

Biostatistics, Epidemiology, and Bioinformatics Summer Research Opportunities

- 1) **STEP 1: See STEM Summer Internship/Research handout for timelines and guidance.**
- 2) **STEP 2: After making a list of opportunities, make an appointment with a faculty member, especially in the Biology, Mathematics, and Public Health departments. Faculty members may help you identify opportunities that you may not have considered!**
- 3) **Application deadlines begin in mid-November, begin research NOW!**
 - a. Contact faculty members **at least 5 weeks** before the application deadline with 1) the **coursework** and/or events in which you have worked with them 2) an updated **résumé** so that they can write the best letter of recommendation possible.
 - b. Please make an appointment with Career Planning if you need help creating or editing a résumé.
 - c. Recommended coursework for applicants: statistics (AP, IB, MAT115, PSY206, or ECO318) and calculus (AP, IB, or MAT118 and MAT119); MAT206 and MAT220 are useful and are considered pre-requisites for many graduate school biostatistics and bioinformatics programs
- 4) **First Year Students:** Plan to apply to 7-10 programs, including at least 5 that will accept first years.
 - a. **Do NOT miss the opportunity to apply for summer research your first year.**
 - b. **Many positions are PAID and with HOUSING! Your first internship will significantly increase your opportunities in the future!**
 - c. ASC first year students have been accepted to programs with a sophomore standing prerequisite due to résumé content, such as advanced coursework, extracurricular activities, and high school course credit. Please see Career Planning and your faculty advisor to help you prepare.
 - d. Your program list should include multiple disciplines and may include mathematics, applied mathematics, and/or laboratory experiences. You may find a field you like even **MORE!**
- 5) **International Students**
 - a. Many research and lab groups offering REU opportunities restricted to permanent U.S. residents may hire international students independently. Talk with your advisor about how to approach researchers who are doing work that interests you.
 - b. Study/research abroad opportunities may also lead to more opportunities in the future.
 - c. Be careful to check the admissions requirements. Many programs accept international students. Even if programs prefer permanent residents, many have accepted international students who show excellent research communication, course preparation, and/or other skills emphasized by ASC's liberal arts environment.
- 6) **Students Interested in Bioinformatics and Biostatistics**
 - a. There are 3 types of programming languages that will be helpful 1) mathematics languages (MAPLE, Matlab), 2) statistics languages (STATA and R), and 3) programming languages, especially object-oriented (Python, Java, and C/C++). Consider taking free online courses programming courses over fall and winter breaks to improve your résumé —“Completed XXX online open access course in XXX language.”**
 - i. **MAPLE** is introduced through the Mathematics program. **STATA** is introduced through the Economics program. All are available on library and Science Learning Center (3rd Floor Bullock) computers.
 - ii. Some programming instruction may be available through cross-registration. Please see your faculty advisor for details.**
 - iii. **Free programming software:**
 1. **R:** <http://mirrors.nics.utk.edu/cran/>
 2. **Java:** <http://docs.oracle.com/javase/tutorial/>
 - iv. **Free online courses:**
 1. **R:** <http://manuals.bioinformatics.ucr.edu/home/programming-in-r>; <http://cran.r-project.org/doc/manuals/R-intro.pdf>

2. **Java:** <http://www.mindview.net/Books/TIJ/>; <http://math.hws.edu/javanotes/>;
<http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-092-introduction-to-programming-in-java-january-iap-2010/>
3. **Python:** <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-00sc-introduction-to-computer-science-and-programming-spring-2011/>
4. **C and C++:** <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-088-introduction-to-c-memory-management-and-c-object-oriented-programming-january-iap-2010/>

****If you take the initiative to do this and think it is awesome, consider the Agnes Scott College-Emory University dual degree in Computer Science:** <http://www.agnesscott.edu/academics/majors-minors/computer-science-dual-degree.html>. **If you are interested, please contact Dr. Riddle:** lriddle@agnesscott.edu.

Summer Research Opportunities (Southeastern U.S. opportunities)

A. Comprehensive list: <http://people.rit.edu/~gtfsbi/Symp/bioinformatics.htm>

B. Study Abroad

- a. Germany: <http://www3.ie-freiburg.mpg.de/>
- b. United Kingdom, ***APPLICATIONS BEGIN IN NOVEMBER:***
<http://www.sanger.ac.uk/workstudy/placements/>

C. All fields

- a. **American Mathematical Society**
<http://www.ams.org/programs/students/undergrad/emp-reu>
<http://www.ams.org/programs/students/undergrad/emp-internships>

D. Biostatistics

a. All fields

- i. ***SIBS, 6-week Introduction Biostatistics—an excellent opportunity that could be coupled with another internship with locations at 8 universities across the U.S.; may or may not be available after 2012 due to funding, so check on an annual basis:***
<http://www.nhlbi.nih.gov/funding/training/redbook/sibsweb.htm>
- ii. Mathematical Biosciences Institute:
<http://www.mbi.osu.edu/eduprograms/undergrad2012.html>
- iii. National Science Foundation:
https://mail.agnesscott.edu/exchweb/bin/redirect.asp?URL=http://www.nsf.gov/crssprgm/reu/list_result.cfm?unitid=5044

b. Genetics

- i. **Genetics, Plant and Molecular Biology, Cold Spring Harbor Laboratory:**
<http://www.cshl.edu/education/urp/application-guidelines>

c. Public Health

- i. ***UNC Chapel Hill BSURE:*** http://www.sph.unc.edu/bios/bsure_9974_9556.html
- ii. ***ROLLING APPLICATION STARTING NOVEMBER,*** National Cancer Institute:
<http://dceg.cancer.gov/fellowships/summerprogram/>
- iii. New York City Health Research Training Program:
<http://www.nyc.gov/html/doh/html/hrtp/hrtp.shtml>

d. Clinical

- i. Mayo Clinic: <http://www.mayoclinic.org/intern-biostats-rst/application.html>
- ii. Lourdes Health System, Center for Public Health: <http://www.lourdesnet.org/services/ph-students10.php>

e. **Infectious Disease, MIDAS, University of Pittsburgh:**
<https://www.midas.pitt.edu/index.php?Itemid=263>

f. Environmental Health

- i. ***CDC Collegiate Leaders in Environmental Health:***
<http://www.cdc.gov/nceh/cleh/>

- ii. National Institute of Environmental Health Sciences:
<http://www.niehs.nih.gov/careers/research/summers/>

g. Industry

- i. Pharmaceutical, Amgen:
http://www.amgenscholars.com/about_amgen_scholars/program_overview/
- ii. Pharmaceutical, Novartis: http://nibr.com/careers/internships_ca.shtml

h. Policy and Management

- i. University of Michigan SEP: <http://www.sph.umich.edu/sep/>
- i. Many public health biostatistics opportunities, including in industry:
 - i. http://www.sph.unc.edu/student_affairs/internship_opportunities_4082_7811.html

E. Epidemiology

a. Environmental Health

- i. *CDC Collegiate Leaders in Environmental Health:*
<http://www.cdc.gov/nceh/cleh/>

b. Clinical

- i. Lourdes Health System, Center for Public Health: <http://www.lourdesnet.org/services/ph-students10.php>
- ii. Mayo Clinic: <http://www.mayoclinic.org/intern-biostats-rst/application.html>
- iii. Marshfield Clinic:
https://www.marshfieldclinic.org/research/pages/default.aspx?page=educational_opportunities

c. National, city population health

- i. ***ROLLING APPLICATION STARTING NOVEMBER***, National Cancer Institute:
<http://dceg.cancer.gov/fellowships/summerprogram/>
- ii. New York City Health Research Training Program:
<http://www.nyc.gov/html/doh/html/hrtp/hrtp.shtml>

F. Bioinformatics

a. All fields

- i. National Science Foundation:
https://mail.agnesscott.edu/exchweb/bin/redirect.asp?URL=http://www.nsf.gov/crssprgm/reu/list_result.cfm?unitid=5044

b. Public Health

- i. Lourdes Health System, Center for Public Health: <http://www.lourdesnet.org/services/ph-students10.php>
- ii. Marshfield Clinic:
https://www.marshfieldclinic.org/research/pages/default.aspx?page=educational_opportunities

c. Genomics

- i. Harvard-MIT Bioinformatics and Integrative Genomics:
<http://hst.mit.edu/academics/summer-institute/bioinformatics>
- ii. Computational Genomics Johns Hopkins:
<http://genomics.jhu.edu/internship.html>
- iii. Crop genomics Cornell:
<http://www.bti.cornell.edu/index.php?page=Education§ion=InternshipsPGRP#page=PlantGenome>

d. Modeling

- i. MIDAS, University of Pittsburgh: <https://www.midas.pitt.edu/index.php?Itemid=263>

G. Promoting student diversity in the biocomputational sciences

- a. *CDC, Project IMHOTEP:*
<http://www.cdc.gov/minorityhealth/programs/2011/IMHOTEPProgram.html>
- b. Harvard Department of Biostatistics: <http://www.hsph.harvard.edu/biostats/diversity/summer/>

- c. University of Pennsylvania, Economics including Health Economics:
<http://ldi.upenn.edu/sumr/about-sumr>
- d. University of Michigan SEP: <http://www.sph.umich.edu/sep/>
- e. Rutgers University Institute for Health, Health Care Policy, and Aging Research:
<http://www.ihhpar.rutgers.edu/projectlearn/howtoapply.asp?v=2>