

## FACILITIES AND OTHER RESOURCES

Among the nation's leading biomedical research universities, UAB cultivates a long-standing, rich collaborative research environment ideal for comprehensive research training in the biology and clinical application of rehabilitation science. UAB offers an exceptionally rich combination of more than 80 state-of-the-art Scientific Core Facilities (**Appendix C**) and 28 University-Wide Interdisciplinary Research Centers (UWIRCs) (listed below), over 75 pilot and departmental research centers, outstanding clinical research facilities capped by the CCTS, and a collective faculty world-renowned for its wealth and breadth of scholarly productivity. In essence, research training opportunities are limitless—any technology, experimental model system, or intellectual expertise sought by a burgeoning translational scientist can be found at UAB.

 <b>THE UNIVERSITY OF ALABAMA AT BIRMINGHAM</b> <i>University-wide Interdisciplinary Research Centers</i>	
<b>Biomatrix Engineering &amp; Regenerative Medicine Center</b>	Tim Wick, PhD & Joanne Murphy-Ullrich, PhD
<b>Center for Aging</b>	Richard Allman, MD
<b>Center for AIDS Research</b>	Michael Saag, MD
<b>Center for Biophysical Science &amp; Engineering</b>	Larry DeLucas, PhD
<b>Center for Cardiovascular Biology</b>	Steven Pogwizd, MD
<b>Center for Clinical &amp; Translational Sciences</b>	Robert Kimberly, MD
<b>Center for Computational &amp; Structural Dynamics</b>	Jere Segrest, MD, PhD
<b>Center for Cranio-facial, Dental and Oral Disorders</b>	Mary McDougall, PhD
<b>Center for Emerging Infections &amp; Emergency Preparedness</b>	Richard Whitley, MD
<b>Center for Exercise Medicine</b>	<b>Marcas Bamman, PhD</b>
<b>Center for Free Radical Biology</b>	Victor Darley-Usmar, PhD
<b>Center for Information Assurance</b>	Anthony Skjellum, PhD
<b>Center for Metabolic Bone Disease</b>	<b>Majd Zayzafoon, MD, PhD</b>
<b>Center for Outcomes &amp; Effectiveness Research &amp; Education</b>	Kenneth Saag, MD, MSc
<b>Center for the Study of Community Health</b>	Max Michael, III, MD
<b>Center for Women's Reproductive Health</b>	John Hauth, MD
<b>Civitan International Research Center</b>	Harald Sontheimer, PhD
<b>Comprehensive Arthritis, Musculoskeletal &amp; Autoimmunity Center</b>	Robert Kimberly, MD
<b>Comprehensive Cancer Center</b>	Edward Partridge, MD
<b>Comprehensive Diabetes Center</b>	<b>Anath Shalev, MD</b>
<b>Comprehensive Neuroscience Center</b>	<b>Lori McMahon, PhD</b>
<b>Gregory Fleming James Cystic Fibrosis Research Center</b>	Eric Sorscher, MD
<b>Heflin Center for Human Genetics</b>	Bruce Korf, MD, PhD
<b>Minority Health &amp; Health Disparities Research Center</b>	Mona Fouad, MD
<b>Nanoscale Materials &amp; Biointegration</b>	Yogesh Vohra, PhD
<b>Nephrology Research &amp; Training Center</b>	Paul Sanders, MD
<b>Nutrition Obesity Research Center</b>	David Allison, PhD
<b>Vision Science Research Center</b>	Kent Keyser, PhD
UWIRC Directors who are P&RMP primary mentors are <b>bolded</b> .	

UAB is the only four-year, public university in Birmingham—Alabama's largest metropolitan area. The University has grown from 15 blocks in 1969 to more than 80 blocks with some 225 buildings providing over 12 million square feet of assignable space. UAB's budget of \$49.9 million in 1969 has multiplied to a current level in excess of \$2 billion. The economic impact of UAB is unparalleled in the state. It is Alabama's largest employer with over 53,000 full-time equivalent jobs, translating as 8 out of every 100 jobs in the Birmingham metropolitan area, as well as 3 of every 100 in Alabama. Additionally, externally funded grants and contracts continue to increase. This funding has doubled every decade since 1969 when UAB was established, and now stands at more than \$433 million. In funding from the National Institutes of Health, UAB and the School of Medicine consistently rank among the top 25, with seven departments among the nation's top ten. Excellence in health care is recognized within the UAB Health System. UAB Hospital specialty programs consistently rank among the top 25 (e.g., from 2011 edition of *US News and World Report's* rankings of "America's Best Hospitals": Rheumatology 11<sup>th</sup>, Nephrology 22<sup>nd</sup>, Pulmonology 25<sup>th</sup>, Urology 24<sup>th</sup>, and Gynecology 20<sup>th</sup>).

Our core of 31 enthusiastic and highly-productive faculty mentors are committed to advancing the field of rehabilitation medicine. These mentors, many of whom are united by long-standing research and mentoring collaborations, span 13 Departments and Divisions across the UAB Schools of Medicine, Health Professions, Public Health, and Arts and Sciences (see **Data Table 1**). Mentors direct active and well-funded research programs in an area of concentration highly

relevant to this training program (see **Data Table 2**).

### Commitment

In addition to the outstanding facilities, trainees of this training program will benefit from significant institutional support in several ways: **Major Financial Investments**. We are very fortunate to have strong support from the major programs and Schools associated with this training program. The Schools of Medicine and Health Professions have each committed \$5000/yr to support the annual interdisciplinary symposium as well as recruitment expenses (see letters from Drs. Ray Watts and Harold Jones). Similarly, we are fortunate to have received a generous contribution from the Nutrition Obesity Research Center (\$4000/yr) to support trainee travel for obesity related rehabilitation research. Finally, the UAB Center for Exercise Medicine has committed \$13,000/yr to support a number of enrichment activities including the annual symposium, bi-weekly research roundtable, journal clubs, and the Exercise Medicine Distinguished Lecture Series. All of these programs and efforts will have a significant, positive impact on our trainees' development and on the overall

success of P&RMP. **These contributions total \$27,000 per year, or \$135,000 over five years**—real value added to the P&RMP by institutional support. Clearly, UAB is behind this program.

**Administrative Support.** Recruitment, appointment, tracking, and other administrative functions will be supported by the directors of the GBS and Rehabilitation Science programs (see letters from Dr. Susan Rich and Dr. David Brown) and Office of Postdoctoral Education (see letter from Dr. Lisa Schwiebert). Each of these offices assisted in the preparation of this application, and will continue to provide invaluable support during operation of the program. **Supplementation of Stipends.** Mentors in this program have a lengthy history of supplementing NIH stipends for postdoctoral trainees. These supplements are typically 3-5K annually, and are usually funded by a Center closely affiliated with the trainee's research. The practice of supplementing NRSA stipends with state funds is one of the many factors contributing to UAB's remarkable success in recruiting competitive trainees on a national scale. **New Curriculum Development.** New course development is strongly encouraged at UAB. Each of the major programmatic entities involved in this program (GBS; Rehabilitation Science; OPE; and CCTS) is responsible for curriculum development and each has encouraged new course development to fill knowledge gaps for a particular program. For example, highly relevant to this training program, the PD Dr. Bamman is launching a new exercise science and medicine workshop for the Physical Medicine and Rehabilitation Residency program at the request of residents, which will also be attended by trainees in this program. **Protected Time for Mentoring.** Institutional commitment for protected mentoring time is very clear (see letters from Drs. Ray Watts and Harold Jones). This is not trivial; rather, it is significant that the mentors on each trainee's Translational Mentoring Team will have ample protected time for working with the trainee, which will optimize his/her training experience. In addition, the PD's 10% effort will be fully supported by the Department (see letter from Dr. Benveniste, Chair).

### **Translational Rehabilitation Research Environment.**

In addition to primary mentors' laboratories, numerous Center-affiliated basic and clinical core facilities and laboratories are utilized regularly by both trainees and mentors. Several of the primary mentors serve as Directors of Centers (Drs. Ball, Bamman, Dell'Italia, Garvey, Jackson, McMahon, Rimmer, Shalev, Standaert, and Zayzafoon) and Scientific Core Facilities (Drs. Ball, Ballinger, Bamman, Dell'Italia, Garvey, Gower, Jackson, and Nagy). **Particularly advantageous to trainees in this program are the established collaborations among specific centers directed by program mentors:** Spain Rehabilitation Center (Jackson); UAB Center for Exercise Medicine (Bamman); Comprehensive Neuroscience Center (McMahon); Center for Translational Research on Aging and Mobility (Ball); Comprehensive Diabetes Center (Shalev); Center for Heart Failure Research (Dell'Italia); and Center for Metabolic Bone Disease (Zayzafoon). University-wide Centers important to the cross-cutting themes of this program are also led by some of the primary mentors: Comprehensive Cancer Center (Assoc. Director Demark-Wahnefried); Center for Aging (Assoc. Directors Ball, Bamman, and McMahon).

In addition, since the prior submission of this application (2011), Dr. Jim Rimmer was recruited to UAB and brought the CDC funded National Center on Health, Physical Activity and Disability (NCHPAD), and the NIDRR funded Rehabilitation Engineering Research Center on Interactive Exercise Technologies and Exercise Physiology for People with Disabilities (RERC Rec-Tech). These are indeed outstanding additions that significantly enhance even further the UAB research and training environment, particularly in the area of rehabilitation research training for persons with disabilities. Finally, Dr. Rimmer's appointment as Director of the Lakeshore Foundation/UAB Research Collaborative establishes a strong linkage between these two institutions.

**Lakeshore Foundation/UAB Research Collaborative.** Lakeshore Foundation and the University of Alabama at Birmingham joined forces in 2009 to develop a world-class research program in rehabilitative science. Recognizing that together the two institutions can accomplish more than either can accomplish alone, the Collaborative's mission is to conduct and promote comprehensive rehabilitative science research to establish the effectiveness of current programs and services, and to seek better and more effective ways of improving the quality of life of a broadening array of individuals of all ages with physically disabling conditions. Funded by a multi-million dollar investment from Lakeshore Foundation, the partnership established the Lakeshore Foundation Endowed Chair in the UAB School of Health Professions, which is held by Dr. Rimmer. The Lakeshore Foundation/UAB Research Collaborative focuses on research in applied rehabilitative science, including the development and evaluation of new programmatic and service efforts, the development and validation of new supportive technologies, and will seek to identify and develop meaningful alternatives that improve life for people who have or will face chronic disabling conditions. Lakeshore Foundation is one of the largest disability service providers in the U.S. that serves over 3500 people with disabilities on an annual basis

in the areas of health promotion, sport and physical activity, and provides a strong base for conducting research on people with disabilities. This novel Collaborative will provide outstanding opportunities for P&RMP trainees to experience research “in the field” (see letter from Dr. Rimmer).

**Rehabilitation Engineering Research Center on Recreational Technologies.** The Rehabilitation Engineering Research Center on Recreational Technologies (RERC Rec-Tech) is a five-year grant (H133E070029) funded by the National Institute on Disability and Rehabilitation Research (NIDRR) of the US Department of Education. The center, now anchored in Birmingham (directed by Dr. Rimmer), will provide unique and enriching opportunities for P&RMP trainees studying physical disabilities and barriers to physical activity. The primary mission of the RERC Rec-Tech is to expand new knowledge and research on recreation technology for people with disabilities, and to disseminate technology development through education, training and collaboration with private sectors. Rectech is dedicated to using technology to promote more healthy, active lifestyles for people with disabilities. Rectech focuses on four areas of research and development that are key to promoting health and function and community participation for people with disabilities: 1) increasing access to the environments, equipment, and programs associated with healthy, active lifestyles; 2) encouraging greater participation in healthful levels of physical activity; 3) promoting adherence to being physically active on a regular basis, ideally every day; and 4) expanding the knowledge base on health and function outcomes of physical activity for people with disabilities.

**National Center on Health, Physical Activity, and Disability.** NCHPAD is an information center concerned with physical activity and disability that is now anchored in Birmingham. The mission is to promote substantial health benefits that can be gained from participating in regular physical activity. The slogan of NCHPAD is Exercise is for EVERY body, and every person can gain some health benefit from being more physically active. NCHPAD is supported by Grant/Cooperative Agreement U59/CCU522742-02 from the Centers for Disease Control and Prevention (CDC).

**Center for Clinical and Translational Science (CTS).** The environment for clinical and translational research and training is notably enhanced by the programs and services provided by the Center for Clinical and Translational Science (CTS), which is a designated UWIRC. The CTS was developed in response to the National Institutes of Health’s (NIH) request for applications for Clinical and Translational Science Awards (CTSAs). The Center was officially approved by the University of Alabama’s Board of Trustees on February 3, 2006 and funded by the NIH on May 19, 2008 (5UL1 RR025777). Robert P. Kimberly, MD, directs the Center. UAB is one of 60 academic health centers nationwide that are member institutions of the CTSA Consortium. The mission of the CTS is to enhance human health by driving scientific discovery and dialogue across the bench, bedside, and community continuum. The vision of the CTS is to speed the translation of research into improved human health. The Center is comprised of nine Components [Biomedical Informatics; Pilots; Drug Discovery; Research Ethics, Regulatory Knowledge and Support; Research Education and Training; Biostatistics, Epidemiology and Research Design (BERD); the Clinical Research Unit (CRU); One Great Community; and Cores] and the Research Commons. The CTS is well-integrated into this training program and CTS leaders are clearly committed to fostering the development of our trainees (see letters from Drs. Kimberly and Chaplin).

**CTS Components.** The Biomedical Informatics (BMI) Component provides a variety of consultation services covering data acquisition, management, and analysis. These services include assisting with the design, development, and use of new tools and systems to support the analysis of data generated by clinical and translational research. BMI has a special focus on genomic, gene expression, and other –omics data. It also assists with research proposal preparation and provides descriptions of (and access to) the informatics resources available at UAB necessary to support grant proposals. BMI is also involved in local and national initiatives to improve the informatics infrastructure to support research at UAB. It works with other entities to provide the informatics infrastructure to collect structured clinical data at the point of care; export it to a data warehouse; and provide access to the data for clinical, translational and outcomes research. The Pilot Program, the Translational Research Intramural Grant Program, is a partnership between the CTS and other UWIRCs. The goal is to develop new investigator-initiated interdisciplinary clinical and translational research projects in order to grow mature research programs in these areas. CTS leadership anticipates awarding up to six projects per year. At least one project, in collaboration with the UAB Minority Health & Health Disparities Research Center, will provide funding for a minority investigator working on a translational research project for underrepresented minority populations. In 2011, eight \$60,000 one-year awards were made, from a total of 32 applications. Twelve different UWIRCs participated in these awards. The Drug Discovery Component is advancing academic drug discovery through a partnership with Southern Research, a not-for-profit affiliate which has a very productive, internationally-recognized track record in drug discovery and development.

Southern Research has in-house facilities capable of high-throughput drug screening; medicinal chemistry and structure analysis; and lead optimization through iterative chemistry, preclinical toxicology and absorption, distribution, metabolism and excretion studies. This Component takes UAB's most promising basic science discoveries and facilitates their translation to targets for drug discovery that will improve human health and clinical research. Recognizing that new compounds require significant investment to become licensed therapeutics, the Drug Discovery Component has a mechanism by which both private investment and the pharmaceutical industry can participate in the academic drug discovery process. The relationship between the Drug Discovery Component and Southern Research was instrumental in solidifying the establishment of the Alabama Drug Discovery Alliance (ADDA) in October 2008. The Research Ethics, Regulatory Knowledge and Support Component helps facilitate the research experience for participants by ensuring that they understand the consent forms and their rights by the end of the consent process. It also provides guidance to investigators in complying with regulatory requirements and institutional processes. Collaborating with the Center for Ethics and Values in the Sciences, the CCTS aids in promoting research ethics training and development of research integrity educational materials.

The Research Education and Training Component is helping UAB produce intellectually innovative and methodologically rigorous clinical and translational researchers. Two funding mechanisms provide training slots through separate and competitive processes. The CCTS *Pre-doctoral Training Program* (TL1 Trainees) provides one year of support for two predoctoral students in order to give them protected time to acquire competencies necessary to conduct clinical and translational research. For medical students who are admitted to the TL1 program, their coursework and research activities qualify them for the *Master of Science in Basic and Translational Science* (described below). The CCTS *Mentored Career Development Program* (KL2 Scholars) is for junior faculty in a clinical or related discipline. Scholars receive KL2 Clinical and Translational Science career development support for two to three years with protected time for both formal training and hands-on research. Scholars enroll in an educational program, often the *MSPH in Clinical and Translational Science* conferred by the School of Public Health. In parallel, they enter a research apprenticeship with a primary mentor who has an excellent training record and commits to extended close interaction with the Scholar. The overall goal of this training program is to impart knowledge, experience, and perspective to a network of junior scientists who will emerge as independent investigators. Conferred by the School of Medicine, the *Master of Science or MD/MS of Biomedical Sciences* is a distinctive program for medical students or post-professional fellows interested in translating basic research findings into studies of human subjects. The program can be completed in one full year of combined courses and research. The *Vocabulary of Clinical and Translational Science (CTS)* program is an on-line course that includes fundamental information on hypothesis generation and testing; informatics; biostatistics; epidemiology and population research; clinical trials; ethics; oversight of research; and critical review of clinical and translational literature. It is designed for residents, fellows, graduate and professional students, and others interested in pursuing a career in clinical and translational science.

An exciting new program is the *Certificate Program in Translational and Molecular Sciences*. This program was developed as a collaboration between the HHMI Med into Grad Program and the CCTS. It was recently reviewed and approved by the Graduate School, and is currently under review by the UA Board of Trustees prior to its endorsement as a fully approved Certificate Program. This program is open to all students in a MS, PhD, or MD/PhD program who commit to including 12 credit hours of coursework particularly relevant to translational science as part of their degree program. It is expected to be active for Fall 2012. The *Clinical and Translational Science (CTS) Training Program* provides six months of training through 50 hours of lectures and interactive sessions within the following modules: Clinical Trials, Epidemiology, Biostatistics, Ethics, Clinical Genetics Research, Behavioral Research, Outcomes Research, Dissemination of Results, and Grant Writing and Funding Opportunities. Sessions are presented by experienced clinical and translational researchers or individuals with special expertise in areas such as grants and contracts and regulatory issues. The Selection Committee for the CTS Training Program chooses up to 25 candidates each year through a competitive review process. The *Research Coordinator Training Program* provides the basics of Good Clinical Practice (GCP) and research compliance for all individuals who perform clinical research.

The Biostatistics, Epidemiology and Research Design (BERD) Component provides investigators with methodological expertise in epidemiology, biostatistics, outcomes and effectiveness research, and data management. The focus of this support is at the "launch" of translational research, during the critical design and initial implementation phases of the project, with the expectation that resources for the continued involvement of methodologists will be provided by the projects themselves as they transition to funding and execution. The Clinical Research Unit (CRU), formerly the clinical arm of the Pittman General Clinical

Research Center (GCRC), is revolutionizing UAB's research culture by providing a highly efficient and flexible resource that participates in study development, implementation, and outreach. Available resources include a pool of skilled research nurses, a research dietitian and dietetic technicians, recruitment and retention services, and the services of a research pharmacy. Nursing offers a variety of services to investigators including but not limited to urine pregnancy tests, venipuncture, PK/PD sampling and IV infusions, glucose tolerance testing, and resting metabolic rate testing. Bionutrition services include nutritional assessments such as anthropometry and analysis of food intake, the creation and provision of research diets, and nutrition education. One Great Community is the formal venue for developing and enhancing community partnerships by: (i) translating scientific knowledge generated at UAB into direct community benefit, (ii) engaging the community in the generation of questions and ideas that will be pursued by CCTS researchers through hypothesis-driven research in partnership with the community, and (iii) supporting and facilitating collaboration and trust between the community and the biomedical research enterprise. One Great Community is building on extensive and long-standing partnerships that join UAB researchers with communities in the impoverished, rural Deep South. The Cores Component provides for the procurement, processing and distribution of patient-derived research samples and establishes and coordinates an effective portfolio of core laboratories necessary for clinical and translational research. This Component collaborates with the CRU to consolidate and coordinate patient/participant sample collection and processing in the Sample Portal and Analytic Nexus. It also provides access to the Metabolism Core, which offers assessment of energy expenditure, fuel utilization, body composition, hormone/substrate assays, and insulin sensitivity testing for pediatric and adult subjects.

**CCTS Research Commons.** The Research Commons is a dynamic, physical and virtual hub through which CCTS Components, investigators, trainees, and community members interact. It **houses services that are especially useful to trainees.** Research Commons staff also foster the career development of postdoctoral researchers, clinical fellows, and junior faculty. They serve as Investigator Advocates for investigators utilizing CCTS resources, and provide input on crafting career development plans. The Nascent Projects Panel provides readily available expertise in a variety of areas of relevance (e.g. biostatistics, ethics, health disparities, outcomes, regulatory, grant writing, etc.) for investigators planning and/or developing clinical and translational research projects. The Panel consists of experienced investigators (including Dr. Bamman) from across campus and provides input to all CCTS trainees and other "developing" investigators. As needed, the Panel identifies mentors and collaborators for investigators to provide necessary input on the project and career development. The Program for Regulatory Coordination fosters an on-going dialogue with UAB research stake-holders. Spurred by the CCTS, investigator interactions with UAB Research Administration have been facilitated through the establishment of the Council for Translational Research. The vision of the Council is to enhance communications and facilitate interactions among all elements of the UAB research community. The Professional Skills Training Program is a series of monthly interactive seminars designed to provide practical assistance in the areas of scientific writing (such as the development of grants and scientific manuscripts), scientific presentations, career development, and leadership. CCTS leadership seminars are in partnership with the School of Business, Science and Technology Honors Program, and the Provost's Office.

### **UAB Office of Postdoctoral Education (OPE)**

Based largely on the wide array of carefully planned programs and career development services provided by the OPE, **UAB ranks #1 among public universities nationwide in "Best Places to Work for Postdocs"**, according to the 2012 rankings published in *The Scientist*, April 2012. The OPE was established in 1999 and was one of the first Postdoctoral offices in the country. Since its inception, the OPE has been instrumental in establishing and maintaining competitive terms, benefits and training programs for all postdoctoral fellows. At UAB, approximately 250 postdoctoral fellows are training currently in a variety of disciplines, including biomedical sciences, dentistry, engineering, health professions, clinical medicine, natural sciences and mathematics, public health, optometry, and social and behavioral sciences. The demographics of this postdoctoral community are 55% US citizen or permanent resident, including 55% female, and 17% from underrepresented minorities. Following is a summary of key features of the postdoctoral training experience at UAB fostered by the OPE. **Orientation.** All new postdocs at UAB are required to attend a postdoc orientation during their first year. Orientation sessions include information from leaders of the OPE, Institutional Review Board, Conflict of Interest Review Board, Institutional Animal Care and Use Committee (IACUC), Occupational Health and Safety Office, Office of Sponsored Programs, and Research Foundation, among others. In addition, orientation includes a 2-hour workshop in the responsible conduct of research conducted by the Department of Philosophy.

**OPE instruction in the responsible conduct of research.** The following courses and resources are facilitated by the OPE to ensure comprehensive instruction in research ethics and responsible conduct: **(1)** All postdoctoral scholars receive copies of the UAB misconduct policy and *"On Being a Scientist"* published by the National Academy of Sciences. **(2)** Established in 1998, the *UAB Center for Ethics and Values in Science* offers seminars and symposia that discuss issues related to scientific integrity and research ethics training. The Center is a focal point both on campus and nationally for discussion of value issues in science. Recent symposia hosted by the Center have examined scientific misconduct, fraud, and ethics involving information communication in science as well as the bioethics of health disparities. Postdoctoral scholars and their mentors will be encouraged to attend and/or participate in the training opportunities offered through the Center. **(3)** Postdoctoral scholars complete (as appropriate) systematic instruction via formal courses including: (i) *Human subjects protection (IRB) training* (required for postdoctoral scholars who will perform human research) typically via the web based training program Collaborative IRB Training Initiative (CITI). Training must be updated annually. (ii) *IACUC training* (required for postdoctoral scholars who will be involved in research that utilizes animals) consisting of on-line coursework and individualized instruction from IACUC veterinarians. Specifically, IACUC training will review the humane use of animals in research together with related ethical issues. In addition, scholars will receive species-specific direction in the appropriate techniques of drug administration, specimen collection, and surgery. (iii) *Principles of Scientific Integrity (GRD 717)*. A survey of ethical issues and principles in the practice of science. Topics include the nature, extent and causes of fraud in science; UAB policies on fraud; ideals of good science; responsibilities of authorship and peer review; bias and sloppy practices; responsible use of the press; potential problems raised by the commercialization of research; scientists as public policy advisors; and ethical issues involved in animal experimentation and in clinical trials.

**OPE curriculum in professional skills development.** The OPE provides postdoctoral scholars with training in new skills that differ from and/or complement those that they learned as graduate students. A variety of workshops, seminars, and opportunities that promote the development of professional skills are offered. Past and on-going opportunities include 'Transition to Independence Seminar Series' and 'Job Fair'; each of these events present information regarding career opportunities and job skills for the biomedical field. The OPE also offers the "How do you manage" workshop to all postdoctoral trainees. This workshop provides self-assessment tools for the improvement of management and leadership skills. In addition to these events, the OPE provides the following training opportunities: *Grant Writing Course for Postdoctoral Scholars* – This course introduces every aspect of grant writing, including selecting funding mechanisms, writing individual grant sections and understanding administrative policies. In addition, this course provides each postdoctoral scholar with the opportunity to write a grant application and have it reviewed through a 'mock-study section' with faculty who evaluate trainee applications for the NIH. *Laboratory Management Course for Postdoctoral Scholars* - This course introduces every aspect of laboratory management, including hiring staff, managing start-up budgets, and practicing safe laboratory practices. Participants develop and present a laboratory management plan. *Translational Science Course for Postdoctoral Scholars* – This course introduces major aspects of preparing a translational science research program, including program design, data analysis, and regulatory requirements. The *Clinical and Translational Science: Principles of Human Research* text, by David Robertson and Gordon Williams, is utilized. Participants develop a proposal for a translational science project using a team-based approach. *Job Skills Course* - This course introduces every aspect of preparing for and completing a job search, including career options, preparing CVs and resumes, and interviewing skills. Participants have the opportunity to work one-on-one with a career services specialist. *Mentored Experiences in Research, Instruction, and Teaching (MERIT) Program* - The primary goal of this program is to provide postdoctoral scholars with outstanding research and teaching experiences while improving the recruitment of underrepresented minorities into the field of biomedical research. It includes three years of concurrent research training and teaching instruction and is in partnership with Stillman College in Tuscaloosa, AL.

**OPE incentives and training enhancement awards.** Numerous incentives are offered to encourage career development including: *Tuition payment for professional classes* – The OPE provides tuition monies to all postdoctoral scholars for up to 3 credit hours of course work per year. Eligible course work includes professional development courses, such as grant and professional writing, English as a 2<sup>nd</sup> language, and presentation skills, that are designed to enhance career development. *Postdoctoral Research Day* – At this event each Spring, postdoctoral scholars are invited to orally present their research. Presentations are judged by faculty, and cash awards are given for 1st-, 2nd-, and 3rd-place finishes. *Career Day* – Each year the OPE, in partnership with the UAB Graduate Student Association, hosts a job fair showcasing biomedical career opportunities for both postdoctoral scholars and graduate students. *Career Enhancement Awards* – The OPE provides competitive individual awards up to \$1,500 for collaborative research with other universities,



attendance at workshops or courses to learn new skills, or performance of science-related internships. Travel Awards – The OPE provides competitive individual awards up to \$500 for travel to national or international scientific meetings for the purpose of giving a poster or oral presentation. Internship Awards – The OPE funds up to 3 awards per year in the amount of \$5000 each to aid scholars in their performance of internships within or outside of UAB. Internships may be performed in an industrial, administrative, or academic setting. Grant Incentive Awards – The OPE provides up to \$1,000 as a financial incentive designed to encourage scholars to apply for individual fellowships (e.g., F32 NRSA).

**OPE recruitment process.** Postdoctoral scholars are recruited to apply through a multi-pronged approach that includes advertisements in scientific journals, web postings, and attendance at recruitment fairs. Specifically, advertisements are listed in scientific journals, including *The Scientist*, *Science*, and *Nature*. Web postings are targeted toward academic career-related websites, including *Science Careers* and *FASEB Minority Access to Research Careers*. To enhance recruitment of minorities, OPE representatives attend postdoctoral recruitment fairs, such as the *Annual Biomedical Research Conference for Minority Students* and the *National Conference of the Society for Advancement of Chicanos and Native Americans in Science*, to increase awareness of UAB's postdoctoral training programs. In addition, UAB will host its inaugural *Postdoctoral Recruitment Conference* for outstanding senior graduate students nation-wide this fall.

### **Animal Resources**

Animal research at the University of Alabama at Birmingham is accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC), is registered as a research facility with the United States Department of Agriculture (USDA), and has an Assurance of Compliance on file with the Public Health Service Office of Protection from Research Risks (OPRR). The Animal Resources Program (ARP) is the service unit that provides care for all animals required in research and teaching programs at UAB and affiliated hospitals. Services provided by the ARP include: animal procurement; daily care; quarantine, testing, health surveillance, and veterinary medical care; provision of facilities and personnel for procedures such as surgery, radiography, postoperative care, necropsy, and diet preparation; assuring compliance with animal use laws and policies; and assisting with research and teaching programs that use animals. ARP veterinarians have specialty training in laboratory animal medicine. In addition to their service responsibilities, some of our veterinarians hold faculty positions in the Department of Genetics. The ARP operates under the administrative authority of the President of UAB and is directly managed by the Assistant Vice President for Animal Services and reports to the Vice President for Research and Economic Development. The ARP has an independent budget that is supported by a system of uniform charges to investigators. The ARP oversees approximately 215,000 sq ft of space designated for use or care of laboratory animals. This space is distributed among 17 buildings on campus. The UAB Diagnostic/Health Surveillance Laboratory offers health monitoring for rodents and other animals. The laboratory also provides diagnostic services in support of the ARP. The Transgenic Animal/Embryonic Stem Cell (TA/ESC) Resource is a centralized program that produces transgenic animal models for UAB investigators. The service includes production of mouse models using injection and embryonic stem cell methods. Other Core facilities on campus offer services such as a monoclonal antibody production or maintenance of rodents needing special care. The Institutional Animal Care and Use Committee (IACUC) reviews all proposals to use animals in research, testing, or teaching at UAB.