[Billing Code 4140-01-P]

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government-Owned Inventions; Availability for Licensing

AGENCY: National Institutes of Health, Public Health Service, HHS

ACTION: Notice

SUMMARY: The inventions listed below are owned by an agency of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally-funded research and development. Foreign patent applications are filed on selected inventions to extend market coverage for companies and may also be available for licensing.

FOR FURTHER INFORMATION: Licensing information and copies of the U.S. patent applications listed below may be obtained by writing to the indicated licensing contact at the Office of Technology Transfer, National Institutes of Health, 6011 Executive Boulevard, Suite 325, Rockville, Maryland 20852-3804; telephone: 301-496-7057; fax: 301-402-0220. A signed Confidential Disclosure Agreement will be required to receive copies of the patent applications.

Quick2Insight: 3D Biological Tissue Image Rendering Software

Description of Technology: Available for licensing for commercialization or internal use is software providing automatic visualization of features inside biological image volumes in 3D. The software provides a simple and interactive visualization for the exploration of biological datasets through dataset-specific transfer functions and direct volume rendering. The method employs a K-Means++ clustering algorithm to classify a two-dimensional histogram created from the input volume. The classification process utilizes spatial and data properties from the volume. Then using properties derived from the classified clusters the software automatically generates color and opacity transfer functions and presents the user with a high quality initial rendering of the volume data. User input can be incorporated through the simple yet intuitive interface for transfer function manipulation included in our framework. Our new interface helps users focus on feature space exploration instead of the usual effort intensive, low-level widget manipulation.

Potential Commercial Applications:

• Biological tissue visualization in 3D

• Research uses

Competitive Advantages:

• User friendly

• Intuitive interface

Development Stage: Prototype

Inventors: Yanling Liu, Jack Collins, Curtis Lisle (all of FCRDC/SAIC)

Publications:

1. Maciejewski R, et al. Structuring feature space: a non-parametric method for volumetric transfer function generation. IEEE Trans Vis Comput Graphics. 2009 Nov-Dec;15(6):1473-80. [PMID 19834223]

2. Zhou J, Takatsuka M. Automatic transfer function generation using contour tree controlled residue flow model and color harmonics. IEEE Trans Vis Comput Graphics. 2009 Nov-Dec;15(6):1481-8. [PMID 19834224]

3. Röttger S, et al. Spatialized Transfer Functions. In: Brodlie K, Duke DJ, and Joy KI (eds.) EuroVis05 Joint Eurographics - IEEE VGTC Symposium on Visualization 1-3 June 2005, Leeds, United Kingdom, pp. 271-278. [doi: 10.2312/VisSym/EuroVis05/271-278]

Intellectual Property: HHS Reference No. E-254-2012/0 — Software Research Tool. Patent protection is not being pursued for this technology.

Licensing Contact: Michael Shmilovich; 301-435-5019; shmilovm@mail.nih.gov

Collaborative Research Opportunity: The National Cancer Institute is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize automatic 3D visualization of biological image volumes. For collaboration opportunities, please contact John Hewes, Ph.D. at hewesj@mail.nih.gov.

Human Renal Epithelial Tubular Cells for Studies of Cystinosis

Description of Technology: Cystinosis is a rare lysosomal storage disease, affecting about 500 people (mostly children) in the United States and about 2000 people

worldwide. It is an autosomal recessive disorder, wherein patients have a defect in the CTNS gene, which codes for the lysosomal cystine transporter. In this disorder, cystine (an amino acid) is not properly transported out of the lysosome and accumulates in the cells, forming damaging crystals. As a result, cystinosis slowly destroys various organs in the body, including kidneys, liver, muscles, eyes, and brain. Currently, the only treatment for cystinosis is cysteamine, a drug that reduces intracellular cystine levels, although this treatment requires frequent dosing.

Available from NHGRI are human renal epithelial tubular cells isolated from cystinosis patient samples. These cells may be useful for studying the biology of cystinosis, as well as the metabolic role of the lysosomal cystine transporter; they may also be useful for the development of screening assays for potential therapeutic agents for cystinosis.

Potential Commercial Applications:

• Use in studies focused on cystinosis and lysosomal metabolism

• Use in assays for high throughput screening of potential therapeutic agents

Competitive Advantages: These cell lines were derived from cystinosis patient samples, and studies performed using these cells are expected to correlate well to the initiation, progression and treatment of cystinosis in patients.

Development Stage: Early-stage

Inventor: William A. Gahl (NHGRI)

Intellectual Property: HHS Reference No. E-204-2012/0 — Research Tool. Patent protection is not being pursued for this technology.

Licensing Contact: Tara L. Kirby, Ph.D.; 301-435-4426; tarak@mail.nih.gov

Context Aware Mobile Device Software for Substance Abuse Interventions and Behavioral Modification

Description of Technology: Available for licensing for commercial development is software that provides personalized feedback for treating drug dependence and associated risky behaviors. The tool is designed for both healthcare providers at the point-of-care and for self-help. Many people who could benefit from treatment do not receive it because of its low availability and high cost. The available software "mPAL" (Mobile Personalized Assessment and Learning), combines mHealth-based educational functions with the Ecological Momentary Assessment (EMA) functions of TED (transactional electronic diary) software. mPAL allows interchange of data obtained from EMA and learning system in order to deliver context-aware intervention in real time, customized to the individual needs of participants. mPAL enables participants to interact with educational materials at the time and place of their choosing and receive personalized feedback when and where it is most needed. The software integrates into HuRlS where comprehensive patient data can be leveraged alongside the mPAL data to provide better understanding of the underlying factors under investigation.

Potential Commercial Applications:

• Substance abuse

• Drug abuse

• Alcoholism

• Behavioral modification

• Smoking cessation

• Pain management

Competitive Advantages:

• Low-cost mobile treatment mechanism

• Provides personalized feedback to patients at the time and place they choose

• Proven usability in prior clinical studies

Development Stage: Clinical

Inventors: Massoud R. Vahabzadeh, Mustapha Mezghanni, and Jia-Ling Lin (all of NIDA)

Publications:

1. Vahabzadeh M, et al. PGIS: Electronic diary data integration with GPS data initial application in substance-abuse patients. In, Proc. 23rd IEEE International Symposium on Computer-Based Medical Systems, pp 474- 9, 2010. [DOI: 10.1109/CBMS.2010.6042691]

2. Lin JL, et al. A high-level specification for adaptive ecological momentary assessment: real-time assessment of drug craving, use and abstinence. AMIA Annu Symp Proc. 2005:455-9. [PMID 16779081]

3. Vahabzadeh M, et al. An electronic diary software for ecological momentary assessment (EMA) in clinical trials. In, Proc. 17th IEEE International Symposium on Computer-Based Medical Systems, pp 167-72, 2004. [DOI: 10.1109/CBMS.2004.1311709]

Intellectual Property: HHS Reference No. E-195-2012/0 — Software. Patent protection is not being pursued for this technology.

Licensing Contact: Michael Shmilovich; 301-435-5019;

shmilovm@mail.nih.gov

Collaborative Research Opportunity: The NIDA, IRP, Biomedical Informatics Section, is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize Mobile Personalized Assessment & Learning for Addiction Treatment and Behavioral Modification. For collaboration opportunities, please contact Vio Conley at conleyv@mail.nih.gov.

Plasmid Useful in Transplantation Therapy for Age-Related Eye Disease

Description of Technology: Researchers have developed a green fluorescent protein (GFP) based plasmid that can be used to detect differentiated retinal pigment epithelium (RPE) cells. RPE is a layer of cells located behind the eye that becomes damaged in age-related macular degeneration (AMD). Current cell based therapies for treating AMD focus on generating RPE cells from stem cells. This GPF-based plasmid can be inserted into growing stem cells, and the fluorescence marker can be used to detect and purify stem cells differentiating into RPE cells. This advancement allows generation of a purified population of RPE cells for in vitro and transplantation purposes.

Additionally, cells comprising the GFP-based construct may be useful in high-throughput drug screening as a means to: (1) identify potential therapeutic targets of RPE degenerative diseases such as AMD, and (2) evaluate initial toxicity of candidate drugs in RPE cells.

Potential Commercial Applications:

• Fluorescence based marker for detecting and purifying differentiated RPE cells

• Potential use in high throughput drug screening

Competitive Advantages: GFP based marker allows for fast and simple detection of differentiated RPE cells from stem cells.

Development Stage:

• Prototype

• In vitro data available

Inventors: Kapil Bharti (NINDS), Heinz Arnheiter (NINDS), Sheldon Millier (NEI)

Publication: Bharti K, et al. The new paradigm: retinal pigment epithelium cells generated from embryonic or induced pluripotent stem cells. Pigment Cell Melanoma Res. 2011 Feb;24(1):21-34. [PMID 20846177]

Intellectual Property: HHS Reference No. E-054-2012/0 — Research Tool. Patent protection is not being pursued for this technology.

Licensing Contact: Lauren Nguyen-Antczak, Ph.D., J.D.; 301-435-4074; lauren.nguyen-antczak@nih.gov

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