Resources Available to Graduate Students and Postdoctoral Scholars
Within the Division of Biology and Medicine, Brown University

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General/Administrative Resources
Brown University's Division of Biology and Medicine
http://biomed.brown.edu/
Comprising the Program in Biology and the Warren Alpert Medical School, the Division is home to five basic biology departments offering undergraduate and graduate courses, 14 clinical departments, and two hybrid departments (with both clinical and campus-based faculty). The Division of Biology and Medicine is the administrative home for faculty whose primary roles are in research, education, or clinical care in the domains of biology and medical science. This organizational structure encourages multidisciplinary instruction and research, a hallmark of education at Brown. Faculty within the Division and its teaching hospital partners attract $210 million in external research funding per year.

Support for Graduate Students in the Division of Biology and Medicine
All predoctoral students offered admission to graduate programs are guaranteed five years of financial support contingent upon making satisfactory progress toward the degree. This support includes stipend, health insurance, and remission of tuition and fees. Support comes from a combination of resources including Division Fellowships, Predoctoral Training Grants, Research Grants, Teaching Assistantships and individual fellowships.

The Office of Graduate & Postdoctoral Studies
http://biomed.brown.edu/grad-postdoc/
Created in 2006 to focus on and enhance the training environment for the roughly 227 graduate students and 67 postdocs within the Division of Biology and Medicine. In creating this office, the Dean of Medicine and Biological Sciences, made a commitment not only to growth in the overall numbers of our trainees, but also to increasing the diversity of this group and enriching trainees' preparation as scholars within the university setting and in their future career paths. Elizabeth O. Harrington, PhD serves as Associate Dean for Graduate & Postdoctoral Studies. Her office, located in the Arnold Laboratory, 91 Waterman St., oversees admissions, recruitment, tracking, support, and professional development for students and postdocs in the Division of Biology and Medicine. Graduate Programs within the Division of Biology and Medicine are interdisciplinary in nature, and include faculty from other departments both within the division and outside it. Numerous departments have faculty involved in graduate training including, but not limited to Chemistry, Engineering, Sociology, Cognitive, Linguistic & Psychological Sciences, Applied Math, and Computer Sciences. Our graduate students benefit from this training environment and a strong extramural research-funding base. Each Graduate Program within the Division has its own administrative offices, support staff, and dedicated space for students, along with computer and internet access in the vicinity of the faculty research laboratories. There are further student computer clusters and associated hardware (printers and scanners) and fully supported software at the Libraries and CIT (Computing Information Technology) center. Each student is assigned dedicated space.
CareerLAB
http://careerddevelopment.brown.edu/undergrads/index.php
Located at 167 Angell Street, CareerLAB assists graduate students with their professional development, including career exploration as well as job search skills, CV and resume development, cover letter development and interview preparation. Confidential career advising sessions are available with trained advisors familiar with graduate student career issues in both academic and non-academic career fields.

Sheridan Center for Teaching and Learning
http://www.brown.edu/Administration/Sheridan_Center/
Located at 96 Waterman St. This key resource, available to all students, postdocs and faculty, is directed by Kathy Takayama, PhD. Among other offerings, the Center provides TA Orientation and Training; assistance in syllabus and teaching portfolio development and conducts seminars and workshops leading to four Certificate levels. The Center also runs programs in Career Advising and Online TA training. Many graduate students partake in training offered here as part of their professional development.

Writing Center
http://www.brown.edu/Student_Services/Writing_Center/
A free academic support service for all members of the Brown Community. The Center is staffed by graduate students from a variety of academic disciplines. Staff members are experienced writers and teachers who participate in ongoing training in composition theory and practice. In addition to holding one-on-one conferences, Writing Center Associates offer various workshops on writing for interested groups. Writing Center conferences generally last an hour. Writing Center Associates are prepared to discuss all stages of the writing process, from finding a topic up through revision and editing strategies. Associates can help writers deal with writer's block, audience awareness, argumentation, organization, grammar, research skills, the conventions of academic writing, and issues of clarity and style.

Watson Center for Information Technology
http://www.brown.edu/cis/about/index.php
Located at 115 Waterman St., Brown University holds an extensive list of site licenses for computing including compilers, numerical libraries, mathematical problem-solving environments, visualization software, statistical packages, and productivity software. For Unix platforms: Maple, Mathematica, Matlab, NAG ASLI Software Suite, Portland Group Inc. (PGI) Compilers, Tecplot. For Mac and Windows platforms: Mathematica, MatLab, NVivo, S-Plus, SAS, SPSS, Stata SE. Several teaching labs equipped with systems running Linux or Windows. Most of these systems are custom-built machines configured and assembled by the department's technical staff.

BioMed Computer Services Office
http://biomed.brown.edu/cso
In addition to the Brown campus-wide resources of the Computing and Information Services Department (CIS), the Biomed Computer Services Office supports instructional, administrative, and research technology needs for both campus and hospital-based faculty and staff. The office assists with trouble-shooting computer problems, installation of software and hardware, computer configuration management, the purchase of new equipment, network planning and configuration, application and website development, and all Division information technology management and planning.
BioMed Facilities Planning and Operations
http://biomed.brown.edu/facilities/
This is a core service group that supports all matters pertaining to physical facilities within the Division of Biology and Medicine. It comprises three main components: Planning, Design and Construction, Facility Services, and Support Operations. The Support Operations group encompasses Stores Operations, Machine Shop, Copy Centers, Mail Services and Information Centers. Stores Operations offers over 900 stocked research supply items at two sites, provides laboratory gases and services for the research operations, and coordinates the shipping and receiving services for all of the Division’s facilities. The Machine Shop, staffed by our Senior Instrument Maker, provides consultation and technical services ranging from equipment repair to full design and fabrication services. The Division’s Mail Services, Copy Centers, and Information Centers provide the necessary administrative support to the Division’s operations.

Environmental Health and Safety Office
http://brown.edu/Administration/EHS/
Environmental Health & Safety (EHS) helps ensure a safe campus community and promotes environmental responsibility through partnerships with students, faculty, staff and visitors. EHS provides regulatory compliance assistance, training programs, program development, inspections, emergency response services and oversees procedures for review and approval of any research involving hazardous substances.

Research Buildings (back to top)
Sidney Frank Life Sciences Building
Located at 185 Meeting St., this building has 73,733 square feet of useable space, with 66% of that devoted to research. Opened in November 2006, the building consolidated most of the Division of Biology and Medicine’s wet lab research space in one city block. The building contains 34 labs and 51 lab modules. This building houses the Magnetic Resonance Imaging (MRI) facility and one of the two Leduc Bioimaging Facilities. In addition, it houses a large common area, conference rooms, and the 99-seat Markewitz Auditorium for classes and lectures. Faculty in the Neuroscience and Molecular and Cellular Biology Departments are located in the Sidney Frank Building.

The Laboratories for Molecular Medicine (LMM)
Located at 70 Ship St, this building has 69,002 square feet of useable space, 63% of which is devoted to research in genetics, genomics, proteomics, structural biology, pharmacology, and pathology. The open floor plan of the facility promotes collaboration among scientists and benefits trainees. These partnerships provide the context in which biomedical research will ultimately translate into the tools for clinical care. The facility is within a few blocks of the new Warren Alpert Medical School building (in construction), as well as the major research buildings of Woman & Infants Hospital and Rhode Island Hospital, which house other Brown faculty and research centers affiliated with the Division. This building houses the Genomics, Transgenics, Proteomics, Bioimaging, and Molecular Pathology Facilities. Faculty in Molecular Pathology and Laboratory Medicine, Molecular and Cellular Biology, and Molecular Pharmacology, Physiology and Biotechnology Departments are located in the Laboratories for Molecular Medicine.

121 South Main St:
The Program in Public Health research and training is located in this building. The facility includes 64,040 square feet of useable space devoted to research, administration and instruction, and houses the Center for Statistical Sciences, as well as 9 other nationally renowned public health research centers. The academic and research goals for the Public
Health Program are focused in the Department of Community Health. Offering multi-disciplinary, comprehensive programs in population-based medicine and health, the department's educational mission encompasses undergraduate, graduate, and medical education, and fellowship training. Education and research activities are structured into four sections: Behavioral and Social Sciences, Biostatistics, Epidemiology, and Health Services, Policy and Practice.

Faculty trainers in Graduate programs in Biostatistics, Epidemiology, and Health Services Research are located here.

Biomedical Center
Located at 171 Meeting St, this seven story building consists of 67,118 square feet of useable space, 37% of which is devoted to research. It is part of the BioMed Complex, housing a total of 47,107 square feet of research space. The building is also located immediately adjacent to the Sidney Frank Life Sciences Building. This building houses research laboratories and the Flow Cytometry Facility. Faculty in Microbiology and Immunology, Ecology and Evolutionary Biology, and Molecular Pharmacology, Physiology and Biotechnology Departments are located in the Biomedical Center.

Plant Environmental Center
Located at 91 Waterman St, the Plant Environmental Center, supported by the Department of Ecology and Evolutionary Biology, is a growing facility devoted to plant biology research. Spread out over 3 research greenhouses encompassing 5,000 square feet, the space includes a teaching plant collection, a classroom laboratory, and research facilities. There is also a 2,000 square foot Conservatory, housing many different plant families. In addition to this space there are five E7/2 conviron plant growth chambers, and a 180-sq-ft. walk-in growth chamber, used by grad students and faculty.

Sciences Library
Located at 201 Thayer St. Brown faculty, students, and staff have access to both print and electronic resources at the Sciences Library. The print collection supports study and research in the fields of medicine, psychology, neural science, environmental science, biology, chemistry, geology, physics, engineering, computer science, and pure and applied mathematics.

- Access over 20,000 online journals, of which 60% are in science, technology, and medicine. On campus, these are available through Josiah, Brown's online catalog (library.brown.edu/search) or from the subject list of e-journals (dl.lib.brown.edu/eresources/ejournals.php). From off-campus, users can gain access through “Off-Campus Access Service” at http://dl.lib.brown.edu/libweb/proxy.php
- The $4M Friedman Study Center is a 24/5 student study space featuring 27,000 square feet of study and social space on three levels of the Sciences Library. The Center is staffed by expert library and technology experts and has wireless connectivity, a café, seminar rooms to support group projects, individual study spaces, multimedia terminals and more
- One-on-one assistance, individual and group orientations, and in-depth training.
- Search PubMed, Biological Abstracts and other databases and link directly to journal articles via “LibX”
- Access interdisciplinary databases such as: Academic Search Premier, Lexis/Nexis and Web of Science (includes Science Citation Index).
- Access over 100,000 e-books: http://dl.lib.brown.edu/eresources/ebooks.php
- Interlibrary loan services
Research Facilities (not COREs) (back to top)

Structural Biology Core Facility
Located at the Laboratories of Molecular Medicine, the Structural Biology Core Facility hosts biomolecular NMR spectrometer, X-ray crystallography and small angle X-ray scattering (SAXS) instrumentation. Specifically, 2 Bruker NMR spectrometer are available: an Avance II 500 MHz and an Avance IIIHD 850 NMR spectrometer, which are both equipped with four independent channels for \(^1\text{H}, \, ^{13}\text{C}, \, ^{15}\text{N} \) and \(^2\text{H}\) observation and decoupling and TCI-HCN cryo-probes (\(^1\text{H}, \, ^{13}\text{C}\) cooled). In addition, extensive in-house crystallography capability exists including a Rigaku \(^1\)FRE+ Superbright microfocus generator, VariMax-HF Arc)Sec Confocal optics, a Saturn 944 CCD detector, a Cobra liquid nitrogen coldstream, the ACTOR automated robotic screening system is available for crystal screening and data collection at cryogenic temperatures at a single wavelength. Furthermore a BioSAXS-1000 2D Kratky SAXS system is available. High-throughput crystallization trials are carried out using the Art Robbins Phoenix nan-liter crystallization robot and imaged using the Art Robbins CrysCam. The Structural Biology Core Facility is directed by Dr. Wolfgang Peti and managed by Dr. Michael Clarkson and open to all Brown University investigators.

Water Flume
The Department of Ecology and Evolutionary Biology was awarded a grant from the NSF to establish a core research facility for a 3,500-gallon water flume. Measuring 80 cm in width, 60 cm in height, and 440 cm in length, the flume is based on a re-circulating design with the flow loop arranged in a horizontal configuration. With its ability to regulate flow rate patterns up to 1 m/s, the flume offers researchers a wide array of simulated conditions. Principal investigators use the flume to replicate situations normally found in the field.

Centers and Institutes (partial) (back to top)
Full online listing of BioMed Institutes and Centers can be found at http://biomed.brown.edu/research/cip, listing of Research Laboratories can be found at http://research.brown.edu/research/labs.php

Center for Alcohol and Addiction Studies
http://www.caas.brown.edu/
CAAS is based in the School of Public Health at Brown University. This center brings together more than 130 faculty and professional staff across eleven University departments and eight affiliated hospitals to promote the identification, prevention, and effective treatment of alcohol and other drug use problems in our society through research, education, training, and policy advocacy. CAAS currently has over 40 research grants focused on alcohol and other drug use, representing over 8 million in direct costs per year. Key research programs ongoing at CAAS include: behavioral and pharmacologic lab studies, behavioral and pharmacologic intervention studies, studies of the prenatal effects of drugs; mechanisms studies of drugs with humans (including cue reactivity, behavioral economics, electronic diaries, web-based assessment, and genetic markers); contingency management studies; and intervention, assessment, and lab and/or treatment studies on adults and adolescents involved in the legal system.

Center for Gerontology and Health Care Research
http://brown.edu/research/projects/gerontology-healthcare-research/
The Center for Gerontology and Health Care Research is a multi-disciplinary research center whose primary mission is to advance the fields of gerontology and health services research through methodological and substantive research, informed by basic theories of aging, human
development, and the illness experience. The goal of these efforts is to enhance the quality of life of persons with chronic illness, especially older adults. The research focus, both basic and applied, draws upon the social sciences as well as the clinical disciplines.

Center for the Study of Human Development
http://www.brown.edu/Departments/Human_Development_Center/index.php
Child and Adolescent Development is the primary focus of the research and teaching of the faculty affiliated with this multidisciplinary center.

International Health Institute (IHI)
http://publichealth.brown.edu/ihi/
The International Health Institute (IHI) is a research center in the School of Public Health and pursues interdisciplinary research on population health in low and middle income countries. IHI faculty lead externally funded research on non-communicable diseases and infectious diseases, as well as lead and participate in training and education of undergraduate, medical and graduate students, and low and middle income nation researchers from partner institutions.

Global Health Initiative (GHI)
http://brown.edu/initiatives/global-health/
The Global Health Initiative is a multidisciplinary university-wide effort to reduce health inequalities among underserved populations locally and worldwide through education, research, service and development of partnerships. The GHI is distinguished by an integrative, overarching approach to the fundamentally interrelated problems of health and development. One key advantage of the GHI is its ability to bring together the social, cultural, and human dimensions of global health problems and their biomedical and technological elements under a single umbrella. Building upon Brown’s expertise in both population analysis and infectious disease intervention, the Initiative offers high impact education, research, and service opportunities for students and faculty, and addresses issues of capacity, infrastructure, environment, and health care delivery to reduce the burden of disease in impoverished communities.

Center for Computational Molecular Biology (CCMB)
http://brown.edu/ccmb
The mission of the Center for Computational Molecular Biology (CCMB) is to make breakthrough discoveries in the life sciences through the development and application of novel computational, mathematical, and statistical techniques. Research in the Center aims to exploit the opportunities from technological advances in genomics and proteomics.

Center for Statistical Sciences (CSS)
http://www.stat.brown.edu/
The Center provides a focus of statistical expertise for the Brown research community and to foster research and statistical education at Brown. CSS faculty expertise covers a broad range of areas in applied statistics, including statistical methods for the assessment of diagnostic technology; design and analysis of clinical trials; statistical methods for health services and outcomes research; longitudinal data analysis; meta-analysis; statistical methods for psychiatry and the behavioral sciences; analysis of observational studies; and statistical methods for genomics and proteomics. In addition to research in statistical theory and methods, Center faculty and staff are involved in a variety of interdisciplinary projects both within and outside of Brown. The Center is part of the School of Public Health at Brown and is co-located with the newly founded Department of Biostatistics.
Center for Advanced Scientific Computation and Visualization (CCV)
http://www.brown.edu/Departments/CCV/
Brown University has made significant investments in resources to promote analysis and handling of massive data sets. A key investment has been the continued development of the Center for Computation and Visualization (CCV). CCV functions are to generate, store, backup, analyze or visualize large datasets for members of the Brown community, and to provide the necessary infrastructure, including support, to transfer and share data at high bandwidths through a parallel file system. CCV establishes collaborations with research groups to install, run, test, and debug parallel or compute-intensive algorithms and applications and provides access to systems with specialized hardware, such as large memories or GPU co accelerators. CCV also provides a business model to integrate externally funded hardware into Brown’s on-campus data center. The computing platform comprises a 430+ node IBM iDataPlex system with 88 GPU's for accelerated computing, and peak performance of roughly 100 TeraFLOPs. A GPFS parallel filesystem provides roughly a one Petabyte of disk storage, and 40 Gb/s Infiniband connectivity is used for all parallel applications messaging and I/O. The storage system is integrated with a 2 Petabyte Tivoli TSM backup/archival system. CCV also maintains a high end visualization lab with large scale immersive visualization capabilities. This includes a fully immersive Cave system and a multi-projector stereo display wall. Custom visualization solutions for software and hardware needs are available.

Brown Institute for Brain Science (BIBS)
http://brainsciences.brown.edu/
BIBS catalyzes collaborative theoretical and experimental study of the brain from genes and cells to circuits to brain and behavior. It unites more than 100 faculty members who strive to understand functions of the brain that distinguish us as humans, discover new ways to treat disorders that diminish our humanity, and create brain-like technology to improve the human condition.

Center for Vision Research (CVR)
http://cvr.brown.edu/home.html
The Center for Vision Research, part of Brown’s interdisciplinary Institute for Brain Science, promotes and facilitates research on biological vision, computational aspects of machine vision, visual disorders, and the brain mechanisms underlying vision. The CVR provides in-depth training in vision research to postdoctoral fellows, medical residents, graduate students, and undergraduates, and serves as a unifying organization spanning traditional departments, as well helping to bridge the gap between basic research and clinical practice.

Center for Biomedical Engineering
http://www.brown.edu/Departments/Center_for_Biomedical_Engineering/
The Center for Biomedical Engineering (BME) is a joint program of the School of Engineering and the Division of Biology and Medicine. Biomedical engineering creates new knowledge and improves human health through cross disciplinary research and educational activities that integrate the engineering and physical sciences with the life sciences and clinical practice. As a discipline, BME is resoundingly inter-disciplinary and collaborative. Thus, at Brown, BME is a multi-disciplinary, inter-Divisional and inter-Institutional activity. The Center oversees and ABET accredited undergraduate degree in biomedical engineering and a graduate program offering PhD and ScM degrees in biomedical engineering.
Ties with Other Institutions  (back to top)

Rhode Island Hospital
Hallett Center for Diabetes and Endocrinology
http://www.rhodeislandhospital.org/endocrinology *
The Hallett Center, located at Rhode Island Hospital, pursues clinical and basic research on diabetes and other endocrine diseases that will increase our understanding of causal mechanisms and define new approaches to treatment.

Liver Research Center
http://med.brown.edu/gastroenterology/LiverResearchCenter
The Liver Research Center is a 13,000 square foot facility emphasizing molecular biology of liver diseases. Fellows may participate in many of the established studies, i.e. genomics and pathogenesis of HCC.

Women & Infants Hospital
Center for Excellence in Women’s Health
http://www.womenandinfants.org/centerofexcellence/center-of-excellence.cfm
The Center is dedicated to improving the health and health care for all women by working with academic and community partners and collaborating with public and private health care providers throughout the state.

Marine Biological Laboratories
http://www.mbl.edu/research/
Located in Woods Hole, Massachusetts (approximately 70 miles from the Brown University campus), this research institution hosts year-round research programs in cellular, developmental, and reproductive biology; molecular biology and evolution; neurobiology and sensory physiology; ecology; global infectious diseases; and marine biotechnology and aquaculture. In the summer months, distinguished scientists from around the world gather to do research at the MBL. The MBL includes the WM Keck Ecological and Evolutionary Genetics Facility at the Josephine Bay Paul Center, which is equipped for high-throughput DNA template production and sequencing. The facility operates two Applied Biosystems 3730XL capillary sequencers (96- or 384-well plate format) and contains additional support instrumentation including a colony picker, thermocyclers, centrifuges, and microarrayer. The facility also operates a Roche 454 GS20 instrument for massively parallel pyrosequencing.

University of Rhode Island
The Rhode Island Genomics and Sequencing Center
http://www.uri.edu/research/gsc/
This Center facilitates interdisciplinary genomics research for RI EPSCoR institutions. The Center has a multitude of equipment for training and research. The Applied Biosystems 3130xl & 3500xl instruments are fully automated fluorescence-based genetic analysis systems utilized for Sanger sequencing and fragment analysis. The Center includes a refrigerated centrifuge, a Nanodrop 8000 spectrophotometer, and an Eppendorf epMotion 5075VAC automated pipetting workstation. The Center offers access to an Omnilog Phenotype Microarray system and three qPCR systems (Agilent Mx3005P and two Roche LC-480) as well as a Qiagen QiaCube spin-column preparation robot. Recently installed equipment includes a Sage Science BluePippin DNA size selection system, a Covaris S220 AFA ultrasonicator, an IntegenX Apollo 324 DNA library preparation system, and an Illumina MiSeq next generation sequencer. Imaging services have also been upgraded with the acquisition of a Zeiss LSM 700 laser scanning confocal imaging system and a Zeiss Axio Imager 2 epifluorescent microscope.