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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
2 December 2004 (02.12.2004)

PCT

(10) International Publication Number
WO 2004/103304 A3

(51) International Patent Classification[7]: A61K 38/00

(21) International Application Number:
PCT/US2004/015340

(22) International Filing Date: 14 May 2004 (14.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/471,017	15 May 2003 (15.05.2003)	US
60/489,270	21 July 2003 (21.07.2003)	US
60/514,930	27 October 2003 (27.10.2003)	US
60/517,338	4 November 2003 (04.11.2003)	US

(71) Applicant: **DMI BIOSCIENCES, INC.** [US/US]; 3601 S. Clarkson St., Suite 420, Englewood, CO 80110 (US).

(72) Inventors: **BAR-OR, David**; 900 E. Oxford Lane, Englewood, CO 80110 (US). **BAR-OR, Raphael**; 1720 Wynkoop Street #214, Denver, CO 80202 (US). **SHIMONKOVITZ, Richard**; 2334 East Terrace Drive, Higlands Rance, CO 80126 (US).

(74) Agents: **CONNELL, Gary, J.** et al.; Sheridan Ross P.C., Suite 1200, 1560 Broadway, Denver, CO 80202-5141 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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, HU, IE, IT, LU, MC, NL, 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*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
7 July 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TREATMENT OF T-CELL MEDIATED DISEASES

(57) Abstract: The invention provides a method of treating T-cell mediated diseases and a method of inhibiting the activation of T-cells using certain diketopiperazines. The invention also provides methods of synthesizing diketopiperazines and pharmaceutical compositions comprising certain diketopiperazines. The invention ftirther provides methods of making improved pharmaceutical compositions of proteins and peptides by either increasing or decreasing the content of diketopiperazines in the compositions and the resultant improved pharmaceutical compositions.

WO 2004/103304 A3