In one aspect, there is provided an isolated monoclonal antibody which specifically binds to IL-1β, or an antigen binding fragment thereof, wherein said antibody or fragment thereof comprises the following Complementarity Determining Regions (CDRs):

(i) a heavy chain variable region CDR H1 comprising the amino acid sequence DYYWS,

(ii) a heavy chain variable region CDR H2 comprising the amino acid sequence EIDHSGSTNYNPSLKS,

(iii) a heavy chain variable region CDR H3 comprising the amino acid sequence ASPSSGWTLDY,

(iv) a light chain variable region CDR L1 comprising the amino acid sequence GDKLGDKFAF,

(v) a light chain variable region CDR L2 comprising the amino acid sequence LDNKRPS, and

(vi) a light chain variable region CDR L3 comprising an amino acid sequence selected from the group consisting of: YAWADTYEV, QAWADSFEV, YAWDNAYEV, EAWDAAAEV, and EAWADTYEV.

In another aspect, there is provided an isolated monoclonal antibody which specifically binds to IL-1β, or an antigen binding fragment thereof, wherein said antibody or fragment thereof comprises:

(i) a light chain sequence comprising the amino acid sequence of SEQ ID NO: 17; and

In another aspect, there is provided an isolated monoclonal antibody or fragment thereof as described herein or the composition as described herein for use in therapy.

In another aspect, there is provided a use of the isolated monoclonal antibody or fragment thereof as described herein or the composition as described herein, in the preparation of a medicament for the treatment of an autoimmune disease.

In another aspect, there is provided a use of the isolated monoclonal antibody or fragment thereof as described herein or the composition as described herein, in the preparation of a medicament for the treatment of arthritis, inflammatory bowel disease, Crohn's disease, rheumatoid arthritis, gout, diabetes, uveitis, cryopyrin-associated periodic syndromes or inflammatory acne.

In another aspect, there is provided a use of the isolated monoclonal antibody or fragment thereof as described herein or the composition as described herein, in the preparation of a medicament for the treatment of an inflammatory disease.

In another aspect, there is provided a use of the isolated monoclonal antibody or fragment thereof as described herein or the composition as described herein, in the preparation of a medicament for the treatment of cancer.

In another aspect, there is provided a use of the isolated monoclonal antibody or fragment thereof as described herein or the composition as described herein, in the preparation of a medicament for reducing tumor growth.

Claims

1. An isolated monoclonal antibody which specifically binds to IL-1β, or an antigen binding fragment thereof, wherein said antibody or fragment thereof comprises the following Complementarity Determining Regions (CDRs):

(i) a heavy chain variable region CDR H1 comprising the amino acid sequence DYYWS,

(ii) a heavy chain variable region CDR H2 comprising the amino acid sequence EIDHSGSTNYNPSLKS,

(iii) a heavy chain variable region CDR H3 comprising the amino acid sequence ASPSSGWTLDY,

(iv) a light chain variable region CDR L1 comprising the amino acid sequence GDKLGDKFAF,

(v) a light chain variable region CDR L2 comprising the amino acid sequence LDNKRPS, and

(vi) a light chain variable region CDR L3 comprising an amino acid sequence selected from the group consisting of: YAWADTYEV, QAWADSFEV, YAWDNAYEV, EAWDAAAEV, and EAWADTYEV.

2. The isolated monoclonal antibody or fragment thereof of claim 1, wherein the light chain variable region CDR L3 comprises the amino acid sequence YAWADTYEV.

3. The isolated monoclonal antibody or fragment thereof of claim 1, wherein the light chain variable CDR3 comprises the amino acid sequence QAWADSFEV.

4. The isolated monoclonal antibody or fragment thereof of claim 1, wherein the light chain variable CDR3 comprises the amino acid sequence YAWDNAYEV.

5. The isolated monoclonal antibody or fragment thereof of claim 1, wherein the light chain variable CDR3 comprises the amino acid sequence EAWDAAAEV.

6. The isolated monoclonal antibody or fragment thereof of claim 1, wherein the light chain variable CDR3 comprises the amino acid sequence EAWADTYEV.

7. An isolated monoclonal antibody which specifically binds to IL-1β, or an antigen binding fragment thereof, wherein said antibody or fragment thereof comprises:

(i) a light chain sequence comprising the amino acid sequence of SEQ ID NO: 17; and

(ii) a heavy chain sequence comprising the amino acid sequence of SEQ ID NO: 18 or SEQ ID NO:2.

8. The isolated monoclonal antibody or fragment thereof of claim 7, wherein the heavy chain sequence comprises the amino acid sequence of SEQ ID NO: 18.

9. The isolated monoclonal antibody or fragment thereof of claim 8, wherein the heavy chain sequence comprises the amino acid sequence of SEQ ID NO: 14.

10. The isolated monoclonal antibody or fragment thereof of claim 7, wherein the heavy chain sequence comprises the amino acid sequence of SEQ ID NO:2.

11. The isolated monoclonal antibody or fragment thereof of any one of claims 1-10, which is fully human.

12. The isolated monoclonal antibody or fragment thereof of any one of claims 1-11, wherein the IL-1β is human.

13. The isolated monoclonal antibody or fragment thereof of any one of claims 1-12, which is the antibody of the subtype IgG1, IgG2, IgG3 or IgG4.

14. The isolated monoclonal antibody or fragment thereof of claim 13, wherein the antibody is of the subtype IgG4.

15. A composition comprising the isolated antibody or fragment thereof of any one of claims 1-14 and a pharmaceutically acceptable carrier.

16. An isolated nucleic acid encoding the isolated monoclonal antibody or fragment thereof of any one of claims 1-14, wherein the nucleic acid comprises: a first sequence encoding the light chain or the light chain variable region of said antibody or fragment, and a second sequence encoding the heavy chain or the heavy chain variable region of said antibody or fragment.

17. A set of two isolated nucleic acids which together encode the isolated antibody or fragment thereof of any one of claims 1-14, wherein: the first nucleic acid comprises a sequence encoding the light chain or the light chain variable region of said antibody or fragment, and the second nucleic acid comprises a sequence encoding the heavy chain or the heavy chain variable region of said antibody or fragment.

18. A vector comprising the isolated nucleic acid molecule of claim 16, or the set of two isolated nucleic acids of claim 17.

19. A host cell comprising the isolated nucleic acid of claim 16, or the set of two isolated nucleic acids of claim 17.

20. A method of producing the isolated monoclonal antibody or fragment thereof of any one of claims 1-14, comprising culturing the

host cell of claim 19 under suitable conditions and recovering said antibody or fragment therefrom.

21. An isolated cell line that is capable of producing the isolated monoclonal antibody or fragment thereof of any one of claims 1-14.

22. The isolated monoclonal antibody or fragment thereof of any one of claims 1-14 or the composition of claim 15 for use in therapy.

23. Use of the isolated monoclonal antibody or fragment thereof of any one of claims 1-14 or the composition of claim 15, in the preparation of a medicament for the treatment of an autoimmune disease.

24. Use of the isolated monoclonal antibody or fragment thereof of any one of claims 1-14 or the composition of claim 15, in the preparation of a medicament for the treatment of arthritis, inflammatory bowel disease, Crohn’s disease, rheumatoid arthritis, gout, diabetes, uveitis, cryopyrin-associated periodic syndromes or inflammatory acne.

25. Use of the isolated monoclonal antibody or fragment thereof of any one of claims 1-14 or the composition of claim 15, in the preparation of a medicament for the treatment of an inflammatory disease.

26. The use of claim 25, wherein the inflammatory disease is arthritis, gout or inflammatory acne.

27. Use of the isolated monoclonal antibody or fragment thereof of any one of claims 1-14 or the composition of claim 15, in the preparation of a medicament for the treatment of cancer.

28. Use of the isolated monoclonal antibody or fragment thereof of any one of claims 1-14 or the composition of claim 15, in the preparation of a medicament for reducing tumor growth.