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(71) Applicant: NANYANG TECHNOLOGICAL UNIVERSITY [SG/SG]; 50 Nanyang Avenue, Singapore 639798 (SG).

(72) Inventors: JAYARAMAN, Premkumar; c/o Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 (SG). POH, Chueh Loo; c/o Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 (SG). WANG, Hui Juan; c/o Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 (SG).

(74) Agent: WATKIN, Timothy Lawrence Harvey; Marks &amp; Clerk Singapore LLP, Tanjong Pagar, P O Box 636, Singapore 910816 (SG).

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(54) Title: SYSTEMS AND METHODS FOR SYNTHETIC BIOLOGY DESIGN AND HOST CELL SIMULATION

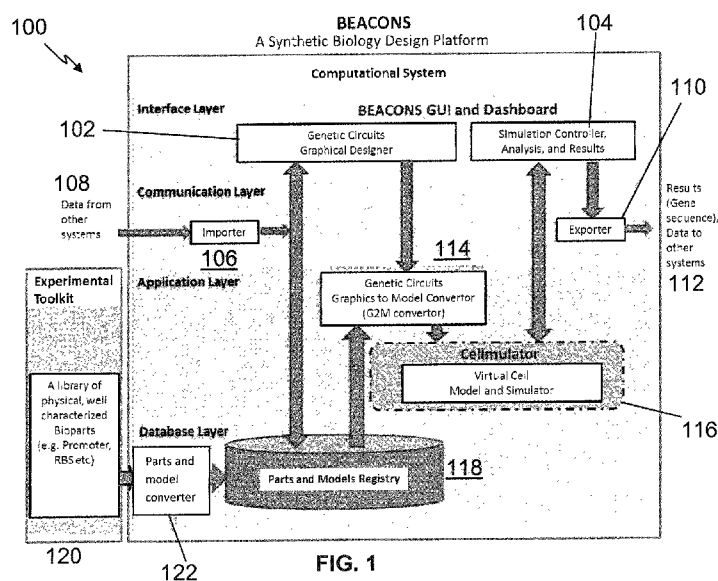


FIG. 1

(57) Abstract: Systems and methods are proposed for synthetic biology design and host cell simulation. In one form, a synthetic biology design system is proposed, comprising a model conversion component configured to: receive genetic circuit data indicative of a user-specified genetic circuit design; identify, from the genetic circuit data, constituent parts of the genetic circuit design, and the connections between the constituent parts; obtain mathematical models corresponding to the constituent parts; and combine the obtained mathematical models into a composite model configured to generate genetic circuit output data based on input data indicative of one or more of: free RNA polymerase concentration, free ribosome concentration and rRNA concentration. The system further comprises a host cell simulation component configured to receive, as input, the genetic circuit output data from the composite model, and based on the genetic circuit output data, generate host cell output data representing a physiological state of the host.



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