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(54) Title **DKK-1 ANTIBODIES**

(56) References

Cited:

WO-A2-2006/015373

WO-A1-2008/097510

WO-A2-2007/084344

WO-A1-2010/129752

FULCINITI MARIATERESA ET AL: "Anti-DKK1 mAb (BHQ880) as a potential therapeutic agent for multiple myeloma", BLOOD, AMERICAN SOCIETY OF HEMATOLOGY, UNITED STATES LNKD- DOI:10.1182/BLOOD-2008-11-191577, vol. 114, no. 2, 9 July 2009 (2009-07-09), pages 371-379, XP009134332, ISSN: 1528-0020 [retrieved on 2009-05-05]

TERPOS E: "Antibodies to dickkopf-1 protein", EXPERT OPINION ON THERAPEUTIC PATENTS, INFORMA HEALTHCARE, GB LNKD- DOI:10.1517/13543776.16.10.1453, vol. 16, no. 10, 1 October 2006 (2006-10-01), pages 1453-1458, XP002486202, ISSN: 1354-3776

HEATH DEBORAH J ET AL: "Inhibiting Dickkopf-1 (Dkk1) removes suppression of bone formation and prevents the development of osteolytic bone disease in multiple myeloma", JOURNAL OF BONE AND MINERAL RESEARCH, AMERICAN SOCIETY FOR BONE AND MINERAL RESEARCH, NEW YORK, NY, US LNKD- DOI:10.1359/JBMR.081104, vol. 24, no. 3, 1 March 2009 (2009-03-01), pages 425-436, XP009134333, ISSN: 0884-0431 [retrieved on 2009-12-04]

MELODY MAZON ET AL: "Modulating Dickkopf-1: A Strategy to Monitor or Treat Cancer?", CANCERS, vol. 8, no. 7, 28 June 2016 (2016-06-28), page 62, XP55329263, DOI: 10.3390/cancers8070062

GAVRIATOPOLOU MARIA ET AL: "Dickkopf-1: a suitable target for the management of myeloma bone disease.", EXPERT OPINION ON THERAPEUTIC TARGETS JUL 2009 LNKD-PUBMED:19530987, vol. 13, no. 7, July 2009 (2009-07), pages 839-848, XP009134320, ISSN: 1744-7631

ZHOU XIAO-LEI ET AL: "Downregulation of Dickkopf-1 is responsible for high proliferation of breast cancer cells via losing control of Wnt/beta-catenin signaling", ACTA PHARMACOLOGICA SINICA, vol. 31, no. 2, February 2010 (2010-02), pages 202-210, XP009134321, ETTENBERG SETH A ET AL: "BHQ880, a novel anti-DKK1 neutralizing antibody, inhibits tumor-induced osteolytic bone disease", PROCEEDINGS OF THE ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH, NEW YORK, NY, US, vol. 49, 1 April 2008 (2008-04-01), page 947, XP009134334, ISSN: 0197-016X

HALL CHRISTOPHER L ET AL: "Dickkopf-1 expression increases early in prostate cancer development and decreases during progression from primary tumor to metastasis", PROSTATE, WILEY-LISS, NEW YORK, NY, US LNKD- DOI:10.1002/PROS.20805, vol. 68, no. 13, 15 September 2008 (2008-09-15), pages 1396-1404, XP009134318, ISSN: 0270-4137 [retrieved on 2008-06-16]

FILIPPO CARACI ET AL: "The Wnt Antagonist, Dickkopf-1, as a Target for the Treatment of Neurodegenerative Disorders", NEUROCHEMICAL RESEARCH, KLUWER ACADEMIC PUBLISHERS-PLENUM PUBLISHERS, NE LNKD- DOI:10.1007/S11064-008-9710-0, vol. 33, no. 12, 22 April 2008 (2008-04-22), pages 2401-2406, XP019647587, ISSN: 1573-6903

DIARRA DANIELLE ET AL: "Dickkopf-1 is a master regulator of joint remodeling", NATURE MEDICINE, NATURE PUBLISHING GROUP, NEW YORK, NY, US LNKD- DOI:10.1038/NM1538, vol. 13, no. 2, 1 February 2007 (2007-02-01), pages 156-163, XP002486201, ISSN: 1078-8956 [retrieved on 2007-01-21]

YACCOBY SHMUEL ET AL: "Antibody-based inhibition of DKK1 suppresses tumor-induced bone resorption and multiple myeloma growth in vivo", BLOOD, AMERICAN SOCIETY OF HEMATOLOGY, US LNKD- DOI:10.1182/BLOOD-2006-09-047712, vol. 109, no. 5, 1 March 2007 (2007-03-01), pages 2106-2111, XP002486200, ISSN: 0006-4971 [retrieved on 2006-10-26]

KRAJ MARIA: "Multiple myeloma bone disease and novel anti-myeloma agents", ACTA HAEMATOLOGICA POLONICA, vol. 39, no. 2, 2008, pages 163-178, XP009134337, ISSN: 0001-5814

Enclosed is a translation of the patent claims in Norwegian. Please note that as per the Norwegian Patents Acts, section 66i the patent will receive protection in Norway only as far as there is agreement between the translation and the language of the application/patent granted at the EPO. In matters concerning the validity of the patent, language of the application/patent granted at the EPO will be used as the basis for the decision. The patent documents published by the EPO are available through Espacenet (<http://worldwide.espacenet.com>) or via the search engine on our website here: <https://search.patentstyret.no/>

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Patentkrav

1. DKK-1 antistoff eller antigenbindende fragment derav, omfattende en variabel region i lettkjeden (LCVR) og en variabel region i tungkjeden (HCVR), hvori LCVR-en omfatter aminosyresekvensen ifølge SEQ ID NO: 36, og HCVR-en omfatter aminosyresekvensen ifølge SEQ ID NO: 37.

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2. DKK-1 antistoff ifølge krav 1, hvori DKK-1 antistoffet omfatter en lettkjede omfattende aminosyresekvensen ifølge SEQ ID NO: 34 og en tungkjede omfattende aminosyresekvensen ifølge SEQ ID NO: 35.

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3. DKK-1 antistoff ifølge krav 1 eller krav 2, omfattende to lettkjeder, hvori hver lettkjede omfatter aminosyresekvensen ifølge SEQ ID NO: 34 og to tungkjeder, hvori hver tungkjede omfatter aminosyresekvensen ifølge SEQ ID NO: 35.

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4. Farmasøytisk sammensetning omfattende DKK-1-antistoffet eller det antigenbindende fragmentet derav ifølge et hvilket som helst av kravene 1 til 3 og en farmasøytisk akseptabel bærer, tynner eller eksipient.