



(12) Translation of  
European patent specification

(11) NO/EP 2930184 B1

NORWAY

(19) NO  
(51) Int Cl.  
**C07K 16/18 (2006.01)**  
**A61K 39/00 (2006.01)**

**Norwegian Industrial Property Office**

---

(21)	Translation Published	2019.07.01
(80)	Date of The European Patent Office Publication of the Granted Patent	2019.03.27
(86)	European Application Nr.	15159780.4
(86)	European Filing Date	2010.04.06
(87)	The European Application's Publication Date	2015.10.14
(30)	Priority	2009.04.10, US, 168411 P
(84)	Designated Contracting States:	AT ; BE ; BG ; CH ; CY ; CZ ; DE ; DK ; EE ; ES ; FI ; FR ; GB ; GR ; HR ; HU ; IE ; IS ; IT ; LI ; LT ; LU ; LV ; MC ; MK ; MT ; NL ; NO ; PL ; PT ; RO ; SE ; SI ; SK ; SM ; TR
	Designated Extension States:	AL BA ME RS
(62)	Divided application	EP2417158, 2010.04.06
(73)	Proprietor	Eli Lilly and Company, Lilly Corporate Center, Indianapolis, IN 46285, USA
(72)	Inventor	Chedid, Marcio, Lilly Corporate Centre, Indianapolis, IN 46285, USA Darling, Ryan James, Lilly Corporate Center, Indianapolis, IN 46285, USA Galvin, Rachelle Jeanette, Lilly Corporate Center, Indianapolis, IN 46285, USA Swanson, Barbara Anne, Lilly Corporate Center, Indianapolis, IN 46285, USA
(74)	Agent or Attorney	ZACCO NORWAY AS, Postboks 2003 Vika, 0125 OSLO, Norge

---

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

(56) References  
Cited: WO-A1-2010/129752, WO-A1-2008/097510, WO-A2-2006/015373, WO-A2-2007/084344  
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  
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]  
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]
- 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]
- 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]
- 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]
- 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,
- 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
- 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
- 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
- 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
- MÉLODY 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

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/>

**Patentkrav**

5           **1.** Konstruert DKK-1-antistoff eller antigenbindende fragment derav som omfatter en lettkjede variabel region (LCVR) og en tungkjede variabel region (HCVR), hvori

LCVR-en omfatter aminosyresekvensen ifølge SEQ ID NO: 14 og HCVR-en omfatter aminosyresekvensen med SEQ ID NO: 12.

10           **2.** Konstruert DKK-1-antistoff ifølge krav 1, hvori det konstruerte DKK-1-

antistoffet omfatter en tungkjede omfattende aminosyresekvensen med SEQ ID NO: 18 og en lettkjede omfattende aminosyresekvensen med

SEQ ID NO: 20.

15           **3.** Konstruert DKK-1-antistoff ifølge krav 1 eller krav 2 som omfatter to lettkjeder,

hvor i hver lettkjede omfatter aminosyresekvensen med SEQ ID NO: 20, og to tungkjeder, hvor i hver tungkjede omfatter aminosyresekvensen med

SEQ ID NO: 18.

20           **4.** Farmasøytisk sammensetning omfattende det konstruerte DKK-1-antistoffet

eller antigenbindende fragment derav ifølge hvilke som helst av kravene 1 til 3, og en farmasøytisk akseptabel bærer, fortynningsmiddel eller hjelpestoff.