Generating, Analyzing and Understanding Sensing and Sequencing Information

GAUSSI Program Guide
2016-2017
Mission and Goals

The GAUSSI program was created to provide a much needed opportunity for Ph.D. and M.S. students from Life Sciences, Computer Science, Mathematics, Statistics, and Biomedical Engineering to gain technical expertise in the generation, processing, analysis and interpretation of large biological datasets. In addition, GAUSSI also provides personalized career mentoring and training in important transferrable skills including STEM communication, outreach, collaboration, ethical conduct of research, and entrepreneurship. The pressing academic and industrial needs for expertise in biological data analytics will drive students to enter the program in order to progress in their own research projects while forging new interdisciplinary collaborations.

Primary Goals of the Program:

1. To provide a flexible and accessible curriculum of modular courses to train graduate students from a variety of disciplines in the approaches used to generate, analyze and understand large biological datasets.
2. To facilitate exploration of non-academic career paths through personalized career development.
3. To provide opportunities for students to recognize and practice the skills required for success in academia and industry.
4. To introduce the public and K-12 students to the concept of big data science through a variety of outreach activities.
5. To stimulate collaborative research in the areas of biosensing, and computational & systems biology.

Roles and Responsibilities

GAUSSI DIRECTORS

Director:
Tom Chen, Professor, School of Biomedical Engineering, Electrical & Computer Engineering
Dr Chen is responsible for the overall operation of the GAUSSI program. He also engages with the funding agency (NSF) and other internal and external constituencies to maximize the impact of the GAUSSI program.

Associate Directors:
Asa Ben-Hur, Associate Professor, Computer Science
Dr Ben-Hur is responsible for review of applications, admission of new trainees, and curriculum development.

Carol Wilusz, Professor, Microbiology, Immunology & Pathology
Dr Wilusz is responsible for recruitment of new trainees, advising trainees on curriculum, providing letters of support for grant and fellowship applications, and curriculum development.

All directors participate in meetings with the external advisory board, evaluators and NSF representatives and share responsibility for organizing the annual symposium.

GAUSSI CORE FACULTY

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stuart Tobet</td>
<td>Professor</td>
<td>Biomedical Engineering, Biomedical Sciences</td>
</tr>
<tr>
<td>Michael Kirby</td>
<td>Professor</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Dan Sloan</td>
<td>Assistant Professor</td>
<td>Biology</td>
</tr>
<tr>
<td>Zaid Abdo</td>
<td>Associate Professor</td>
<td>Microbiology, Immunology &amp; Pathology</td>
</tr>
<tr>
<td>Hamidreza Chitsaz</td>
<td>Assistant Professor</td>
<td>Computer Science</td>
</tr>
<tr>
<td>Laurie Stargell</td>
<td>Outreach</td>
<td>Biochemistry &amp; Molecular Biology</td>
</tr>
<tr>
<td>Rich Feller</td>
<td>Professor</td>
<td>Education</td>
</tr>
<tr>
<td>Paul Hernandez</td>
<td>External Evaluator</td>
<td>West Virginia University</td>
</tr>
</tbody>
</table>

Core faculty members help define the program goals and curriculum, evaluate applicants, recruit and mentor participants, facilitate collaboration, networking and outreach, provide instruction, organize the annual symposium and promote biosensing and computational biology at CSU. Core Faculty will also provide recommendations and letters of support for
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Trainees as they apply for fellowships and jobs. Some core faculty members are also responsible for specific aspects of the program as specified above.

GAUSSI FACULTY ADVISORS AND INSTRUCTORS

In addition to the core faculty, other faculty members may join the program as instructors of GAUSSI supported courses, as past, current or future advisors of GAUSSI students and/or based on their expertise and interest in research connected to sensing and computational biology. Faculty members are asked to participate in GAUSSI meetings and the annual symposium, present their research to GAUSSI participants, identify and host speakers and non-academic partners, provide constructive feedback and mentoring to GAUSSI trainees and promote and support a collaborative and inclusive community.

2016-2017 Faculty Advisors and Instructors:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adam Heuberger</td>
<td>Assistant Professor</td>
<td>Hort</td>
</tr>
<tr>
<td>Brad Borlee</td>
<td>Assistant Professor</td>
<td>MIP</td>
</tr>
<tr>
<td>Brad Woods</td>
<td>Associate Dir. For Research</td>
<td>RICRO</td>
</tr>
<tr>
<td>Brian Geiss</td>
<td>Associate Professor</td>
<td>MIP</td>
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<tr>
<td>Brian Munsky</td>
<td>Assistant Professor</td>
<td>SBME</td>
</tr>
<tr>
<td>Christina Boucher</td>
<td>Assistant Professor</td>
<td>CS</td>
</tr>
<tr>
<td>Christie Peebles</td>
<td>Assistant Professor</td>
<td>CBE</td>
</tr>
<tr>
<td>Courtney Jahn</td>
<td>Assistant Professor</td>
<td>BSPM</td>
</tr>
<tr>
<td>Erin Nishimura</td>
<td>Assistant Professor</td>
<td>BMB</td>
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<tr>
<td>Greg Ebel</td>
<td>Associate Professor</td>
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<tr>
<td>Henry Adams</td>
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<td>Jane Stewart</td>
<td>Assistant Professor</td>
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<td>Mark Stenglein</td>
<td>Assistant Professor</td>
<td>MIP</td>
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<td>Tai Montgomery</td>
<td>Assistant Professor</td>
<td>Bio</td>
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<tr>
<td>Tom Santangelo</td>
<td>Associate Professor</td>
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</tr>
<tr>
<td>Tim Stasevich</td>
<td>Assistant Professor</td>
<td>BMB</td>
</tr>
</tbody>
</table>

GAUSSI COORDINATOR

Kate Sherrill MEd

The program coordinator provides administrative support for program team, advises trainees on GAUSSI activities, tracks trainee progress and provides certificates of completion, maintains the GAUSSI website, participates in recruiting and symposium organization, and distributes information regarding program activities. A primary role of the coordinator is to help build and support a welcoming and inclusive GAUSSI community.

GAUSSI TRAINEES

GAUSSI trainees are individuals who have made a commitment to performing high quality research in the areas of sensing and/or computational and systems biology while developing additional professional skills needed to be successful in their future careers. Some GAUSSI trainees may be eligible for 1 yr NSF-supported fellowships. Requirements for participation in GAUSSI are similar regardless of whether a student is supported by an NSF fellowship. Student trainees are expected to participate in the program until graduation.

Eligibility

Although GAUSSI is designed primarily for graduate students, GAUSSI trainees can be at any stage of their graduate degree or post-graduate career. Any individual employed or enrolled at Colorado State University with a Bachelor’s degree in any science or engineering discipline and an interest in sensing and computational biology may participate.

Roles and Responsibilities

Trainees in the GAUSSI program may be in various stages of their academic program. Some may still be focused on completing the course requirement for their degree programs, including taking GAUSSI-sponsored courses. Others may have completed course requirement and be focused on their research. No matter what stage of an academic program a trainee is in, all trainees are expected to

* Attend and present at bi-weekly GAUSSI project meetings
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- Attend at least 4 relevant workshops/seminars/courses per semester in transferrable skills training offered by the Professional Learning Institute (PLI), The Institute for Learning and Teaching (TILT), the Graduate School, and other on-campus events.
- Participate in GAUSSI orientation and the summer symposium.
- Participate in personalized career development activities through on-line surveys and web-based tools administered by Dr. Rich Feller and his graduate students.
- Participate in peer-peer mentoring activities
- Participate in outreach activities at a level of 10-20 hr per semester
- Complete program-wide surveys and interviews administered by the GAUSSI external evaluator, Dr. Paul Hernandez and his team from the West Virginia University, in a timely fashion.

Student Leadership Panel

This panel consists of trainees who have volunteered to take an active role in defining the direction of the GAUSSI program. Ideally, the panel will consist of students from different disciplines and at different stages of the GAUSSI program. The students from the panel play leadership roles in organizing GAUSSI events and provide GAUSSI with valuable feedback to improve the program’s broad reach and impact on all participants.

EXTERNAL EVALUATORS

Paul Hernandez, Ph.D., Christina Paguyo, Ph.D.
The external evaluator and his team develop and administer a set of online tools to assess progress of trainees in academic and transferrable skills training on an annual basis. The outcome of the assessment helps GAUSSI adjust program activities to better meet the needs of its participants.

EXTERNAL ADVISORY BOARD

Steve Simske
HP Inc.
Lance Ford
BIOO Scientific
Larry Hunter
University of Colorado, Denver
Tina Larson
Achaogen Inc.
Victor Saucedo
Genentech
Corey O’Hern
Yale University
John Wuu
AMD

The external advisory board comprises individuals from industry and academia. The board meets twice per year and provides guidance on the direction and progress of the program.

CAREER PARTNERS

These are individuals from within or outside the university who have agreed to mentor and/or supervise individual GAUSSI trainees with regards to career planning and/or training. They may also participate in career panel discussions.

GAUSSI Training Program

GAUSSI MEETINGS

GAUSSI project meetings are held at least every other week during the Fall and Spring semesters. Trainees participating in GAUSSI for less than 2 years are expected to attend meetings, present their research and other activities related to transferrable skills and career development. Trainees who have been with GAUSSI for more than two years are also strongly encouraged to participate as mentors and collaborators. Faculty participation is strongly encouraged. Meetings may encompass:

(i) Research presentations by trainees, faculty or external speakers
(ii) Activities to cultivate transferrable skills, particularly STEM communication
(iii) Career panel discussions
(iv) Journal club discussions
In conjunction with GAUSSI meetings, trainees will complete assignments such as development of a LinkedIn Profile, participation in an online GAUSSI journal club, and submission and peer review of “7 minutes of Science” video presentations.

**GAUSSI ANNUAL SYMPOSIUM**

The goals of the Annual Symposium are to increase the visibility of the GAUSSI program and computational and systems biology in general, provide opportunities for networking and collaboration amongst Front Range researchers, and to allow trainees to practice their communication skills. The symposium is held in conjunction with orientation for trainees and faculty and also initiation of outreach activities for the year. The symposium includes local and external speakers, a career discussion panel and poster session.

**TECHNICAL COURSES**

GAUSSI technical courses are designed to be short and focused. Most courses are 1-2 credits and many are offered over the course of 4 or 8 weeks rather than a whole semester.

There are no required technical courses and no required number of credits. Trainees should only take courses that are directly related to their course of study or research project and may utilize credits to fulfill their degree requirements. Basic GAUSSI modules should normally be offered outside the student’s home department/area of expertise and require minimal prior knowledge. Most GAUSSI trainees will complete between 2 and 10 credits including basic, intermediate and capstone courses. The majority of trainees will need to complete at least one graduate level statistics course. STAT511 (4 cr) and STAT512 (4 cr) should be accessible for life scientists and those with a weaker quantitative background. Other statistics courses (STAA courses) may also be helpful for GAUSSI trainees depending on their areas of research and the level of quantitative background. Coursework can generally be completed within a year, but it is acceptable to take longer. GAUSSI trainees will be given priority registration for GAUSSI courses whenever possible.

GAUSSI will offer capstone courses starting in Spring 2017. The purpose of capstone courses is twofold: 1) to provide a platform where concepts learned in other courses can be synthesized and integrated using a set of applications that are related to students’ research areas, and 2) to provide a platform where interdisciplinary collaborations become part of the learning experience using applications of common interests.

**Summer Bootcamp Courses**

The statistics department offers two online self-paced boot camps that GAUSSI students may participate in at no charge. These boot camps are designed to prepare students for graduate level statistics classes:

- **GSLL 3095:** Math Skills for Statistical Analysis
- **GSLL 3096:** Computing Skills for Statistical Analysis

### Fall 2016 GAUSSI Courses

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Credits</th>
<th>Instructor</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM581A1</td>
<td>Nucleic Acids for Non-Life Scientists (Lab)</td>
<td>1</td>
<td>Carol Wilusz</td>
<td>Basic</td>
</tr>
<tr>
<td>CM580A1</td>
<td>Protein Basics for Non-Biologists</td>
<td>1</td>
<td>Brian Geiss</td>
<td>Basic</td>
</tr>
<tr>
<td>CM580A2</td>
<td>Basic Microbiology</td>
<td>1</td>
<td>Brian Geiss</td>
<td>Basic</td>
</tr>
<tr>
<td>CM581A2</td>
<td>NGS Libraries and Platforms</td>
<td>1</td>
<td>Carol Wilusz, Mark Stenglein, Dan Sloan</td>
<td>Intermediate</td>
</tr>
<tr>
<td>NSC1580A4</td>
<td>Linux as a Computational Platform</td>
<td>1</td>
<td>Asa Ben Hur, Tai Montgomery, Erin Nishimura</td>
<td>Basic</td>
</tr>
<tr>
<td>NSC1580A5</td>
<td>Genomics Data Analysis in Python</td>
<td>2</td>
<td>Asa Ben Hur, Tai Montgomery, Erin Nishimura</td>
<td>Intermediate</td>
</tr>
<tr>
<td>NSC1580A3</td>
<td>RNA-seq Data Analysis</td>
<td>1</td>
<td>Asa Ben Hur, Tai Montgomery, Erin Nishimura</td>
<td>Intermediate</td>
</tr>
<tr>
<td>BIOM581B1</td>
<td>Cells as Circuits</td>
<td>1</td>
<td>Kevin Lear</td>
<td>Basic</td>
</tr>
<tr>
<td>BIOM581B5</td>
<td>Electrochemical Sensors</td>
<td>1</td>
<td>Tom Chen/Chuck Henry</td>
<td>Intermediate</td>
</tr>
<tr>
<td>MATH58x</td>
<td>Linear Algebra for Biologists</td>
<td>1</td>
<td>Mike Kirby</td>
<td>Basic</td>
</tr>
<tr>
<td>STAT51</td>
<td>Design &amp; Data Analysis for Researchers (R)</td>
<td>4</td>
<td>Jana Anderson</td>
<td>Basic</td>
</tr>
<tr>
<td>STAT551</td>
<td>Regression Analysis (online)</td>
<td>2</td>
<td>Jana Anderson</td>
<td>Intermediate</td>
</tr>
<tr>
<td>STAT561</td>
<td>Probability &amp; Applications (online)</td>
<td>2</td>
<td>Mary Meyer</td>
<td>Intermediate</td>
</tr>
</tbody>
</table>
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Spring 2017 GAUSSI Courses

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Credits</th>
<th>Instructor</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORT581A3</td>
<td>Metabolomics: Design &amp; Data Analysis</td>
<td>2</td>
<td>Adam Heuberger</td>
<td>Intermediate</td>
</tr>
<tr>
<td>MIP58x</td>
<td>Microbiomes &amp; Metagenomics</td>
<td>2</td>
<td>Zaid Abdo</td>
<td>Intermediate</td>
</tr>
<tr>
<td>TBD</td>
<td>Capstone in NGS Data Analysis</td>
<td>1</td>
<td>Asa Ben Hur</td>
<td>Capstone</td>
</tr>
<tr>
<td>BIOM581B3</td>
<td>Sensor Circuit Fundamentals</td>
<td>1</td>
<td>Tom Chen</td>
<td>Basic</td>
</tr>
<tr>
<td>BIOM581B4</td>
<td>Affinity Sensors</td>
<td>1</td>
<td>Tom Chen/Bryan Geiss</td>
<td>Intermediate</td>
</tr>
<tr>
<td>BIOM581B6</td>
<td>Biophotonic Sensors/Refractive Index</td>
<td>1</td>
<td>Kevin Lear</td>
<td>Intermediate</td>
</tr>
<tr>
<td>BIOM581B2</td>
<td>Signal &amp; Noise in Sensors</td>
<td>1</td>
<td>Kevin Lear</td>
<td>Intermediate</td>
</tr>
<tr>
<td>MATH58x</td>
<td>Geometric Data Analysis</td>
<td>1</td>
<td>Mike Kirby</td>
<td>Intermediate</td>
</tr>
<tr>
<td>MATH58x</td>
<td>Topological Data Analysis</td>
<td>1</td>
<td>Henry Adams</td>
<td>Intermediate</td>
</tr>
<tr>
<td>STAT512</td>
<td>Design &amp; Data Analysis for Researchers II</td>
<td>4</td>
<td>Ann Hess</td>
<td>Basic</td>
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<tr>
<td>STA574</td>
<td>Methods in Multivariate Analysis</td>
<td>2</td>
<td>Daniel Cooley</td>
<td>Intermediate</td>
</tr>
<tr>
<td>STA551</td>
<td>Regression Analysis (online)</td>
<td>2</td>
<td>Jana Anderson</td>
<td>Intermediate</td>
</tr>
<tr>
<td>STA577</td>
<td>Statistical Learning and Data Mining (online)</td>
<td>2</td>
<td>Darren Homrighausen</td>
<td>Intermediate</td>
</tr>
<tr>
<td>STA566</td>
<td>Computational &amp; Graphical Methods (online)</td>
<td>2</td>
<td>Jana Anderson</td>
<td>Intermediate</td>
</tr>
</tbody>
</table>

Other Relevant Courses

These courses generally have more credits than the short GAUSSI courses, may not be aimed at interdisciplinary students and may have significant pre-requisites. However, they may be relevant/useful for some students.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Credits</th>
<th>Instructor</th>
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</thead>
<tbody>
<tr>
<td>MIP570</td>
<td>Functional Genomics</td>
<td>3</td>
<td>Ric Slayden</td>
</tr>
<tr>
<td>CS325</td>
<td>Introduction to Bioinformatics Algorithms</td>
<td>4</td>
<td>Asa Ben Hur, Hamidreza Chitsaz</td>
</tr>
<tr>
<td>CS581</td>
<td>Big Data</td>
<td>4</td>
<td>Sangmi Lee Pallickara</td>
</tr>
<tr>
<td>MATH532</td>
<td>Mathematical Modeling of Large Datasets</td>
<td>3</td>
<td>Mike Kirby</td>
</tr>
<tr>
<td>GRAD510</td>
<td>Fundamentals of High Performance Computing</td>
<td>3</td>
<td>Pat Burns</td>
</tr>
<tr>
<td>GRAD511</td>
<td>High Performance Computing and Visualization</td>
<td>3</td>
<td>Pat Burns</td>
</tr>
<tr>
<td>BZ/MIP577</td>
<td>Computer Analysis in Population Genetics</td>
<td>2</td>
<td>Bill Black/Mike Antolin</td>
</tr>
<tr>
<td>BZ360</td>
<td>Bioinformatics &amp; Genomics</td>
<td>3</td>
<td>Tai Montgomery</td>
</tr>
<tr>
<td>MATH676</td>
<td>Topics in Mathematics</td>
<td>3</td>
<td>Jennifer Mueller</td>
</tr>
<tr>
<td>BIOM400</td>
<td>Biomolecular Kinetics and Cell Dynamics</td>
<td>3</td>
<td>Ashok Prasad</td>
</tr>
<tr>
<td>BZ/MATH548</td>
<td>Theory of Population and Evolutionary Ecology</td>
<td>4</td>
<td>Colleen Webb</td>
</tr>
<tr>
<td>BZ/BSPM520</td>
<td>Advanced Systematics</td>
<td>3</td>
<td>Mark Simmons</td>
</tr>
<tr>
<td>ERHS535</td>
<td>R Programming for Research</td>
<td>3</td>
<td>Brooke Anderson</td>
</tr>
</tbody>
</table>

Questions about GAUSSI Courses

In addition to consulting with your academic advisors, GAUSSI trainees can also consult the following GAUSSI faculty about the relevance of GAUSSI courses.

Math courses: Dr. Michael Kirby (kirby@math.colostate.edu)
Statistics courses: Dr Zaid Abdo (Zaid.Abdo@colostate.edu)
Life Science courses: Dr. Carol Wilusz (Carol.Wilusz@colostate.edu)
Computer Science courses: Dr. Asa Ben-Hur (Asa.Ben-Hur@colostate.edu)
Biosensor/Bioengineering courses: Dr. Tom Chen (Thomas.Chen@colostate.edu)

PROFESSIONAL SKILLS TRAINING

The GAUSSI program aims to provide researchers with the skills needed to be successful in academic and non-academic careers. This goal is met in part through completion of coursework covering Ethics, STEM Communication & Grant Writing (Ph.D. students only):

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Instructor</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSCI580A2</td>
<td>Ethical Issues in Big Data Research</td>
<td>Brad Woods</td>
<td>tCR FA</td>
</tr>
<tr>
<td>†GRAD544</td>
<td>Ethical Conduct of Research</td>
<td>varies</td>
<td>tCR FA, SP</td>
</tr>
<tr>
<td>GRAD550</td>
<td>STEM Communication</td>
<td>Stu Tobet, Jeff Wilusz</td>
<td>tCR FA, SP</td>
</tr>
<tr>
<td>*BME750</td>
<td>Grant Writing</td>
<td>Stu Tobet</td>
<td>tCR FA</td>
</tr>
</tbody>
</table>
In addition to formal courses described above, GAUSSI trainees must participate in at least 4 events comprising a minimum of 6 hours per semester of workshops, seminars or discussions related to professional skills development. These events should be selected to cover skills directly connected to the trainee’s career goals and may include:

- Time Management
- Cultural awareness/sensitivity
- Safety
- Team-based Science
- Leadership

- Entrepreneurship
- Budget Planning
- Project Management
- Conflict Resolution
- Teaching
- Mentoring

Training opportunities will be highlighted on the GAUSSI website and through weekly emails. Programs offered through TILT, the Professional Learning Institute (PLI) and the Graduate School can be used towards this requirement. Participation will be logged by the student and approved by the GAUSSI Coordinator each semester.

**CAREER DEVELOPMENT**

All GAUSSI trainees who are currently enrolled in a graduate degree program will have the unique opportunity to participate in personalized career planning (surveys, MyIDP, personal consultations). They are encouraged to identify one or more career mentors and participate in career panel discussions. Dr Rich Feller oversees this aspect of the program.

**INTERNSHIPS/EXTERNSHIPS/CAREER MENTORING**

Although internships/externships are not a required component of GAUSSI training, trainees are encouraged to consider gaining experience in this way. Links to internship opportunities will be posted on the GAUSSI website and GAUSSI faculty are happy to provide guidance in how to go about applying. Generally, an internship will last for 2-3 months during the summer. The GAUSSI program may support travel, but stipend support would usually need to be identified through other sources. Externships are shorter (1-3 weeks) and would normally be conducted at a local company. Students interested in this type of experience should consult with Dr Tobet or a faculty member with experience in a relevant field.

During the course of the training program, trainees will identify one or more possible career paths. They will identify individuals who have pursued similar paths and may be willing to act as mentors or participate in a panel discussion. GAUSSI faculty will assist in engaging mentors/panelists.

**OUTREACH**

Outreach is a central component of the GAUSSI program. As such, all GAUSSI trainees are required to participate in outreach-related activities during each of the Fall & Spring semesters. This requirement can be met through developing and delivering a module connected to big data for the “Biochemistry is Elementary” program overseen by Dr Laurie Stargell, or through other activities arranged by the trainee. All outreach activities should be STEM-related and ideally connected with computational and systems biology, biosensing or DNA sequencing. Some ideas for acceptable outreach activities will be listed on the GAUSSI website. Each trainee should submit a brief description of their planned outreach activity by the beginning of the Fall Semester, provide a one paragraph description of progress at the end of the fall semester and submit a one page final report by the end of the Spring semester. Lesson plans and other deliverables should be shared with the Program Coordinator and submitted to public repositories if appropriate.

**CERTIFICATE OF COMPLETION**

A non-transcripted Certificate of Completion can be requested by trainees who have consistently met the requirements of the program over the course of at least two years.
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FUNDING

GAUSSI is supported through NSF award DGE-1450032 with additional support from the Provost Office, OVPR, CVMBS, CoE, and CNS. These funds support fellowships, curriculum development, training and outreach activities, the annual symposium and trainee research and travel.

GAUSSI NRT FELLOWSHIPS

Fellowships provide $32,000 stipend, plus tuition and fees for up to 8 fellows per year. Fellows must be US citizens or permanent residents, must be enrolled in a graduate degree program at Colorado State University and must be performing interdisciplinary research connected with Biosensing or Next Generation Sequencing. Each fellowship is awarded for one year and is non-renewable. Fellowship applications can be submitted online at gaussi.colostate.edu. The application deadline is April 15 each year and awards start June 1st.

TRAVEL AWARDS

Travel awards are available to all GAUSSI trainees to support attendance at conferences and workshops related to professional development or research projects. Travel funds may also be used to support travel for internships/externships. Applications for travel funds will be evaluated on a case-by-case, first come / first served basis. Details on how to apply can be found on the GAUSSI website (gaussi.colostate.edu).

INTERDISCIPLINARY RESEARCH AWARDS

 Funds are available to support interdisciplinary research projects involving two or more GAUSSI trainees. The research awards are intended as a supplement for materials & supplies for exploratory activities leading to more sustained long-term collaborations. The awards cannot be used for salary and other personnel costs. The application deadline is Sep 1, 2016, and awardees will be notified by Oct 1, 2016. Details on how to apply can be found on the GAUSSI website.