

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**
(PCT Rule 43*bis*.1)

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2017/035887

International filing date (day/month/year)
05.06.2017

Priority date (day/month/year)
06.06.2016

International Patent Classification (IPC) or both national classification and IPC
INV. G01N15/14 ADD. B01L3/00

Applicant
VERILY LIFE SCIENCES LLC

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



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Date of completion of this opinion

see form
PCT/ISA/210

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-20</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-20</u>
Industrial applicability (IA)	Yes: Claims	<u>1-20</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1 US 2014/158913 A1 (TANASE HIRONOBU [JP]) 12 June 2014
(2014-06-12)
- D2 US 2013/200277 A1 (LI NAN [US] ET AL) 8 August 2013 (2013-08-08)

- 1 The present application does not meet the criteria of Article 33(2) PCT, because the subject-matter of claim 1 is not new.
- 2 D1, Fig. 1 discloses a system comprising:
- at least two excitation lasers (paragraph [044]: *plurality of light sources generating laser light*);
 - an objective that directs light from the at least two excitation lasers to a common point in an interrogation region of a fluidic channel, wherein the fluidic channel directs a flow of a plurality of fluorescently labeled particles through the interrogation region (Fig. 1: *objective lens unit 23*);
 - at least one modulator that temporally multiplexes light from the at least two excitation lasers such that pulses of light from different lasers intersect the common point in the interrogation region of the fluidic channel at different times (paragraph [56], [71]: *microparticles 10 are irradiated with a plurality of laser light beams having different wavelengths in a time-division manner*);
 - at least one detector (Fig. 1: *fluorescence detection unit 4*); and
 - at least one optical element optically coupled to the objective and the at least one detector to direct light emitted from the plurality of fluorescently labeled particles and transmitted through the objective to the at least one detector (Fig. 1 and [80]: *light separation unit 41*).
- 2.1 The corresponding independent method claim 16 is not novel for the same reasons, *mutatis mutandis*.
- 3 The dependent claims do not contain any features which, in combination with the features of any claim to which it/they refers/refer, meet the requirements of the PCT in respect of novelty and/or inventive step.

- Claim 2,6-11 : These features are each merely one of several straight-forward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.
- Claim 3-5,12,13,14. These features are also disclosed in D1: a (single pixel) Photodetector / PMT in [72], sequential pulses in [71], at least three lasers [48], forward scatter [51], side scatter [81].
- Claim 15,17-20: D2 Fig. 1 and [52] disclose directing the light of at least two light sources to two spatially separated interrogation zones (one of them upstream). The skilled man would implement this teaching into the cytometer of D1 where circumstances make it desirable.