

# *Office of Technology Transfer*



**NIH Bioinformatics Technologies  
Available for Licensing**

**Bioinformatics Technology Forum  
Federal Laboratory Consortium Mid-Atlantic Region  
Rockville, Maryland  
March 4th, 2009**

## INTRODUCTION

NIH has an extensive intellectual property portfolio of early-stage technologies and also invests substantially in their development. Roughly 10 percent of the annual NIH budget is dedicated to intramural research and development activities -- resulting in inventions that form the basis of a variety of new medical technology and therapies in the areas of medical devices, software, vaccines, diagnostics, and reagents. Similar to university research, commercial partners are needed to make sure that the long hours at the lab bench and the public investment pay off in the end in marketed products.

NIH believes that the future development of its innovative, early stage research lies largely with innovative, early stage companies. While the increasingly consolidated pharmaceutical industry remains a steady customer of research reagents and clinical collaborations with NIH, the more exciting therapeutic developments increasingly seem to come from NIH licenses signed with small and medium-sized life science companies early in their growth phase.

To further attract such early-stage concerns and start-ups, NIH affords favorable treatment to small firms and tries to provide IP agreements that facilitate new areas of product development based upon NIH research. For example, financially-burdened smaller companies can benefit from flexibility on patent costs and license execution fees in license agreements. Of particular note for venture-backed firms is that companies do not give up equity or management control nor are their future development or marketing rights compromised by signing NIH license agreements. Finally, once the product is in development, NIH is often able to assist with clinical trials, follow-on research collaborations, and even eventual purchase of the product as a customer.

This brochure focuses on NIH and FDA technologies that fall under the general category of Bioinformatics. These technologies range from microarrays to medical imaging, from software to biomarkers. Each entry has a link to an abstract that further describes the technology. For more information or any inquiries please email us at [nihott@od.nih.gov](mailto:nihott@od.nih.gov)

## Software Technologies

### **Artificial Network for Temporal Sequence Processing**

Lead Inventor: Lipo Wang  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=138>

HHS Reference #: E-027-1993  
*Category: Software*

### **Methods and Apparatuses for Processing Synthesized Models of Complex Medical Structures**

Lead Inventor: Ronald M. Summers  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=618>

HHS Reference #: E-040-1997  
*Category: Software*

### **System and Method for Simulating a Two-Multidimensional Radiation Intensity Distribution of Photon or Electron Beams**

Lead Inventor: Jan Van De Geijn  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=272>

HHS Reference #: E-054-1995  
*Category: Software*

### **DT-MRI and Considerations of Water Diffusion**

Lead Inventor: Peter J. Basser  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1926>

HHS Reference #: E-079-2003  
*Category: Software*

### **Refinement of Isointensity Surfaces**

Lead Inventor: Peter Yim  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=654>

HHS Reference #: E-078-2002  
*Category: Software*

### **Computational Analysis of Nucleic Acid Information Defines Binding Sites**

Lead Inventor: Thomas D. Schneider  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=284>

HHS Reference #: E-080-1995  
*Category: Software*

### **Simulating Microarrays Using a Parameterized Model**

Lead Inventor: Edward R. Dougherty  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1889>

HHS Reference #: E-089-2003  
*Category: Software*

### **Custom Lymphoid Malignancy Diagnostic DNA Microarray - Oligo Probes and Lymphoma Survival Prediction Algorithm**

Lead Inventor: Louis M. Staudt  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=961>

HHS Reference #: E-108-2004  
*Category: Software*

### **Automated Portrait/Landscape Mode Detection on a Binary Image**

Lead Inventor: Daniel X. Le  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=145>

HHS Reference #: E-111-1993  
*Category: Software*

**System and Method for Combining Multiple Learning Agents to Produce a Prediction Method**

Lead Inventor: Lawrence Hunter

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=389>

HHS Reference #: E-118-1996

*Category: Software*

**Profiling of Transcriptional Targets: An Integrated Approach to Define and Evaluate Molecular Targets of Signal Transduction Pathways**

Lead Inventor: Kevin Gardner

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=970>

HHS Reference #: E-127-2003

*Category: Software*

**e-Profiles in Commerce Software**

Lead Inventor: Diana V. Mukitarian

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=498>

HHS Reference #: E-147-2000

*Category: Software*

**Computer Based Model for the Identification and Characterization of Non-competitive Inhibitors (Nci) of the Nicotinic Acetylcholine Receptor**

Lead Inventor: Irving W. Wainer

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=759>

HHS Reference #: E-158-2003

*Category: Software*

**Positioning an Item in Three Dimensions via a Graphical Representation**

Lead Inventor: Jeffrey C. Smith

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=435>

HHS Reference #: E-162-2000

*Category: Software*

**Use of Cumulative Distribution Functions to Determine Protein Purity and Homogeneity.**

Lead Inventor: Alfred L. Yergey

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=499>

HHS Reference #: E-163-2000

*Category: Software*

**Microbial Identification Databases**

Lead Inventor: Jon G. Wilkes

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=182>

HHS Reference #: E-169-2000

*Category: Software*

**Automated Recognition of the Ileocecal Valve for CT Colongraphy Computer-Aided Detection**

Lead Inventor: Ronald M. Summers

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=790>

HHS Reference #: E-174-2003

*Category: Software*

**System and Method of Creating and Managing Relational Data over a Network**

Lead Inventor: Andrew Schwartz

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=242>

HHS Reference #: E-236-2000

*Category: Software*

**Algorithm Predicting Drug Development Potential for a Given Gene to become a Successful Drug Target**

Lead Inventor: Anatoly L. Mayburd

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1477>

HHS Reference #: E-268-2005

*Category: Software*

**Rapid Identification of Genomic DNA  
Sequence Dimorphisms (indels) from  
Whole Genome Shotgun Sequencing Traces**

Lead Inventor: David E. Symer

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1536>

HHS Reference #: E-301-2006

*Category: Software*

**Neural Networks Pattern Recognition**

Lead Inventor: Darrell R. Abernethy

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=954>

HHS Reference #: E-319-2003

*Category: Software*

**Identification of Proteins Using Molecular  
Weight and Accurate Aromatic Amino  
Acid Content**

Lead Inventor: Rodney L. Levine

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=898>

HHS Reference #: E-306-2002

*Category: Software*

## Medical Imaging

### **Two- and Three-Dimensional Auto-radiographic Imaging Utilizing Charge Coupled Devices**

Lead Inventor: Stephen B. Leighton

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=103>

HHS Reference #: E-106-1991

*Category: Medical Imaging*

### **System for Analyzing Diffusion Tensor Magnetic Resonance Images**

Lead Inventor: Peter J. Basser

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=410>

HHS Reference #: E-192-1999

*Category: Medical Imaging*

### **Ultrasound-Hall Effect Imaging System and Method**

Lead Inventor: Han Wen

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=366>

HHS Reference #: E-067-1996

*Category: Medical Imaging*

### **Method for Imaging and Reconstruction of Partial Field of View Phase Contrast MRI**

Lead Inventor: Reza Nezafat

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1356>

HHS Reference #: E-134-2005

*Category: Medical Imaging*

### **Accelerated Magnetic Resonance Imaging**

Lead Inventor: Peter Kellman

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=427>

HHS Reference #: E-200-2000

*Category: Medical Imaging*

### **Tomographic Reconstruction of the 3-D "average propagator" from Diffusion Weighted MR Data Using an Iterative Scheme**

Lead Inventor: Peter J. Basser

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1484>

HHS Reference #: E-164-2006

*Category: Medical Imaging*

### **Fisptrain: A High Signal Magnetic Resonance Imaging (MRI) Sequence with Steady-state Free Precession and Intrinsic Fat Suppression**

Lead Inventor: John A. Derbyshire

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=923>

HHS Reference #: E-237-2003

*Category: Medical Imaging*

### **Vessel Delineation in Magnetic Resonance Angiographic Images**

Lead Inventor: Peter Yim

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1326>

HHS Reference #: E-229-1999

*Category: Medical Imaging*

### **Electroacoustic Imaging Methods and Apparatus**

Lead Inventor: Han Wen

<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=77>

HHS Reference #: E-241-1998

*Category: Medical Imaging*

***In Vivo* Quantitative Tissue Oxygen Imaging Using Pulsed Time-Domain Electron Paramagnetic Resonance - Echo-based Single Point Imaging (ESPI)**

Lead Inventor: Sankaran Subramanian  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1891>

HHS Reference #: E-250-2008

***Category: Medical Imaging***

**Normalized Circumferencial and Areal Measures of the Elliptical Cone of Uncertainty in Diffusion Tensor Imaging**

Lead Inventor: Cheng G. Koay  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1812>

HHS Reference #: E-273-2007

***Category: Medical Imaging***

**Detection of Colon Wall Outer Boundary and Segmentation of the Colon Wall Based on Level Set Methods**

Lead Inventor: Robert Van Uitert  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=1747>

HHS Reference #: E-298-2006

***Category: Medical Imaging***

**A Method and Apparatus to improve an MRI Image**

Lead Inventor: Peter Kellman  
<http://www.ott.nih.gov/Technologies/abstract/Details.aspx?RefNo=587>

HHS Reference #: E-361-2001

***Category: Medical Imaging***

## Biomarkers and Microarray

### **Biomarkers that Allow the Prediction of Responder- and Non-responder Status to Interferon- $\beta$ in Multiple Sclerosis (MS)**

Lead Inventor: Roland Martin

<http://www.ott.nih.gov/Technologies/abstractDetails.aspx?RefNo=1050>

HHS Reference #: E-005-2004

*Category: Biomarkers*

### **Use of ABCB1 Genotyping to Predict Peripheral Neuropathy and Neutropenia Following Paclitaxel Treatment in Human Cancer**

Lead Inventor: William D. Figg

<http://www.ott.nih.gov/Technologies/abstractDetails.aspx?RefNo=1404>

HHS Reference #: E-237-2006

*Category: Biomarkers*

### **Use of SLCO1B3 Genotyping to Predict a Survival Prognosis of Prostate Cancer**

Lead Inventor: William D. Figg

<http://www.ott.nih.gov/Technologies/abstractDetails.aspx?RefNo=1688>

HHS Reference #: E-083-2007

*Category: Biomarkers*

### **A Molecular Grading System for Ductal Carcinoma *in situ* of the Breast**

Lead Inventor: Paul S. Meltzer

<http://www.ott.nih.gov/Technologies/abstractDetails.aspx?RefNo=1744>

HHS Reference #: E-192-2007

*Category: Biomarkers*

### **A Gene Expression-based Survival Predictor for Diffuse Large B Cell Lymphoma Treated with Chemotherapy Plus Rituximab**

Lead Inventor: Louis M. Staudt

<http://www.ott.nih.gov/Technologies/abstractDetails.aspx?RefNo=1840>

HHS Reference #: E-256-2008

*Category: Biomarkers*

### **Use of CYP1B1\*3 Genotyping to Predict Survival to Docetaxel Treatment in Androgen-independent Prostate Cancer**

Lead Inventor: William D. Figg

<http://www.ott.nih.gov/Technologies/abstractDetails.aspx?RefNo=1312>

HHS Reference #: E-307-2005

*Category: Biomarkers*

### **A Custom DNA Microarray for Molecular Diagnosis and Prognosis in Human Lymphoid Malignancies**

Lead Inventor: Louis M. Staudt

<http://www.ott.nih.gov/Technologies/abstractDetails.aspx?RefNo=961>

HHS Reference #: E-234-2003

*Category: Microarray*

### **Virus Microarray**

Lead Inventor: Cassio S. Baptista

<http://www.ott.nih.gov/Technologies/abstractDetails.aspx?RefNo=1450>

HHS Reference #: E-206-2006

*Category: Microarray*