



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

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| <b>(51) International Patent Classification <sup>6</sup>:</b><br><b>A01H 1/04, 1/06, C12N 15/00</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>A2</b> | <b>(11) International Publication Number:</b> <b>WO 99/12411</b><br><b>(43) International Publication Date:</b> 18 March 1999 (18.03.99)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>(21) International Application Number:</b> PCT/IL98/00442<br><b>(22) International Filing Date:</b> 10 September 1998 (10.09.98)<br><b>(30) Priority Data:</b><br>121750 11 September 1997 (11.09.97) IL<br><b>(71) Applicants (for all designated States except US):</b> YEDA RESEARCH AND DEVELOPMENT CO. LTD. [IL/IL]; at the Weizmann Institute of Science, P.O. Box 95, 76100 Rehovot (IL). YISSUM RESEARCH DEVELOPMENT COMPANY OF THE HEBREW UNIVERSITY OF JERUSALEM [IL/IL]; P.O. Box 4279, 91042 Jerusalem (IL).<br><b>(72) Inventors; and</b><br><b>(75) Inventors/Applicants (for US only):</b> LEVY, Avraham, A. [IL/IL]; Neve Metz 4, Weizmann Institute of Science, 76100 Rehovot (IL). MEISSNER, Rafael [IL/IL]; Mordei Hagetaot 10, 76464 Rehovot (IL). ELKIND, Yonatan [IL/IL]; Simhi Street 7, 76504 Rehovot (IL).<br><b>(74) Agent:</b> BEN-AMI, Paulina; Yeda Research and Development Co. Ltd., at the Weizmann Institute of Science, P.O. Box 95, 76100 Rehovot (IL).                                                                                                                                                                                                                                                                                                                                                                                                     |           | <b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).<br><b>Published</b><br><i>Without international search report and to be republished upon receipt of that report.</i> |
| <b>(54) Title:</b> METHOD FOR LARGE SCALE MUTAGENESIS IN CROP PLANTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>(57) Abstract</b><br><p>The present invention enables the rapid and large-scale production of mutants in crop plants. This is accomplished by utilizing a miniature plant which can be crossed with a commercial plant of the same species. Mutations are induced in the miniature cultivar, and the mutants subsequently identified in the resulting mutant plant population. Mutant genes of interest can be introgressed into a commercial cultivar by crossing selected mutant miniature plants with the commercial cultivar. Reverse genetics can be undertaken using a plant population of the miniature crop which contains random T-DNA or transposon insertion events and screening this population for insertions into genes of interest. Likewise, the miniature plant population is transformed with a DNA construct comprised of a promoter-less screenable marker gene within a mobile DNA. The mutants derived from this construct are rapidly screened for expression of the screenable marker gene and the promoter operably linked to the screenable marker gene in these transformants is cloned.</p> <div style="text-align: center;"> <br/>       *162162*<br/> <br/>       *G00001*     </div> |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |