CAIX polypeptide.

4. The use according to Clams 1-3, wherein the CAIX score is determined and/or calculated by the formula: CAIX Score = (0 x percentage of viable tumor cells with no staining intensity) + (1 x percentage of viable tumor cells with faint staining intensity) + (2 x percentage of viable tumor cells with moderate staining intensity) + (3 x percentage of viable tumor cells with strong staining intensity).

5. The use according to Clams 1-4, wherein the predefined CAIX score is ≥ 2.0.

6. The use according to Clams 1-5, wherein the predefined CAIX score is ≥ 2.6.

7. The use according to Clams 1-6, wherein the targeting compound is an anti-CAIX antibody.

8. The use according to Clams 1-7, wherein the targeting compound binds to the amino acid sequence LSTAFARV and/or ALGPGREYRAL.

9. The use according to Clams 1-8, wherein the targeting compound is the antibody girentuximab and/or a fragment thereof.

10. The use according to Clams 1-9, wherein the cancer is selected from the group comprising cervical carcinomas, esophageal carcinomas, gastric carcinomas, colorectal carcinomas, liver carcinomas, bladder carcinomas, lung carcinomas, head and neck cancer, billary carcinomas and renal cell carcinomas.

11. The use according to Clams 1-10, wherein the cancer is renal clear cell carcinoma (RCC).

12. The use according to Clams 1-11, wherein the medicament is to be used after the subject to be treated has undergone primary tumor resection.

13. The use according to Clams 1-12, wherein the medicament is to be used in an adjuvant therapy.

14. Use of a CAIX targeting compound in the manufacture of a medicament for the treatment of cancer expressing CAIX, wherein cancer cells are characterized by a CAIX score ≥ 2.0, in particular ≥ 2.6, wherein the CAIX score is determined and/or calculated on the basis of CAIX expression described by a combination of tumor cell extent and staining intensity and wherein CAIX expression is quantified by tumor cell staining, preferably immunohistochemical staining.

15. The use according to Clam 14, wherein the CAIX targeting compound is G250 and/or an epitope binding fragment thereof.

16. The use according to Clams 14-15, wherein the cancer is renal clear cell carcinoma.

17. The use according to any of Clams 1-16, wherein the subject to be treated is human and/or has an age of less than 65 years.

18. A method for diagnosing, prognosing and/or classifying a cancer disease comprising
    (a) quantifying the expression of CAIX in a cancer sample by staining;
    (b) determining a CAIX score; and
    (c) classifying the cancer disease according to the CAIX score;
    wherein the CAIX score is determined and/or calculated on the basis of CAIX expression described by a combination of tumor cell extent and staining intensity and wherein CAIX expression is quantified by tumor cell staining, preferably immunohistochemical staining.

19. A method for diagnosing a cancer disease according to Clam 18, wherein the cancer is renal clear cell carcinoma, in particular having a CAIX score ≥ 2.0.