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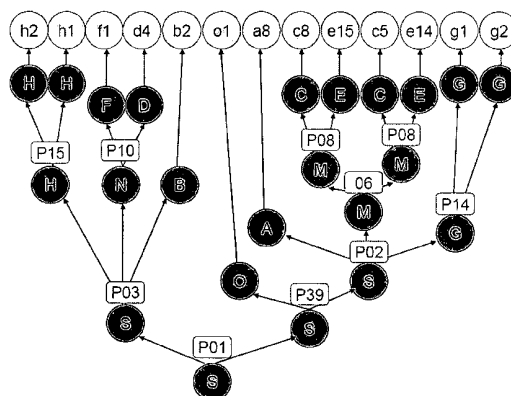
Published:

- 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

(88) **Date of publication of the international search report:**
27 November 2008

(54) Title: SOFTWARE FOR DESIGN AND VERIFICATION OF SYNTHETIC GENETIC CONSTRUCTS

Figure 1B



(57) Abstract: The present invention provides methods for designing and verifying nucleic acid molecules having one or more desired properties. The methods are typically encoded into software, and typically include use of databases and algorithms to determine if nucleic acid molecules designed to have various elements in functional relationships have the intended properties. The result is achieved by determining if the various elements of the designed nucleic acid are in the correct order and physical relationship to other elements, and that the proper elements are selected. Computer systems for implementing the method, as well as business methods for reaping monetary gain from use of the methods, are also disclosed.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/058808
A. CLASSIFICATION OF SUBJECT MATTER
C12Q 1/68(2006.01)i, G06Q 50/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 8 G06F 19/00, G06E 3/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

NCBI PubMed, eKIPASS, "genetic construct, design, verification, element, order, placement, spacing, computer, software, etc."

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Alan Villalobos, et al., 'Gene designer: a synthetic biology tool for constructing artificial DNA segments', In: BMC Bioinformatics, 06 June 2006, Vol.7:285 - see the whole document.	1-6, 8-11, 19-22
A	US 2004/0117128 A1 (Jill Cheng, US) 17 June 2004 - see the whole document, especially Figures 2-3..	1-6, 8-11, 19-22
A	US 2004/0073527 A1 (Alan B. Sherr, US) 15 April 2004 - see the whole document, especially Figures 1-3B.	1-6, 8-11, 19-22
P,X	Yizhi Cai, et al., 'A syntactic model to design and verify synthetic genetic constructs derived from standard biological parts', In: Bioinformatics, 05 September 2007, Vol.23(20), pp.2760-2767 - see the whole document.	1-6, 8-11, 19-22
P,A	Seung-gu Kang and Jeffery G Saven, 'Computational protein design: structure, function and combinatorial diversity', In: Current Opinion in Chemical Biology, 23 May 2007, Vol.11, pp.329-334 - see the whole document.	1-6, 8-11, 19-22

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

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Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/058808

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 23, 24
because they relate to subject matter not required to be searched by this Authority, namely:

Claims 23 and 24 are directed to methods of doing business. Thus this International Search Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iii) of the Regulations under the PCT, to search.
2. ☒ Claims Nos.: 7, 12-18
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

Claims 7 and 12-18 are not clear and concise as required by PCT Article 6. The reason is as follows:
1) In Claims 7 and 12, "software comprising instructions for executing the automated method" are not defined clearly.
2) Claims 13-15 and 16-18 are not clear and concise because these claims quote indefinite claim 7 or 12.
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2008/058808

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004/0117128 A1	17.06.2004	None	
US 2004/0073527 A1	15.04.2004	None	