

Student Research Opportunities

2011-12

 Washington
University in St. Louis

SCHOOL OF MEDICINE

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Foreword

Washington University School of Medicine is an internationally recognized institution where an outstanding faculty directs compassionate patient care and world-class research. Consistently ranked as one of the best medical schools in the country, Washington University offers stimulating and challenging educational opportunities.

Although many students come to Washington University for the superb clinical training the school offers, approximately 90 percent of each year's graduates of the School of Medicine report having been involved in supervised research. Basic science and clinical sponsored research grants from the National Institutes of Health (NIH) totaled nearly \$386.5 million in federal fiscal year 2010.

The vast size and broad scope of the research activities at Washington University provide many opportunities for any medical student who has an interest in pursuing research into any aspect of modern medicine.

This brochure provides a brief description of the following research opportunities: Summer Research Opportunities, One-Year Research Opportunities, the Medical Scientist Training Program (MSTP) and the Fourth-Year Research Electives. Additional information covers financial considerations, length of programs, eligibility requirements, application instructions and contact information.

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Summer Research Opportunities for Medical Students

Summer Research Opportunities for medical students involve participation in two to three months of full-time research in the following programs: National Heart, Lung, and Blood Institute (NHLBI)/Dean's Summer Research, Clinical Research, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), Otolaryngology/NIH, Mallinckrodt Institute of Radiology, and Alvin J. Siteman Cancer Center. Approximately 90 students participate in summer research each year.

NHLBI/Dean's Summer Research Program

Objectives: To provide medical students with a hands-on research experience. This can be a first-time experience or a project related or unrelated to research conducted as an undergraduate. Excellent mentors from a broad range of basic and clinical sciences are available. A Washington University Summer Research Fellowship can provide a strong background for application to the MA/MD and MD/PhD (MSTP) degree programs, lead to abstracts at meetings and to publications, and be important for applications for competitive residencies.

Length of Program: Students work full-time on the research project for 2.5 months during the period from late May until classes start in August.

Funding: Fellowships provide a stipend. Support is provided through the NHLBI training grant and Washington University School of Medicine training grants.

Eligibility: Applicants must be full-time medical students at Washington University School of Medicine and in good academic standing without encumbrances. All research is conducted under the direction of a full-time faculty member of the School of Medicine.

Research Interests: Students may consult a list of faculty research interests at: dbbs.wustl.edu or research.medicine.wustl.edu. Students should visit prospective mentors to discuss possible projects and background reading.

Requirements: Students are required to write a one- to three-page research proposal by April 1, to write an abstract and present a poster on Research Day in the fall, and to write a research report in September. Research must have human or animal committee approvals, and students are required to attend a research ethics seminar. No academic credits may be earned from a Summer Research Program.

Application Process: Deadline is April 1. Interested students may request an application or obtain additional information by contacting:

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Director of the Office of Medical Student Research
Assistant Dean for Admissions and Student Affairs
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Clinical Research Training Center–Predoctoral Program

Overview: The Clinical Research Training Center (CRTC) Predoctoral Program provides career development for medical and allied health care students through didactic coursework, mentored training, work-in-progress research discussions, journal clubs and conferences. As a core educational component of the Institute of Clinical and Translational Sciences (ICTS) at Washington University, the CRTC Predoctoral Program strives to:

- Promote clinical research training among predoctoral allied health care students
- Create an efficient entry into a variety of clinical research careers
- Allow flexibility to develop novel and unique approaches

The CRTC Predoctoral Program Summer Research Core is a two-month program held in June and July.

Objectives: The CRTC Predoctoral Program supports a select group of trainees as they embark on careers as outstanding patient-oriented researchers by teaching them to:

- Design and conduct clinical research
- Analyze data
- Consider relevant ethical and legal issues
- Write manuscripts and grants
- Develop and present scientific posters
- Compete for research funding

Eligibility and Requirements: The CRTC Predoctoral Program is offered to students in medicine, physical therapy, occupational therapy, biomedical engineering, pharmacy, audiology and communication sciences, or other allied health professions who wish to pursue academic careers in clinical research. Applicants must be enrolled in a doctoral degree program in medicine or other allied health profession at the time of the appointment.

Trainees accepted into the program must be able to commit full-time effort to the program for the duration of the appointment. In addition, trainees must successfully complete all coursework per the requirements of the individual courses. Trainees must complete their required courses with passing grades and within the course time frames as specified by the instructors and the Program Director.

Tuition: As a result of NIH and institutional support, there is no tuition cost for any of the required CRTC Predoctoral Program courses or seminars. Additionally, stipends are available.

Application: Applications to the CRTC Predoctoral Program are accepted online. Applications open in the late Fall Semester of each year and close in the early Spring Semester of the following year. Prospective trainees are responsible for completing all required steps of the application, admission and enrollment process.

More Information: For more information, including specific coursework and application requirements, visit the program's website at crtc.wustl.edu or contact:

Jay Piccirillo, MD, FACS
CRTC Predoctoral Program Director
voice: (314) 362-8641
email: piccirij@wustl.edu

Jacquelyn Rice
CRTC Predoctoral Program Administrator
voice: (314) 454-8255
email: jrice@wustl.edu

Clinical Research Training Center–Predoctoral Program
Washington University School of Medicine
Campus Box 8051, 660 S. Euclid Ave.
St. Louis, MO 63110

Trans-NIDDK Short-Term Training for Medical Students

Overview: The goal of the trans-NIDDK Short-Term Training Program for Medical Students is to expose medical students to career opportunities in basic or clinical research related to diabetes, obesity, endocrine disorders, metabolic diseases, nutritional disorders, digestive diseases, liver diseases, kidney diseases, urologic diseases and hematologic disorders. Sixteen medical students may participate for three months (or less) of the summer. The program is particularly interested in recruiting minority students both from this institution and outside institutions. Monthly financial support for the student is equal to that of the NHLBI/Dean's Summer Research Fellowships.

Medical students entering this program will pair with faculty on this training grant to develop a three-month summer research program. They will participate in a weekly series of talks devoted to developing academic skills. Medical students participating in this program will be encouraged to continue their project and undergo further training in basic or clinical research by entering the MA/MD and/or the Medical Scientist Training Program.

Application: Applications are due April 1. For more information, contact:

Thomas J. Baranski, MD, PhD
Associate Professor
Internal Medicine and Developmental Biology
Washington University School of Medicine
Campus Box 8127, 660 S. Euclid Ave.
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NIH Grant Title: "Development of Clinician/Researchers in Academic ENT"/Summer Research for Students Title: "Learning Research at the Bench and Bedside"

Overview: This experience focuses on the student learning research concepts and techniques at the bench and bedside to become a scholarly physician, using Sir William Osler as a model. Four medical students may participate for three months (or less) of the summer. Monthly financial support for the student is equal to that of the NHLBI/Dean's Summer Research Fellowships. A unique feature is the possibility of continuing work in the same, or different, lab or research office while continuing to interact with research-oriented surgeons clinically throughout medical school.

Students spend uninterrupted time with funded investigators doing hands-on research that could result in publication.

Application: Applications are due April 1. For more information and application form, contact:

J. Gail Neely, MD, FACS
office: (314) 362-7344
cell: (314) 210-9939
email: jgneely@aol.com or neelyg@wustl.edu

Summer Research Program at the Mallinckrodt Institute of Radiology

For many years, the Mallinckrodt Institute of Radiology (MIR) Summer Research Program has offered undergraduate and medical students an excellent introduction to current radiological sciences research. The wide variety of ongoing research includes areas such as:

- Cardiovascular Imaging
- Contrast Agent Development
- Diagnostic Radiology
- Digital Imaging
- Magnetic Resonance Imaging
- Magnetic Resonance Spectroscopy
- Molecular Pharmacology
- Neuroscience Imaging
- Nuclear Medicine
- Optical Imaging
- Positron Emission Tomography
- Radiopharmaceutical Development
- Ultrasound
- X-ray Computed Tomography

Applicants selected to the Summer Research Program will receive \$5,000 for a 10-week summer research period. The start and finish dates of the program are flexible. To view the requirements or to download an application, visit the MIR website (www.mir.wustl.edu) and choose Education/Training Programs/Summer Research Program. The direct URL is www.mir.wustl.edu/education/internal.asp?NavID=95. Information on research may be found at www.mir.wustl.edu/research/default.asp?NavID=69, which includes descriptions of the various MIR research labs and individual faculty's research interests.

Application Deadline: Early February prior to the summer research period. (Official deadline can be checked online.)

Application forms may be found online (available November) or you may contact Kathryn Andel at (314) 362-8481 or andelk@wustl.edu.

Suzanne Lapi, PhD
MIR Summer Research Program Director
Mallinckrodt Institute of Radiology
Washington University School of Medicine
Campus Box 8225, 510 S. Kingshighway Blvd.
St. Louis, MO 63110
voice: (314) 362-4696
email: lapis@mir.wustl.edu
www.chempet.wustl.edu/faculty/lapis.htm

Summer Student Opportunities at the Siteman Cancer Center

The Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine provides opportunities for undergraduate, pre-med and medical students currently enrolled at Washington University or other accredited universities to apply to work on cancer research projects during the summer. Opportunities range from basic laboratory research to clinical research to prevention/control and population research.

Applicants selected for the program will receive a \$3,500 stipend for a 10-week summer research period from May 29 through August 3, 2012, though some flexibility is available. Approximately 12 students will be selected. Please apply online at: www.siteman.wustl.edu/internal.aspx?id=254.

The application process includes:

- An online application form, which requires:
 - a personal statement describing why you would like the opportunity to work on a cancer research project
- Documents that can be uploaded or faxed:
 - two reference letters (on university or college stationery)
- Required documents that must be uploaded to the Siteman Cancer Center website:
 - cover letter
 - unofficial college transcript(s) (university seal NOT required)
 - an updated resume

In the program application, identify the type of project on which you would ideally like to work (laboratory research, clinical research, population-based research) as well as any specific cancer type (breast cancer, prostate cancer, leukemia, etc.). Please choose three to four Siteman investigators with whom you would like to work (from the website). Also, specify any relevant skills or experience you may have (e.g., statistical knowledge, laboratory experience, course work, computer skills, etc).

Online applications are due on March 1. All applicants are notified via email by April 1. For further information, contact Theresa Waldhoff at the Siteman Cancer Center, research and business administration office, at waldhofft@siteman.wustl.edu or (314) 454-8439 or via fax at (314) 414-0204.

Summer Research Opportunities for Undergraduate Students

Summer Research Opportunities for undergraduate students involve participation in two to three months of full-time research in the following programs: Biomedical Research Apprenticeship Program (BioMedRAP), Cellular and Developmental Biology Research Apprenticeship Program (CD-BioRAP), Amgen Scholars Program, Opportunities in Genomics Research, Summer Research Program at the Mallinckrodt Institute of Radiology, and Summer Student Opportunities at the Siteman Cancer Center.

Biomedical Research Apprenticeship Program (BioMedRAP) and Cellular and Developmental Biology Research Apprenticeship Program (CD-BioRAP) at Washington University in St. Louis

The Biomedical Research Apprenticeship Program (BioMedRAP) and the NSF-funded Cellular and Developmental Biology Apprenticeship Program (CD-BioRAP) are 10-week summer research programs for exceptional college students interested in pursuing biomedical research careers. These programs are designed to provide a rigorous, in-depth research experience to prepare participants for top-quality PhD and MD/PhD programs in the biological and biomedical sciences. Applications for BioMedRAP and CD-BioRAP are accepted November 1–January 31.

As a BioMedRAP/CD-BioRAP participant, you will:

- Conduct independent research with outstanding faculty mentors
- Work in a cutting-edge science and technology environment
- Gain exposure to some of the nation's finest biomedical investigators and an extensive variety of research topics
- Receive individualized career counseling and develop your career interests
- Participate in workshops, seminars and journal clubs
- Build a social network with student peers and faculty
- Prepare to apply to the best PhD and MD/PhD programs in the United States

The BioMedRAP and CD-BioRAP are designed to recruit exceptional students interested in careers in biological and biomedical sciences with an intensive 10-week laboratory experience at one of the top research institutions in the nation. Participants will engage in an independent research project under the mentorship of faculty at Washington University in St. Louis. Students who have had prior research experience and are currently enrolled in a U.S. undergraduate program are encouraged to apply to BioMedRAP and CD-BioRAP. Those who do not have prior research experience or who are interested in non-mammalian research are encouraged to apply for CD-BioRAP.

BioMedRAP and CD-BioRAP selects participants based on academic achievement, leadership and commitment to diversity. We seek applicants who have challenged themselves and excelled academically, demonstrate experience overcoming substantial educational, cultural or economic obstacles, are first-generation college students, or can demonstrate a strong interest in bringing diverse people together.

We encourage applications from individuals who come from rural or inner-city areas and individuals from groups traditionally underrepresented in biomedical research — specifically African Americans, Hispanic Americans, Native Americans, Pacific Islanders, women and those with disabilities. Applications also are encouraged from international students currently pursuing a bachelor's degree in the United States.

Individuals who have earned a baccalaureate degree and students who are not currently enrolled at a U.S. institution are not eligible to apply.

Stipend and Other Benefits: BioMedRAP and CD-BioRAP participants receive a generous research stipend for 10 weeks of residence in the program. Additionally, on-campus housing and travel to and from St. Louis are provided free to participants.

BioMedRAP and CD-BioRAP will also pay for each student to invite a guest to attend the final research symposium held at the end of the summer.

Applications are available online each year November 1 and completed applications will be accepted until January 31. For more information please go to our website at <http://dbbsummerresearch.wustl.edu> or contact Rochelle Smith at (314) 362-7963 or rsmith@wustl.edu.

The Amgen Scholars Program at Washington University in St. Louis

The Amgen Scholars Program at Washington University in St. Louis is a 10-week intensive summer laboratory experience in biomedical research for undergraduate students at one of the nation's leading research institutions. This opportunity is a part of a 10-school consortium, made possible by the generous support of the Amgen Foundation. Scholars will work with world-renowned faculty to develop an intriguing research project. Mentoring also will be provided by current graduate students and post-doctoral fellows in the lab. This mentorship team will provide a great environment for scholars to become acquainted with the culture of training for and implementation of biomedical research.

Scholars will engage in a multitude of activities designed to build confidence and gain experience as a research scientist. In addition to independent research, scholars will participate in lab meetings and attend scientific seminars and workshops offered throughout the summer by faculty and students. This will allow the scholars to interact with those in DBBS and the university community. The workshops are on various topics such as scientific writing and presentation skills, preparing for the GRE or MCAT, team building and career development. The scholars will write a paper and present a scientific poster at the end of the summer. Scholars receive advice to prepare them to apply to top-tier graduate and professional schools and an understanding of the excitement and path for a career in creating new knowledge.

The Scholars Program will be administered by the Division of Biology and Biomedical Sciences (DBBS) which is also responsible for the administration of PhD and MD/PhD programs in the biological sciences.

DBBS will provide activities to integrate Amgen scholars socially and intellectually with fellow Amgen scholars and participants in peer summer programs. Scholars will have an opportunity to explore St. Louis and participate in social activities such as float trips, cookouts and Cardinals baseball.

Applications are encouraged from U.S. citizen or permanent resident undergraduate students with diverse backgrounds from around the United States, including Washington University. Prior research experience is not necessary for a successful application. Rather, we will focus on the applicant's demonstrated aptitude in math and science, letters of recommendation and interest in PhD or MD/PhD training in preparation for a career in biomedical research.

Successful applicants will receive a generous stipend of \$4,000 with housing provided, as well as travel to and from St. Louis and travel to the Amgen Scholars Symposium. A free public transportation pass for travel within the St. Louis metropolitan area also is provided.

For more information regarding the program, please see <http://dbbssummerresearch.wustl.edu>, or contact Amgen Scholars Program Manager, Rochelle Smith at (314) 362-7963 or email: rsmith@wustl.edu.

**Opportunities in Genomics Research (OGR)–
Undergraduate Scholars Program
The Genome Institute at Washington University in St. Louis**

The outreach group at the Genome Institute at Washington University in St. Louis is seeking bright, innovative and talented students to participate in the OGR Undergraduate Scholars Program. This is an eight-week summer program providing students with an intensive, mentored research experience in genomics and related fields. Students will be a part of an excellent lab team led by one of the established scientists at Washington University School of Medicine. At the end of the program, all participants will give an oral presentation of their summer research findings. The program includes enrichment activities such as Kaplan GRE course, journal club, career counseling/workshops, presentations/writing skills and social activities.

Provisions of the Program: Competitive stipend, on-campus housing, and travel to/from program

Requirements: Must be a sophomore, junior or senior at a four-year institution at the time of entry into the program

GPA Requirements: Competitive–highly competitive GPA

Residency: Must be a U.S. citizen or a permanent resident

Major: Science, technology, engineering or mathematics fields
(some exceptions)

All OGR programs are funded by the NHGRI-Minority Action Plan, which seeks to increase the number of underrepresented minorities in genomics. These groups include: African-Americans, Native-Americans (including Alaska Natives), Native-Pacific Islanders and Hispanics, Latinos and Chicanos.

For more information, contact:

Cherilynn R. Shadding, PhD
Director of Outreach, Instructor
The Genome Institute
Campus Box 8501, 4444 Forest Park Blvd.
St. Louis, MO 63108
voice: (314) 286-1897/1803
email: cshaddin@genome.wustl.edu

Or visit us at: genome.wustl.edu/outreach

Summer Research Program at the Mallinckrodt Institute of Radiology

See above, under section “Summer Research Opportunities for Medical Students.”

Summer Student Opportunities at the Siteman Cancer Center

See above, under section “Summer Research Opportunities for Medical Students.”

One-Year Research Degree Opportunities for Medical Students

One-Year Research Degree Opportunities for medical students involve participation in one year of full-time research in the following programs: MA/MD, Master of Science in Clinical Investigation (MSCI), Master of Population Health Sciences (MPHS), One-Year Research Without Degree (MD5) and Leave of Absence.

MA/MD Degree Program

Description: Created in 1982, the Master's Degree Program allows medical students to participate in cutting-edge basic biomedical research or hypothesis-driven clinical research and earn a Master of Arts degree in preparation for a career in academic medicine. The program is highly flexible with an objective of providing students with an individualized research experience in an excellent environment.

Eligibility: Applications to the program will be accepted from students who are in the first three years of the medical curriculum and in good standing without encumbrances at Washington University School of Medicine.

Degree Requirements: Full-time research for one year culminating in a presentation before the research advisory committee, submission of a publication-quality manuscript of the presentation and participation in a research ethics seminar. No academic credit toward the MD degree will be given.

Funding: See below, under section "One-Year Research Funding Opportunities for Medical Students."

Application Process: All applicants must apply to the program regardless of funding source. For an application or additional information, contact:

Christy Durbin
Washington University School of Medicine
Campus Box 8226, 660 S. Euclid Ave.
St. Louis, MO 63110
voice: (314) 747-6787
fax: (314) 362-3369
email: durbinc@wustl.edu

Master of Science in Clinical Investigation Program

Overview: The Master of Science in Clinical Investigation (MSCI) Program provides high-quality, multidisciplinary training in clinical research to promote the successful career development of clinical investigators. The MSCI is available to postdoctoral scholars, junior faculty and predoctoral students enrolled in established clinical research training programs. The program is also available to other Washington University affiliated postdoctoral health sciences scholars. Postdoctoral scholars and junior faculty must be within the medicine and allied health professions, conducting clinical research at Washington University or

with an affiliated program. Predoctoral students in medicine, psychology, Biology and Biomedical Sciences (DBBS), social work, audiology, physical therapy, occupational therapy, and related disciplines in the Graduate School of Arts & Sciences who have completed or are enrolled in the intensive Predoctoral Interdisciplinary Clinical Research Training Program are also eligible.

Requirements: The MSCI requires the following core curriculum in clinical investigation:

- Designing Outcomes and Clinical Research
- Introduction to Statistics for Clinical Investigation
- Intermediate Statistics for the Health Sciences
- Ethical and Legal Issues in Clinical Research
- Epidemiology for Clinical Research
- Grantsmanship

OR

- Scientific Writing and Publishing

Scholars also:

- Conduct independent research under the tutelage of a mentorship committee (7 credits)
- Participate in an ongoing seminar series to present and discuss research as a work-in-progress (1 credit each semester, minimum of four semesters)
- Take elective course work related to their research interests (minimum 6 credits)
- Submit a final thesis consisting of a submitted manuscript

Advanced placement credit can be earned for past equivalent coursework as determined on an individual basis.

Tuition: Tuition is \$1,000 per credit hour. Training grant or departmental funds are typically used to cover tuition costs. Trainees currently enrolled in other medicine and allied health programs should contact the program director or program coordinator to discuss entry into the MSCI program.

Location: Most courses and seminars are taught during late afternoon or early evening hours in the CRTTC, located on the second floor of the Wohl Hospital Building.

Further Information: Visit our website at <http://crtc.wustl.edu> or contact Sarah Zalud-Cerrato, curriculum coordinator, (314) 362-0916, szalud@dom.wustl.edu.

Master of Population Health Sciences

Overview: The Master of Population Health Sciences (MPHS), offered by the School of Medicine, is designed as a one-year, full-time degree program for clinicians, clinical doctorates and medical students seeking training in clinical research methods. Part-time study is also available. Its quantitative curriculum emphasizes the role of epidemiology and biostatistics in approaching clinical effectiveness and outcomes research.

The MPHS does not require a research thesis/capstone. Instead, the program uses applied coursework to focus on the long-term application of skills. Using topics relevant to their careers and interests, the applied coursework allows MPHS students to practice the art of developing research study protocols, performing systematic reviews, designing epidemiologic studies and much more. MPHS students deepen their learning by choosing one of three concentrations: Clinical Epidemiology, Health Services or Quantitative Methods.

Prospective Students: Applicants should have completed a clinical training program at the doctoral level or be in the process of completing such a degree. The program is designed for students who have clinical training or expertise in health care or a health-related field. The pace of course work assumes students have familiarity with clinical medicine.

Program Format: The MPHS program is a full-time, 10-month format. A minimum of 12 credit hours is required for full-time student status, and the maximum course load is 18 credit hours per semester. Part-time study options are available.

Core MPHS Courses:

- Introduction to SAS (M21 503)
- Ethical and Legal Issues in Clinical Research (M17-510)
- Biostatistics 1
- Biostatistics 2
- Introduction to Epidemiology
- Intermediate Epidemiology
- Applied Epidemiology

Information on elective courses is available at <http://www.mphs.wustl.edu>.

MD/MPHS Program: The MD/MPHS provides medical students with an opportunity to supplement their clinical training and course work with a quantitative approach to population health science research. Students develop core skills in epidemiology and biostatistics, which can be applied to research in any clinical field, from primary to specialty care. The program is intended for medical students who plan to incorporate population health research into their clinical careers. The program is not restricted to Washington University medical students; students from other medical schools are encouraged to apply. The program combines the traditional medical school curriculum with one additional year of full-time study for the MPHS degree. This added year is typically taken after the second or third year of medical school.

Application Deadlines:

For 2012–13 Academic Year: December 15, 2011

Notification of Students of Admission Decision: February 1, 2012

Commitment Deadline: April 2, 2012

Further Information: The director of the MPHS program is Graham Colditz, MD, PhD. Additional information can be obtained at www.mphs.wustl.edu or by emailing mphs@wustl.edu.

One-Year Research Without Degree Program (MD5)

Number of Participants: Available to all Washington University medical students at any point in the curriculum.

Length of Program: Completed in one year; in exceptional circumstances, a second year may be permitted.

Funding: None through Washington University School of Medicine, though students may receive a stipend from the research mentor. If a stipend is available, the primary university appointment must be as a full-time student. A secondary appointment as a predoctoral fellow or trainee or as a graduate research assistant is acceptable. These appointments may imply stipend limits. Students are not eligible for employee benefits, but the department may elect to cover student health costs under separate payment. Tax liability and withholding will depend on the appointment and the individual's circumstances. The research department and payroll department may be consulted for additional information.

Project Guidelines and Eligibility: Students who wish to take advantage of this program should select a research mentor and obtain permission to work with him/her for one year. The arrangement should then be approved by the mentor and the associate dean for medical student research through the application process.

Because this is a recognized program endorsed by the school, students are registered for the year for this course of study with a Pass/Fail grade option and are considered full-time students during that time. No tuition is charged. A nominal registration fee is charged, and the student health fee is charged if the research is performed at a local institution.

Requirements:

- An independent research project must be completed.
- The application process requires a completed application form and a research proposal due one month prior to the start of the research year.
- Students and mentors are expected to meet regularly throughout the year to ensure timely progress and benefit of mentor guidance and feedback.
- No thesis is required. However, a final research report must be submitted to the mentor and the associate dean for medical student research at the completion of the research year.
- The mentor issues to the associate dean for medical student research a final grade of Pass or Fail and an evaluation of the student's performance by May 10, at the completion of the research year. This grade will be recorded on the student's permanent academic record.

Application: Due one month prior to the start of the research year. The application and the research proposal are submitted to the associate dean for medical student research. Students interested in the program may obtain additional information and an application by contacting:

Koong-Nah Chung, PhD
Associate Dean for Medical Student Research
Director of the Office of Medical Student Research
Assistant Dean for Admissions and Student Affairs
Instructor of Cell Biology and Physiology
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St. Louis, MO 63110
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fax: (314) 362-4658
email: chungk@wusm.wustl.edu

One-Year Research Funding Opportunities for Medical Students

For the MA/MD and MSCI degree programs for medical students, stipends and other support are available through the following fellowships: Howard Hughes Medical Institute, Clinical Research Training Center-Predoctoral Program, Doris Duke Clinical Research Fellowship Program, National Institute of Diabetes and Digestive and Kidney Diseases Training Grant, and the Washington University School of Medicine Fellowship.

Howard Hughes Medical Institute

Overview: Basic science or clinical research

<http://www.hhmi.org/grants/individuals/medfellows.html>

Application Deadline: early January

Clinical Research Training Center–Predoctoral Program

Overview: The Clinical Research Training Center (CRTC) Predoctoral Program provides career development for medical and allied health care students through didactic coursework, mentored training, work-in-progress research discussions, journal clubs and conferences. As a core educational component of the Institute of Clinical and Translational Sciences (ICTS) at Washington University, the CRTC Predoctoral Program strives to:

- Promote clinical research training among predoctoral allied health care students
- Create an efficient entry into a variety of clinical research careers
- Allow flexibility to develop novel and unique approaches

The CRTC Predoctoral Program Intensive Research Core is a year-long, pull-out program.

Objectives: The CRTC Predoctoral Program supports a select group of trainees as they embark on careers as outstanding patient-oriented researchers by teaching them to:

- Design and conduct clinical research
- Analyze data
- Consider relevant ethical and legal issues
- Write manuscripts and grants
- Develop and present scientific posters
- Compete for research funding

Eligibility and Requirements: The CRTC Predoctoral Program is offered to students in medicine, physical therapy, occupational therapy, biomedical engineering, pharmacy, audiology and communications sciences, or other allied health professions who wish to pursue academic careers in clinical research. Applicants must be enrolled in a doctoral degree program in medicine or other allied health profession at the time of the appointment.

Trainees accepted into the program must be able to commit full-time effort to the program for the duration of the appointment. In addition, trainees must successfully complete all coursework per the requirements of the individual courses.

Trainees must complete their required courses with passing grades and within the course time frames as specified by the instructors and the Program Director.

Tuition: As a result of NIH and institutional support, there is no tuition cost for any of the required CRTC Predoctoral Program courses or seminars. Additionally, stipends are available.

Applications: Applications to the CRTC Predoctoral Program are accepted online. Applications open in the late Fall Semester of each year, and close in the early Spring Semester of the following year. Prospective trainees are responsible for completing all required steps of the application, admission and enrollment process.

More Information: For more information, including specific coursework and application requirements, please visit the program website at crtc.wustl.edu or contact:

Jay Piccirillo, MD, FACS
CRTC Predoctoral Program Director
voice: (314) 362-8641
email: piccirij@wustl.edu

Jacquelyn Rice
CRTC Predoctoral Program Administrator
voice: (314) 454-8255
email: jrice@wustl.edu

Clinical Research Training Center – Predoctoral Program
Washington University School of Medicine
Campus Box 8051, 660 S. Euclid Ave.
St. Louis, MO 63110

Doris Duke Clinical Research Fellowship Program

Mission: The mission of the Doris Duke Charitable Foundation is to improve the quality of people's lives by nurturing the arts, protecting and restoring the environment, seeking cures for diseases and helping to protect children from abuse and neglect. This fellowship is part of the Medical Research Program of the Doris Duke Charitable Foundation, which seeks to further the prevention and cure of disease by supporting and strengthening clinical research and by narrowing the gap between basic biomedical discoveries and their translation into new treatments. The Clinical Research Fellowship provides funds to be used to support medical students to receive didactic and hands-on clinical research training during an additional year of medical school. Program leadership is provided at both local and national levels.

Objective: At Washington University, the program objective is similar to that of the MA/MD Degree Program in that medical students will be provided one full year of individual, full-time, in-depth clinical research experience. For Washington University School of Medicine students, a Master of Arts degree is awarded with the MD at graduation.

Number of Participants: Up to five fellows per year

Length of Program: One year (July 1–June 30)

Eligibility: Applicants must be full-time medical students in good standing without encumbrances at Washington University School of Medicine and must have completed two years of medical school at the start of the fellowship.

Requirements:

- Full-time clinical research for one year
- At least two didactic courses (individually selected on a case-by-case basis) and work as an active research team member
- Complete mandatory education seminars
- Submit a publication-quality manuscript
- Present completed project to the advisory committee

No academic credit toward the MD degree will be given.

Description: The program provides the opportunity for clinical research, individual guidance by a faculty mentor and advisory committee, stipend, health insurance and travel allowance.

Application Process: Applications and clinical research proposals are due in January. Fellows are chosen and notified in March. Find details of the national application process at www.ddcf.org.

Jay Piccirillo, MD, FACS
Program Director, Doris Duke Clinical Research Fellowship
voice: (314) 286-1174
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Jacquelyn Rice
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National Institute of Diabetes and Digestive and Kidney Diseases

Overview: GI, hepatology, endocrinology, nutrition, nephrology and hematology research

Application Deadline: early March

Contact: Thomas Baranski, MD, PhD, at (314) 747-3997 or baranski@wustl.edu

Washington University School of Medicine Fellowship

Application Deadline: early March

Contact: Christy Durbin at (314) 747-6787 or durbinc@wustl.edu

Medical Scientist Training Program

Objectives: To prepare individuals for careers in academic medicine and biotechnology. Students complete Doctor of Medicine and Doctor of Philosophy degrees with research in a medically relevant field.

Number of Participants: 25 new students each year.

Length of Program: Students complete the first two years of the MD curriculum, at least three years of original research toward a thesis to satisfy requirements for the PhD degree and finish with at least 15 months of clinical training. The program may be completed in as little as six years, though seven or eight years is the norm.

Funding: Tuition and student health insurance are paid, in addition to a stipend of \$28,000 per year. Funding is provided by grants from the National Institutes of Health, the Olin Foundation and monies from the School of Medicine and the School of Arts & Sciences. International students receive the same level of financial support as U.S. citizens.

Eligibility: Individuals who have spent the equivalent of at least two semesters in laboratory research are invited to apply to the program. Applicants must meet the requirements for admission to the School of Medicine. The Graduate Record Examination is not required. Individuals planning to conduct research in disciplines related to chemical or physical sciences should have completed mathematics through calculus (including differential equations), physics, physical chemistry and advanced organic chemistry. For students whose major interests are the more biological aspects of medical science, the requirements for chemistry are less rigorous, but a strong background in mathematics and physics is important. Although most individuals enter the program at the beginning of their medical studies, medical students in the first or second year at Washington University are encouraged to apply. Student performance is reviewed annually, and high scholastic achievement is expected.

Application Process: Students must complete the AMCAS and the Washington University School of Medicine secondary application. Inquiries may be directed to:

Brian Sullivan
Washington University School of Medicine
Campus Box 8226, 660 S. Euclid Ave.
St. Louis, MO 63110
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fax: (314) 362-3369
e-mail: briansullivan@wustl.edu
www.mstp.wustl.edu

Research Electives for Credit in Fourth Year for Medical Students

Number of Participants: Available to all fourth-year medical students

Length of Program: Six to 12 weeks.

Funding: No remuneration is allowed for electives that are taken for academic credit. Payment or acceptance of a scholarship or stipend outside of a financial aid award for an elective for academic credit is prohibited.

Description: To qualify for the Doctor of Medicine at Washington University School of Medicine, students are required to satisfactorily complete a minimum of 36 weeks of clinical or research electives in the fourth (final) year. Research electives must: a) be sponsored by a designated investigator who will outline the project, oversee the student's progress and evaluate the student's performance; b) be accomplished while the student is enrolled at Washington University School of Medicine; and c) be a project in which the student has worked full-time for a total of at least six weeks. Research electives are on a full-time, daily basis. There is no thesis requirement.

Application: Students desiring research work should arrange this with the appropriate faculty member and must file a Research Elective form with the Curriculum Office at least one month before the research is to begin. For questions relating to scheduling of fourth-year plans, contact:

Randi Hantak
Curriculum Office
Washington University School of Medicine
Campus Box 8214, 660 S. Euclid Ave.
St. Louis, MO 63110
voice: (314) 747-3854
fax: (314) 362-3439
email: hantakr@wusm.wustl.edu

Washington University encourages and gives full consideration to all applicants for admission, financial aid and employment. The university does not discriminate in access to, or treatment or employment in, its programs and activities on the basis of race, color, age, religion, sex, sexual orientation, gender identity or expression, national origin, veteran status, disability or genetic information. Present Department of Defense policy governing all ROTC programs discriminates on the basis of sexual orientation; such discrimination is inconsistent with Washington University policy. Inquiries about compliance should be addressed to the university's Vice Chancellor for Human Resources, Washington University, Campus Box 1184, One Brookings Drive, St. Louis, MO 63130. The School of Medicine is committed to recruiting, enrolling and educating a diverse student body.



Washington
University in St. Louis

SCHOOL OF MEDICINE