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(71) Applicant (for all designated States except US): **UNIVERSITY OF FLORIDA** [US/US]; 223 Grinter Hall, Gainesville, FL 32611-5500 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MERICLE, Robert, A.** [US/US]; 4527 NW 36th Drive, Gainesville, FL 32605 (US). **BATICH, Christopher, D.** [US/US]; 3733 N.W. 40th Street, Gainesville, FL 32606-6199 (US). **WATKINS, Courtney, S.** [US/US]; 8001 NE 78th Place, Gainesville,

FL 32609 (US). **BURRY, Matthew, V.** [US/US]; 6202 Northwest 37th Drive, Gainesville, FL 32563-0816 (US). **RICHTER, Erich, O.** [US/US]; 729 NW 9th Avenue, Gainesville, FL 32601 (US). **SWANDESHMUKUL, Santra** [IN/US]; University Village South, Apr. #3, Gainesville, FL 32603-2048 (US).

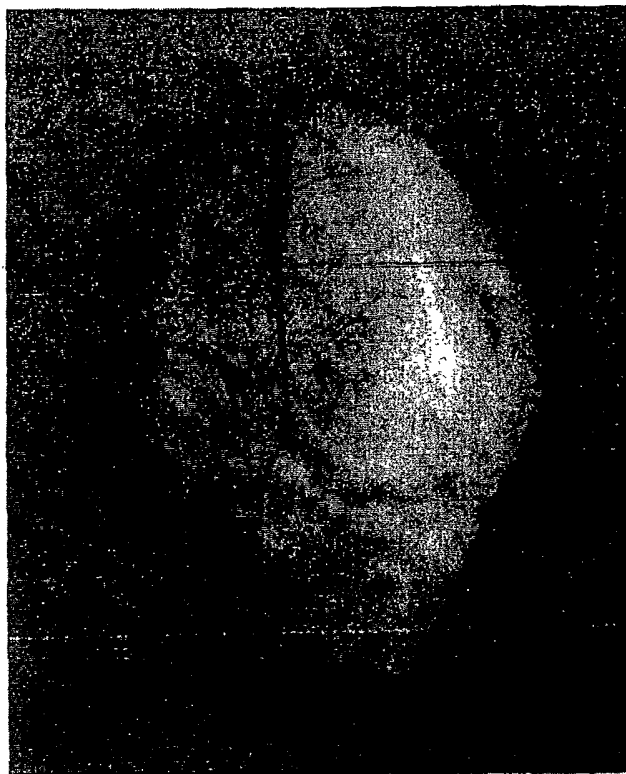
(74) Agents: **CLARKE, Dennis, P.** et al.; Miles & Stockbridge P.C., 1751 Pinnacle Drive, Suite 500, McLean, VA 22102-3833 (US).

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[Continued on next page]

(54) Title: METHOD OF ENDOVASCULAR BRAIN MAPPING



(57) Abstract: Disclosed are the following strategies for endovascularly mapping the brain with a chemical agent capable of staining the preselected region of the brain to a color visibly contrasting with non-stained portions of the brain and of passing through the blood-brain barrier to the preselected region of the brain: 1) Passive transport: (a) pro-drug, (b) Modification of mapping agent to mimic molecules that readily cross the BBB (e.g., amino acid, glucose, etc.); 2) Active transport; 3) Receptor-mediated transport (e.g., antibody mediated); 4) Blood brain barrier (BBB) manipulation; 5) Emulsification of agent (such as  $\beta$ -carotene, organic dye, etc.) to stain capillary endothelium; 6) Embolization of brain capillaries; 7) Grafted-nanoparticle systems for brain delivery of mapping agent.

WO 2003/090604 A3



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*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.*

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INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US03/12835

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) :A61B 6/00

US CL : 600/407, 431

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)

U.S. : 600/407, 420, 431

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)

EAST:

Blood Brain Barrier, permeability, contrast agent, dye, radioopaque, catheter, endovascular, anesthesia

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,352,979 A (CONTURO) 04 October 1994, see col. 10 lines 13-34, col. 15 lines 47-56.	1-3, 5, 8-11, 13, 16, 17, 20-22, 24, 26, 28, 30-32
Y	US 6,321,105 B1 (JENKINS et al.) 20 November 2001, see col. 2 lines 34-49.	1-3, 9-11, 17, 20-22, 24, 26, 30-32
Y	US 6,272,370 B1 (GILLIES et al.) 07 August 2001, see fig. 1 and ol. 6 lines 26	5, 8, 13, 16, 28
A	US 4,792,564 A (HARDER et al.) 20 December 1988, see entire document.	1-32

Further documents are listed in the continuation of Box C.  See patent family annex.

•	Special categories of cited documents:	"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
"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier document published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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		

Date of the actual completion of the international search

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Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

SHAWNA J. SHAW

*Deane Kesselle*

Telephone No. (703) 308-0858

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US03/12835**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

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

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: 4, 6, 7, 12, 14, 15, 23, 25, 27, 29  
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:  
  
the claims are incomplete.
  
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 II Observations where unity of invention is lacking (Continuation of item 2 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.  
 No protest accompanied the payment of additional search fees.