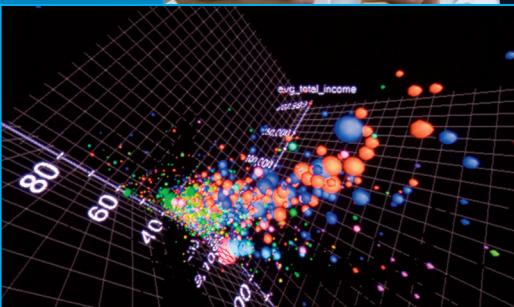
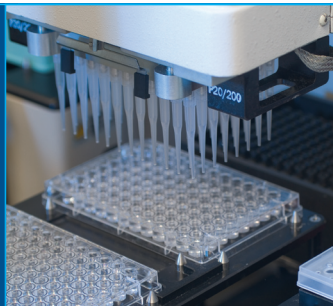
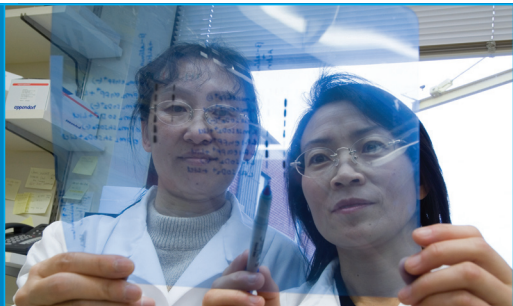


Advanced Technology Program



Accelerating discoveries for the treatment of cancer and AIDS

Advanced Technology Program

Accelerating discoveries for the treatment of cancer and AIDS

The Advanced Technology Program (ATP) laboratories at the National Cancer Institute at Frederick, operated by SAIC-Frederick, Inc., were established to provide NCI and other NIH investigators with access to leading-edge technologies and specialized expertise through a tightly integrated, highly effective approach to the study of complex biological problems.

Under the direction of Tim Harris, Ph.D., our scientists—at the forefront of their respective fields—continuously meet challenges with new technologies and make significant contributions to collaborative research projects with NIH scientists and extramural collaborators.

Our wide range of cutting-edge technologies accelerate the translation of basic research discoveries into new treatments for patients with cancer and AIDS. These technologies are integrated under the unified management structure of a Federally Funded Research and Development Center (FFRDC). The FFRDC enables the rapid and flexible deployment of these technologies to achieve targeted R&D priorities of the federal government and of our corporate and academic partners.

Powerful Tools

Each ATP lab devotes a substantial portion of its effort to technology development, resulting in advanced methods and approaches designed for maximum impact on discovery and translational research.

The ATP can be accessed through a variety of funding, contractual, and partnership mechanisms. Please contact for further information:

Program Director

Timothy Harris, PhD

Corporate Vice President of Technology
SAIC-Frederick, Inc.
301-846-1144 or harristjr@mail.nih.gov

Public–Private Partnerships

David Hoekzema, MBA

Director, Strategic Business Development
SAIC-Frederick, Inc.
301-846-5895 or hoekzemadt@mail.nih.gov

Intramural/NIH Institutional Programs

Bruce Crise, PhD

Director, Business Development
SAIC-Frederick, Inc.
301-846-5739 or criseb@ncifcrf.gov

Advanced Technology Program

SAIC-Frederick, Inc.
National Cancer Institute at Frederick
P.O. Box B
Frederick, MD 21702

www.ncifcrf.gov/atp

Research Collaborations

The resources available to you include the opportunity to partner with the biomedical research scientists on our staff. They are engaged daily in everything from routine laboratory processes to complex experimental design and interpretation of results. Projects frequently flow across the range of expertise within the ATP groups. Our scientists have already enabled many investigators to extend their inquiries to depths and in directions perhaps otherwise inaccessible.

ATP Technologies and Capabilities

Genetics and Genomics

4 Molecular Technology

Proteins and Proteomics

6 Protein Chemistry

8 Protein Expression

10 Proteomics and Analytical Technologies

12 Viral Technology

Imaging and Nanotechnology

14 Image Analysis

16 Nanotechnology Characterization

Computing

18 Advanced Biomedical Computing

Integrated In Vivo Services

20 Animal Sciences

Communications

22 Visual Communications

Laboratory of Molecular Technology

Systematic genomics in a high-throughput environment

A Powerful Partner

The Laboratory of Molecular Technology (LMT) is an integrated molecular biology laboratory focusing on high-throughput gene discovery and analysis, including advanced sequencing, genetics and genomics technologies, together with associated bioinformatics and information management. LMT offers access to its technologies and expertise through routine technical support, as well as more complex collaborations that focus on technology development. Along with the Core Genotyping Facility [<http://cgfweb.nci.nih.gov/>], the ATP has an unparalleled breadth of capabilities in the areas of genetics and genomics.

Helping You with Powerful Science

- Highly automated robotic systems that increase throughput, accuracy, and cost efficiency
- High-throughput automation for nucleic acid extractions, sequencing, molecular diagnostics, microarray and quantitative PCR analyses
- Strategies designed to identify pathways/ genes/gene products involved in the development of cancer
- Integration of genomic DNA and expression profiles to identify prognostic and diagnostic markers

For information about these services, contact:

Ester Rozenblum, PhD

Phone: 301-846-6294

Fax: 301-846-6100

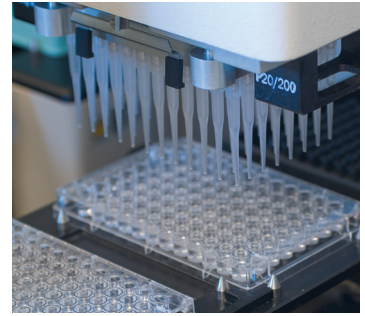
erozenbl@ncifcrf.gov

For information:
www.ncifcrf.gov/atp

For support:
www.ncifcrf.gov/research-technologies

Areas of Expertise and Available Technologies

The LMT is offering Next-Generation Sequencing (Roche's 454) with 250 base pair reads and *de novo* sequencing capabilities; Affymetrix High Throughput Arrayer with capacity for simultaneous processing of 24, 48, 72 and 96 samples for genotyping, gene expression and molecular profiling; array-Comparative Genomic Hybridization (array-CGH) on Whole Genome Microarray and on an LMT-developed High Density Cancer Gene array-CGH; an LMT-developed microRNA Microarray; and an LMT-developed Virus Microarray, for molecular profiling, virus and microRNA discovery, are provided on Agilent platforms.



DNA Sequencing

- Low and High-throughput Sanger DNA Sequencing
- Next-Generation Sequencing on a 454 platform
- Mutation screening
- Viral insertion site identification and mapping
- LMT-LIMS Sequencing Database

Laboratory Automation

- Beckman FX/Argencourt DNA and RNA extraction
- Real-time PCR
- Multiple Beckman ALH for sequencing processing
- HTA for 24- and 96-sample PEG arrays

Quantitative PCR and SNP Genotyping

- Absolute and relative gene expression analysis utilizing TaqMan® assays
- Multiplex gene expression analysis
- Microarray confirmation analysis: Copy number and fold expression
- miRNA confirmation analysis: Qiagen miRNA panel
- SNP genotyping, utilizing TaqMan® assays

Clinical Diagnostics

- Mutation detection under Clinical Laboratory Improvement Amendment (CLIA)
- Pathogen detection for mycoplasma and viruses

Microarrays

- Low- and High-throughput Affymetrix Gene Expression Microarrays
- Affymetrix Genotyping Microarrays
- Agilent Expression Microarrays
- Low- and High-throughput array-CGH
- miRNA Microarrays
- Virus Microarrays

ATP Collaborative Technology Development

- Next-Gen Sequence Template Capture
- Whole Transcriptome Sequencing
- Ultra high-throughput mutation detection
- Whole Genome Methylation Status
- Wiki-LIMS
- Integrated 8q24 physical, genetic and transcript map (CGF, ABCC)
- Bead-based Self-Assembling Protein Microarray

Protein Chemistry Laboratory

Expertise in macromolecular interactions

A Powerful Partner

The Protein Chemistry Laboratory (PCL) has expertise in macromolecular interactions and experience with surface plasmon resonance (SPR) spectroscopy. These techniques provide valuable resources for identifying appropriate targets for drug development, developing assays for drug screening, characterizing affinity reagents, and gaining insights into areas of anti-cancer and anti-HIV drug development. PCL also offers advanced protein chemistry techniques for protein identification and has developed powerful tools for molecular binding studies.

Helping You with Powerful Science

- SPR (Biacore®), fluorescence spectroscopy, and mass spectrometry
- SPR Array Proteon XPR 36
- High-sensitivity protein identification (using both Edman sequencing and mass spectrometry)
- HPLC purification and quality control of proteins and oligonucleotides
- Extramural partnerships to develop new techniques and technologies

For information about these services, contact:

Robert Fisher, PhD

Phone: 301-846-5154

Fax: 301-846-7269

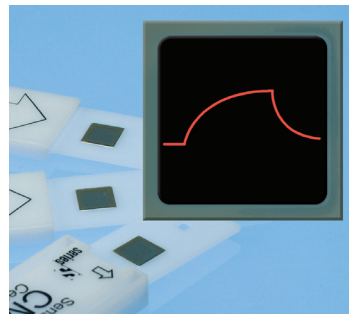
fisher@ncifcrf.gov

For information:
www.ncifcrf.gov/atp

For support:
www.ncifcrf.gov/research-technologies

Areas of Expertise and Available Technologies

The depth of expertise in SPR spectroscopy at PCL provides an unparalleled resource to study macromolecular interactions, ranging from small molecules binding target proteins to protein-nucleic acid interactions. The technology and expertise at PCL are provided to the research community through routine technical support as well as through more complex collaborations.



SPR Spectroscopy

- Acquisition of real-time signals that detail the molecular interactions between a tethered ligand and solution analytes
- Kinetic data, association/dissociation and equilibrium constants, obtained in a label-free environment
- Design of additional experiments to investigate the molecular mechanisms of interactions

Protein Chemistry/ Characterization

- Mass spectrometry and in-gel digestion used to identify proteins, cross-links, phosphorylation sites, and other post-translational modifications
- Classical Edman amino acid sequencing, which gives unambiguous and quantitative results about the N-terminal amino acid sequence of a protein
- Protein, peptide, and oligonucleotide analysis and purification by high-performance liquid chromatography

Mass Spectrometry

- Expertise in MALDI-TOF (matrix-assisted laser desorption/ionization time-of-flight) mass spectrometry; emphasis on molecular-weight determination of oligonucleotides, proteins, and peptides
- Ongoing MALDI-TOF development of new matrices/modifiers, sample preparation, and BIA/MS

Fluorescence Spectroscopy

- Steady-state fluorescence anisotropy and fluorescence intensity measurements for studying solution-based molecular interactions
- Time-resolved fluorescence approaches for quality control and interaction analysis

Protein Expression Laboratory

Innovative solutions for access to proteins

A Powerful Partner

The Protein Expression Laboratory (PEL) develops and adopts innovative gene cloning, cell culture, protein expression, and protein purification technologies to deliver cells, clones, and recombinant proteins for a broad range of applications. Under the leadership of an inventor of the Gateway® cloning system, PEL has proven particularly effective at providing researchers with solutions to intractable protein expression problems.

Helping You with Powerful Science

- Construction of chimeric proteins that can be employed as in vivo reagents either to capture interacting proteins or to follow the dynamics of protein migration and interactions
- Expression of interacting proteins and virus-like particles from single DNA constructs
- Discovery of protein–protein interactions via tandem affinity purification
- Construction of lentiviruses to express genes and reporters from a variety of mammalian promoters
- The most highly efficient in vitro protein synthesizing systems available

For information about these services, contact:

James Hartley, PhD

Phone: 301-846-7375

Fax: 301-846-6631

hartley@ncifcrf.gov

For information:
www.ncifcrf.gov/atp

For support:
www.ncifcrf.gov/research-technologies

Areas of Expertise and Available Technologies

PEL has invented and demonstrated a proprietary approach to highly parallel protein expression for large numbers of proteins in human and other proteomes. These proteins will be critical for the development of reagents for biomarker discovery, validation, and detection. PEL provides access to its technologies and expertise through both routine technical support and more involved collaborations.



Gene Cloning

- DNA clone construction, simple to complex
- Expression vectors with a wide variety of promoters, fusion tags, drug selections
- Vectors for *E. coli*, *Pichia pastoris*, *K. lactis*, baculovirus, lentivirus, adenovirus, transient and stable insect and mammalian expression
- Complete sequencing of all clones

Expression Optimization

- Parallel optimization in *E. coli*, yeast, insect, and mammalian cells
- Comparison of promoters, fusion tags, expression conditions
- Analysis by stained gels and westerns
- Comprehensive positive and negative controls

Discovery of Protein–Protein Interactions

- Tandem affinity purification with in-house vectors and assays complementary to yeast two-hybrid
- N- or C-terminal fusions
- Two internal controls and a parallel negative control for each experiment
- Identification of interacting proteins by the ATP Laboratory of Proteomics and Analytical Technologies

Instrumented Expression

- Fully instrumented expression for superior yield and reproducibility
- Vessels from 1 to 60 liters
- Automatic capture of growth parameters
- Automated sampling 24-7
- Outstanding for secreted mammalian proteins

Protein Purification

- Microscale preliminary scouting with MEA Phynexus
- Affinity or native purification
- Fusion tag removal
- Low endotoxin available
- Microgram-to-gram scale with six computer-controlled work stations

Laboratory of Proteomics and Analytical Technologies

Proteomics discoveries through enabling technologies

A Powerful Partner

As one of the major mass spectrometry centers worldwide, and as its name suggests, the Laboratory of Proteomics and Analytical Technologies (LPAT) has a wide range of technologies and expertise for characterizing both single proteins and multiple proteins present within complex mixtures, as well as for cell profiling. These capabilities have helped to place NCI at the forefront of proteomics research.

Helping You with Powerful Science

- State-of-the-art instrumentation capable of both high-throughput and complete protein characterization: includes three LTQ ion traps; an LTQ-FT-Mass Spectrometer (MS); a QqTOF MS; and a MALDI-TOF/TOF
- New methods for the analysis of lipids and steroid hormones
- New methods for quantifying carcinogens and their metabolites, PCR products, DNA fragments, proteins, peptides, and amino acids
- Nuclear Magnetic Resonance facility specializing in small-molecule structural determination and becoming increasingly involved in metabolomics

For information about these services, contact:

Timothy D. Veenstra, PhD

Phone: 301-846-7286

Fax: 301-846-6037

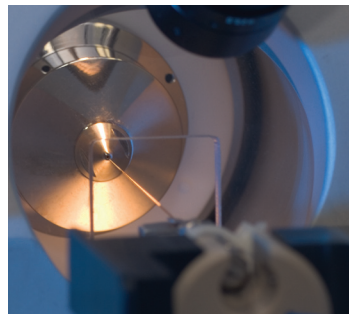
veenstrat@mail.nih.gov

For information:
www.ncifcrf.gov/atp

For support:
www.ncifcrf.gov/research-technologies

Areas of Expertise and Available Technologies

The technologies developed at LPAT include a broad range of proteomic and protein analytical assays. Access to the LPAT technologies and expertise is available to the research community through both routine technical support and more involved collaborations.



The Mass Spectrometry Center

- Protein identification via sequence-related information obtained by LC-MS/MS
- Peptide mapping acquired by MALDI-TOF
- Quantitative proteomics
- Identification of protein complexes
- Small molecule identification using tandem MS
- Quantitative lipid analysis
- Analysis of clinical samples, including tissue sections

Separation Technology

- Capillary electrophoresis
- Fast separation and sensitive laser-induced fluorescence detection
- Determination of protein isoelectric point
- High-pressure liquid chromatography
- DNA mutant detection
- Gas chromatography

Nuclear Magnetic Resonance

- NMR data acquisition
- Structural assignment
- Pulse sequence programming

Viral Technology Laboratory

Specialty services in viral-based applications

A Powerful Partner

The Viral Technology Laboratory (VTL) focuses on oncogenic viral pathogenesis and the role of viruses in cancer etiology. Using a combination of well-established techniques and cutting-edge technologies, VTL performs serological and molecular assays that are sensitive, specific, cost-effective, and time-efficient. VTL also produces custom lentiviruses and adenoviruses for transgene or shRNA delivery. These viruses are powerful tools that enable researchers to manipulate and study the role of specific genes involved in cancer and various other disease states.

Helping You with Powerful Science

- Generation, amplification, and purification of lentiviruses and adenoviruses expressing transgenes or shRNAs for gene delivery in vitro and in vivo
- Development of PCR-based full-genome expression arrays for viruses or pathways
- Nucleic acid extraction, purification, and quantitation from blood samples, cells or tissues for various downstream uses, including PCR and SNP analysis
- Customized applications and assay development for viral analysis, including antibody and antigen screening assays, as well as sensitive and specific quantitative real-time PCR assays to detect viruses

For information about these services, contact:

Betty Conde, PhD

Phone: 301-846-7533

Fax: 301-846-7119

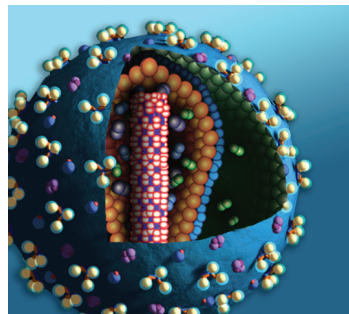
conde@ncifcrf.gov

For information:
www.ncifcrf.gov/atp

For support:
www.ncifcrf.gov/research-technologies

Areas of Expertise and Available Technologies

VTL offers custom recombinant lentiviral and adenoviral vectors for studying gene expression in vitro and in vivo. VTL also offers a variety of customized applications, assays, and analyses, including validated serological and molecular assays for measuring HBV, HCV, EBV, HIV, and HTLV.



Lentivirus and Adenovirus Production

- Recombinant lentiviral and adenoviral expression vector construction and virus production
- Viral vector expression of shRNA for gene knockdowns
- Pre-made adenoviruses (Ad-GFP, Ad-Cre-GFP, Ad-LacZ)
- Large-scale CsCl purified preparations of transfection-quality plasmid DNA and BAC preps
- Mammalian cell transduction and gene expression

Custom Molecular Services

- SuperArray testing
- Development of Q-PCR arrays for viral gene expression or cellular pathways
- Viral genotyping assays
- Phylogenetic analysis of viral nucleotide and protein sequence data

Serological Testing

- Luminex® multiplex cytokine, chemokine, and cell-signaling analysis
- Commercial and in-house serological assays (ELISA, IFA) for HBV, HCV, EBV, HIV, and HTLV
- Custom serological assay development

Molecular Testing

- Nucleic acid (DNA and RNA) extraction and purification from many specimen types such as blood, cells, tissues, and saliva
- Validated real-time quantitative PCR assays that measure viral nucleic acids (viral loads)
- Affymetrix human gene microarrays

Image Analysis Laboratory

Cellular and molecular imaging expertise

A Powerful Partner

The Image Analysis Laboratory (IAL) provides the research community with valuable tools for understanding molecular interactions at the tissue as well as cellular and intracellular levels, and for imaging of living and fixed cells, tissues, and even whole organisms. This laboratory, coupled with others in the NCI, allows the researcher to study the molecular biology of cancer in living tissue.

Helping You with Powerful Science

- State-of-the-art, 3D optical (confocal) microscopy
- State-of-the-art scanning and transmission electron microscopy
- State-of-the-art algorithms for quantitative confocal image analysis of tissue and cells

For a detailed listing of the expertise and technologies available through IAL, please see facing page.

For information about these services, contact:

Stephen Lockett, PhD

Phone: 301-846-5515

Fax: 301-846-6552

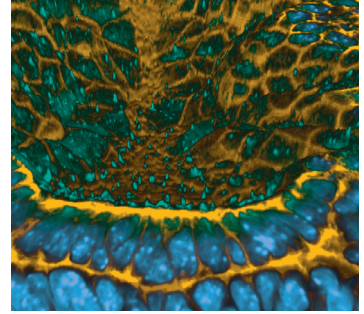
slockett@ncifcrf.gov

For information:
www.ncifcrf.gov/atp

For support:
www.ncifcrf.gov/research-technologies

Areas of Expertise and Available Technologies

Confocal and electron microscopies offer tremendous potential as a “bridge” between molecular imaging from the microscopic level to whole animals. Access to IAL technologies and expertise is available to the research community through both routine technical support and more involved collaborations.



Confocal Microscopy

- High-resolution and time-lapse fluorescence imaging
- Microinjection
- Differential Interference Contrast microscopy
- Ratio imaging of calcium ions and other elements
- Experiments in uncaging and photoactivation of molecules in cells
- Fluorescence resonance energy transfer (FRET) experiments to detect direct-binding of fluorescence-tagged molecules
- Fluorescence recovery after photobleaching (FRAP) experiments to measure the diffusion of molecules
- Two-photon excitation

Image Analysis

- Cell and cell nucleus segmentation
- Deconvolution
- Mathematical modeling of FRAP data
- Spatial-statistical analysis of gene organization in interphase nuclei
- Co-localization analysis of two fluorescence-tagged molecules in cells
- Automatic data archiving

Electron Microscopy

- Transmission electron microscopy (TEM) for ultrastructural and semi-quantitative, negative-stained, and shadow-replica analysis; analysis of DNA, DNA-protein complexes, RNA, and whole chromosome mounts
- Scanning electron microscopy (SEM), including cell-surface immunolabeling and cryofractured samples
- Immunoelectron microscopy: pre- and post-embedding, silver-enhanced, and negative-stained analysis
- Freeze-fracture replication of tissue and cells
- Ultra Microtomes: Toluidine Blue-O-stained plastic sections from embedded samples
- Electron dispersive X-ray spectroscopy
- Variable pressure SEM

Nanotechnology Characterization Laboratory

New applications in cancer therapeutics and diagnostics

A Powerful Partner

The Nanotechnology Characterization Laboratory (NCL) provides preclinical efficacy and toxicity testing of nanotech cancer therapeutics and diagnostics. The NCL is a formal collaboration among the National Cancer Institute's Alliance for Nanotechnology in Cancer, the National Institute of Standards and Technology (NIST), and the Food and Drug Administration (FDA) to accelerate the development and commercialization of nanoscale particles and devices for clinical applications.

Helping You with Powerful Science

- Sterility testing
- Physicochemical characterization: size, topology, and molecular weight
- Aggregation and purity
- Surface characteristics, functionality
- Zeta potential, stability, solubility
- In vitro toxicity and immunological characterization
- In vivo efficacy and toxicity testing: pharmacokinetics and ADME
- Immunotoxicity
- Dose-range finding toxicity
- Efficacy

For information about these services, contact:

Scott E. McNeil, PhD

Phone: 301-846-6939

Fax: 301-846-6399

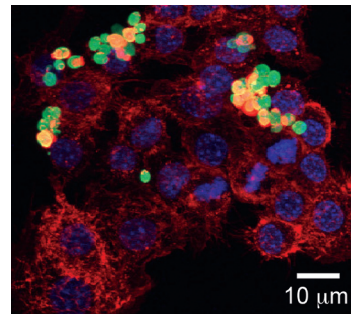
ncl@mail.nih.gov

For information:
ncl.cancer.gov

For support:
www.ncifcrf.gov/atp

Areas of Expertise and Available Technologies

NCL has an interdisciplinary staff with expertise in the evaluation of nanomaterials from the majority of types intended for medical applications—including liposomes, nanoshells, nanorods, metal colloids, functionalized gold, titanium dioxide, derivatized fullerenes, dendrimers, quantum dots, nanoemulsions, nanocrystals, iron oxides, and polymer-based nanomaterials. NIST and FDA also bring unique expertise to the NCL partnership.



The NCL Assay Cascade

NCL now has more than 30 protocols in its assay cascade. These assays undergo in-house validation and regular revision to ensure applicability to a variety of nanomaterials. NCL has recently developed methods for:

- Gadolinium quantitation
- Two lysosomal dysfunction assays
- Stressor gene responses in cells
- Mycoplasma detection
- Cellular uptake via light microscopy
- Quantitation of gold in biological matrix
- Thin-layer chromatography assay for lipid-based systems
- Inductively coupled plasma mass spectrometry
- Atomic force microscopy
- Dynamic light scattering

Moving Nanotechnology Concepts to the Clinic

For many nanotechnology drug developers, the prospect of preparing, characterizing, and submitting these

products for regulatory approval can be daunting. Unlike protocols for small-molecule drugs or protein-based drugs, the protocols for characterizing new nanotech products are not well established.

NCL provides a smoother path to clinical trials by offering characterization based on protocols developed especially for nanoscale particles.

NCL assays are now being promoted as “best practices” by standards-developing organizations such as ASTM International and the International Standards Organization (ISO). Three NCL methods for nanoparticle biocompatibility testing are now ASTM International standards.

The data generated from NCL characterization are intended for use in support of submission of Investigative New Drug (IND), or Investigational Device Exemption (IDE) applications with the FDA. NCL also conducts independent and collaborative research programs directed at understanding the relationships between nanoparticle structure and biological activity.

Advanced Biomedical Computing Center

High-performance bioinformatics and modeling support

A Powerful Partner

The Advanced Biomedical Computing Center (ABCC) provides high-performance computing support to biological researchers in all areas of bioinformatics, including the areas of proteomics, molecular modeling, imaging, data-intensive classification and knowledge discovery, structural biology and genomics, and nanotechnology modeling and simulation. ABCC maintains technological currency to provide a cyber infrastructure and scientific collaboration and consulting, which creates an environment for the solution of data-intensive problems.

Helping You with Powerful Science

- Up-to-date, local copies of such databases as Genbank, PDB, PIR, SWISS-PROT, Genpept, NRDBNucl, and NRDBProt
- Comprehensive and diverse software resources, including high-performance computing resources, high-capacity storage, and 3D visualization for imaging
- Technical support, including collaborative research, parallel program development, visualization/graphics, algorithm optimization, and training seminars
- Infrastructure support and access to the Cancer Biomedical Informatics Grid™ applications

For information about these services, contact:

Robert Stephens, PhD

Phone: 301-846-5787

Fax: 301-846-5762

bobs@ncifcrf.gov

For information:
www.ncifcrf.gov/atp

For support:
www.ncifcrf.gov/research-technologies

Areas of Expertise and Available Technologies

Of particular interest, ABCC is developing analytical approaches for serum proteomic profiles and genomic analysis. Recently, ABCC has developed classification methods to identify biomarkers for interstitial bladder cystitis and colorectal cancer. For colorectal cancer, the biomarker is 86% accurate for pre-cancerous polyps and 96% accurate for Stage I tumors. ABCC has also developed rapid methods for finding tandem repeats and segmental duplications in whole genomes. In addition, ABCC has developed techniques for doing whole genome comparisons.



Bioinformatics

- Bioinformatics training and consultation with individual scientists or entire laboratories
- On-line access to all common bioinformatics applications and databases
- Sequence comparisons and analysis
- Database searching and peptide analysis, including pathway and microarray analysis; custom application and database development; multiple execution platforms; Web-accessible applications; Web hosting; and Biomarker identification and classification
- Microarray analysis from all platforms
- Genome-wide association analysis
- Data integration and identifier conversion
- Data/laboratory management solutions
- Archive and long-term storage
- Next-generation sequence analysis

Modeling

- Homology modeling
- Docking
- Classes in modeling and molecular structure
- Structural genomics
- Characterization of physical properties
- Drug design
- Enzyme catalysis
- Interactions of metals with proteins
- Protein–protein interactions

Image Analysis

- 3D Image analysis (MRI, PET, CT/Spect, ultrasound, etc.)
- Cellular image analysis, data storage, and management
- Medical image analysis
- Visualization



Laboratory Animal Sciences Program

Translational research support through integrated services

A Powerful Partner

The Laboratory Animal Sciences Program (LASP) works in parallel with the laboratories of the Advanced Technology Program to provide an integrated range of quality services, facilities, and technologies to support the diverse animal-based research requirements of the scientific community. LASP performs comprehensive oversight of facilities and operations to ensure the ethical use of laboratory animals under controlled and healthful environmental conditions.

Helping You with Powerful Science

The LASP veterinary staff manages the preventive medicine program, and provides clinical diagnosis, therapy, and preoperative and postoperative care for research colonies. Experienced scientific and technical personnel offer consultation and assistance in the design of animal research protocols, and in selection of appropriate animal models to meet the research objectives of investigators. Scientific support programs for mouse model development and phenotypic analysis and other technologies are offered in support of the research effort.

For information about these services, contact:

Lionel Feigenbaum, PhD

Phone: 301-846-1696

Fax: 301-846-6165

E-mail: feigenbaum@ncifcrf.gov

For information:

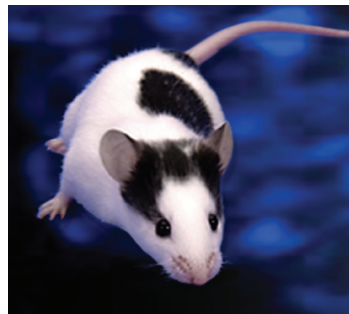
www.ncifcrf.gov/rtp/lasp/intra

For support:

www.ncifcrf.gov/research-technologies

Areas of Expertise and Available Technologies

Animal models of human diseases constitute a powerful tool in our understanding of disease etiology, progression, and treatment. Through the development of a longitudinal set of technologies, LASP is able to address some of the most salient questions in tumor biology. As a partner in the NCI Preclinical Models Research Initiative, LASP uses a wide range of services, facilities, and technologies to assist in developing targeted cancer therapies.



Transgenic Mouse Model Laboratory

- Production and characterization of genetically engineered mice by pronuclear microinjection and gene targeting in ES cells
- Consultation in the design of targeting or transgenic constructs

Pathology/Histotechnology Laboratory (PHL)

- Flexible and innovative histopathology and molecular pathology support, from rodent necropsies through to nucleic acid isolation from target cell populations
- Laser capture microdissection, immunohistochemistry, tissue microarray, in situ hybridization, blood chemistry analysis, and hematology
- Pathologist-assisted animal study design, histopathology and immunohistopathology evaluation, photomicrography, report and manuscript preparation

Cryopreservation and Assisted Reproduction Laboratory

- Banking of mouse strains by preserving their frozen germplasm
- Alternative techniques (embryo, ovary or sperm) enabling most inbred, spontaneous mutant, or genetically engineered strains to be cryopreserved

Animal Health Diagnostics Laboratory

- Comprehensive diagnostic services to monitor and maintain the health status of animal research colonies

Animal Holding and Quarantine

- High-quality facilities and resources that ensure that research animals are handled and cared for in a humane manner in a healthful, controlled environment
- Quarantine of imported animals and/or rederivation of pathogen-carrying strains

Small-Animal Imaging Program

- Multimodality imaging facility (MRI, PET, SPECT, Ultrasound, X-ray CT, and Optical Imaging) for real-time in vivo monitoring of tumor cells, metastases, and tracking of gene expression

Speed Congenics Program

- Accelerated production of congenic mouse strains by microsatellite marker-assisted backcrossing

Visual Communications

Effective science deserves excellent presentation

A Powerful Partner

Visual Communications provides the scientific community with expertise in the effective communication of information, both scientific and general. Visual Communications includes the NCI-Frederick Conference Center, which offers conference and events planning services; and Scientific Publications, Graphics & Media (SPGM), which provides a broad range of media production services. Professionals in Visual Communications provide support at the level of the customer's choosing, in whole or in part, to maximize the impact of print and presentation media.

Helping You with Powerful Science

- Video and multimedia production
- Writing, proofreading, and editorial services
- Digital image capture and processing
- Design and illustration
- Large-format print output
- Free seminars and workshops on effective communication
- Conference facilities and video teleconferencing
- Conference and events planning

For information about these services, contact:

Ken Michaels

Phone: 301-846-1055

Fax: 301-846-6563

ncispgm@mail.nih.gov

For information:
www.ncifcrf.gov/spgm

For support:
www.ncifcrf.gov/research-technologies

Areas of Expertise and Available Technologies

Communicating ideas and concepts accurately and understandably is vital to scientific progress. To that end, the mission of Visual Communications is to assist all of its clients in presenting their science in the most effective manner possible.



Digital Video and Multimedia

- Animation and graphics for the screen
- Digital video shooting and production
- Video format conversions and duplication

Manuscript Preparation

- Editing
- Electronic file preparation and text formatting
- Preparation of graphics and figures
- Illustration and photography

Oral Presentation

- PowerPoint slideshows
- Graphics and photography

Site Visit Preparation

- Formatting reports and handout materials
- Illustration, photography, and visuals

Scientific Posters and Titles

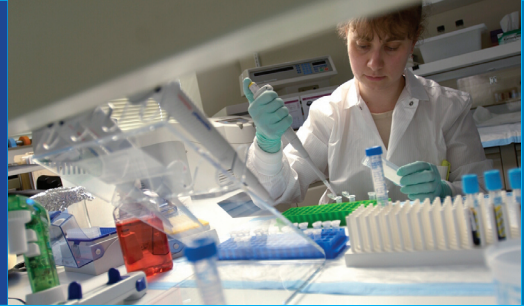
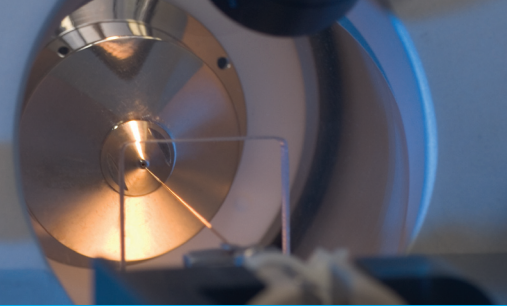
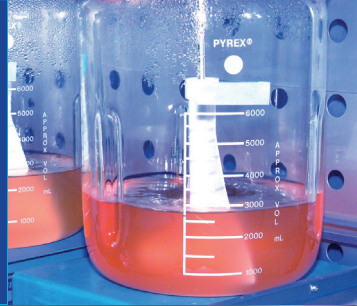
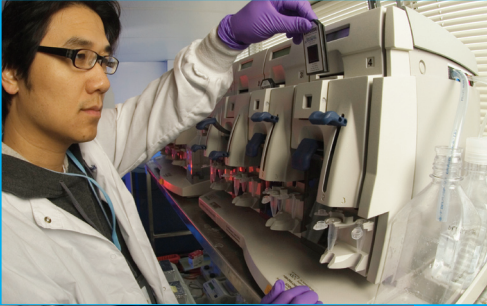
- Illustration and photography
- Large poster printing and laminating
- Design and layout

Technical Services

- Digital image capture, enhancement and file preparation
- Color matching and correction
- PDF file authoring

Conferences and Events

- Full service conference/events planning
- Facilities and audiovisual equipment
- Video teleconferencing equipment and setups



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