Division of Nutritional Sciences
FACILITIES & OTHER RESOURCES

The Division of Nutritional Sciences (DNS) at Cornell University is among the largest academic units in the United States devoted to human nutrition. The DNS mission and scholarly activities integrate knowledge from the physical, biological and social sciences in the areas of molecular, human, international and community nutrition. The program is supported by state-of-the-art facilities for both transgenic animal and human metabolic research. Multidisciplinary research, graduate training (funded by NIDDK, NICHD, USDA and NYS) and outreach programs include Maternal & Child Nutrition, Nutritional Genomics, Food Systems, Global Health & International Nutrition and Obesity & Chronic Disease.

Scientific Environment:

Note new requirement: The Facilities and Other Resources section has been changed to require a description of how the scientific environment will contribute to the probability of success of the project, unique features of the environment, and for Early Stage Investigators, “the institutional investment in the success of the investigator (e.g., resources, classes, etc.)”

Laboratory: The DNS occupies about 40,000 sq ft of space in Savage/Kinzelberg, Martha Van Rensselaer (MVR), and Weill Hall with adjacent state-of-the-art animal facilities. The Division has 17,800 sq ft of modern laboratory space in Kinzelberg Hall. In addition to laboratories for individual faculty, this space includes specialized solvent storage, facilities for washing glassware and sterilization, a dark room, cell culture facilities, cold rooms and space for major pieces of shared equipment. Of the space in Savage and MVR halls, about 8,000 sq ft supports research programs that do not require traditional wet laboratories.

Faculty to complete specific to their lab

Computer: Cornell is an acknowledged leader in the application of computing for teaching and research. Cornell Information Technologies provides a high-speed campus network and special tools and services for academic teaching. The Division of Nutritional Sciences has long been a leader on the Cornell campus in developing support services for computer hardware and software and, particularly, for statistical services. These services are provided jointly with the Colleges of Human Ecology and Agriculture and Life Sciences.

Computing facilities in the Division include those in the laboratories and offices of our individual faculty as well as those in two facilities that support the work of our students. The facility dedicated to graduate students houses state-of-the-art microcomputers and printers and provides high-speed connections to the Internet. Software is available for word processing, database management, graphics, data entry and statistical analysis. In addition, the Division is a member of the data sharing program of the National Center for Health Statistics (NCHS), which facilitates faculty and students access to all NCHS data. DNS has acquired and can provide access to data collected by the World Health Organization, the Institute of Nutrition of Central America and Panama, the Pan American Health Organization, the Centers for Disease Control and Prevention, and other organizations.
Office: All Division faculty have individual offices equipped with networked personal computers including internet access. The PI has an office space of (# of square feet). Discuss what are nearby resources, i.e., Located in the Biotechnology Bldg, adjacent to PI’s lab, or near other collaborators or resources.

Clinical:
**Human Metabolic Research Unit (HMRU):**
The HMRU is a 4,000 sq. ft research facility with specialized laboratories and facilities to support comprehensive nutrition and metabolism research on human subjects. The HMRU supports many facets of research in the nutritional sciences, including human metabolism, dietetics, and clinical chemistry, as well as studies involving human performance and assessment of body composition and bone mass. Facilities include a **Metabolic Kitchen and Dining Room** for controlled feeding studies of up to 24 research participants, a **Consultation Room** for interviews and counseling, a **Ward** that can accommodate overnight studies for up to 4 research participants, an **Examination and Changing Room**, the **Nell I. Mondy Laboratory for Human Performance** with facilities to test energy expenditure and oxygen consumption by indirect calorimetry, a **Body Composition Laboratory** which includes a Dual Energy X-ray Absorptiometer (DXA), Bod-Pod and a water displacement tank, and a **Clinical Chemistry Laboratory** which includes an IMMULITE 2000 Immunoassay system, Dimension Xpand Plus Integrated Chemistry System, and Biotech Precision XF Robotics Pipetting System, Synergy II Plate Reader and Plate Washer. Hematology equipment includes a Coulter hematology analyzer and a ZPP Hematofluorometer. A Perkin Elmer graphite furnace atomic absorption spectrophotometer is also available for assessment of trace mineral concentrations in biological samples.

**Human Participant Space for Research (HPSR):**
The HPSR is a shared space for human participant and focus group research consisting of 4 suites located within the newly built (2011) Human Ecology Building.

**Human Subject Protection:** Cornell University operates its Human Research Protection Program under the Federal Wide Assurance (FWA 00004513) filed with the U. S. Department of Health and Human Services. University policy requires that all research that involves human participants, regardless of the source of financial support, must be reviewed and approved by the Institutional Review Board before it can be initiated.

The DNS also has close ties with the University of Rochester Medical Center and formal collaborative arrangements with its General Clinical Research Center (GCRC). This is an inpatient and outpatient research support service funded by the National Center for Research. The GCRC serves as a regional resource for the performance of and training in clinical research. The GCRC has two components at Strong Memorial Hospital. One is an inpatient unit consisting of two beds and the other is an outpatient area with four rooms to support outpatient procedures/studies. Other resources available to investigators include a metabolic kitchen, a core support laboratory that performs various hormone and substrate assays and provides other special tests for investigators, a GC-mass spectrometer, DEXA and K40 body composition facility, a unique environmental chamber and rooms (2) dedicated to muscle function testing and analysis and a room for glucose-clamp metabolic studies. The unit is staffed with skilled nurses experienced in the implementation of sophisticated clinical studies.

**Animal:** DNS has dedicated space for transgenic mice available at the Cornell Core Transgenic Facility in the College of Veterinary Medicine and Weill Hall. The requisite cages are available as well as shared surgical facilities with a fume hood. All mice are maintained in micro-isolator.
cages under virus/pathogen-free conditions. Our animal facilities are AAALAC-certified and therefore adhere to the highest standards.

The University has undergone a major campus-wide restructuring of its animal facilities. Two new major separate barrier facilities have been constructed. Each facility has dedicated animal holding and procedure space for DNS faculty, state-of-the-art imaging and embryonic stem cell facilities and instrumentation for studying metabolism and energy expenditure are also available. These state-of-the-art facilities will house up to 15,000 mice for studies of gene-nutrient interaction as part of the campus-wide Life Sciences initiative.

**Animal Care and Use:** Cornell University operates its Animal Care and Use program under the Animal Welfare Assurance A3347-01 on file with the Office of Laboratory Animal Welfare (OLAW). This assurance applies to all the associated campuses, except Weill Medical College. Cornell University gives assurance that it will comply with the Public Health Service Policy on Humane Care and Use of Laboratory Animals. As part of that assurance, institutions using vertebrate animals in research have an Institutional Animal Care and Use Committee (IACUC) to review all animal proposals and procedures.

**Veterinary Facilities:** Veterinary care is provided by the veterinary staff at the Center for Research Animal Resources at the College of Veterinary Medicine. The facilities and operations are maintained in compliance with the Animal Welfare Act regulations of the U.S. Department of Agriculture, and Public Health Service Guidelines.

**Institutional Biosafety Committee:** Cornell University’s Institutional Biosafety Committee (IBC) reviews and approves all research involving the use of biohazardous agents. The IBC works to ensure that all research involving biohazardous materials and the facilities used to conduct the research, are in compliance with the National Institute of Health’s Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines), The Centers For Disease Control and Prevention (CDC) guidelines, United States Department of Agriculture (USDA) regulations, and Occupational Health and Safety Administration (OSHA) regulations.

**Other:**

**Cooperative Extension:** Cornell Cooperative Extension (CCE) is a key outreach system of Cornell University with a strong public mission and an extensive local presence that is responsive to needs in New York communities. The Cornell Cooperative Extension educational system enables people to improve their lives and communities through partnerships that put experience and research knowledge to work. Cornell Cooperative Extension operates on the Cornell Campus through the leadership of faculty and staff in departments in the College of Agriculture and Life Sciences and the College of Human Ecology, with contributions from the College of Veterinary Medicine.

Cornell Cooperative Extension Associates and the New York City office provide 56 portals to Cornell University. Extension educators in these locations form powerful community-university partnerships with the Cornell Campus, and involve local constituents to address the issues and concerns of New Yorkers.

The **Bronfenbrenner Life Course Center (BCTR) and the Cornell Population Center (CPC)** provide training and support for young investigators focusing on collaborative research on life course and family issues, including a monthly works-in-progress seminar for developing and refining research proposals. The aim of the BCTR is to help investigators develop innovative translational proposals in the area of human development, health, and well-being. Dr.
Wethington, one of my mentors, is an Associate Director of this center. The CPC offers a monthly seminar series on demographic research related to families and children, health behaviors and disparities, and poverty and inequality, as well as training in grantsmanship and statistical analyses.

**Library:** The Division is served primarily by Mann Library (approximately 791,000 volumes, including about 6,000 serial subscriptions), one of the nation’s leaders in holdings related to nutritional sciences and also in the application of computer technology for access to scholarly information. Mann is the host for HEARTH (Home Economics Archive: Research, Tradition, History), a core electronic collection of books and journals in Home Economics, including nutrition. In the coming year, Mann will add the online backfile of *Nutrition Abstracts and Reviews* which will extend bibliographic information back to the 1930s.

After over a decade of planning and construction, the Mann Library has been completely reconstructed. The library now boasts nearly 38 miles of fiber optic cable, ensuring high-speed access to high-volume Internet resources across the country and the world, which enhances the library’s ability to take advantage of imminent high-technology developments in the information field.

One highlight of Mann’s printed resources is a significant collection in international nutrition, supplemented by Kroch Library’s archival collections of the papers of various pioneers in this area. In as much as Mann is also Cornell’s agricultural and life sciences library, students are surrounded by strong back-up collections in general biology, genetics and biochemistry.

Among the other 21 Cornell libraries available to support the research of trainees are the Flower-Sprecher Veterinary Library (approximately 95,000 volumes) and the Physical Sciences Library (96,000 volumes) on the Ithaca campus and the Weill Library (approximately 200,000 volumes) of Cornell Medical College in New York City, which provides copies of articles rapidly by fax to faculty in the Division.

**Statistical Consulting:** The Cornell Statistical Consulting Unit (CSCU) is operated by DNS. The objective of CSCU is to enhance research at Cornell by assisting researchers with their statistical analyses. The statistical consulting, instructional, and infrastructure services are coordinated to provide advice and support the use and learning of the latest methodology for undergraduate and graduate students, faculty and the entire research community. CSCU offers a pool of consultants, faculty and staff statisticians, with a vast array of statistical background, talent and expertise. CSCU provides researchers with statistical consultation through daily walk-in sessions and by appointment. Assistance is provided with study design and preparation of grant proposals, planning and implementation of statistical analysis, interpretation of results and preparation and revision of manuscripts. CSCU also offers workshops introducing a vast area of statistical techniques and also considers contract work, including performing statistical analysis, for clients.

The Cornell Institute for Social and Economic Research (CISER) provides statistical computing services, access to data archiving consulting, and training to all of our faculty and graduate students. CISER maintains a data archive that is one of the foremost in the country for social science data and other government-collected data sets.

Additional computational support is available through the Cornell Computational Biology Service Unit (CBSU), which provides research, software and hardware support: available resources are described in further detail at the CBSU website, http://cbsu.tc.cornell.edu/. The CBSU is part of the Life Sciences Core Laboratories Center of Cornell University. The unit provides
computational support and resources for Cornell Life Sciences Faculty on the Ithaca campus as well at the Weill Medical School. CBSU is also one of the Microsoft's High Performance Computing Institutes, dedicated to bringing the latest HPC technology to biological research. CBSU researchers have extensive experience analyzing Illumina/Solexa and Roche/454 data for RNA-seq, ChIP-seq and genome re-sequencing and genotyping projects. The CBSU currently has: a Linux cluster of 425-node SUN servers with dual 64-bit Opteron processors; a Windows cluster of 230-node DELL servers with dual Xeon processors; four SQL/file servers with combined storage of 4.5 TB; access to four 64GB RAM servers for next-generation sequencing and genotyping data analysis. For GWA studies, the CBSU provides services including the following: run standard Illumnia pipeline for genotype calls, copy number variation, as well as standard QC procedure, PCA analysis; format genotyping results in different formats to run various data analysis pipelines, set up and manage the project database, integrate the genotyping results with genome annotation databases, and other functional genomics studies like microarray et al., and development of software for data mining.