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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 October 2006 (26.10.2006)

PCT

(10) International Publication Number
WO 2006/111029 A1

(51) International Patent Classification:
C12N 15/53 (2006.01) *C12Q 1/48* (2006.01)
C12N 15/11 (2006.01) *C12Q 1/68* (2006.01)
A61P 35/00 (2006.01) *C40B 40/08* (2006.01)
C12N 15/12 (2006.01) *G01N 33/574* (2006.01)

(21) International Application Number:
PCT/CA2006/000652

(22) International Filing Date: 18 April 2006 (18.04.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/672,016	18 April 2005 (18.04.2005)	US
60/721,522	29 September 2005 (29.09.2005)	US
60/789,872	7 April 2006 (07.04.2006)	US

(71) Applicant *(for all designated States except US)*: **1304854 ONTARIO LTD.** [CA/CA]; 3rd Floor, 1294 Balmoral Street, Thunder Bay, Ontario P7B 5Z5 (CA).

(72) Inventors; and

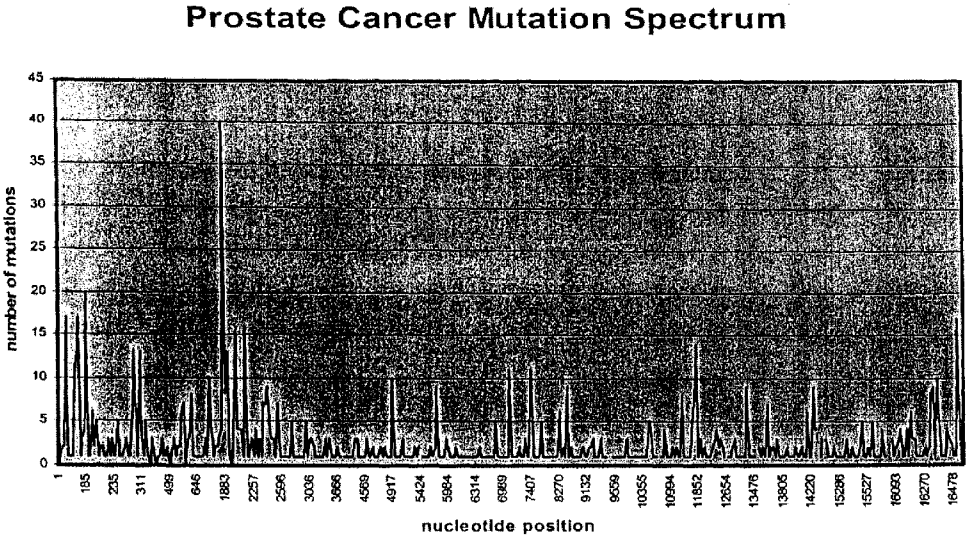
(75) Inventors/Applicants *(for US only)*: **PARR, Ryan** [US/CA]; 1282 Hutton Park Drive, Thunder Bay, Ontario P7G 1J5 (CA). **THAYER, Robert** [CA/CA]; 2197 Falconcrest Drive, Thunder Bay, Ontario P7K 1H5 (CA). **DAKUBO, Gabriel** [CA/CA]; 1016 Brannan Lane, Thunder Bay, Ontario P7J 1H7 (CA). **MAKI, Jennifer** [CA/CA]; 537 Beverly Street, Thunder Bay, Ontario P7B 5S8 (CA). **ROBINSON, Kerry** [CA/CA]; 400 Court Street North, Thunder Bay, Ontario P7A 4X1 (CA). **AGUIRRE, Andrea** [CA/CA]; 1291 Hutton Park Drive, Thunder Bay, Ontario P7G 1C6 (CA). **REGULY, Brian** [CA/CA]; 145 Duke Street, Thunder Bay, Ontario P7A 5S9 (CA). **HARBOTTLE, Andrew** [GB/GB]; 19 Love Lane, Pandon Quays, Newcastle Upon Tyne NE1 3DW (GB). **BIRCH-MACHIN, Mark** [GB/GB]; 5 Emblehope Drive, Kingsmere, Gosforth, Newcastle Upon Tyne NE3 4RW (GB).

(74) Agent: **BLAKE CASSELS GRAYDON LLP**; 199 Bay Street, Suite 2800, Commerce Court West, Toronto, Ontario M5L 1A9 (CA).

(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, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: MITOCHONDRIAL MUTATIONS AND REARRANGEMENTS AS A DIAGNOSTIC TOOL FOR THE DETECTION OF SUN EXPOSURE, PROSTATE CANCER AND OTHER CANCERS



(57) Abstract: Mitochondrial DNA deletions useful for the detection of cancers and sun exposure are provided. In particular, methods and kits for detecting mitochondrial DNA deletions for the early detection, diagnosis and progression of prostate cancer, sun exposure and non-melonoma skin cancer are provided.

WO 2006/111029 A1

(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, 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*

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.