The University of Chicago
Division of Biological Sciences

2009 – 2010

Graduate Training Grants

Administrative Handbook

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Grant Director/ Co-Director	Grant Number	Training Grant	# of Pre-doctoral students	# of Post-doctoral students	Grant Expiration Date
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Rothman-Denes, Lucia	GM07197	Genetics and Regulation	18	0	06/30/11
Ruvinsky, Ilya	P200A090309	Genomics	5	0	08/14/12
Schneewind, Olaf	AI065382	Host-Pathogen Interactions	3	0	07/31/10
Schwartz, Nancy	HD07009	Growth and Development	13	0	04/30/13
Solway, Julian	HL07605	Respiratory Biology	2	9	06/30/10
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TRAINING GRANTS FROM FEDERAL AGENCIES

Grant Director: Albert Bendelac

Admin. Contact: Sue Levison Phone: 2-2464 Fax: 2-3172

Project Title: **Interdisciplinary Training Program in Immunology**

Agency: National Institute of Allergy and Infectious Diseases

Expiration Date: 06/30/14 **Grant Number:** AI07090

Number of Slots: 8 Pre-Doctoral
2 Post-Doctoral

Purpose: This interdisciplinary program trains individuals to become creative, independent research scientists in Immunology. A Ph.D. specializing in immunology is offered by the Committee on Immunology. A number of core courses offered in immmunobiology stress the development of critical thinking skills and an understanding of current experimental approaches. In addition to formal coursework, discussion and research, trainees present their research in bi-weekly seminars and the annual committee on immunology retreat. Ph.D. students in their first two years of training are also encouraged to take advanced courses in molecular genetics, cell biology, microbiology, and biochemistry. Participation in journal clubs and research seminars is required to develop skills important in communicating ideas and research to other scientists. Progress of the students in the first two years is monitored by the program director and by the chairman of the immunology curriculum committee, and in the later years by the graduate student adviser and the student's thesis committee. The overall goal of the program is to develop the knowledge, ability, and desire to solve the most critical questions in the field of immunobiology.

Grant Director: Eugene Chang

Admin. Contact: Lynn Kaczmarz Phone: 4-5811 Fax: 2-2182

Project Title: **Research Training in Digestive Diseases and Nutrition**

Agency: National Institute of Diabetes and Digestive and Kidney Diseases

Expiration Date: 06/30/10 **Grant Number:** DK07074

Number of Slots: 2 Pre-Doctoral
5 Post-Doctoral

Purpose: The major goal of this program is to train young physicians as well as pre- and postdoctoral students to become independent, productive investigators in the fields of adult and pediatric digestive diseases and/or nutrition. This program is truly multidisciplinary as well as multi-departmental in scope. The program offers a well-balanced and broad curriculum in a diverse area of fields pertaining to digestive diseases and nutrition. The program also offers its students the opportunity to attend

national meetings, workshops and symposia. Minority students are particularly encouraged to apply.

Grant Director: Elliot Gershon

Admin. Contact: Christianne Montgomery Phone: 4-1324 Fax: 4-6761

Project Title: **Multidisciplinary Psychiatric Genetics Training Program**

Agency: National Institute of Health

Expiration Date: 06/30/12 **Grant Number:** MH20065

Number of Slots: 0 Pre-Doctoral
2 Post-Doctoral

Purpose: A central goal of the Departments in this application, Psychiatry, Human Genetics, Neurobiology, Statistics, and Psychology, is innovative biomedical research in behavior, the neurosciences, and genetics combined with the training of researchers who are able to make significant contributions to the field. This three-year postdoctoral training program is focused on interdisciplinary approaches to genetics of complex inheritance psychiatric disease, including basic research and technology development.

Grant Director: Godfrey Getz

Admin. Contact: Tracie DeMack Phone: 4-3652 Fax: 2-4476

Project Title: **Cardiovascular Pathophysiology and Biochemistry**

Agency: National Heart, Lung, and Blood Institute

Expiration Date: 06/30/12 **Grant Number:** HL07237

Number of Slots: 8 Pre-Doctoral
3 Post-Doctoral

Purpose: The training grant in cardiovascular pathophysiology and biochemistry supports the training in cardiovascular pathophysiology broadly defined. Trainees are generally recruited from students who have already applied to the University of Chicago departments, committees and individual faculty. Trainees are selected by a faculty committee based on academic record, letters of recommendation, and statement of purpose from candidate and sponsor. A wide range of training opportunities exists with faculty in the disciplines of pathology, biochemistry and molecular biology, physiology, pharmacology, genetics, and nutrition. Trainees are exposed to various forms of microscopy (electron and confocal); various forms of spectroscopy and crystallography; genetic, molecular biologic; pharmacologic and electrophysiologic techniques; and experimental pathologic approaches.

A number of core courses offered in molecular pathogenesis of disease, and cardiovascular disease in particular, stress the development of critical thinking skills and an understanding of current experimental approaches. In addition to formal

coursework, discussion and research, trainees will have an opportunity to present their research at the annual cluster retreat. Ph.D. students in their first two years of training are also encouraged to take advanced courses in molecular biology, cell biology, genetics, and biochemistry. Participation in journal clubs and research seminars is required to develop skills important in communicating ideas and research to other scientists. Progress of the students in the first two years is monitored by the program director and by the curriculum committee, and in the later years by the graduate student adviser and the student's thesis committee. The overall goal of the program is to develop the knowledge, ability, and desire to solve the most critical questions in the field of cardiovascular pathophysiology and molecular pathogenesis and molecular medicine.

Grant Director: Maryellen Giger

Admin. Contact: Tarnisha Smith Phone: 4-7769 Fax: 2-0371

Project Title: **Research Training in Medical Physics**

Agency: National Institute of Biomedical Imaging and Bioengineering

Expiration Date: 04/30/10 **Grant Number:** 5 T32 EB002103

Number of Slots: 4 Pre-Doctoral
2 Post-Doctoral

Purpose: The field of medical physics, which has emerged from the growing interaction between physics and biology, may be broadly defined as applied physics in medicine. The program faculty's primary areas of research interest include the physics of diagnostic radiology, magnetic resonance imaging, nuclear medicine, and radiation therapy. Students are required to take coursework, participate in seminars and journal club meetings, assist in research projects, and complete a research project under the supervision of a faculty member. Research projects may consist of: the development of computer-aided diagnostic schemes and the evaluation of observer performance; theoretical and experimental studies in digital radiography, picture archiving and communication systems; magnetic resonance imaging; MR spectroscopy; nuclear medicine imaging; positron emission tomography; computer applications in radiation therapy; multi-modality image correlation; or radiolabeled monoclonal antibody dosimetry. Unique features of this program are the faculty's focused efforts on research in medical imaging and on the training of high-level medical physicists.

The Graduate Programs in Medical Physics at the University of Chicago offers research training that leads to the Doctor of Philosophy degree as well as postdoctoral training. Students working toward a graduate degree in medical physics are expected to have completed training equivalent to that required for the S.B. degree in the Department of Physics at this University. Postdoctoral trainees are selected from candidates with the Ph.D. degree in Physics or equivalent fields. Primary areas of research interests by the program faculty include four components: Physics of Diagnostic Radiology, Physics of Nuclear Medicine, Physics of Magnetic Resonance Imaging/Spectroscopy, and Physics of Radiation Therapy. Unique features of this program are the faculty's focused effort on research in medical imaging and radiation oncology, and on the training of high-level medical physicists. Students and trainees are required to take course work, participate in seminars and journal club meetings, assist in research projects, and complete a

research project under supervision of a faculty member. Research projects may be theoretical or experimental studies in digital radiography, diagnostic performance, computer-aided diagnosis, magnetic resonance imaging and spectroscopy, nuclear medicine imaging, positron emission tomography, computer applications in radiation therapy, dose computation and verification, multi-modality image correlation, or dosimetry. All trainees take a cancer and radiation biology course, participate in programs related to responsible conduct of research, and serve as teaching assistants. The number of current program faculty is 22. The number of current predoctoral students is 26. There are two postdoctoral trainees in the program at the present. The number of trainees for which funding is requested is four per year at the predoctoral level (2 first-year and 2 second-year trainees per year), and 2 per year postdoctoral level.

Grant Director: **Ben Glick** **Co-Director:** **Phoebe Rice**

Admin. Contact: Dawn David Phone: 4-8344 Fax: 2-3172

Project Title: **Molecular and Cellular Biology**

Agency: National Institute of General Medical Sciences

Expiration Date: 06/30/12 **Grant Number:** GM007183-34

Number of Slots: 28 Pre-Doctoral
0 Post-Doctoral

Purpose: The Molecular and Cell Biology (MCB) training program is a long standing interdisciplinary program at the University of Chicago that is focused on the training of graduate students for independent academic and/or research careers in the Biomedical Sciences. The core mission of the program is to train students to analyze biological processes using the conceptual and experimental tools of structural, molecular, cell biology and biochemistry. This mission is necessarily interdisciplinary in nature and represents a distinctive feature of this training program. The program has strong research foci in the following areas of molecular and cellular biology: biochemistry including macromolecular structure (Protein and RNA), folding and function, synthetic biology, protein trafficking, organelle biogenesis, cell signaling, cell-cell interaction, control of gene expression and cell fate determination, chromosome structure, recombination and alterations during oncogenesis, viral and bacterial pathogenesis, immune cell development and recognition of antigens. An MCB trainee must take the Protein Fundamentals course and can choose between one of two courses in Cell Biology and one of three courses in Molecular Biology. All trainees, both current and past, participate in and attend the program lecture series, mini-symposium and "Research in Progress."

Grant Director: **Geoffrey Greene**

Admin. Contact: Tracie DeMack Phone: 4-3652 Fax: 2-4476

Project Title: **Graduate Training Program in Cancer Biology**

Agency: National Cancer Institute

Expiration Date: 12/31/14 **Grant Number:** CA09594

Number of Slots: 8 Pre-Doctoral
3 Post-Doctoral

Purpose: The program offers an interdisciplinary regimen of studies leading to the Ph.D. in preparation for research and teaching in this field. The program offers a broad curriculum and research training in a diverse area of fields pertaining to cancer. Areas of training include: cancer biology; cell biology; molecular genetics; biochemistry; pathogenesis of cancer; chromosomal rearrangements; oncogenic transformation; growth control; herpes and papilloma virus biology; immunology; and carcinogenesis. In addition to formal coursework, discussion and research, trainees present their research in bi-weekly cancer biology research seminars, the annual cluster retreat, and interact with invited speakers for the seminar series. The program also offers its students the opportunity to attend national meetings and cancer biology workshops.

Grant Directors: Michael LaBarbera

Admin. Contact: Carolyn Johnson Phone: 2-9474 Fax: 2-4699

Project Title: **Graduate Assistance in Areas of National Need (GAANN): Evolutionary Biology**

Agency: U.S. Department of Education

Expiration Date: 08/14/12 **Grant Number:** P200A090336

Number of Slots: 3 Pre-Doctoral
0 Post-Doctoral

Purpose: Responses of natural and managed biotic systems to environmental change are among the most important issues confronting the nation this century. Addressing these issues requires biologists trained to undertake research across a spectrum of spatial and temporal scales, to communicate their results to diverse audiences (including policy-makers), and to mentor future generations of scientists at this interface. Recent reports show that few PhD's are being prepared to answer this urgent national need. Meeting this challenge requires a multidisciplinary educational program that includes ecology, genetics, bioinformatics, conservation biology, systematics, paleobiology, anthropology, and climatology.

The program will be administered by the Committee on Evolutionary Biology (CEB) at The University of Chicago, a top-ranked inter-institutional PhD program composed of scientists from the University, Field Museum, Brookfield and Lincoln Park Zoos, The Chicago Botanic Garden, Morton Arboretum, and Argonne National Labs.

The CEB GAANN Fellows will train in a coordinated program including: 1) cross-disciplinary courses focused on evolutionary environmental biology, 2) structured opportunities to learn from biologists, geologists, and policy-makers addressing applied ecological problems, 3) intensive teaching and innovative internship opportunities, and 4) group interactions at annual GAANN student-faculty retreats.

Program Director: Peggy Mason

Admin. Contact: Diane Hall Phone: 2-6371 Fax: 2-1216

Project Title: **Training in Neural Systems**

Agency: National Institute of General Medical Sciences

Expiration Date: 06/30/13 **Grant Number:** GM07839-30

Number of Slots: 7 Pre-Doctoral
0 Post-Doctoral

Purpose: The training program in neurobiology is a broad interdisciplinary program devoted to training individuals for careers as independent research scientists in universities and health related research laboratories. A Ph.D. degree specializing in neurobiology is offered by the Committee on Neurobiology. All predoctoral students are required to take a core sequence of courses in Neurobiology during their first year and then may choose from a variety of electives in accordance with their background and research interests. The progress of students is monitored by the program director during the first year and then by an advisory committee which the student formulates with the aid of the program director. The uniform features of the program are common course work, departmental and student seminar programs, and journal clubs.

Grant Director: Elizabeth McNally

Admin. Contacts: Amy Murphy Phone: 2-2680 Fax: 2-2681

Project Title: **Cardiovascular Sciences Training Grant**

Agency: National Heart, Lung and Blood Institute

Expiration Date: 06/30/14 **Grant Number:** HL07381

Number of Slots: 3 Pre-Doctoral
6 Post-Doctoral

Purpose: The Cardiovascular Training Grant supports both postdoctoral (M.D. and Ph.D.) and predoctoral (Ph.D.) students for terms of 2-3 years to work in the laboratories of one of 33 trainers, whose research is in the cardiovascular sciences. The trainers include faculty from Cardiology, Pathology, Internal Medicine, Neurology, Pharmacology and Physiology, and Biochemistry and Molecular Biology. The program emphasizes training in cellular electrophysiology, muscle physiology, cardiac dynamics, gene regulation, and genetic disease.

Grant Director: David Meltzer **Co-Director:** William Dale, Godfrey Getz

Admin. Contact: Coleman Evans Phone: 2-5035 Fax: 4-2238

Project Title: **MD/PhD Program in Medicine, Social Sciences and Aging**

Agency: NIH/NIA

Expiration Date: 04/30/10 **Grant Number:** T32AG23496

Number of Slots: 5 Pre-Doctoral
0 Post-Doctoral

Purpose: This interdisciplinary program provides trainees with the skills they will need to pursue successful academic careers, produce high quality research, and provide leadership at the interface of medicine, the social sciences, and aging. This will be accomplished by providing training in medicine (leading to an MD), in the social sciences (a PhD in a social science or related discipline), and rich interdisciplinary training in both aging & health services research.

Grant Director: Olufunmilayo Olopade, M.D.

Admin. Contact: JacQuan Henley Phone: 2-2471 Fax: 2-0963

Project Title: **Basic Research Training in Medical Oncology**

Agency: National Cancer Institute

Expiration Date: 06/30/12 **Grant Number:** T32 CA09566

Number of Slots: 0 Pre-Doctoral
6 Post-Doctoral

Purpose: Medical Oncology is a subspecialty of internal medicine that concerns itself with the diagnosis, staging, and treatment of malignant diseases. The emphasis is on the use of systemic therapies that include chemotherapy and biologics. Fundamental research includes cancer genetics, cancer cytogenetics, molecular oncology, and cancer pharmacology. The purpose of this program is to provide training to board-certified or board-eligible internists who desire to become the physician-scientists of the future and who want to maintain a full-time academic focus.

Grant Directors: Catherine Pfister

Admin. Contact: Julie Steffen Phone: 2-0844 Fax: 2-9740

Project Title: **Graduate Assistance in Areas of National Need (GAANN): Ecology**

Agency: U.S. Department of Education

Expiration Date: 08/14/10 **Grant Number:** P200A070323

Number of Slots: 3 Pre-Doctoral
0 Post-Doctoral

Purpose: Environmental problems are a growing concern in the United States and worldwide. Adequately addressing these problems requires a solid quantitative understanding of how ecological systems operate. To meet the anticipated national needs for highly trained scientists and teachers in ecology, the Department of Ecology and Evolution has aggressively enlarged its faculty by 35% in experimental and quantitative ecology over the last 10 years. Trainees in this GAANN program learn both basic research and teaching skills. Our program seeks to support students in ecology, with particular attention aimed at students with financial needs, minorities and women. We offer support as participants in the program, as well as indirectly, by providing venues for training and mentoring students from the high school level to the Ph.D. Trainees will benefit from our highly interactive and interpersonal program focused on the rigorous interplay of quantitative and experimental techniques in ecology.

Grant Director: Joseph Piccirilli

Admin. Contact: Lisa Anderson **Phone:** 4-3586 **Fax:** 2-0439

Project Title: **Predoctoral Training Program in Chemistry & Biology**

Agency: National Institute of Health

Expiration Date: 06/30/2011 **Grant Number:** T32 GM008720

Number of Slots: 6 Pre-Doctoral
0 Post-Doctoral

Purpose: The Predoctoral Training Program in Chemistry & Biology, supported through a grant of the National Institutes of Health (T32 GM008720), is the only interdivisional, interdisciplinary predoctoral training program at The University of Chicago. Students are admitted to the program from both the Division of Physical Sciences and the Division of Biological Sciences. Students fulfill simultaneously the requirements of the program and the requirements of the program of graduate study leading to the Ph. D. degree in which they are enrolled. The main objective of the program is cross-training of students at the interface of the chemical and biological sciences with a mechanistic and synthetic focus. This goal is achieved through (1) satisfactory completion of two courses in the department of the other scientific discipline as electives; (2) an elective research rotation under the guidance of a participating faculty member in the other discipline upon initial appointment to the program in the Spring Quarter of the first year of graduate study; (3) coordinated mentoring of student-trainees by the primary research advisor together with a co-advisor of the other department up to the time of the final Ph. D. oral defense; and (4) participation in a series of monthly meetings throughout the academic year designated as “Discussions at the Interface of Chemistry & Biology" to gain acquaintance with theoretical concepts and methods. The broad scope of the interdisciplinary research interests of the faculty participating in the training program, strengthened through collaborative research projects and interactions, ensures a large variety of opportunities for meaningful cross-training experience.
The program offers a supportive environment for training of students in cutting-edge research at the interface of chemistry and biology.

Grant Director: Victoria Prince

Admin. Contact: Kristine Gaston Phone: 2-8037 Fax: 2-3172
Pilar Frankowicz Phone: 2-5785 Fax: 4-3028

Project Title: **Training Program in Developmental Biology**

Agency: National Institute of Child Health and Human Development

Expiration Date: 04/20/13 **Grant Number:** 1T32HD055164-01A1

Number of Slots: 4 Pre-Doctoral
0 Post-Doctoral

Purpose: The core mission of the developmental biology training program (DBTP) is to train students to analyze all aspects of developmental processes from a broad interdisciplinary perspective, integrating cellular, molecular and genetic approaches. Developmental Biology is by its nature a highly integrative discipline that takes multiple approaches to study a range of topics including embryogenesis, organogenesis, cell fate specification, stem cell biology, cancer and regeneration. Studies in these areas have major impact on biomedical research and training: developmental biologists have been instrumental in developing animal models of human disease and experimental systems to allow rigorous studies of genetic mechanisms in whole animals. At Chicago our developmental biologists are using an array of experimental approaches to address a wide range of questions across the entire spectrum of developmental model systems, as well as using comparative approaches in non-model systems. We can thus offer our trainees a uniquely diverse training experience that prepares them for careers in advanced research and education.

Grant Director: Richard Quigg

Admin. Contact: Kiara Moore Phone: 2-3596 Fax: 2-5818

Project Title: **Nephrology Research Training**

Agency: National Institute of Diabetes and Digestive and Kidney Diseases

Expiration Date: 6/30/13 **Grant Number:** DK07510

Number of Slots: 0 Pre-Doctoral
3 Post-Doctoral

Purpose: The overall goal of the program is the training of physicians and scientists to investigate both renal diseases and the basic biology that underlies normal and abnormal kidney function. Although emphasis is placed on basic research techniques, they are applied to health related problems that include kidney regeneration after injury, glomerulonephritis, nephrolithiasis, uremic bone disease, vascular reactivity and hypertension, kidney disease and hypertension in pregnancy and cardiac function in uremia. Principal methods include molecular cloning,

genomic DNA analysis using PCR, all forms of protein purification and characterization, cell culture, tubule microdissection and microanalysis, antibody methods, vascular contractility measurements, and whole organ and animal physiology, as well as direct human clinical protocols. Candidates have the M.D. or Ph.D. degree, and physicians will have completed clinical training in Internal Medicine and one year in Nephrology. Candidates are selected by the entire faculty based on interviews, letters of recommendation and past research performance where applicable. Progress of candidates is assessed by the program director and co-director, individual faculty sponsors, and seminars given by candidates.

Grant Director: José Quintáns

Admin. Contact: Barbara Crenshaw Phone: 4-3661 Fax: 4-3999

Project Title: **Medical Scientist National Research Service Award**

Agency: National Institute of General Medical Sciences

Expiration Date: 06/30/10 **Grant Number:** GM07281

Number of Slots: 34 Pre-Doctoral
0 Post-Doctoral

Purpose: The Medical Scientist Training Program is an integrated program of study leading to the MD degree and to the PhD in a field related to medicine under the auspices of the Interdisciplinary Scientists Training Program (ISTP). Students admitted to the program begin in the summer quarter at the end of June with the newly-developed Intro to Basic and Translational Science Research course, and later in the summer join their medical school classmates for The Human Body (Anatomy) and Health Care Disparities in America. During the school year students enroll in the Pritzker Initiative and the ISTP graduate curriculum which includes a year long, MSTP-specific Journal Club. During the second summer, trainees rotate through one or two laboratories to determine their specific area of research interest and select their potential faculty adviser. While some students make this choice early and begin thesis research after the first year of medical studies, most trainees enter into full time research toward the PhD after the second year of medical studies is completed, taking additional courses only as needed to meet degree requirements. After completion of the PhD, trainees return to finish the remainder of their medical program.

Grant Director: Mark Ratain

Admin. Contact: Michelle Domecki Phone: 2-9699 Fax: 2-9698

Project Title: **Clinical Therapeutics**

Agency: National Institute of General Medical Sciences

Expiration Date: 06/30/10 **Grant Number:** GM07019

Number of Slots: 0 Pre-Doctoral
3 Post-Doctoral

Purpose: This training program has been designed to provide an education in a broad range of academic clinical pharmacology activities through exposure to both research and clinical activities and studies. The Committee on Clinical Pharmacology and Pharmacogenomics is comprised of faculty in the Departments of Anesthesia and Critical Care, Human Genetics, Medicine, Psychiatry, and Pediatrics. Each trainee follows an individually designed program based on his or her background, with minimal core requirements. It is anticipated that most fellows will have a M.D. degree, will have completed their residency training and will be eligible for board certification in their selected specialty. However, qualified applicants with a Ph.D. and Pharm.D. in a relevant discipline will be considered for acceptance into the program. It is also anticipated that some applicants with a M.D. degree will have completed a period of fellowship training in a selected sub-specialty. Applicants are expected to complete a 2-3 year period of training, at the end of which they should be qualified to address clinical pharmacologic issues and research questions within their specialty, as well as be prepared for board certification

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Grant Director: Samuel S. Refetoff

Admin. Contacts: Ann M. Leu Phone: 2-6217 Fax: 4-0486

Project Title: **Integrated Clinical and Basic Endocrinology Research**

Agency: National Institute of Diabetes and Digestive and Kidney Diseases

Expiration Date: 06/30/11 **Grant Number:** DK07011

Number of Slots: 0 Pre-Doctoral
3 Post-Doctoral

Purpose: The Endocrinology Fellowship Training Grant provides trainees with multidisciplinary training in endocrinology to prepare them for careers in academic endocrinology. The major focus of training is for M.D. and M.D./Ph.D. candidates, although a limited number of Ph.D. fellows are also eligible for training. Potential trainees interview preceptors who include faculty in the Section of Adult and Pediatric Endocrinology, Diabetes, and Metabolism and the Departments of Medicine and Pediatrics, as well as faculty in the basic science departments whose research is related to the study of hormonal regulation. Regularly scheduled conferences and research seminars are part of the training program, and the trainees have the opportunity to interact with invited speakers and also to attend national meetings and to present the results of their research in this forum.

Grant Director: Robert L Rosenfield **Co-Director:**

Admin. Contact: Ann M. Leu Phone: 2-6217 Fax: 4-0486

Project Title: **Pediatric Endocrinology Research Training grant**

Agency: NIDDK

Expiration Date: 06/30/14 **Grant Number:** DK0654182

Number of Slots: 0 Pre-Doctoral
4 Post-Doctoral

Purpose: The Pediatric Endocrinology Research Training Program at the University of Chicago will train pediatric physician-scientists in the investigation of endocrine diseases. This training program will help fill the national shortage of physician-scientists in the area of pediatric endocrinology. Four research training slots are requested so that two trainees can be entered annually into a two-year research training program. Thus, this program is for trainees who have had introductory laboratory and course work in their initial year of pediatric endocrinology training and have developed a research project to which they are prepared to dedicate 80% effort for the two-year training period. The training is based in a newly combined Pediatric-Adult Endocrinology, Diabetes, and Metabolism unit, the Institute for Endocrine Discovery and Clinical Care. The Senior Training Faculty numbers 15 investigators from four University departments (Medicine, Pediatrics, Human Genetics, Health Studies) who carry out a broad range of endocrine-related clinical and basic research supported by a substantial base of NIH and other peer-reviewed research grants. Each is an established investigator. In addition, the program is aided by the participation of 13 Associate Training Faculty from the Departments of Medicine, Pediatrics, Ob/Gyn and Health Studies. The University provides a rich environment of other faculty and physical resources. Trainees are selected on the basis of prior individual accomplishments including prior research training and experience as well as commitment to an academic research career. Trainees select a basic and clinical research mentor and an advisor, and the trainee and mentors jointly identify a primary and secondary research project. Trainees then undergo at least 2 years of training in the research laboratory of the preceptor(s), during which time they assume a progressively greater responsibility for developing research hypotheses, designing experiments, analyzing the data and preparing abstracts and scientific manuscripts. In the final year of training, an area of research is identified which is sufficiently different from the research of the preceptor to allow the trainee to submit a peer-reviewed mentored research grant proposal. This research training occurs within the framework of a required core curriculum consisting of courses that describe and review current research methodology and research advances as well as statistical analysis of research data. The setting is one that emphasizes translational research and timely monitoring of trainee progress.

PUBLIC HEALTH RELEVANCE: The Pediatric Endocrinology Research Training Program at the University of Chicago aims to produce highly qualified physician-scientists trained in the use of a variety of modern experimental techniques that will enable them to translate fundamental discoveries into improved medical care of diabetes and other endocrine disorders.

Grant Director: Lucia Rothman-Denes

Admin. Contact: Sue Levison Phone: 2-2464 Fax: 2-3172

Project Title: **Genetics and Regulation Training Grant**

Agency: National Institute of General Medical Sciences

Expiration Date: 06/30/11 **Grant Number:** GM07197

Number of Slots: 18 Pre-Doctoral
0 Post-Doctoral

Purpose: This is a broad interdisciplinary program aimed at training Ph.D. scholars in advanced rationales and methods of genetic analysis for careers as independent scientists in basic and applied biomedical research and education. Trainees may matriculate in any degree-granting unit in the division. The training faculty is comprised of members from 9 academic departments in the Division of Biological Sciences. Opportunities are available to study diverse areas of genetics, including: developmental processes; gene structure and regulation; genetic recombination and mutation; chromosome mechanics; evolution; human disease; immunology; and other areas of modern genetics. Students receive broad training in these subdisciplines while specializing in one of them for their research career. Students take courses in molecular, transmission and population/evolution genetics. The program sponsors a regularly invited seminar series, a genetics journal club, student research presentations and an annual symposium focused on areas of current interest in genetics

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Grant Directors: **I**lya Ruvinsky, Joy Bergelson

Admin. Contact: Julie Steffen Phone: 2-0844 Fax: 2-0740

Project Title: **Graduate Assistance in Areas of National Need (GAANN): Genomics**

Agency: U.S. Department of Education

Expiration Date: 08/14/12 **Grant Number:** P200A090309

Number of Slots: 5 Pre-Doctoral
0 Post-Doctoral

Purpose: Advancing discovery in the basic biomedical sciences is central to our nation's ability to respond to challenges in healthcare in the 21st century. Among the most promising directions to have emerged in the last decade is evolutionary genomics, a new field at the nexus of evolutionary genetics, bioinformatics and molecular biology. Yet, relatively few Ph.D.s are being trained for active research in this area of national need. Our program will meet this challenge by providing comprehensive training that includes genetics, evolution, bioinformatics, statistics and related disciplines. The program will be administered by the nationally top-ranked Department of Ecology & Evolution at The University of Chicago, and will draw in scientists from several departments at the University as well as the Field Museum and Argonne National Lab.

The training of the GAANN Fellows will include: 1) interdisciplinary courses in evolutionary genomics with emphasis on quantitative data analysis and mechanistic inquiry, 2) unparalleled opportunities to conduct cutting-edge research in the laboratories of distinguished faculty, 3) extensive and systematic preparation in teaching, and 4) group interactions at annual retreats, weekly seminars and journal clubs which will bring together GAANN Fellows with the faculty and visiting scholars. Our program seeks to support, mentor, and graduate underrepresented minority and female students.

Grant Director: Olaf Schneewind, MD, PhD

Admin. Contact: Lia Bosma Phone: 2-6825 Fax: 4-8150

Project Title: **Biodefense Training in Host-Pathogen Interactions**

Agency: National Institute of Allergy and Infectious Diseases

Expiration Date: 7/31/10 **Grant Number:** AI065382

Number of Slots: 3 Pre-Doctoral
0 Post-Doctoral

Purpose: Training in Biodefense is intended for rigorous scientific training in pathogenic microbes, ther mechanisms of studying human or animal infections, as well as the discovery of novel therapies or counter measures that prevent human disease. Training faculty study bacterial pathogenesis, animal viruses, viral physiology and pathogenesis, plant pathogenesis, drug resistant microbes, microbial toxins, and the immune response to infections. This program of study is executed by the degree-granting Committee on Microbiology and the Committee on Immunology.

Grant Director: Nancy Schwartz

Admin. Contacts: Jeanne Corey Phone: 2-4722 Fax: 2-9234

Project Title: **Graduate Training in Growth and Development**

Agency: National Institute of Child Health and Human Development

Expiration Date: 04/30/13 **Grant Number:** HD007009

Number of Slots: 13 Pre-Doctoral
0 Post-Doctoral

Purpose: This is an integrated training program leading to both the M.D. and Ph.D. degrees. Students are considered for the program after they have completed one or in most cases two years of medical studies. Although not supported by the program during these pre-clinical years, students usually acquire relevant laboratory experience, fulfill some graduate course requirements and seek out a research sponsor and graduate degree unit in anticipation of their application to the program. If selected, the trainee may receive up to five years of support, which generally encompasses part of the Ph.D. phase and the remainder of the M.D. training (the two clinical years). A wide variety of Ph.D. degree-granting units are available to trainees, including: Biochemistry and Molecular Biology; Developmental Biology; Genetics; Immunology; Molecular Genetics and Cell Biology; Molecular Pathogenesis; and Neurobiology.

Grant Director: Julian Solway

Admin. Contacts: Elneda Boyd Phone: 2-0737 Fax: 2-6500
Juanita Tyler Phone: 2-6790 Fax: 2-4736

Project Title: **Research Training in Respiratory Biology**

Agency: National Heart, Lung and Blood Institute

Expiration Date: 06/30/10 **Grant Number:** HL07605

Number of Slots: 2 Pre-Doctoral
9 Post-Doctoral

Purpose: The objective of this research training program for Ph.D. or M.D. trainees is to produce scientists whose basic investigations in cell and molecular biology elucidate the pathophysiology of human respiratory disease and critical illness. The program focuses primarily on Airway Biology and on Endothelial Cell Biology. Areas of training include: cell and molecular biology of airway and vascular tissue components; mechanisms of inflammation; tissue remodeling and growth; immunology; and organ physiology. Formal coursework, research presentations, and clinical exposure, coupled with laboratory investigation, provide broad experience designed to facilitate transition to the trainees' independent research careers.

Grant Director: Paul Vezina

Admin. Contact: Christianne Montgomery Phone: 4-1324 Fax: 4-6761

Project Title: **Neuropsychopharmacology Training for Drug Abuse Research**

Agency: National Institute on Drug Abuse

Expiration Date: 6/30/12 **Grant Number:** DA07255

Number of Slots: 5 Pre-Doctoral
5 Post-Doctoral

Purpose: The objective of this training program is to provide an educational and research environment in which both pre- and postdoctoral students receive basic and specialized training that will enable them to pursue research and teaching careers in drug abuse. The theme of research in the program is designed to enhance our knowledge of the behavioral, neurochemical, and neuropharmacological basis of drugs of abuse and by so doing, increase understanding of important behavioral and biological factors that play a role in drug abuse. This program relates to the neuropharmacology, psychopharmacology, and molecular biochemistry of drug abuse as well as the behavioral and subjective effects of drugs in humans. In addition to formal coursework, discussion, and research, this training program sponsors a seminar series in which trainees have the opportunity to present their work and to learn more about the work of training faculty and outside speakers working in the area of drug abuse.

DIVISIONAL UNENDOWED FUNDS

Administration: BSD Office of Graduate Affairs

Number of Slots: Varies

Duration of Support: Full fellowships for four quarters of the first year.

Purpose: Divisional Unendowed awards provide support during the first year (four quarters) to new graduate students. A significant portion of the first year students are supported by Divisional funds for the first year of graduate study.

RESEARCH ASSISTANTS TYPE B

Administration: BSD Office of Graduate Affairs

Number of Slots: Unlimited

Purpose: Graduate Students may be supported by faculty research grants. This form of support is valuable for those students who have completed their period of support from an institutional training grant or who do not qualify for training support. Students are considered to be salaried research assistants to the advisor, employed to advance the research for which the grant was awarded.

Stipend: The current salary level for academic year 2009-10 is $27,000. Research Assistants Type B are paid at the same level as graduate students who are supported by training grants or other sources of funding. Health insurance and fees may be paid separately from a non-federal account. Alternatively, their salary may be increased to cover the cost of insurance and fees. The latter method must be used for foreign students who are paid as Research Assistants Type B.

Tuition: The research assistant tuition recovery from the research grant is $9,600 per research assistant per year, mandated by the Office of the Provost.

OTHER SOURCES OF FUNDING

Support for graduate students at the University of Chicago is a shared responsibility among the student's sponsor, the degree-granting department or committee, and the Division. Funding patterns may vary during a student's time at the University and may include support from training grants, Divisional funds, and individual awards and fellowships or research grants (RAships).

Students are also encouraged to seek independent, competitive outside awards. A significant number of current students have been awarded National Science Foundation and other prestigious national awards.

APPENDIX A
SUPPLEMENTAL INFORMATION FOR TRAINING GRANTS

Central Resources
While Training Grant Directors maintain current information on individual training grants and students, the following information may be obtained from the BSD Office of Graduate Affairs:

Student Admissions Statistics (Historical and current)
Current Minority Student Statistics (Historical and current)
Faculty Training Grant Affiliations
Electronic Versions of Standard Text (Minority Recruitment and Integrity of Science boilerplate)
List of Division-wide Training Grants

Minority Recruitment
The following may be used as a boilerplate for training grant renewals. However, each program should modify and add to the text in a manner, which will reflect its own implementation and initiative.

The Division of Biological Sciences of the University of Chicago is represented at major minority conferences by members of the Office of Graduate Affairs (OGA), faculty, and current students. These conferences include the Annual Biomedical Research Conference for Minority Students (ABRCMS); the annual meeting of the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS); the Association of Minority Health Professions Schools; the Leadership Alliance, California Forum for Diversity in Graduate Education, the National Institutes of Health Graduate and Post-baccalaureate Fair, and the National Institute of General Medical Sciences (NIGMS) Minority Programs Symposium. The Office of Graduate Affairs follows up with information and application materials to all students who we meet at the conferences and express an interest in the graduate programs of the Division. In addition, the Office of Graduate Affairs sends out annual mailings to colleges with high minority populations.

The Division of the Biological Sciences participates in several minority summer research programs for college students. The Office of Graduate Affairs provides funds for summer research internships for minority students who intend to pursue Ph.D. studies in basic science research as part of the Graduate Summer Program. The Office of Graduate Affairs also participates and coordinates activities with Summer Research Opportunities Program (SROP), which has science slots and is managed by the Dean of Students in College, as well as the Leadership Alliance Summer Program, overseen by the Office of the Provost, Research and Minority Issues.

The University of Chicago, Division of Biological Sciences, offers a PREP (Post-Baccalaureate Research Education Program) which is supported by The National Institute of General Medical Sciences. This is an opportunity for underrepresented minorities who hold a recent bachelor's degree in science to work as lab technicians for one to two years at the University of Chicago. In addition to the employment, PREP Scholars participate in academic activities designed to help them prepare for successful application to an advanced degree program. Approximately 70% of the time is spent in the lab, and Mentors from a wide variety of research fields participate in this Program. Scholars are encouraged to pursue research in areas that address health problems which disproportionately affect minorities and the medically underserved people of this country.

The Pritzker Office of Multicultural Affairs administers a grant from the National Heart, Lung, and Blood Institute and has in place a minority summer internship program for undergraduates, and first year medical students to do 11 weeks of research with Pritzker faculty. The Young Scientist Training Program (YSTP) focuses on minority high school students and is funded by the National Institute of Digestive Diseases and Kidney Diseases of the NIH is also offered. The Pritzker Office of Multicultural Affairs also administers the Chicago Academic Medicine Program (CAMP) and the Prizker School of

Medicine Experience in Research (PSOMER) to strengthen the competitiveness of minority students for medical school admission.

Although each training program initiates its own student visitation and outreach, the training grant directors have also established a committee on minority affairs, the Graduate Minority Committee (GMC). With the Committee, the Office of Graduate Affairs coordinates recruitment visits to other schools, fosters other recruitment efforts, and enhances awareness among the faculty. The Office of Graduate Affairs tracks applications from minority students for graduate study, ensuring that applications from promising candidates are reviewed promptly. Also, the Office of Graduate Affairs tracks current students throughout their academic career, especially the early years of coursework, and provides counseling and tutoring programs if necessary. These activities are carried out with the cooperation of GMC members.

Currently enrolled minority graduate students often accompany Office of Graduate Affairs or Committee members on recruitment visits to minority institutions. The BSD graduate students have formed organizations which promote interaction and a sense of community among the students. BSD minority graduate students are frequently called upon to meet with minority undergraduates currently in the College, summer research programs, or in the PREP to inform them about graduate study. They also act as hosts for visiting students or their program directors.

Scientific Ethics

The following may be used as a boilerplate for training grant renewals. However, each program should modify and add to the text in a manner, which will reflect its own implementation and initiative.

The University of Chicago has always taught the importance of conducting scientific research in an ethical and responsible manner. In 1990, in response to new regulations from the National Institutes of Health, this informal training was formalized into a teaching program on Scientific Integrity and the Responsible Conduct of Research. The program was initially sponsored by the University's Center for Clinical Medical Ethics. All pre- and postdoctoral students receiving funding from NIH/PHS T-32 grants were expected to attend. Other graduate students and faculty were encouraged to participate.

In 1990-91, a series of lecture-discussions was presented during the academic year, with accompanying readings. Speakers included members of the University community, as well as outside experts. Topics covered included: the feasibility of teaching scientific integrity; government concerns with integrity and misconduct in science; policies for protecting human research subjects; ethical and policy concerns of animal research; University of Chicago procedures for investigating academic fraud; ethical issues in scientific publication; and an examination of how researchers at the University handle issues of scientific responsibility.

In 1991-92, the format was changed to a series of four two-hour seminars, one in each academic quarter. For each seminar, students were divided into ten groups; each led by two faculty members, a biological scientist and an ethicist. Selected readings and a case study to initiate discussion accompanied each seminar, together with a list of potential topics and questions to cover, based on the reading material. Topics covered were scientific misconduct and fraud, laboratory supervision and control of data, publication and reviewing practices, and societal concerns about research material such as genes, animals, and human subjects.

In 1992-93, Robert Martin, a senior researcher from NIH discussed the famous case of the Piltdown Man and the current thinking on its status as a case of scientific fraud. A period of discussion followed. After the talk professional actors performed a reading of Mr. Martin's play, "A Stampede of Zebras," which deals with issues of scientific ethics. A panel of faculty and students then fielded questions and discussed issues raised in the play.

In 1993-94, a series of lectures was organized through out the year by invited speakers and covered topics such as: integrity and misconduct in science; conflicts of interest between academia and industry; responsible authorship and data management; and University of Chicago policies for handling

questions of scientific ethics. In addition, training grant directors organized discussion sessions in which students presented specific ethics cases to small groups of students for more in-depth analysis.

In 1994-95, due to the popularity and success of the small discussion groups, training grant directors continued the program from the prior year. Selected readings, covering specific issues of scientific ethics, were also discussed at the sessions.

In 1995-96, the MacLean Center for Clinical Medical Ethics arranged a series of lectures, which focused on aspects of scientific integrity, including conflicts of interest, publishing, record keeping, the responsible conduct of research, and University policies for ensuring responsible science. Each lecture was followed by a lengthy question and answer session. The small discussion groups initiated by training grant directors were also continued.

In 1996-97, the Division of the Biological Sciences initiated a formal course in Spring Quarter entitled "Scientific Integrity and the Ethical Conduct of Research." Since then, all first-year graduate students are obliged to attend the course for academic credit, as one of the requirements for the Ph.D. degree. Many of the sessions are also open to the public and other students and postdocs are encouraged to attend. Different aspects of scientific ethics were covered each week; each led by two different faculty members. The format varied, including faculty presentations followed by group discussions; faculty presentations with question and answer periods within the presentation time; or case study discussion with no formal prior presentation. Topics covered included: mentoring; data presentation, ownership and sharing; responsibilities of scientific communication; fraud and misconduct; publication and authorship; human experimentation; the genome project; human cloning; institutional policies on scientific misconduct; conflicts of interest in research and industry; implications of genetic susceptibility to disease; animals in research; and science and society. The students were also required to complete two written assignments, based on case studies, and make small group presentations to the rest of the class.
In 2000-01, based on feedback from a student focus group, the structure of the course was altered from primarily a formal lecture format to incorporate smaller group discussions in a workshop format. The topics for the lectures follow the requirements from NIH, and include Teaching/Mentoring, Data Presentation & Management/Authorship & Publication, Fraud and Misconduct, Animals in Research, Human Research and its Challenges and Conflict of Interest. The rest of the course offers a variety of workshops that students may choose according to their area of research, such as, IACUC, Informed Consent, IP/Tech Transfer, Science and Society I – impact of sciences on society, Science and Society II – perception of sciences by society and how science is presented to the public, Genetic Counseling, Genome Project, Field Biology, and Genetically Engineered Food and Crops. The students also complete two written assignments. There were a total of 9 workshops throughout the course quarter.

In 2001-02, due to extreme popularity and value of the workshops, the number of workshops was increased to 12 with the introduction of Patents and the Academic Mission, Sexual Harassment in the Scientific Workplace, and Evolution and its Perception by Society. The lectures, student presentations and written assignments remained the same.

In 2002-03, the course format of formal lectures and smaller group workshops continued to be well received by the students. The lecture sessions remained the same as the previous year, while the workshops included Ethical Interpretation of the Genome Project, Evolution & it's Perception by Society, Genetically Engineered Crops & Food, Scientific Communication with the Public, Sexual Harassment in the Scientific Workplace, Patents & the Academic Mission, Environmental Ethics, Genetic Counseling and Mechanisms Underlying Ethical Behavior in Science. Student presentations and written assignments remained the same.

In 2003-04, a few changes were incorporated into the course format as well as the assignments and projects. For the first assignment, in addition to writing a paper on an ethical dilemma, the students were broken up into small groups for further discussion. The students very well received the small group discussions. The final project for the course was a group effort. The assignment consisted of a 20-minute presentation presented by 3-5 students and a brief paper prepared by the remaining members of the group. Again, the small group project was a great success and will be continued next year.

In 2004-05, the course format remained similar to the year before, as it had been well-received by students. An introductory lecture on "Scientific Ethics" was added, to give students a philosophical basis for Ethics. Other lecture topics included: Teaching: The Formal Context of Scientific Training; Ethical Treatment of Animals, Fraud & Misconduct; Intellectual Property, Technology Transfer, Conflicts of Interest; and Ethical Issues Related to Human Embryonic Stem Cell Research. All students attended two workshops. Workshop topics included: Sexual Harassment in the Scientific Workplace; Ethical Implications of the Genome Project; Genetically Engineered Crops and Food; Genetic Counseling; Patents and the Academic Mission; Scientific Communication with both the media and the public; Scientific Authority; and Environmental Ethics. Student groups had 20 minutes each to present on a variety of topics ranging from Data Integrity in Field Research to Personal Views of Appointed Scientists to Bioterrorism Research Spending to Genetics & Racism. Written assignments remained the same.

The format for the BSD Scientific Integrity and the Ethical Conduct of Research course was modified in 2005-06, and continued with the new format in 2006-2007. In order to foster critical thinking and peer discussion about scientific ethics, the BSD Ethics course changed from a lecture/workshop format to primarily student-led lessons on relevant and current topics of scientific research and education. After an introductory session, students broke into twelve groups, and were each assigned a distinct topic to present to the entire class. Each group met for at least an hour with a faculty mentor with expertise on the subject, followed by another meeting with the teaching assistants to polish the presentation. Each group then presented their work to the entire class, in a half-hour presentation with discussion following. There were six "formal sessions" with the entire class, with two groups each presenting a 45-minute lesson at each session. This allowed the students to present the concepts to their peers, and they then fostered discussion with the whole class. These "formal sessions" were moderated by the faculty course director and two teaching assistants.

For the six formal sessions with the entire class, there was a general topic, which allowed the two presenting groups to look at different aspects of that topic in depth. In 2007, topics included: Fraud and Misconduct (one presentation on "Resources and Consequences;" the other on "Current Cases"); Teaching (one presentation on the "Ethics of Teaching;" the other on "Ethical Issues Facing Students"); Ethical Treatment of Animals (one presentation on "In the Lab;" the other on "In the Field"); Human Research Subjects (one presentation on "Stem Cells;" the other focusing on "Cultural Perspectives"); Publishing and Authorship (one presentation on "Publishing, Authorship, and Data Presentation;" the other presentation on "Figure Production and Manipulation"); Patents and Conflicts of Interest (one presentation on "Commercialization of Intellectual Property and Conflict of Interest;" one presentation on "Patents and Tech Transfer"). Students were asked to write a reflection paper at the end of the course. Evaluations of the course have shown that the majority of the students were more actively engaged in the course than in previous years under a lecture format, and have admitted to gaining more useful information, gaining a broader understanding of differing viewpoints on Ethical Issues, and re-thinking their initial premises about the concerns discussed.

As the new format was well-received by the students, this format continued into 2007-2008. In a response to interests listed by students in their evaluations, two sessions additional to those listed above were added in the area of "Social Responsibility: Sexual Harassment," and "Scientific Communication with the Pubic." The addition of these two sessions were well-received by the students. This brought the number of "formal sessions" with the entire class meeting for a two-hour period up to eight, seven on the general topics, and one introductory session. In addition, faculty mentors were strongly encouraged to attend their group's presentation, in order to make themselves available as the "expert" for the question and answer discussion session after the presentation. Students appreciate the opportunity to meet in small group format with their mentor, enjoy working with other students from different fields on the topics, and find the format more engaging and interactive than faculty lectures.

In 2008-2009, the format was modified slightly to accommodate some suggestions from the students. Three faculty-led sessions were added: one on Ethics, one on ethical issues in teaching, and a panel discussion on 'Human Stem Cells in Research Revisited,' all with senior faculty. The topics on Fraud and Misconduct were split into two topics for the group presentations, one on Misconduct and one on Fraud. We added a session on "Science and the Public" with one topic on "Evolution – Current Controversies,"

and the other on "Scientist Citizens." The session on "Harassment" was broadened to include all form of harassment, not just sexual harassment. Again, most faculty mentors were able to attend their group's presentations, and were present for the discussions of their topics. The course staff now includes two course directors, both of whom attended the majority of the sessions, two teaching assistants who attended all faculty mentor sessions and held sessions with the student groups prior to their presentation as well as attending all the formal sessions, and a course facilitator who handled logistical details. While many of the course participants feel that their ethical stances are fairly firm at this phase of their lives, many students admit that the course does bring up viewpoints not previously considered, and broadens their understanding of how to approach these issues.

Teaching Requirement

The following may be used as a boilerplate for training grant renewals. However, each program should modify and add to the text in a manner, which will reflect its own implementation and initiative.

As part of the commitment of the Division of the Biological Sciences to enhance the teaching abilities of all its students, especially those on training grant support, the Division has established a Teaching Assistant Program. All Ph.D. students are required to teach twice (two quarters) for credit in pre-approved teaching assistant (TA) positions in the Biological Sciences. The requirement must be fulfilled before the Ph.D. degree can be awarded.

Students may register in a Teaching Assistant Training Course, given every Fall Quarter. This course may count as one of the two required teaching positions. It is led by two "Super TAs," who are graduate students with extensive experience in teaching. Invited faculty speakers offer their insights on how to give a lecture and encourage class participation. Discussion sessions, led by students taking the course, cover a wide variety of teaching issues. Students also complete written assignments. The course incorporates elements useful for all Teaching Assistants: for instance, the effective use of computer-based learning tools like Chalkboard and PowerPoint.

At the beginning of the course, students prepare short lectures, which they deliver to the rest of the class, followed by a critique of their presentation by their fellow students. These mini-lectures are videotaped and the student is required to replay and critique his or her own performance at leisure. Later in the course, students prepare a second, ten-minute talk, which is also videotaped and critiqued. Participants thus have the opportunity to assess how well they have incorporated the teaching techniques taught during the course. Students also sit in on and evaluate College or graduate course sessions during the quarter, focusing on those given by faculty who have won awards for excellence in teaching, to examine and learn from different teaching styles.

Students performing a TAship in partial fulfillment of the requirement are expected to gain real teaching experience from their work. To this end, course directors are asked to specify what aspect of teaching the TA will perform during the quarter. Qualifying elements are: giving one or more supervised lectures, running weekly discussion sessions which are a scheduled part of the course, running weekly labs, or running field trips. Courses that do not contain any of these elements do not qualify for fulfillment of the teaching requirement. A committee comprised of faculty representatives from all Ph.D. programs oversees the teaching assistant program.

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