

(19) World Intellectual Property Organization
International Bureau



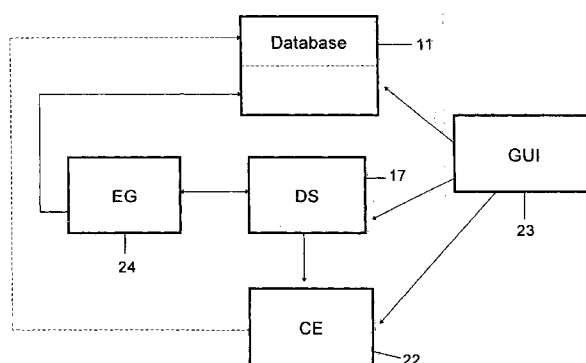
(43) International Publication Date
9 August 2001 (09.08.2001)

PCT

(10) International Publication Number
WO 01/057775 A3

- (51) International Patent Classification⁷: **G06F 19/00**, **G06N 3/00**
- (21) International Application Number: PCT/US01/01988
- (22) International Filing Date: 22 January 2001 (22.01.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
09/499,575 7 February 2000 (07.02.2000) US
- (71) Applicant (for all designated States except US): **PHYS-IOME SCIENCES, INC.** [US/US]; 307 College Road, Princeton, NJ 08540 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **RAMAKRISHNA, Ramprasad** [IN/US]; 6-08 Fox Run Drive, Plainsboro, NJ 08536 (US). **JIM, Kam-Chuen** [US/US]; 6514 Town Court North, Lawrenceville, NJ 08648 (US). **LETT, Gregory, Scott** [US/US]; 409 South Main Street, Hightstown, NJ 08520 (US). **PESTANO, Gary, Anthony** [GY/US]; 47-11 Fox Run Drive, Plainsboro, NJ 08536 (US). **LI, Jian** [CN/US]; 21 Hamilton Lane, Plainsboro, NJ 08536 (US).
- (74) Agents: **RESTAINO, Leslie, Gladstone** et al.; Brown Raysman Millstein Felder & Steiner LLP, 55 Madison Avenue, 4th Floor, Morristown, NJ 07960 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, 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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, 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, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report
- (88) Date of publication of the international search report:
2 October 2003
- 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: SYSTEM AND METHOD FOR MODELLING GENETIC, BIOCHEMICAL, BIOPHYSICAL AND ANATOMICAL INFORMATION



(57) **Abstract:** Genetic, biochemical, biophysical and anatomical information is integrated at the subcellular, cellular, tissue and organ level. At least one database containing biological information is used to generate at least one data structure having at least one attribute associated therewith. An interface interactively views, edits or links together attributes of the data structures to create at least one hierarchical description of subcellular, cellular, tissue and organ function. The hierarchical description may optionally be an elementary, binary or pathway data structure, or, alternatively, an anatomical data structure capable of being modified to form a structural model. A computational engine mathematically generates at least one data structure from the hierarchical description. Genetic information is accessed, tabulated and combined with functional information on the biochemical and physiological role of gene products. Computational models of genetic, biochemical and biophysical processes within cells and higher order systems are automatically formulated, solved and analyzed based on combination of genetic and functional information adduced. A dynamic tool is thereby provided for achieving discernible objectives, such as increased understanding of biological processes, identification of new drug targets for therapeutic intervention and predictions involving the outcome of drug screening. These objectives are accomplished by the realization of highly complex nonlinear dynamic interactions that occur between each gene or gene product.



WO 01/057775 A3