

----- Summer internships in the mathematical sciences -----

SIAM post a list of companies and institutions that have information about career, internship, or fellowship opportunities on their web site.

<http://www.siam.org/careers/internships.php>

Juan Restrepo at the University of Arizona maintains an outstanding (although dated) list of internships in mathematics.

<http://www.physics.arizona.edu/~restrepo/AMII/amii.html>

Biology & Biotechnology Paid Co-op/Internships

Links to co-op/internship opportunities by-state, ecology, pre-medical studies, minority students, immunology, biomedical engineering, university research, first-year students, international students

<http://people.rit.edu/gtfsbi/Symp/summer.htm>

"The Santa Fe Institute is accepting applications for its signature education program for graduate students and postdocs: the 2017 Complex Systems Summer School, June 11-July 7, 2017, at St. John's College in Santa Fe, New Mexico. Apply by January 23, 2017.

The program offers an intensive four-week introduction to complex behavior in mathematical, physical, living, and social systems.

CSSS is intended for graduate students and postdoctoral fellows in the sciences or social sciences who seek a background and hands-on experience conducting interdisciplinary research in complex systems."

<https://www.santafe.edu/news-center/news/apply-now-for-sfis-2017-complex-systems-summer-school>

The National Research Council of the National Academies <http://sites.nationalacademies.org/pga/rap/> sponsors a number of awards for graduate, postdoctoral and senior researchers at [participating federal laboratories and affiliated institutions](#). These awards include generous stipends ranging from \$45,000 - \$80,000 per year for recent Ph.D. recipients, and higher for additional experience. [Graduate](#) entry level stipends begin at \$30,000. These awards provide the opportunity for recipients to do independent research in some of the best-equipped and staffed laboratories in the U.S. Research opportunities are open to U.S. citizens, permanent residents, and for some of the laboratories, foreign nationals.

RAND's Graduate Student Summer Intern Program introduces outstanding graduate students to RAND, an institution that conducts research on a wide range of national security problems and domestic and international social policy issues. Students are given the opportunity to conduct independent research that can be completed during the three months they are at RAND. The program is designed for students who have completed at least two years of graduate work leading to a doctorate or professional degree (e.g., professional engineer certificate). Approximately 25 students in a wide range of academic disciplines participate in the program each year.

http://www.rand.org/about/edu_op/fellowships/gsap.html

"The Summer Internship Program (SIP) at the NIH provides an opportunity to spend the summer working side-by-side with some of the leading scientists in the world in an environment devoted exclusively to biomedical research. Students sixteen years of age or older who are U.S. citizens or permanent residents and are currently enrolled at least half-time in high school or an accredited U.S. college or university are eligible to apply. Students who have been accepted into a college or university may also apply."

<https://www.training.nih.gov/programs/sip>

The Graduate Partnerships Program (GPP) links the [National Institutes of Health \(NIH\)](http://mdphd.gpp.nih.gov/) <<http://mdphd.gpp.nih.gov/>> to national and international universities in the training of graduate students. You get the best of both worlds – the academic environment of a university and the breadth and depth of research at the NIH. A different kind of graduate experience emerges, one which focuses on training the next generation of scientific leaders by accelerating communication and collaboration skills. Over 450 graduate students, representing more than 100 universities world-wide, work and study at the NIH.

The American Statistical Association (ASA) maintains a yearly list of (summer) internships on their webpage: <http://www.amstat.org/ASA/Education/Internships-and-Fellowships.aspx>

----- special workshops in modeling biological systems

The Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID 2017) will be July 10-28 –Check back in January for schedules, module options and other details.

<http://www.biostat.washington.edu/suminst/>

<http://www.biostat.washington.edu/suminst/sismid>

The Institute consists of a series of two-and-a-half day workshops designed to introduce infectious disease researchers to modern methods of statistical analysis and mathematical modeling and to introduce statisticians and mathematical modelers to the statistical and dynamic problems posed by modern infectious disease data. Prerequisites are minimal, and the modular nature of the Institute enables participants to design a program best suited to their backgrounds and interests. Most participants will likely take two or three modules.

Individuals attending the Institute will receive certificates of course completion in recognition of their participation.

Summer Institute in Statistics for Big Data; email: sisbid@uw.edu

<http://www.biostat.washington.edu/suminst/sisbid>

Summer Institute in Statistics for Clinical Research; email: siscr@uw.edu

<http://www.biostat.washington.edu/suminst/siscr>

National Institute for Mathematical and Biological Sciences (NimBios)

The 2017 Summer Research Experiences for Undergraduates and Teachers (SRE) is now accepting applications. Projects include modeling bird mating patterns, seasonality in multi-host systems, La Crosse encephalitis spread, immune system response in host-virus conflict, and a project to develop computer games for teaching biology. Dates are June 5-July 28. Undergraduates receive free university apartment-style housing at the University of Tennessee, Knoxville, a stipend, and support for travel. Application deadline: February 15. Full details at <http://www.nimbios.org/sre/>

Summer Research Experiences (SRE) at NIMBioS for Undergraduates and Teachers

Looking for a fun and challenging summer research experience? The Summer Research Experiences (SRE) at NIMBioS for Undergraduates and Teachers provides undergrads in math, biology and related fields, as well as high school teachers in mathematics and biology, the opportunity to conduct research in teams with UT professors, NIMBioS researchers, and collaborators on projects at the interface of math and biology. During this eight-week summer program, undergraduates live on the UT-Knoxville campus and work in collaborative teams on a variety of biological research projects using mathematical methods. The topics change each year and cover a range of life science areas including disease and health, evolution, ecology, molecular biology and more. Students receive a stipend, apartment-style housing, travel support to Knoxville, and more. U.S. high school math and biology teachers and pre-service teachers are also encouraged to apply.

Clinic on the Meaningful Modeling of Epidemiological Data

MMED is a 2-week modeling clinic that emphasizes the use of data in understanding infectious disease dynamics. Participants conduct modeling projects informed by epidemiological data that address practical questions in a meaningful way.

<http://www.ici3d.org/mmed/>

Intended audience

This clinic targets quantitative scientists, including mathematicians, statisticians, computer scientists, and infectious disease epidemiologists with strong quantitative backgrounds. Applicants should be junior researchers based at institutions in the US, Canada, or Africa. Participants will engage with meaningful questions about infectious disease dynamics by integrating mathematical models with epidemiological data.

Selection criteria

Selection of participants will be on the basis of the applicant's academic background, the unique perspectives that they will bring to the Clinic, and the degree to which the selection committee expects the applicant will benefit from attending the Clinic. We expect to have up to eight places for applicants from US-based institutions; the number of students from African institutions is yet to be determined.

The seventh annual Clinic on the Meaningful Modeling of Epidemiological Data (MMED) was held May 30 - June 10, 2016 at the African Institute for Mathematical Science in Muizenberg, South Africa. Information about MMED 2017 will be available in January.

Mathematical and Theoretical Biology Institute Summer Program

MTBI Summer Research Program: MTBI 2017: June 7 - July 29

Applications are now open for the 2017 MTBI Summer Program.

<https://mtbi.asu.edu/SummerProgram>

Established in 1996 at Cornell University, the Mathematical and Theoretical Biology Institute (MTBI) was moved to Arizona State University in the spring of 2004. With the culmination of the 2006 summer institute, MTBI has mentored 277 undergraduate participants who have produced 169 technical reports. Furthermore, over 60% of its alumni are currently graduate students, or have completed graduate programs, mostly in the mathematical sciences. Twenty-four MTBI alumni have earned a Ph.D. in the mathematical sciences—a group that includes fourteen individuals from underrepresented groups. MTBI mentorship efforts at the graduate school level include its Sloan Pipeline Graduate Program (MTBI-SLPP). MTBI is an active participant of the Western Alliance to Expand Student Opportunities (WAESO), sponsored by the NSF Louis Stokes Alliance for Minority Participation (LSAMP) program. MTBI year round efforts are supported through grants from the National Science Foundation, The National Security Agency, The Alfred P. Sloan Foundation, The Hispanic Research Center and the Office of the Provost of Arizona State University. MTBI funding was provided by Cornell University and Los Alamos National Laboratory (T-Division) from 1996-2004.

PREPARE FOR THE RIGORS OF GRADUATE SCHOOL:

This intensive eight-week summer research experience for undergraduates in Tempe, Arizona prepares promising young scientists interested in working at the interface of mathematics, statistics and the natural and social sciences for the rigors of graduate studies. MTBI is a research experience for undergraduates (REU); it is not an internship, nor will students earn college credit for participation.

HIGH QUALITY INSTRUCTION FROM RENOWNED SCHOLARS:

Participants receive intensive instruction in dynamical systems, stochastic processes, computational methods and modeling delivered by top scientists and special guest lecturers and colloquia speakers.

STUDENT-DRIVEN COLLABORATIVE RESEARCH:

At MTBI, students don't work alone. Everything, from homework to research, exists in a collaborative environment with fellow participants, graduate students, postdoctoral students, and visiting scholars. Students work in self-selected groups on research problems of their own choosing, while collaborating with experienced faculty and graduate students mentors. By the end of the program, students complete a technical report, research poster, and oral presentation, which are brought to national conferences for even further mentoring by peers and colleagues.

ELIGIBILITY:

Undergraduates who have completed at least their sophomore year

Majoring in math, biology, or related fields

At least one year of calculus

Latinos, Native Americans and African Americans are strongly encouraged to apply.

International students are accepted, but on a very limited basis.

AWARD:

Participating U.S. citizens/students will receive airfare and transportation to Tempe, Arizona (up to \$500), room & board and a \$4,000 stipend (notification of award amount by March 20).

APPLICATION DEADLINE:

All application materials must be submitted by January 31, 2016. Any late material will not be considered. Any incomplete application packets will not be considered

----- MBI 2017 UNDERGRADUATE RESEARCH PROGRAM

(JUNE 5 - AUGUST 11, 2017)

<http://mbi.osu.edu/education/summer-undergraduate-program/>

The goal of this MBI NSF-funded program is to introduce students to exciting new areas of mathematical biology, to involve them in collaborative research with their peers and faculty mentors, and to increase their interest in mathematical biology. The program consists of three parts - each including a mix of educational and social experiences:

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One-week introduction (June 5-9, 2017): A one-week introduction to the summer research experience with tutorials, lab tours, and computer labs on topics in the mathematical biosciences.

REU Program (June 12 - August 4, 2017): An 8-week mentored research experience at an MBI IP on a topic in mathematical biology.

Capstone Conference (August 7-11, 2017): A student-centered conference featuring talks and posters by students doing research in mathematical biology, keynote talks by prominent mathematical biologists, a graduate studies recruitment fair, and other special features including a conference dinner and social event. Note that the Capstone Conference is open to all undergraduate students doing research in the mathematical biosciences, not only to students participating in the MBI REU.

----- 2017 q-bio Summer School

Applications for the 2017 q-bio Summer School are now open! Applications are due February 1, 2017. <http://q-bio.org/wiki/2017qbSS>

The q-bio Summer School (qbSS17) will take place from Sunday evening June 4, 2017 through Tuesday morning June 20, 2017. The majority of lectures, tutorials and project sessions will take place in the Suzanne and Walter Scott, Jr. Bioengineering Building at the Colorado State University in Fort Collins Colorado. [More information about the CSU venue can be found [here](#).]

School Overview: The q-bio Summer School is an annual event intended to advance predictive modeling of cellular regulatory systems by exposing participants to a survey of work in quantitative biology and by providing in-depth instruction in selected techniques, with an emphasis on techniques useful for modeling cellular regulatory networks, although data analysis techniques and experimental methods will also be covered. Students will each work on

mentored projects. Participants will attend daily core lectures, project-specific lectures, journal clubs, and computer and (in some cases) experimental labs. The summer school is designed for graduate students, postdocs, or anyone with a quantitative background who is new to modeling cellular regulatory systems/networks.

The qbSS17 will involve instruction in four overlapping courses ranging from inference of stochastic models from single-cell measurements to analysis of complexity in synthetic biological systems and to the modeling of dynamics in cancer. Information about specific course topics can be found via the following links:

Stochastic Gene Regulation

Cell Signaling

Cancer Dynamics

Computational Synthetic Biology

Each course will include:

10 shared 1-hour general lectures from invited speakers

10 shared 1.5-hour chalk talks from invited speakers

30 hours of in-depth instruction during breakout discussions including expert panel discussions, chalk talks, computer/experimental lab demonstrations;

20+ hours of mentored project work and project presentations;

2 catered poster sessions

20-24 student talks

8 career oriented discussion panels on topics ranging from forming interdisciplinary collaborations to finding postdoctoral opportunities

The application process will involve submitting a CV, a 1-page statement of interest, and completing a form online. No letters of reference are necessary in the first round of applications, but these may be requested in the application review stage. Applications will be reviewed by the organizers of each course. Organizers have been instructed to look for students who are diverse in background and training, but who demonstrate a keen interest in quantitative methods to study biological systems.

Applications for the 2017 q-bio Summer School are now open! Applications are due February 1, 2017.

35th Graduate Summer Institute of Epidemiology and Biostatistics

JUNE 12 - JUNE 30, 2017

<http://www.jhsph.edu/departments/epidemiology/continuing-education/graduate-summer-institute-of-epidemiology-and-biostatistics/>

The Graduate Summer Institute offers short, intensive courses in epidemiology and biostatistics intended to develop an understanding of the principles, methodologic strategies and practical aspects of epidemiological research.

With onsite and online courses, you choose the course format that works best for your schedule. Register for one or more courses. You may take courses for either professional development, to enhance your current skills, or for academic credit if you are interested in applying the course work towards a degree program. The Summer Institute has been in existence since 1983, and has trained thousands of students from the U.S. and around the world. Institute participants include students, clinicians, public health practitioners, physicians in training and those considering a career in public health.

Registration opens February 12, 2017 Registration deadlines June 12; June 19; June 26

Big Data Summer Institute

Transforming Analytical Learning in the Era of Big Data June 5 - July 14, 2017

<https://sph.umich.edu/bdsi/>

The Big Data Summer Institute is a six-week interdisciplinary training and research program in biostatistics that introduces undergraduate students to the intersection of big data and human health — a rapidly growing field that uses quantitative analysis to help solve scientific problems and improve people's lives. Drawing from the expertise and experience of outstanding faculty of several departments at the University of Michigan — biostatistics, statistics, and electrical engineering and computer science — the institute exposes undergraduate students to diverse experiences and techniques that distinguishes it from any other undergraduate summer program in biostatistics in

the country.

The Big Data Summer Institute is hosted by the University of Michigan School of Public Health. All coursework takes place at the school, on the University of Michigan campus in Ann Arbor, Michigan.