

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 September 2007 (27.09.2007)

PCT

(10) International Publication Number
WO 2007/109175 A1

(51) International Patent Classification:

A61K 31/18 (2006.01) C07D 215/28 (2006.01)
A61P 9/04 (2006.01) C07D 215/36 (2006.01)
C07C 311/48 (2006.01) C07D 231/18 (2006.01)
C07C 317/14 (2006.01) C07D 233/84 (2006.01)
C07C 323/67 (2006.01) C07D 239/38 (2006.01)
C07D 207/36 (2006.01) C07D 241/18 (2006.01)
C07D 213/71 (2006.01) C07D 249/12 (2006.01)
C07D 213/74 (2006.01)

111 Milton Park, Abingdon, Oxfordshire OX14 4RZ (GB).
KALISH, Vincent, Jacob [US/US]; 344 Dubois Road,
Annapolis, MD 21401 (US).

(74) Agents: **REANEY, Shannon** et al.; Morrison & Foerster
LLP, 755 Page Mill Road, Palo Alto, CA 94304-1018 (US).

(21) International Application Number:

PCT/US2007/006710

(22) International Filing Date: 16 March 2007 (16.03.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/783,556 17 March 2006 (17.03.2006) US

(71) Applicant (for all designated States except US): **JOHN HOPKINS UNIVERSITY SCHOOL OF MEDICINE** [US/US]; The John Hopkins University, 100 N. Charles Street, 5th Floor, Baltimore, MD 21201 (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, 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, 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, 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, HU, IE, IS, IT, LT, LU, LV, MC, MT, 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).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **TOSCANO, John, P.** [US/US]; 18 Tree Farm Court, Glen Arm, MD 21057 (US). **BROOKFIELD, Frederick, Arthur** [GB/GB]; 111 Milton Park, Abingdon, Oxfordshire OX14 4RZ (GB). **COHEN, Andrew, D.** [US/US]; 345 E. 80th Street, Apt. 28A, New York, NY 10021 (US). **COURTNEY, Stephen, Martin** [GB/GB]; 111 Milton Park, Abingdon, Oxfordshire OX14 4RZ (GB). **FROST, Lisa, Marie** [GB/GB];

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

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: *N*-HYDROXYLSULFONAMIDE DERIVATIVES AS NEW PHYSIOLOGICALLY USEFUL NITROXYL DONORS

(57) Abstract: The invention relates to *N*-hydroxysulfonamide derivatives that donate nitroxyl (HNO) under physiological conditions and are useful in treating and/or preventing the onset and/or development of diseases or conditions that are responsive to nitroxyl therapy, including heart failure and ischemia/reperfusion injury. Novel *N*-hydroxysulfonamide derivatives release NHO at a controlled rate under physiological conditions, and the rate of HNO release is modulated by varying the nature and location of functional groups on the *N*-hydroxysulfonamide derivatives.

WO 2007/109175 A1