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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
1 February 2007 (01.02.2007)

PCT

(10) International Publication Number
WO 2007/012138 A1

(51) International Patent Classification:
C12Q 1/68 (2006.01)

(21) International Application Number:
PCT/AU2006/001065

(22) International Filing Date: 28 July 2006 (28.07.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2005904085 29 July 2005 (29.07.2005) AU

(71) Applicant *(for all designated States except US)*: **HYBRID BIOSCIENCES PTY LTD** [AU/AU]; Evandale House, 80 Evandale Street, Floreat, Western Australia 6014 (AU).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **KAY, Peter Hamilton** [AU/AU]; 80 Evandale Street, Floreat, Western Australia 6014 (AU).

(74) Agent: **GRIFFITH HACK**; Level 19, 109 St George's Terrace, Perth, Western Australia 6000 (AU).

(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, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, 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, RS, RU, SC, SD, SE, SG, SK, SL, SM, 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, 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*

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.

WO 2007/012138 A1

(54) **Title:** IDENTIFICATION OF GENES AND THEIR PRODUCTS WHICH PROMOTE HYBRID VIGOUR OR HYBRID DEBILITY AND USES THEREOF

(57) **Abstract:** The present invention relates to a method of identifying candidate genes and the proteins encloded by them that are useful in the inducement of hybrid vigour, hybrid debility and/or the diagnosis, prognosis and treatment of disease. In particular, the present invention relates to a method for identifying candidate genes capable of producing hybrid vigour or hybrid debility in an animal or plant, comprising the steps of: (i) comparing the mRNA sequence of alleles of candidate genes isolated from an animal or plant which exhibits hybrid vigour or hybrid debility with the nucleotide sequences from the corresponding alleles isolated from the parents of said animal or plant; (ii) identifying mRNA sequence differences in the alleles from said animal or plant which exhibits hybrid vigour or hybrid debility which codes for amino acid sequence variation; and (iii) identifying that the amino acid sequence variation between alleles of the candidate gene in said animal or plant is encoded by mRNA sequences which are located within two or more different exons within the candidate gene.