(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
22 October 2009 (22.10.2009)

PCT

(10) International Publication Number
WO 2009/129379 A1

(51) International Patent Classification:
C12P 21/02 (2006.01) *C12N 1/38* (2006.01)
A61K 38/18 (2006.01) *C12N 5/00* (2006.01)
C07K 14/51 (2006.01)

(21) International Application Number:
PCT/US2009/040789

(22) International Filing Date:
16 April 2009 (16.04.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/045,643 17 April 2008 (17.04.2008) US

(71) Applicant *(for all designated States except US)*: **WYETH** [US/US]; Five Giralda Farms, Madison, NJ 07940 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **LUAN, Yen-Tung** [US/US]; 3 Armand Drive, Chelmsford, MA 01824 (US). **WANG, Wenge** [US/US]; 1 Hollow Ridge Road, North Chelmsford, MA 01863 (US). **NYBERG, Gregg** [US/US]; 11145 N. Eliot Court, Westminster, CO 80234 (US). **GOMES, Jose, Manuel** [US/US]; 46 Littleton Road, Chelmsford, MA 01824 (US). **DRAPEAU, Denis** [US/US]; 55 Old Farm Road, Salem, NH 03079 (US). **CARDOZA, Terry** [US/US]; 1 Riverview Boulevard, Unit#1-213, Methuen, MA 01844 (US).

(74) Agent: **MCDONELL, Leslie, A.**; Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., 901 New York Avenue, Washington, DC 20001-4413 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

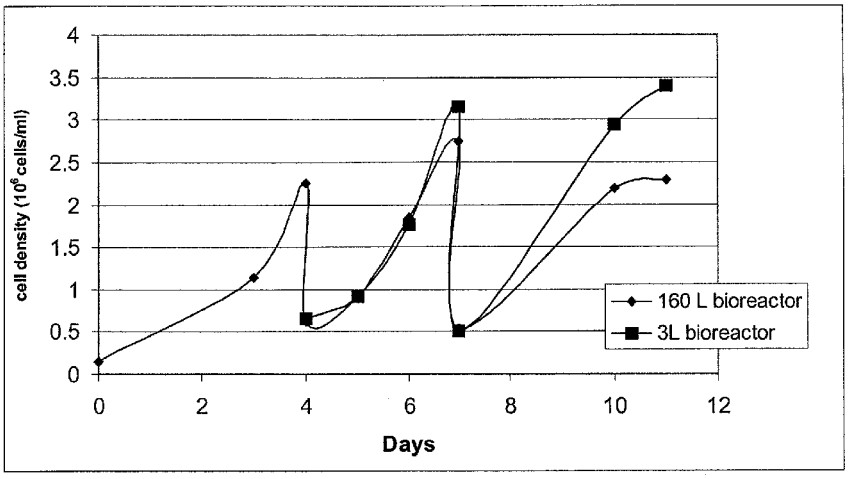
Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(54) **Title**: METHODS FOR ENHANCED PRODUCTION OF BONE MORPHOGENETIC PROTEINS

Figure 1



(57) **Abstract**: Methods and processes for improved recombinant protein production are provided. The methods are useful for production of growth factors, particularly those of the TGF-β superfamily, including bone morphogenetic proteins (BMPs), such as BMP-2. Suitable host cells are cultured in media where iron is present at a concentration of at least 2.25 μM and if pyridoxal is present, it makes up less than 55 % of the molar concentration of vitamin B6 in the media.

WO 2009/129379 A1