

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
25 January 2007 (25.01.2007)

PCT

(10) International Publication Number
WO 2007/011959 A3

- (51) International Patent Classification:
G01N 33/567 (2006.01)
- (21) International Application Number:
PCT/US2006/027902
- (22) International Filing Date: 17 July 2006 (17.07.2006)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/699,947 15 July 2005 (15.07.2005) US
Not furnished 10 July 2006 (10.07.2006) US
- (71) Applicant (for all designated States except US): **QUIN-
TESSENCE BIOSCIENCES, INC.** [US/US]; 505 South
Rosa Road, Madison, WI 53719 (US).

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **TRUBETSKOV,
Vladimir** [US/US]; 7435 Hunters Court, Middleton,
WI 53562 (US). **TRUBETSKOY, Olga** [US/US]; 7435
Hunters Court, Middleton, WI 53562 (US).
- (74) Agents: **CASIMIR, David, A.** et al.; **MEDLEN & CAR-
ROLL, LLP**, 101 Howard Street, Suite 350, San Francisco,
CA 94105 (US).
- (81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP,
KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT,
LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA,
NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC,
SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ,
UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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:
12 July 2007

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.



WO 2007/011959 A3

(54) Title: METHODS AND COMPOSITIONS FOR EXTRACTING MEMBRANE PROTEINS

(57) Abstract: The present invention provides methods and compositions for the isolation and use of membrane proteins and other membrane associated molecules (e.g., peptides, carbohydrates, lipids, or combinations thereof). In particular, the present invention provides amphiphilic polymer compositions and methods of using the compositions to solubilize, enrich and isolate components of biological membranes, including membrane proteins, while retaining function and/or activity of the component.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US06/27902

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G01N 33/567 (2007.01)

USPC - 435/7.2

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)

USPC - 424/9.321, 424/9.51, 401, 402, 422, 423, 424, 450, 489, 428/152, 428/153, 435/7.2, 528/190, 528/191, 528/192, 528/193

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)

PubWEST (USPT, PGPB, EPAB, JPAB); DialogPRO (Life Sciences File 155)

Search Terms: method, isolat?, protein, amphiphilic, polymer, amphipathic, membrane, amphipols, charged, hydrophobic, hydrophilic

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2004/0092449 A1 (EKWURIBE, N.) 13 May 2004 (13.05.2004), para [0030]	1, 15, 19, 36, 53-67, 84-88, 97-98
Y	DUVAL-TERRIE, C. et al. Amphiphilic Biopolymers (Amphibiopols) as New Surfactants for Membrane Protein Solubilization. Protein Sci. 2003, Vol. 12, pages 681-689, entire document, especially pages 684-687, 689, and Fig. 5	1, 15, 19, 36, 53-67, 84-88, 97-98

Further documents are listed in the continuation of Box C.

* 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 another 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

18 February 2007 (18.02.2007)

Date of mailing of the international search report

10 MAY 2007

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774