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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
19 August 2010 (19.08.2010)

PCT

(10) International Publication Number
WO 2010/093925 A3

(51) **International Patent Classification**:
A61K 38/18 (2006.01) ***A61K 9/00*** (2006.01)

(21) **International Application Number**:
PCT/US2010/024106

(22) **International Filing Date**:
12 February 2010 (12.02.2010)

(25) **Filing Language**: English

(26) **Publication Language**: English

(30) **Priority Data**:
61/151,909 12 February 2009 (12.02.2009) US

(71) **Applicant** *(for all designated States except US)*: **STRYKER CORPORATION** [US/US]; 2825 Airview Boulevard, Kalamazoo, MI 49002 (US).

(72) **Inventors; and**

(75) **Inventors/Applicants** *(for US only)*: **GOAD, Mary Elizabeth, Pecquet** [US/US]; 111 Chestnut Street, Andover, MA 01810 (US). **HASKELL, Melissa, M.** [US/US]; 47 North Main Street, Uxbridge, MA 01569 (US). **SCHRIER, Denis** [US/US]; 6 Canterbury Lane, Hopkinton, MA 01748 (US). **WOOD, Susan, A.** [US/US]; 90 Richards Street, Dedham, MA 02026 (US).

(74) **Agents**: **KOMM, Crystal, A.** et al.; K&l Gates LLP, State Street Financial Center, One Lincoln Street, Boston, MA 02111-2950 (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, CL, 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, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, SM, 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))*

(88) **Date of publication of the international search report**:
28 October 2010

WO 2010/093925 A3

(54) **Title**: PERIPHERAL ADMINISTRATION OF PROTEINS INCLUDING TGF-BETA SUPERFAMILY MEMBERS FOR SYSTEMIC TREATMENT OF DISORDERS AND DISEASE

(57) **Abstract**: The present invention is directed to methods and compositions for accomplishing systemic delivery of minimally-soluble bioactive agents such as, but not limited to, proteins of the TGF-β superfamily via a peripheral mode of administration. According to the invention, an exemplary bioactive agent is BMP-7. The invention further provides for minimally-invasive systemic treatment of skeletal disorders such as osteoporosis as well as minimally-invasive systemic treatment of injured or diseased non-mineralized tissues and organs such kidneys. Practice of the invention eliminates adverse side effects at the peripheral site of intravenous administration of the bioactive agent.