

**Name and brief description of initiative:**  
**Microscopy and Computational Biology**

NIBIB, NIGMS, and NCRR all support technology development for microscopy. NIGMS also supports an extensive portfolio of basic research projects in cell biology that utilize light and electron microscopy and single molecule methods. NIH anticipates future growth in both technology development and applications of microscopy. At this time the fields of image processing and image informatics for microscopy are still under-populated and underdeveloped. The NIH is interested in supporting expanded efforts in this area.

NIBIB, NIGMS, and NCRR accept R01 applications in the fields of image processing and image informatics. Applicants may submit unsolicited R01s, or respond to a current bioengineering or bioinformatics announcement.

**Funding Opportunities:**

Funding opportunities and recent announcements of interest for microscopic image informatics and related topics in computational biology include (July 2006):

Traditional Research Grant (unsolicited)

R01 - All Institutes, assigned according to topic.

General Bioengineering and Bioinformatics

PAR-04-023 (R01) Bioengineering Research grants (BRG)

PA-02-011 (R01) Bioengineering Research Partnerships (BRP)

PA-03-058 (R21) Exploratory-Developmental Bioengineering Research Grants

PAR-05-057 (PA-02-141) (R01) Software Development and Maintenance

Exploratory/Developmental

PA-06-181 (PA-03-107) (R21) General Exploratory-Developmental

PA-06-180 (PA-03-108) (R03) Small Research Grants

All Institutes accept unsolicited R01s in their specialty areas, but not all Institutes participate in the above announcements. Be sure to call the program contacts listed in the announcement and to check your eligibility carefully before responding to announcements, especially if they utilize mechanisms other than the R01.

**Institute Contacts for Microscopic Image Informatics:**

NIBIB (EB) National Institute of Biomedical Imaging and Bioengineering

Haller, John	<a href="mailto:hallerj@mail.nih.gov">hallerj@mail.nih.gov</a>	301-451-4772
McLaughlin, Alan	<a href="mailto:mclaugal@mail.nih.gov">mclaugal@mail.nih.gov</a>	301-451-4772
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Zhang, Yantian	<a href="mailto:yz312@nih.gov">yz312@nih.gov</a>	301-402-1373

NIGMS (GM) National Institute of General Medical Sciences (Imaging and Cell Biology)

Deatherage, James	<a href="mailto:deatherj@nigms.nih.gov">deatherj@nigms.nih.gov</a>	301-594-0828
Lewis, Cathy	<a href="mailto:lewisc@nigms.nih.gov">lewisc@nigms.nih.gov</a>	301-594-0828

NCRR (RR) National Center for Research Resources

Farber, Greg	farberg@mail.nih.gov	301-435-0778
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**Review:**

The Bioengineering Sciences and Technologies (BST) IRG reviews technology development for microscopic image processing and image informatics and related areas of computer science, statistics, data management, and modeling. Study sections of the BST IRG specialized to review applications in these areas include Biodata Management and Analysis (BDMA), Modeling and Analysis of Biological Systems (MABS), and Microscopic Imaging (MI).

BST: Bioengineering Sciences and Technologies IRG

<http://cms.csr.nih.gov/PeerReviewMeetings/CSRIRGDescription/BSTIRG>

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**Name and brief description of initiative:**

**Roadmap Imaging Activities**

The NIH Roadmap supports a number of activities aimed at developing new imaging reagents and methods for biological systems analysis. The intention is to develop experimental tools to complement the computational approaches developed by the National Centers for Biomedical Computing and other related recent trans-NIH computational biology initiatives. At this time (July 2006) there are no active Roadmap imaging technology announcements. Ongoing Roadmap research programs relevant to computational biology and bioinformatics are listed below.

**Roadmap Building Blocks, Biological Pathways, and Networks:**

This branch of the Roadmap supports the National Technology Centers for Networks and Pathways to develop technology for acquiring quantitative information at subcellular, biologically-relevant timescales for temporal and spatial characterization of complex biochemical pathways and molecular interactions. The Roadmap has issued two RFAs: RM-04-005 (2004) and RM-04-019 (2005) for Centers. Several of the five funded Centers have significant imaging and informatics components. Contact: Doug Sheeley, NCRR. URL: <http://nihroadmap.nih.gov/buildingblocks/>. Funded projects are listed at <http://nihroadmap.nih.gov/grants/fundedresearch.asp>.

A second activity of this branch of the Roadmap is Metabolomics Technology Development. RFA-RM-04-002 (2004) supports development of technologies for identifying and quantifying cellular metabolites and their fluxes at high anatomical, spatial, and temporal resolution. Contact: Maren R. Laughlin, NIDDK. The nine funded projects are listed at <http://nihroadmap.nih.gov/grants/fundedresearch.asp>.

**Roadmap Molecular Libraries and Imaging (MLI):**

The High-Specificity/High-Sensitivity Molecular Imaging Probes component of the MLI has issued two RFAs for development of high sensitivity imaging. RM-04-001 (2004) <http://grants2.nih.gov/grants/guide/rfa-files/RFA-RM-04-001.html> was for P20 Exploratory Center Grants for 10-100 fold improvement of molecular detection in living cells. Contact: Cathy Lewis, NIGMS. RFA RM-04-021 (2005) <http://grants2.nih.gov/grants/guide/rfa-files/RFA-RM-04-021.html> from ML104 was for imaging probes with clinical potential. Contact: Alan McLaughlin (NIBIB). Funded projects are listed at <http://nihroadmap.nih.gov/grants/fundedresearch.asp>.

The MLI branch of the Roadmap supports the Molecular Imaging and Contrast Agent Database (MICAD) <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=micad> The MICAD database catalogs imaging probe information, describing the specificities, activities, and applications of imaging probes for a wide range of diseases and biological functions. Contact: Ann Menkens (NCI). The MLI also supports the Imaging Probe Development Center (IPDC). This center offers the production of known imaging probes for the research community in cases where there is no viable commercial supplier, and generates novel imaging probes for biomedical research and clinical applications. Contact: King Li (CC, OD)