Texas A&M University

Faculty of Genetics and Genomics

2022 - 2023

First Year Graduate Student Handbook

http://genetics.tamu.edu

Faculty of Genetics and Genomics

Texas A&M University

Please submit any suggestions or corrections to the Genetics and Genomics Office

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HOWDY!

We are pleased you have chosen the Interdisciplinary Graduate Genetics and Genomics (GGEN) Program of Texas A&M University to pursue your graduate studies. This handbook describes the doctoral program, your expectations, and information about registration, procedures, and program research infrastructure. Please note, however, that the 2022-2023 TAMU Graduate Catalog is the official document stating the rules and regulations under which your pursuit of a graduate degree is to be conducted. We strongly advise that you read the academic expectation section and the Genetics section under Interdisciplinary Degree Programs (Doctoral), which lists the steps toward obtaining a Ph.D. and deadlines.

Again, we speak for the whole Faculty of Genetics and Genomics in extending our warmest welcome to you, our new students, and colleagues. Have a good and productive year!

Zachary Adelman, Ph.D.
Chair, Faculty of Genetics and Genomics

David Threadgill, Ph.D.
Past-Chair, Faculty of Genetics and Genomics

Michael McGill
President, Genetics and Genomics Graduate Student Association

TEXAS A&M UNIVERSITY

Texas A&M University is a public institution and flagship of the Texas A&M University System dedicated to developing and disseminating knowledge in diverse academic and professional fields. The University is committed to assisting students in their search for knowledge to help them understand themselves, their cultural and physical environment, and to develop the wisdom and skills needed to assume responsibility in a democratic society. The University assumes as its historic trust the maintenance and enhancement of an intellectual environment that encourages the development and expansion of the human mind and spirit. While continuing to fulfill its mission as a Land-Grant/Sea-Grant/Space-Grant institution, the University is evolving and expanding its role to meet the changing needs of state, national, and international communities as a member of the Association of American Universities, an international organization of pre-eminent research-intensive universities.

Established in 1876 as the first public college in the state, Texas A&M University has become a world leader in teaching, research, and public service. Texas A&M has a long history of genetics education, with the first graduate degree in genetics being awarded in 1919. It is located in College Station in the heart of Texas, and it is centrally situated among five of the country's 12 largest cities -- Dallas, Fort Worth, Houston, Austin, and San Antonio. For the Fall 2020 semester, enrollment was 71,109, making Texas A&M the largest university campus in Texas and the second largest in the United States. Students at Texas A&M represent 243 of 254 Texas counties, all 50 states, and 131 countries.

KEY ADMINISTRATIVE FACULTY AND STAFF

Zach Adelman, Ph.D., Chair and Faculty Grad Mentor, FOG…….979-458-3107
zachadel@tamu.edu, Office: Heep Center, Room 329A

David Threadgill, Ph.D., Past-Chair, FOG…….....979-436-0850
dwthreadgill@tamu.edu, Office: Reynolds Medical Building, Room 428

Isabel Caballero, Ph.D., Admin Coordinator & Outreach Chair…….……979-458-2284
icabal@tamu.edu, Office: BCBP, Room 109A
Responsibilities: Oversees academic milestones, prepares internal and external reports, fellowship nominations, develops career development initiatives, liaises between GGEN, Depts, Colleges, and the Grad School, and leads outreach and recruitment efforts.

Tamara Ospina-Vega, Program Coordinator……. 979-458-2284
tov@tamu.edu, Office: BCBP, Room 109A
Responsibilities: Coordinates events and travel for GGEN seminars and on-campus student recruitment activities, oversees first-year lab rotations, provides day-to-day student support, and is the first point of contact for admission inquiries.

If Dr. Adelman is out of town and a signature is needed, the following faculty have signature authority:

David Threadgill, Ph.D., Past-Chair, FOG…….……979-436-0850
dwthreadgill@tamu.edu, Office: Reynolds Medical Building, Room 428

THE GENETICS AND GENOMICS GRADUATE STUDENT ASSOCIATION (GGSA)

PURPOSE OF THE ORGANIZATION

The Genetics and Genomics Graduate Student Association (GGSA) is an advocacy and social group for graduate students with a research interest in Genetics. A member of the GGSA must be enrolled with graduate classification at Texas A&M University, classified as a Genetics major, and in good standing with the University. The organization meets each month to socialize, to address any academic issues they may have within the Genetics and Genomics Program, and issues within the University. The GGSA has representatives on the Seminar Committee, Outreach Committee, Advisory Committee, and Executive Committee of the Faculty of Genetics and Genomics. In that capacity, they can report issues within the program, which can be treated in the Executive Committee of the Genetics and Genomics Faculty. University-level issues are routed to the Graduate Student Council (GSC). The GGSA also organizes events such as the Fall Picnic, Tailgate Party, volleyball, games, etc. A list of current students serving as officers and on committees in the GGSA can be found at:

https://genetics.tamu.edu/current-students/student-association/

THE INTERDISCIPLINARY PROGRAM IN GENETICS AND GENOMICS (GGEN)

The Doctor of Philosophy (Ph.D.) Graduate Program in Genetics and Genomics (GGEN Program) provides students with specialized training through course work, research, and teaching. The program has established requirements in these areas that must be satisfied by all students. The program requirements exist so that graduate students will thoroughly understand their area of specialization and intensive experience in their particular field of research.

Additional requirements for graduate degrees are established by The Graduate and Professional School ('The Grad School'). In most cases, the GGEN Program requirements are more stringent than The Grad School requirements.

Your responsibility as a graduate student is to ensure that you have met all program and university requirements for your degree. The purpose of this handbook is to describe both the programs and the university requirements so that you have a single, accessible reference that applies to students in your cohort year. Any future rule changes to the handbook will not apply unless the GGEN Office informs you that the change affects all students. **Please keep this book handy and refer to it as you pursue your degree.** For additional information, contact Dr. Isabel Caballero at the GGEN office in Bio/Bio, Room 109A; e-mail: icabal@tamu.edu; Tel: (979) 458-2284.

To ensure that all students are making adequate progress toward their degrees, the Faculty of Genetics and Genomics has established a schedule for meeting specific requirements. This schedule allows students to make reasonable progress toward a degree while assuring that students meet all major requirements in a timely fashion. Additionally, it enables the Faculty of Genetics and Genomics Executive Committee to perceive and correct problems experienced by students.

Timeline of Milestones

All GGEN Ph.D. graduate students should follow the schedule listed below (semester refers to a regular 17-week semester and does not include summer terms). A detailed deadline list is provided in **Appendix I**, Expectations of Genetics and Genomics Graduate Students.

Choice of Major Professor	End of First Semester
Degree Plan Filed with the Grad School.	Before Third Semester
Proposal/Preliminary Examination.	By End of Fifth Semester
Final Defense	By End of Fifth Year

It is expected that all students will adhere to this schedule. Students not meeting deadlines will be contacted by the Chair of the Faculty of Genetics and Genomics and the GGEN Office to inquire about the issue. In most cases, a letter from the student's major professor to the Chair of the Faculty of Genetics and Genomics, explaining why the schedule was not met, and providing a solution will be sufficient for continuation. **If no plan is developed or if students experience recurring problems in meeting the schedule, registration may be blocked.** In these cases, the Chair of the Faculty of Genetics and Genomics will meet with the student's major professor.

Graduate studies are demanding. You are no longer an undergraduate. Graduate studies are no less demanding than a professional degree. If anything, they are far more challenging because your day will not be scheduled like in a professional curriculum. Instead, you MUST be self-motivated to succeed. You receive almost $50,000 per year in salary, tuition, and fees to earn your degree, most coming from your Major Professor's research grants having specific deliverables for which they are responsible. If you approach graduate studies as an 8:00 AM – 5:00 PM job or with the flexibility of an undergraduate, you likely will not finish your degree. Your days should be used for classes and lab work. Any work required for your courses should be done in the evening or on weekends and not substituted for lab time. At a minimum, while taking 9 credit (CR) research hours, you are in essence being paid for 47 hours per week (20 hours through your stipend and 27 hours for your research-related education [9 CR research hours x 3

hours for each CR]). Even when not enrolling in credit research hours, your time in the lab is critical to your success.

Rotations

All students must complete three laboratory rotations during their first semester, independently of you having a lab preference. Rotations acquaint new students with the research programs in their area of interest, providing training in methods used in modern genetics and valuable contacts in other labs. Rotations also ensure students experience the work environments of labs they may consider joining; a lab that sounds interesting on paper may not use a mentoring style that fits your personality. It is very important that all 3 rotations be treated seriously as a potential research home. Upon arrival, students receive written information about the research program in each professor's laboratory and have the opportunity to interact with faculty during short faculty presentations and mixers scheduled during orientation. Following the new student orientation, students submit names of three laboratories to Tamara Ospina-Vega (tov@tamu.edu) disclosing where they would like to perform their first rotation. Requests for the second and third rotations will be due approximately one week before these rotations begin. Rotating students may enroll for up to 2 hours of credit in GENE 685 Directed Studies. Under particular circumstances, students may start a rotation the summer before the fall semester; this summer rotation will count as a fourth rotation. The professor hosting a rotation student will assign A-F grades and provide a written evaluation of the student's work in that lab. Students should review their evaluation with their rotation chair before beginning the next rotation. This information helps the students improve their performance. You will find a schedule of rotation due dates and forms for your rotation lab choices included in **Appendix II** of this handbook.

Choice of Major Professor

Students will identify a Major Professor by the end of the first semester, allowing them to begin research in earnest toward the Ph.D. degree in the second semester. After discussing opportunities with their rotation professors, all students will provide the GGEN

Office with a rank order of their choice for major professor using the forms provided in **Appendix III**. The Student Advising Committee will match students with a Major Professor based on the student and professor's preferences. If an additional rotation is needed to find an appropriate lab, students can perform this rotation in the spring semester. Occasionally, working equally under the direction of two faculty members can enhance a student's graduate program. To accept a Genetics Student, the Major Professor must sign the 2022 Expectations for Graduate Student Training and Support in **Appendix IV** and the GGEN Mentorship Compact form found in **Appendix V**.

Thesis Committee

A Thesis Committee supervises a student's coursework and research, examines a student's progress, and approves documents required for the Ph.D. degree. The Thesis Committee, chaired by the Major Professor, is the primary source of direction and support for a student's research. The Thesis Committee should be constituted soon after choosing a Major Professor to give the students maximum input. The Thesis Committee must have at least three members besides the Major Professor, and at least one member must come from a department outside your "home" department. Only the Major Professor MUST be a FULL member of the Faculty of Genetics and Genomics. The Thesis Committee will advise the student about the degree plan, read, and critique the research proposal and thesis dissertation, and administer the preliminary and final exam. The interactions during the required Annual Committee Meetings allow committee members to engage in mentoring and training and resolve disputes between student and mentors if they arise during their studies. In selecting committee members the student needs to consider that while some committee members are desirable because they are experts in their research area (so that they can provide useful advice, and potentially write knowledgeable letters of recommendation when you graduate), others may be selected due to unique attributes regarding differences in background, mentoring style, professional connections (industry, medicine, government, etc.) or other reasons that can be justified by the student.

Annual Committee Meetings

All graduate students must have at least one committee meeting each academic year. The GGEN Program uses the GENE Committee Sign-Off form in the Doctoral Student Profile and Feedback System to provide annual feedback to the student. The Doctoral Profile and Feedback System provide a dynamic management tool for collecting and curating the student's scholarly profile. Students must submit data regularly, such as information on publications, meetings, and presentations, to assist them in achieving their career goals. Also, the program asks students to engage in programming designed to facilitate career success, such as completing the Individual Development Plan (IDP) and participating in Career Club and Career Development Sessions. **Failure to meet these expectations will result in a registration block for the fall semester.**

Annual Meeting with the GGEN Admin Coordinator

All students must meet annually with Dr. Isabel Caballero to discuss academic milestones or potential issues arising during their studies.

Degree Plan

The Degree Plan establishes course work and research hours to be completed by a student during graduate study. The courses, which constitute the degree plan, are decided upon by the student in consultation with the Major Professor and Thesis Committee. The minimum number of hours required on a Ph.D. degree plan is 64 for students with an M.S. degree awarded in the U.S. (or its equivalent as determined by the Office of International Admissions). Students entering without a M.S. degree or with an M.S. degree that is not the equivalent of an M.S. in Genetics awarded in the U.S. should have 96 hours on their degree plan. Course requirements are in **Appendix VI** of this handbook.

Limitations on using undergraduate, seminar, and transfer courses are detailed in the Graduate Catalog. The student initiates the degree plan through an online submission

process in DPSS. It is checked by Dr. Isabel Caballero and signed electronically by the Thesis Committee members and the Faculty of Genetics and Genomics Chair. The student must file a degree plan by the end of the third semester after having their first Annual Committee Meeting. **Students failing to meet these deadlines will be blocked from registration.**

Research Proposal

The research proposal describes the study a student intends to undertake. It allows students to plan their graduate research projects and become familiar with the literature in that area. Proposals launch a student into a research project and are thus only effective if completed early in the graduate career. For this reason, proposals should be completed and submitted before the end of the fourth semester. In the research proposal, the student describes the research project rationale and objectives and outlines the techniques to be used. Proposals should be no more than ten pages long, not counting references, and follow the format used by a federal funding agency relevant to the student's work (generally NIH). The research proposal is submitted via DocuSign, revised by Dr. Isabel Caballero, evaluated and signed by the student's Thesis Committee, and signed by the Chair of the Faculty of Genetics and Genomics. Proposals that include research with vertebrate animals (including antibody generation in rabbits or mice) must enclose a copy of an approved Animal Use Protocol cover page. The proposal is not a contract to perform the described research, and significant research progress need not be completed at the time of proposal submission. Instead, it is a mechanism to assist students in clarifying research goals early in their graduate program. It also encourages students to become familiar with the primary literature in their field, provides them with technical writing experience, and facilitates research interactions between students and members of their Thesis Committee. **The written research proposal must be given to the student's committee members no later than 2 weeks prior to the oral exam.**

Preliminary Examination

The preliminary examination includes a written proposal, a written exam, and an oral examination in which a Ph.D. student's ability to think critically in the context of their field of specialization and beyond is tested by the student's Thesis Committee. Students should schedule their preliminary examinations before the end of their fifth full semester of graduate study. Students must have current cumulative and degree plan GPR's of AT LEAST 3.00 to be eligible for the exam.

The exam is given no earlier than a date when students are within approximately 6 CR of completing their formal course work (i.e., all course work on the degree plan except for the GENE 681, 684, 690, 691, and 692 courses) or no later than the semester following the completion of the formal course work on the degree plan. The preliminary examination checklist form is initiated by the student in DocuSign, and then it is checked by Dr. Isabel Caballero. The student is responsible for scheduling written exams with each member of their Thesis Committee. Individual members of the Thesis Committee may elect to waive their written exam.

Once all portions of the examination are completed, the **Major Professor** and members of the Committee will sign the Preliminary Exam form with the results of the examination using the same form as the checklist in DocuSign within ten working days of the scheduled examination date to The Grad School). Upon receiving the form, The Grad School will verify that all eligibility requirements were met and, if so, record the results of the preliminary exam. If post-review of the exam by the Grad School reveals that eligibility requirements were not met, then the student and the Major Professor will be notified of necessary actions (such as repeating the exam) required to rectify any deficiencies. Upon acceptance of a passing preliminary exam by The Grad School, satisfying the residence requirement, and completing your graded courses (required and electives), you will be considered a ***candidate*** for the Ph.D. degree. **After passing the required preliminary examination, the student must complete all remaining requirements for the degree**

within four calendar years. Otherwise, you must request an extension before scheduling the final examination (defense).

If the student fails the preliminary examination, there is no obligation for a re-examination. At their discretion, the Thesis Committee (with no more than one-member dissenting) may allow one re-examination when adequate time has passed to allow you to address inadequacies emerging from the first examination (normally six months to 1 year).

Eligibility Requirements that Cannot be Waived:

1. You must register for the semester during which you plan to take either the preliminary or the final examination (or in which any portion of the exam may fall).
2. You must have an approved degree plan on file with The Grad School.
3. You must have a cumulative GPR of 3.00 or above.
4. You must have a degree plan GPR of 3.00 or above.
5. You must have satisfied English language proficiency requirements (non-native English speakers).
6. You must have given your Thesis Committee a copy of your written proposal **no later** than 2 weeks prior to the oral exam.
7. All committee members must have scheduled or waived the written portion and agreed to attend the oral portion of the exam or have found a substitute. Only one committee member substitute is allowed, and it cannot be the Student's Major Professor.

The Written Dissertation

1. Graduate studies culminate with the dissertation, which describes a student's research and outlines the unique contribution a student has made to expanding the frontiers of knowledge.
2. The dissertation describes the research undertaken by a student during graduate study.
3. The content of the dissertation is established by the student in consultation with the Thesis committee.

4. The dissertation should be submitted to the student's Thesis Committee for review at least two weeks prior to the Final Defense.
5. The student's Thesis Committee approves the dissertation, and the Thesis Committee may request changes/edits before approving the dissertation.
6. The format of the dissertation is very precisely controlled by The Grad School.
7. Students must refer to the Thesis Manual and follow it exactly, or risk having their manuscript rejected by the Thesis Clerk.
8. The dissertation requirements can be found at the Thesis and Dissertation Services site: https://grad.tamu.edu/knowledge-center/grad-student-resources/pre-submittal-requirements
9. After the committee approves the dissertation, the student submits the dissertation as a single pdf online to Vireo (Thesis and Dissertation Submission System), which will check for format errors and may require several edits.
10. It is important NOT WAITING until the last minute to submit your dissertation to Vireo.
11. If you are an international student, it can take around 1 month for your thesis to be cleared by the Thesis and Dissertation Services, which must happen BEFORE International Student Services (ISS) can write any letters needed to begin a postdoc/job in the United States.

Final Defense

The final defense provides the student's Thesis Committee with the opportunity to evaluate a student's understanding of his or her research. The final defense consists of a formal public seminar of results presented by the student announced two weeks in advance. The presentation is followed by a private oral examination of the candidate by the Thesis Committee. Final changes to the Dissertation are discussed at this time. The final defense must be held within four years of advancement to candidacy. For all students, the defense should be scheduled at least four weeks prior to the Grad School deadline for submission of dissertations to the Thesis and Dissertation Services. This will allow adequate time for revisions and two weeks for the Chair of the Faculty of Genetics Genomics signature.

REQUIREMENTS FOR THE PH.D. DEGREE

Peer-Reviewed Publication Requirement

Students must have at least one first-author peer-reviewed publication accepted before scheduling the Final Defense. The Doctor of Philosophy degree is awarded based on the generation of new knowledge, which is demonstrated by publication in the peer-reviewed literature in the field of Genetics and Genomics. If a paper is under revision, an exception to schedule the Final Defense can be requested from the Chair of the Faculty of Genetics and Genomics.

In publications authored by a student in the Interdisciplinary Graduate Program in Genetics and Genomics, the student's affiliation should be listed as the "Interdisciplinary Graduate Program in Genetics and Genomics." If desired, the student's home department can be listed as an additional affiliation.

MINIMUM CREDIT HOURS

All students must maintain continuous enrollment throughout their graduate careers. They must enroll for at least one credit hour every regular semester (Fall and Spring) while working towards their degree. Continuous enrollment is required regardless of a student's source of support. All students using university facilities must enroll for a minimum of one credit hour.

Spring and Fall

All graduate students receiving Assistantships must register for a minimum of 9 hours during the Fall and Spring semesters throughout their graduate career.

Summer

All graduate students receiving Assistantships must enroll for a minimum of 6 semester credit hours during the summer. The requirement is 3 semester credit hours during any

one summer session in which you are enrolled or 6 semester credit hours during the two summer sessions in which you are employed.

If you are unsure about which GENE 691 (research) section you should register for (in any semester), please contact Tamara Ospina-Vega at tov@tamu.edu or 979-458-2284. Students wishing to graduate early may need to register for more hours per semester to have enough credits to graduate. For the summer session, the maximum number of GENE 691 credit hours in each 5-week term is 6, and in each ten-week term, the maximum is 10. So, to register for twelve hours, you may register for two 6-hour, 5-week terms.

Full-time status

Graduate students receiving assistantships are considered full-time students if registered for a minimum of 9 credit hours during a fall or spring semester. In summer, full-time students must register for 6 credit hours during a 10-week term, or 3 credit hours during a 5-week term. The GGEN Program is exempt from the 100-credit hour cap.

Minimum GPR

The Grad School calculates two GPRs: a Graduate GPR comprising all courses taken and a Degree Plan GPR comprising courses added to the degree plan. It is expected that both a student's Graduate GPR and Degree Plan GPR will remain at or above 3.00 during their graduate career. When either GPR drops below 3.00, a student will be given a one semester probationary period to restore it to 3.00. If this is not achieved, the student must meet with the Major Professor to determine whether the student should remain in the GGEN Graduate Program. If the student has not chosen a Major Professor at this point, the Chair of the Faculty of Genetics and Genomics will consider scholastic probation (see below) based on evaluations from lab "rotation" professors and grades at that point. A student will not be allowed to take the Preliminary Exam, advance to candidacy, or give the Final Defense if either GPR is below 3.00.

Scholastic Probation

After a student has become scholastically deficient, they may obtain conditional permission to continue in the degree program. For graduate students, this permission is granted by the Chair of the Faculty of Genetics and Genomics. The student's record while on probation determines whether they shall be cleared to register as a regular student, be granted a continuation on probation, or be suspended, dismissed, or terminated from the University because of scholastic deficiency. The graduate student may be informed in writing of the terms of probation and may be required by the Major Professor or in consultation with the Chair of the Faculty of Genetics and Genomics to register for a prescribed schedule of courses. Hours and GPR requirements shall be made consistent with the student's progress toward graduation. The specified hours and grade points are a minimum only. In addition to course work, a graduate student may be required to demonstrate progress toward completion of the degree by completing specified examinations and/or specified milestones in research or other independent study leading to completion of the dissertation. A graduate student will remain on probation until the terms of the probation are accomplished AND the Graduate Advisory Committee and Chair of the Faculty of Genetics and Genomics recommend that the probation be lifted. A graduate student blocked or suspended for scholastic deficiency may appeal such a decision through the Graduate Appeals Panel, following the procedures defined on The Grad School website.

Teaching Requirement

All students must participate as a Teaching Assistant (TA) for two semesters, typically during the second and third semesters. All students regardless their source of funding must complete this requirement, as it is an essential aspect of professional training. Previous teaching experience at the University level can be used to fulfill this requirement at the discretion of the Chair of the Faculty of Genetics and Genomics. Students with this type of experience should submit a written description of the course(s) they taught, what duties were required, and the name and telephone number of the faculty member in charge of the course.

All incoming graduate students must complete TA training. Texas A&M University provides a mandatory TA training called Teaching Assistant Institute (TAI). All new graduate students will be registered and must attend TA training in December 2022. Additionally, Genetics TA's must register for one credit of GENE 697 (Teaching Genetics Labs) every semester they TA.

Deadlines

Research proposals and dissertations forms requiring the Thesis Committee signatures must be submitted via DocuSign to Dr. Isabel Caballero (icabal@tamu.edu), Faculty Advisor, and Chair of the Faculty of Genetics and Genomics for approval at least two weeks prior to The Grad School submission deadline. It is critical not to wait until the last minute to initiate these forms, considering faculty members may be out-of-town or unavailable. These are essential documents required to make progress in your career. International students may need additional time for ISS paperwork to process after The Grad School clears the final dissertation.

FINANCIAL SUPPORT

There are three forms of support for graduate students in our program: Graduate Assistant Teaching (GAT), Graduate Assistant Non-Teaching (GANT), Graduate Assistant Research (GAR) and Fellowships. GAT and GANT support comes from state-appropriated teaching funds. GAR support is funded by research grants and provided by individual faculty. Fellowship support may be provided by The Grad School, Federal, or other sources and is awarded on a competitive basis.

To receive support, students must register for a minimum of 9 credit hours for the fall and spring semesters. For summer support, registration in a minimum of 3 credit hours per five-week summer session, or 6 credit hours for the 10-week session is required.

TEXAS A&M UNIVERSITY RESEARCH CORE FACILITIES

Texas A&M's research budget for fiscal year 2020 was more than $1.131 billion, ranking Texas A&M in the top 20 of the National Science Foundation's Higher Education Research and Development Survey and first in the Southwest.

The University's 5,200-acre campus, which includes a 434-acre research park, is one of the largest in the nation and is valued at more than $1 billion. In addition to the College Station campus and the Bryan Health Science Center Campus, the university has branch campuses in Houston, Galveston, and Doha, Qatar, and operates the Soltis Research and Education Center near the town of San Isidro, Costa Rica, the Santa Chiara Study Center in Castiglion Fiorentino, Italy, and the Texas A&M University Center in Mexico City.

Texas A&M also supports a wide range of core facilities housing cutting-edge equipment and technological capabilities to support genetic, genomic, molecular biology and bioinformatics research and training. Core facilities provide critical resources for groundbreaking research, ensuring more efficient resource utilization, shared research facilities are a cost-effective way to leverage research expertise and specialized instruments. Core facilities provide a dedicated space and specialized scientific equipment. Additionally, staff scientists provide field-specific expertise, research service, technical support, and graduate students and research staff training. Core facilities primarily serve Texas A&M researchers, though many facilities welcome outside users from the broader scientific and industrial community. Texas A&M offers more than 50 core facilities than can be generally categorized into five thematic areas described in the table in the following page.

If you want to know more about Texas A&M Core facilities, please contact Ashlyn Montgomery, Core Facilities Coordinator, at amontgomery@tamu.edu or call at 979-845-1182.

Texas A&M Core Facilities, Division of Research

Microscopy and Imaging	Integrated Biological and Medical Translational	Materials and Fabrication	Data Informatics and Computation	Chemical Science Technologies
These cores focus on advanced imaging techniques, including light microscopy, from visualization of proteins to whole animal imaging	Cores in this area focus on advanced equipment and techniques associated with human, animal, and plant biological and medical research	These core facilities focus on the synthesis and fabrication of different materials, including polymers, metals, ceramics, and composites, and characterization of their structural and physical properties using a wide range of methods.	Cores in this area focus on empowering research and discoveries by providing access to computational hardware, software, and application expertise across the spectrum of data sciences.	These cores focus on state-of-the-art sample collection and chemical analysis using resources, including a mobile environmental sampling van, high-volume resolved particle samplers, mass spectroscopy, Raman spectroscopy, and other analytical techniques.
• College of Dentistry Research Core-Dallas, TX • CVMBS Core Histology Laboratory • IBT Pre-Clinical Imaging Core-Houston, TX • IBT-Center for Advance Imaging, Houston, TX • Image Analysis Laboratory-Veterinary Medicine & Biomedical Sciences • Integrated Microscopy and Imaging Laboratory • Microscopy and Imaging Center	• AgriGenomics Laboratory • Animal Genetics Laboratory • COM Cell Analysis Facility • Comparative Medicine Program • Flow Cytometry Facility • Human Clinical Research Facility • IBT Antibody & Biopharmaceutics Core-Houston, TX • IBTFlow Cytometry & Cell Sorting Core-Houston, TX • IBT High Throughput Research & Screening Center	• AggieFab Nanofabrication Facility • Biomedical Engineering Shared Laboratories • IODP XRF Core Scanning Laboratory • Materials Characterization Facility • Materials Development & Characterization Center • Mechanical Engineering Shared Services Facility • National Corrosion & Materials Reliability Laboratory • Rapid Prototyping Studio MEEN 3D Printing • Soft Matter Facility	• Crop Genome Editing Laboratory • Genomics & Bioinformatics Service • High Performance Research Computing • IBT Rigor & Reproducibility Core • Laboratory for Molecular Simulation • Smart Grid Control Room Lab • TIGSS Bioinformatics Core • Multi-Crop Transformation Facility	• Biomolecular NMR Laboratory • Center for Atmospheric Chemistry & the Environment • Chemistry Mass Spectrometry Facility • Elemental Analysis Laboratory • Geochemical & Environmental Research Group • ILSB Mass Spectrometry Lab • NMR/ESR Facility of the Chemistry Department • Nuclear Engineering & Science Center

Microscopy and Imaging	Integrated Biological and Medical Translational	Materials and Fabrication	Data Informatics and Computation	Chemical Science Technologies
	• IBT Protein Production, Characterization, and Molecular Interaction Core-Houston, TX • Integrated Metabolics Analysis Core • Molecular Cytogenetics Laboratory • Multi-Crop Transformation Facility • National Center for Therapeutics Manufacturing • Systems & Synthetic Biology Innovation Hub • Texas A&M Institute for Genomic Medicine • TIGSS-Rodent Preclinical Phenotyping Core • TIGSS: Experimental Genomics Core • Biomedical Engineering Shared Laboratories • Biomolecular NMR Laboratory	• SQUID Magnetometer • X-Ray Diffraction Laboratory • Chemistry Mass Spectrometry Facility • IBT Antibody & Biopharmaceutics Core-Houston, TX	• National Corrosion & Materials Reliability Laboratory	• Radiation Effects Facility • Stable Isotope Geosciences Facility • Human Clinical Research Facility • Laboratory for Molecular Simulation • Molecular Cytogenetics Laboratory • X-Ray Diffraction Laboratory

BRYAN/COLLEGE STATION

Bryan/College Station is in Brazos County in east-central Texas, about 140 miles from the Gulf of Mexico. It lies in an area known as the Post Oak Belt, and there is a prevalence of post oak, blackjack oak, elm, and hickory trees. The terrain is characterized by gently rolling hills. Bryan/College Station are "sister cities" located in Brazos County with a combined population of 273,101 in 2019 with the 13th-largest metropolitan area in Texas.

The climate is classified as humid sub-tropical with hot summers. The average annual temperature is 68 degrees with average humidity at 71%. Winters are mild, with short spells of cold weather, lasting two to three days. Occasionally, the temperature can drop as much as 30 degrees in one hour; these are caused by polar Canadian air currents and are termed "Blue Northers." Snow is rare. Spring weather is variable with many thunderstorms. Summer is essentially invariable, with an average maximum temperature of 94 degrees and high humidity (it gets hot and stays hot!).

Housing

Housing in Bryan/College Station is plentiful, but it is important to start looking early for accommodations that are satisfactory and affordable. There are several services that can help you find a place to live. Do not forget that it will get hot, and air conditioning is a must!!!

The Off Campus Student Housing Office is on main campus. You can call at (877) 895-1234 during the hours of 8am - 5pm, Monday through Friday. In addition to publishing The Off Campus Survival Manual, this department has a number of useful services such as Adult and Graduate Student Services, Women's Programs, and the Housing Vacancy Listing through AggieSearch which is a listing of houses, apartments, duplexes, rooms in houses, mobile homes and condominiums. This office also has roommate referral services and tenant/landlord rights and responsibilities information. In addition, the Off Campus

Student Housing Office conducts surveys of apartment prices around town and has useful maps and other information for you.

Transportation

The Bryan/College Station area is serviced by the Easterwood Airport (CLL) on the TAMU campus. Daily flights are available on American Airlines from Dallas-Fort Worth International Airport (DFW). A shuttle service is available to and from Houston. Like most moderate-sized US cities, public transportation is available in Bryan/College Station. However, a car, or access to a car, is still very helpful. Uber and commercial taxi services are available throughout the area. Area transportation provides can be found at the Bryan/College Station Convention and Visitor Bureau site using this link: https://visit.cstx.gov/about-us/visitors-guide/.

Texas A&M provides an extensive on- and off-campus bus systems that is free for all students. Maps, with real-time tracking of buses, and information on campus parking are available at the Transportation Services website (http://transport.tamu.edu). The TAMUMobile app is available for smart phones provides real-time bus tracking, route maps, virtual campus tours, event calendar and a variety of other useful information.

The Brazos Transit District provides hourly fixed bus routes throughout Bryan/College Station that is also free for all students. Unlike the TAMU bus system focused on the TAMU campus, The District provides transportation to shopping and other destinations.

- Maps and timetables are available at: http://www.btd.org/fixed-routes/schedules/
- College Station bike maps: https://www.cstx.gov/bike
- Bryan bike maps: https://www.bryantx.gov/bike/
- Veo Bike Share: https://transport.tamu.edu/Alternative/bicycles/bikeshare.aspx

Emergencies

In case of emergency, call 911 for an ambulance, the police, or a fire department. If you are calling from a campus telephone, you will need to dial 9-911, unless you are dialing from a TAMHSC building, in which case it is 8-911.

Health Care

Medical and psychological health services are available on campus at the Beutel Health Center. The non-emergency number is (979) 458-8310. You can schedule an appointment online at https://shs.tamu.edu/ or call at (979) 458-8310.

International Student Services

All International Students need to start any interactions with ISS as soon as possible after accepting our offer. Please visit their website at https://iss.tamu.edu/, or call at 979-845-1824. You can request to talk to the ISS Senior International Advisor, Mrs. Jie Fan.

APPENDIX I: EXPECTATIONS OF GENETICS AND GENOMICS GRADUATE STUDENTS

At all times, before and after passing the preliminary exam, a student must remain in good standing to continue in the graduate program. Graduate students are expected to:

1. Make reasonable progress in their research. Graduate students are expected to actively work on their research project unless they notify their advisor and officially take vacation, medical, or family leave.

- When students are not actively engaged in running experiments or analyzing data, they should read the literature or draft or edit papers, abstracts, reviews, or proposals.
- Sometimes projects do not work as expected, resulting in unpublishable data. When this happens, students are expected to work with their advisor and Thesis Committee to assess the risk of their projects. Risk can be actively managed in many ways, including by planning experiments to determine as rapidly as possible whether a new project is viable, by setting performance deadlines (if we haven't solved the problem by this date, we need to change approaches), or by developing alternate, less risky "Plan B" projects in parallel with the risky project.

Timeline for research deadlines

Year	Semester	Task
1	Fall 2022	• Rotations + selection of major professor
	Spring 2023	• Join research lab (4th lab rotation if needed) • Select a Thesis Committee during the spring semester • Thesis Committee must meet by the end of the spring semester • Students should present a draft degree plan to their committee.
	Summer 2023	• Students must submit their degree plans approved by their committees by the end of the summer semester.
2	Summer 2024	• Prelim Exam must be scheduled by end of July
3	Fall 2024	• Preliminary Exam must be completed by the end of fall semester[1]
	Summer 2025	• Thesis Committee must meet by the end of the summer semester
4 +	Summer 2026	• Thesis Committee must meet by the end of the summer semester
5	Summer 2027	• Thesis Defense[2]

[1] If necessary, a student may submit a request for additional time to complete their preliminary exam in writing to the Program Graduate Advisor and the Chair of the 1st Year Student Thesis Committee. This request must be approved by 3/4 majority vote of the 1st Year Student Thesis Committee.

[2] Grad School Rule: The defense must occur within 4 years after the preliminary exam (end of fall semester of 7th year) or the preliminary exam must be repeated.

It is expected that all students will adhere to this schedule. Students who do not meet deadlines will be contacted by the Chair of the Faculty of Genetics and Genomics to ensure that adequate progress is being made. In most cases, a letter from the student's major professor to the Chair, explaining why the schedule was not met, will be sufficient for continuation. **If students experience recurring problems in meeting the schedule, registration may be blocked.** In these cases, the Chair of the Faculty of Genetics and Genomics and the student's major professor will meet.

2. Provide access to all data and procedures.

According to the Texas A&M Administrative Procedure 15.99.M1.03: "research data conducted on a Texas A&M University project" belongs to Texas A&M University. This includes, but is not limited to:

- Research notebooks and electronic files need to be clear and complete, and the Principal Investigator (PI) and other lab members need to have access to this information.
- All data needs to be permanently and safely always stored in the laboratory. For instance, data cannot be stored only in one place (e.g., on a student's personal computer) and then removed from the laboratory.
- Data collected by a graduate student at other institutions needs to be added to the lab paper or electronic files upon return to Texas A&M University.

3. Behave professionally and respectfully to their colleagues. A student's success in graduate school depends, in part, on the help and support (e.g., training and protocols, critical evaluation of data, troubleshooting assistance) provided by their PI, lab mates, and other colleagues. Students are expected to always behave professionally and respectfully toward their colleagues. Behaviors that foster a hostile workplace are not only forbidden by university policy, but they also erode the social network that helps students succeed.

4. Comply with university policies. In addition to specific policies mentioned above, these policies include but are not limited to:

- The TAMU Student Conduct Code
- Compliance with all regulatory policies applicable to the student's research and completing the required training courses in a timely manner.
- The TAMU rules, policies and Standard Administrative Procedures available at http://rules-saps.tamu.edu/TAMURulesAndSAPs.aspx.

Dissolving a student/PI relationship

We understand that conflicts can arise between students and faculty. The GGEN Program and student committee will work with a student in good standing to resolve these conflicts or help the student change laboratories. In the student's best interest, we will not support multiple lab changes.

A student and/or a PI may decide to dissolve their relationship. In this case, the student or PI terminating the relationship should first contact at least one of the following people:

- The GGEN Administrative Coordinator, Dr. Isabel Caballero: icabal@tamu.edu
- The GGEN Program Chair, Dr. Zach Adelman: zachadel@tamu.edu
- The GGEN Program Past-Chair, Dr. David Threadgill: dwthreadgill@tamu.edu

Alternatively, you can report concerns anonymously through the link below:
https://genetics.tamu.edu/reporting-form-for-student-concerns/

The student and their Major Professor should then meet to discuss the situation. If needed, the GGEN Program Chair may advise the instigator prior to this discussion and/or participate in this discussion.

The GGEN Program encourages students to make thoughtful decisions about their permanent lab and put sincere effort into their projects, because leaving a lab can potentially be detrimental to the student's career. There are four possible outcomes from terminating a student/PI relationship: (i) the student may join another lab and still pursue a Ph.D., (ii) the student may graduate with a non-thesis master's degree, (iii) the student

may graduate with a thesis master's degree, or (iv) the student may leave the university without a degree.

(i) If the student is in good standing and wants to pursue a degree in another lab: The student should immediately begin actively seeking another research mentor. Faculty in the program are listed on the GGEN website at http://genetics.tamu.edu/faculty. The GGEN Program Chair, or the GGEN Office may know of labs actively seeking new members. Students are responsible for contacting faculty and arranging interviews if the faculty is considering taking new students. One of the 3 people listed above can advise the student on how best to proceed.

Often the student is unpaid during this transition.

- Some faculty may provide salary support while the student finishes ongoing experiments and organizes data, and the student may seek a new lab during this time. *However, this is unusual, and a student should not depend on this support being available.*
- In rare cases, a student may TA to support their salary while they seek a new lab. TA positions are generally only available just before the spring and fall semesters begin. In general, TAships are awarded first to students in that department, then to students in Interdisciplinary Programs like Genetics and Genomics who are members of labs in that department, and then finally to students changing labs.
- The program does not have funds available to support students' salary, tuition, or fees during this transition period.

Consequently, it is essential to find a new lab as quickly as possible, keeping in mind that the lab must be a good match for the research interests and personality of the student. **The student must find a new research lab by the end of that semester.**

(ii) If the student wants to leave TAMU with non-thesis option master's degree (MS-NT), then they need to contact Dr. Isabel Caballero, who will assist the student on the processes they need to follow. The student will file a petition to change their degree (MDD) with The Grad School using the Document Processing Submission System. After the MDD

petition is approved, the student will submit another petition to change their degree plan and form a new committee. To get a MS-NT, students must have accumulated 36 hours of coursework. The student must apply for a degree change as soon as possible given that the University graduation deadlines are very early, shortly after the semester begins. The Grad School deadlines can be found at https://grad.tamu.edu/knowledge-center/dates-and-deadlines/dates-and-deadlines. If the deadline for the current semester has already passed, the student can apply for a degree to be awarded the following semester. A detailed list of steps for graduating with a Master's degree, including links to all the required forms can be found at: steps-to-master-s-degree. Please note that there are fees associated with graduation.

(iii) The student may elect to graduate with a thesis master's degree. In addition to accumulating 32 hours of coursework, a thesis master's degree candidate must write and defend a master's thesis. To write a thesis, the student must have accumulated enough data to generate a compelling, well-supported story. Generally, the student's previous Ph.D. committee will continue to serve as the master's thesis committee. Thesis master students must submit a Research Proposal Approval Form to The Grad School no less than 20 days prior to their defense. The student's degree plan must also have been approved no less than 90 days before their Master's Thesis defense. Consequently, it is important to complete both forms quickly. A detailed list of steps for graduating with a Master's degree, including links to all the required forms can be found at: steps-to-master-s-degree. Please note that there are fees associated with graduation.

(iv) If a student decides to leave the university without a degree, they need to make sure that Dr. Isabel Caballero, has been notified of their decision.
When departing a lab for any reason, students must remember to make all notebooks, electronic records, and data available to the laboratory and PI. The student must also make sure all products created by the student (e.g., animal lines, DNAs, proteins, chemicals) are clearly labeled and the remaining lab members know their location. All research notes, data, records, and products are owned by Texas A&M University.

Involuntary Termination from the GGEN Graduate Program

Students can be involuntarily dismissed from the GGEN Graduate Program for several reasons, including but not limited to:

1) Failure to remain a student in good standing.
2) Failure to meet Expectations for GGEN Graduate Students (see above).
3) Students must be actively making progress toward their degree. If they leave their original lab, they must find a new lab by the next registration deadline, so they can register for GENE 691. If the student feels like this could be a problem, they should contact the GGEN Administrative Coordinator, Dr. Isabel Caballero, as soon as possible.
4) An unsatisfactory grade from the student's PI.
5) Other events not explicitly covered calling into question a student's ability to complete the necessary work for a Ph.D. degree.
6) Other events not explicitly covered that call into question the student's ability to interact with their colleagues in a respectful and professional manner.

If any of these situations should occur, the student's case will be reviewed by the GGEN Executive Committee.

APPENDIX II: SCHEDULE OF LAB ROTATIONS - FALL 2022

1st Rotation	
Wednesday, Aug. 24	10 AM Deadline for submitting preference list for 1st rotation
Friday, Aug. 26	1st rotation assignments announced
Monday, Aug. 29	1st rotation begins
Friday, Sept. 30	1st rotation ends

2nd Rotation	
Monday, Sept. 26	10 AM Deadline for submitting preference list for 2nd rotation
Friday, Sept. 30	2nd rotation assignments announced
Monday, Oct. 3	2nd rotation begins
Friday, Nov. 4	2nd rotation ends

3rd Rotation	
Monday, Oct. 28	10 AM Deadline for submitting preference list for 3rd rotation
Friday, Nov. 4	3rd rotation assignments announced
Monday, Nov. 7	3rd rotation begins
Friday, Dec. 16	3rd rotation ends

Permanent Lab	
Monday, Dec. 12	10 AM Deadline for submitting preference list for permanent laboratory
Friday, Dec. 16	3rd rotation ends
Monday, Dec. 19	If possible, permanent lab assignment announced
January 2023	Students enter new lab

Students follow the employee holiday schedule as listed below	
Thanksgiving	November 24 - 25, 2022
Christmas	December 26 - 30, 2022
MLK, Jr. Day	January 16, 2023
Spring Break	March 13 -17, 2023
Memorial Day	May 29, 2023

LAB ROTATIONS IN THE GGEN PROGRAM - *INSTRUCTIONS FOR 2022*

As an integral part of the process of selecting a research advisor, students will undertake three laboratory rotation periods in your first semester. The rotations offer exposure to different lines of research in Genetics and Genomics. They also allow students to experience a specific laboratory's research environment before committing to do doctoral research in that laboratory.

How to choose a laboratory

The first consideration in choosing a laboratory should be the scientific activities in the particular laboratory. Still, it is also important to inquire about the future availability of laboratory space and **stipend support**. New students attend the GGEN Faculty presentations during Orientation Week to inform their decisions about joining a particular laboratory. They also attend one-on-one meetings with professors to consider their work, potential projects, and stipend sources. Talking with lab members helps new students understand whether the PIs mentoring style matches their needs.

Once you begin a laboratory rotation

During your laboratory rotations, spend as much time in the lab as possible, and talk with all lab members. Having more information will help you determine whether the environment in the laboratory, including daily interactions with the professor and research personnel, is desirable for your doctoral work.

Grading

The GGEN faculty will submit written reports of the laboratory rotations to the GGEN Office (see Rotation Student Evaluation – Faculty Response Form). These reports include information on students' time commitment, enthusiasm, perseverance, and interactions with laboratory personnel. This information is crucial in determining whether a student will join a particular laboratory. Because the Ph.D. is primarily a research degree, productive and interactive lab rotations are critical in setting the course of a career as a research

scientist. Even if students decide not to join a particular lab, they should continue to work hard on the rotation project. Students will learn, gain experience, and establish a good reputation by doing so. In addition, students also evaluate the rotation laboratory and PI (see Rotation Faculty Evaluation – Student Response Form).

Duration

Each laboratory rotation period is approximately 5-weeks, with the first rotation beginning at the start of the fall semester. The exact dates are indicated on the attached *Schedule of Lab Rotations* as in the *Graduate Student Handbook*.

Requirements

Students submitting the first laboratory rotation preference list should follow these steps:

1. Attend the faculty research talks during Orientation Week and other scheduled times (if appropriate).

The faculty research talks are an excellent opportunity to learn more about the different research opportunities in the GGEN Program, and they will help in making a wise decision about lab rotations.

2. Set up meetings with *at least* five faculty members to discuss completing a laboratory rotation in their laboratory during the fall semester.

Begin to set up these meetings as soon as possible. Immediately after faculty members give their "faculty research talk" is a good time. Remember, if you delay, the faculty may not have the time to meet with you before your preference list is due.

3. Meet privately with faculty members.

Failure to meet with faculty members delays the laboratory rotation assignment process, for yourself, and your classmates. The GGEN Office will verify that you met with the faculty members on your list.

4. Have each of the five faculty members you meet to sign a *Faculty Confirmation* form (included in your orientation packet)

When faculty sign the *Faculty Confirmation* form, they do NOT commit to taking you into their laboratory for a laboratory rotation. The form simply states that you met with the faculty member to discuss completing a laboratory rotation in the laboratory.

5. Submit your *Preference List* of exactly three faculty names in RANKED ORDER for the FIRST ROTATION, along with *Faculty Confirmation* forms to the GGEN Program Coordinator, Tamara Ospina-Vega, in Bio/Bio Rm. 109A or tov@tamu.edu.

The deadline for submitting your first rotation preference list is Wednesday, *August 24, 2022, at 10:00 AM.* You must submit the *Preference List* by the deadline. **NO EXCEPTIONS. NO EXCUSES**. The *Preference List* forms are included in this handbook, in your orientation package, and fillable-forms are available on the resources page on the Genetics Website.

Lab rotations will be assigned according to the preference lists insofar as possible, subject to the approval of the faculty involved. A laboratory assignment list will be distributed by email before the rotation begins.

6. A new Preference List with the names of *three* faculty members in RANKED ORDER needs to be submitted before the **second rotation**, and again before the **third rotation,** according to the schedule presented above.

7. Before the second and third lab rotations, you are strongly encouraged to meet with additional faculty members to discuss other rotation opportunities. You are also required to attend any additional faculty talks. It is very likely that the initial list of preferences you submitted before the first rotation will change, as you learn more about the program and research opportunities at Texas A&M.

APPENDIX III

GENETICS FACULTY CONFIRMATION

LAB ROTATION 2022

_____ has met with me to discuss completing a laboratory rotation in my lab.

_____ _____

Name of Faculty Member Signature of Faculty Member

GENETICS FACULTY CONFIRMATION

LAB ROTATION 2022

_____ has met with me to discuss completing a laboratory rotation in my lab.

_____ _____

Name of Faculty Member Signature of Faculty Member

(Submit electronically to the GGEN Office at tov@tamu.edu)

PREFERENCE LIST FOR FIRST LAB ROTATION

These are choices for the first lab rotation, NOT for all three rotations. A new preference list must be submitted before each rotation.

Students are strongly encouraged to talk to more than one professor for each rotation in case the first or second choice cannot be arranged.

Lab rotation assignments are made in consultation with Principal Investigators.

Student Name: _____

Lab Choice for First Rotation

1. _____
2. _____
3. _____

Any additional information that would help with rotation assignments:

Student signature:_____

(Submit electronically to the GGEN Office at tov@tamu.edu)

PREFERENCE LIST FOR SECOND LAB ROTATION

These are choices for the second lab rotation, NOT for all three rotations. A new preference list must be submitted before each rotation.

Students are strongly encouraged to talk to more than one professor for each rotation in case the first or second choice cannot be arranged.

Lab rotation assignments are made in consultation with Principal Investigators.

Student Name: _____

Lab Choice for Second Rotation

4. _____

5. _____

6. _____

Any additional information that would help with rotation assignments:

Student signature:_____

(Submit electronically to the GGEN Office at tov@tamu.edu)

PREFERENCE LIST FOR THIRD LAB ROTATION

These are choices for the third lab rotation, NOT for all three rotations. A new preference list must be submitted before each rotation.

Students are strongly encouraged to talk to more than one professor for each rotation in case the first or second choice cannot be arranged.

Lab rotation assignments are made in consultation with Principal Investigators.

Student Name: _____

Lab Choice for Third Rotation

7. _____

8. _____

9. _____

Any additional information that would help with rotation assignments:

Student signature: _____

(Submit electronically to the GGEN Office at tov@tamu.edu)

PREFERENCE LIST FOR FINAL LAB ASSIGNMENT

Student Name: _____

Ranked Choices for Lab Assignment

1. _____
2. _____
3. _____

Any additional information that would help with lab assignments (for instance, if you are similarly interested in two of the faculty):

Student signature: _____

(Submit electronically to the GGEN Office at tov@tamu.edu)

Rotation Student Evaluation Faculty Response Score your response to each statement as follows: 1 poor; 2 fair; 3 average; 4 good; 5 excellent
1. The objectives of the project were clearly explained to the student.
2. The student appeared to have knowledge in this area.
3. The student was well prepared.
4. The student adequately answered questions proposed to him/her.
5. The student was able to discuss recent developments in the field
6. The student could apply concepts to demonstrate their understanding.
7. The student appeared to set high standards for himself/herself.
8. The student's understanding of the subject appears to have been increased during the rotation.
9. The student was informed of his/her progress
10. The student's progress in the lab seemed of a high priority for the student
11. I was satisfied with the student's accessibility within the lab.
12. I would recommend this student to one of my colleagues.

Student Name _____ Rotation Dates: _____
Grade for Rotation (A - F): _____

Would you consider taking this student into your lab for a thesis? Yes ___ No ___
(*This does not commit you to taking this student).* (Please check one)

Advisor's Signature: _____

Advisor's Name (print): _____

(Submit electronically to the GGEN Office at tov@tamu.edu)

Rotation Faculty Evaluation Student Response Score your response to each statement as follows: 1poor; 2 fair; 3 average; 4 good; 5 excellent
1. The objectives of the project were clearly explained to me.
2. I felt well prepared for this rotation.
3. The professor adequately answered questions I proposed to him/her.
4. The professor discussed recent developments in the field.
5. The instructor had students apply concepts to demonstrate understanding
6. The professor sets high standards for students.
7. My understanding of the subject appears to have been increased.
8. I was informed of my progress in the lab by the professor.
9. My progress in the lab seemed of a high priority to this professor.
10. I was satisfied with the professor's accessibility within the lab.
11. The professor increased my interest in this area.
12. I would recommend this professor to one of my friends for a rotation.

Faculty Name: _____ Rotation Dates: _____

Would you consider joining this professor's lab for a thesis? Yes ___ No ___
(*This does not commit you to joining this lab).* (Please check one)

Student's Signature: _____

Student's Name (print): _____

(Submit electronically to the GGEN Office at tov@tamu.edu)

APPENDIX IV
EXPECTATIONS OF GENETICS AND GENOMICS FACULTY

Members of the Faculty of Genetics and Genomics are expected to support the program by participating in a subset of the following activities:

1. Attending G2 Seminars
2. Hosting a speaker for the G2 Seminar
3. Participation in one of the G2 Committees
4. Participation in social events organized by the GGSA.
5. Volunteer to be the Primary or the Secondary Advisor of GGSA
6. Mentoring a Graduate Student. Note: a faculty that accepts a Genetics graduate student into their lab must first sign the Expectations for Graduate Training and Support form on the next page and the Mentorship Compact.
7. Teaching a graduate level GENE course
8. Participating in Genetics student recruitment
9. Serving on the thesis committee of a Genetics graduate student.

Faculty of Genetics and Genomics

2022 Expectations for Graduate Student Training and Support

The Genetics IDP is a premier graduate program that recruits the most talented high potential graduate students in life sciences at TAMU. The program has the following expectations of all faculty members accepting new GGEN Ph.D. student into their laboratories:

1. The faculty member will honor the fact that the student was recruited by the efforts and funds of the GGEN IDP and is a student of such IDP. Consequently, the faculty member will refrain from encouraging or advising the student to transfer to any other TAMU sponsored graduate program for any purpose.

2. The GGEN IDP has actively pursued a variety of funding mechanisms to support all students for more than one year. Some of these funding sources has special requirements for student and faculty mentor participation in certain activities and by accepting a student, the faculty member agrees to support such requirements by the funding source.

3. The faculty member will support the new student's salary until at least August 31, 2027, starting June 2023 at a level equal to or higher than the current minimum stipend stipulated in the student acceptance letter for the Genetics IDP ($30,000-$32,000/year).

4. The faculty member will cover the full cost of tuition and fees (including those for summer semesters) for the student beginning with the summer semester of 2023 until at least August 31, 2027.

5. The student may earn a stipend by accepting teaching assistant assignments, if available, in addition to the two-semester teaching requirement of the program (second semester, while being paid by the program, and third semester, paid by the PI). However, the program strongly discourages teaching assistant assignments more than 2 semesters during year 3 to 5, to ensure that students are able to complete their research project in a timely manner.

6. If a student is given a teaching assistantship, the faculty member will supplement the teaching assistantship to ensure the student's salary does not drop below that in the student's offer letter.

7. Breaking any part of this agreement may preclude the faculty member from taking GGEN students into their laboratory in the future and may led to being removed as a Faculty from the IDP.

Faculty name _____

Faculty signature _____ Date: _____

APPENDIX V
MENTORSHIP COMPACT

Note: The Mentorship Compact will be given to the students after approval by the GGEN Executive Meeting on 08/25/22.

APPENDIX VI

COURSE REQUIREMENTS FOR THE PH.D. DEGREE IN GENETICS AND GENOMICS

Required Courses (17 CR)

- GENE 603 Genetics (3 CR)
- GENE 608 Critical Analysis of Genetic Literature (2 CR)
- Computational genetics (3 CR)*

  ***BIOL 651 Bioinformatics*

  ***BIOL 683 Experimental Design in Biology*

  STAT 604 Special Problems in Statistics Computations and Analysis

  ***STAT 646 Statistical Bioinformatics*

  STAT 657 Advanced Programming using SAS

  VIBS 613 Evolutionary Bioinformatics

  ***GENE 657 Command Line Skills*
- GENE 681 Seminar (3 CR)
- GENE 682 Seminar Presentation (1 CR)
- GENE 685 Research Rotations (2 CR)
- GENE 697 Teaching Genetics Labs (2 CR)
- BICH 656, Application of Scientific Values in Daily Research Practice (1 CR)

* These are approved courses meeting requirements. Alternative courses must be approved by the Genetics and Genomics Executive Committee.

** Courses in *italics* are part of the Bioinformatics and Computational Biology Certificate (CERT-BICB, see **Appendix VII**).

Elective Courses (9 CR)

Note: Student must choose courses spread across at least three competency areas shown below

Competency Area: Molecular Genetics

BICH 631 Biochemical Genetics

BICH 656 RNA Biology

BICH 673 Gene Expression

BIOL 609 Molecular Tools Biology

BIOL 635 Plant Molecular Biology

ENTO 641 Engineering Vector Populations

GENE 648 Molecular Evolution

SCSC 647 Genome Editing Crop Plants

VIBS 611 Tumor Cell Bio and Carcinogenesis

VTPP 676 Genetics & Molecular Toxicology

Competency Area: Quantitative and Population Genetics

ANSC 628 Animal Breeding

ANSC 638 Prediction Genetic Merit

ANSC 689 Advanced Quantitative Genetics

EEBL 605 Population & Quantitative Genetics

EEBL 606 Phylogenetics & Comparative Biology

ESSM 689 Quantitative Methods in Ecology, Evolution and Biogeography

GENE 612 Population Genetics

GENE 613 Quantitative Genetics

GENE 638 Prediction of Genetic Merit

SCSC 641 Plant Breeding

SCSC 642 Plant Breeding II

SCSC 643 Molecular Quantitative Genetics in Plant Breeding

WFSC 624 Dynamics of Populations

WFSC/GENE 633 Conservation Genetics

Competency Area: Statistics and Bioinformatics

BICH 661 Advance Genome Annotation Ontology

BIOL 647 Digital Biology

***BIOL 651 Bioinformatics*

***BIOL 683 Experimental Design Biology*

***GENE 656 Metagenomics*

***GENE 657 Command Line Skills*

***GENE 658 Differential Gene Expression*

***GENE 659 Genome Assembly*

SCSC 660 Experimental Designs in Agriculture

***MPHY 624 Biostatistics*

STAT 604 Special Problems in Statistics Computations and Analysis

***STAT 646 Statistical Bioinformatics*

***STAT 651 Statistics in Research I*

***STAT 652 Statistics in Research II*

STAT 657 Advanced Programming using SAS

VIBS 613 Evolutionary Bioinformatics

WFSC 670 Excel Biometry

***GENE 689 Single-Cell RNA-seq Data Analysis in R*

***GENE 689 Advanced Bioinformatics*

***GENE 689 Shotgun Metagenomic Data Analysis*

Competency Area: Organismal genetics

ANSC 624 Mammalian Developmental Genetics

ANSC 639 Bacterial Genomics

BICH 675 Plant Biochemistry & Genomics

BIOL 606 Microbial Genetics

BIOL 610 Evolution

BIOL 611 Developmental Genetics

ENTO 628 Arthropod Genomics & Gene Expression

GENE 677 Genes and Diseases

MPIM 601 Microbial Pathogenesis of Human Disease

MPIM 663 Molecular Biology of Animal Viruses

MSCI 603 Tumor Microenvironment and Cancer Metastasis

MSCI 630 Pathogenesis of Human Disease

MSCI 689 Foundations of Biotechnology

MSCI 689 Mammalian Immunobiology

VTPB 613 Mammalian Genomics & Bioinformatics

Competency Area: Genomics

ANTH 672 Ancient Genetics

BICH 650 Genomics

BICH 661 Genome Annotation with Ontologies

BIOL 650 Genomics

EEBL 607 Evolutionary Genomics

GENE 620 Cytogenetics

GENE 629 Applied Animal Genomics

GENE 654 Analysis of Complex Genomes

GENE 655 Analysis of Complex Genomes-Lab

GENE 689/BIOL 689 Bacterial Genomics

VIBS 630/GENE 630 Comparative Genomics

VTPP 638 Analysis of Genomics Signals

TYPICAL CURRICULUM§

1st Year

Fall (9 CR)
GENE 603 (3 CR) Genetics
GENE 608 (2 CR) Critical Analysis of Genetic Literature
GENE 681 (1 CR) Seminar
GENE 685 (2 CR) Research Rotations
BICH 658 (1 CR) Application of Scientific Values in Daily Research Practice

Spring (9 CR)
Computational genetics (3 CR)
Genetics elective (3 CR)
GENE 681 (1 CR) Seminar
GENE 697 (1 CR) Teaching Genetics Labs
GENE 691 (1 CR) Research

Summer (6 CR)
GENE 691 (6 CR) Research
Submit Degree Plan

2nd Year

Fall (9 CR)
Genetics elective (3 CR)
Genetics elective (3 CR)
GENE 691 (1 CR) Research
GENE 682 (1 CR) Seminar Presentation (15 min presentation)
GENE 697 (1 CR) Teaching Genetics Labs

Spring (9 CR)
GENE 681 (1 CR) Seminar
GENE 691 (8 CR) Research

Summer (6 CR)
GENE 691 (6 CR) Research

§ Additional elective courses may be taken. Note: nine credit hours of genetics and genomics electives are required. If you want to propose an elective course, see **Appendix VIII**.

3rd Year

Fall (9 CR)
GENE 691 (9 CR) Research
Preliminary Exam

Spring (9 CR)
GENE 691 (9 CR) Research

Summer (6 CR)
GENE 691 (6 CR) Research

4th Year

Fall (9 CR)
GENE 691 (9 CR) Research

5th+ Year

Fall/spring as needed
GENE 691 (9 CR) Research
Thesis Defense

Total hours for Ph.D.

96 CR plus completion of a dissertation
64 CR plus completion of a dissertation if previously completed MS degree

APPENDIX VII

BIOINFORMATICS AND COMPUTATIONAL BIOLOGY CERTIFICATE (CERT-BICB)

The Bioinformatics and Computational Biology Certificate is open to graduate students with a background in life sciences. The certificate emphasizes acquiring biological and computational expertise by supplementing graduate students' experiences with the necessary training in scripting and analysis of DNA/RNA sequencing data on a high-performance computing cluster. The courses offered focus on applying computer-based technologies to biological, biomedical, and biotechnology research. The curriculum includes instruction in database management, data mining, experimental design and analysis applications, and specific quantitative and analytical studies in the genetic and genomic sciences. Students completing the Bioinformatics and Computational Biology Certificate will possess an array of skills: ability to manage, interpret, and analyze large data sets; broad knowledge of bioinformatics analysis methodologies; familiarity with functional genetic and genomic data; and expertise in standard bioinformatics software packages and algorithms using command-line interfaces. Overall, this certificate will enhance graduate student training by strengthening their critical thinking, ability to communicate scientific concepts and analytical reasoning.

CERT-BICB requires completion of 15 credit hours that can be distributed throughout several semesters at will.

Enrollment requirements: must be a current graduate student with a background in the life sciences.

Two, 3 credit hour courses, GENE 657 (Bioinformatics: Command Line Skills) and BIOL 683 (Experimental Design) are required. The additional 9 CR can be a combination of any of the following prescribed electives*: BIOL 651 (Bioinformatics, 3 CR) GENE 656 (Bioinformatics: Metagenomics Data, 1CR), GENE 658 (Bioinformatics: Differential Gene Expression, 1CR), GENE 659 (Bioinformatics: Genome Assembly, 1CR), MPHY 624 (Biostatistics, 3 CR), STAT 646 (Statistical Bioinformatics), STAT 651 (Statistics in Research I, 3 CR), STAT 652 (Statistics in Research II, 3 CR), GENE 689 (Advanced Bioinformatics, 1 CR), GENE 689 (Shotgun Metagenomic Data Analysis), and GENE 689 (Single-Cell RNA-seq Data Analysis in R). Note: GENE 657 must be completed before registering for GENE 656, GENE 658, or GENE 659. The official certificate will be added to your transcripts and student records prior to graduation via the University Adjustment System.

*CERT-BICB electives list will be updated periodically. Additional courses with a strong computational component can be brought to the Faculty of Genetics' Executive Committee for review.

APPENDIX VIII

PROCEDURE FOR APPROVING NEW GENE/GGEN ELECTIVES

The revision of the GENE Ph.D. curriculum around competency areas provides substantial flexibility for individual degree programs. Students are required to take 9 CR of electives spread across three of the five competency areas (Molecular Genetics, Quantitative and Population Genetics, Statistics and Bioinformatics, Organismal Genetics, and Genomics). All courses should have a substantial research literature component. Courses meeting the criteria can be added to the list of qualified courses. The process is:

1) A faculty member or graduate student nominates a course that fulfills a specific competency area to the Executive Committee.
2) The nomination should include the syllabus and a justification explaining how the course fulfills a specific competency area.
3) The justification and syllabus will be forwarded to members of the Executive Committee, who will have 10 working days to vote for or against inclusion of the nominated course in the GENE curriculum.
4) The GENE Executive Committee will vote for or against inclusion of additional courses presented by a faculty member or student. A simple majority is required to approve the course.

APPENDIX IX

ADDITIONAL FORMS

Fillable forms are available at our Genetics Website at:

https://genetics.tamu.edu/current-students/resources/

- Genetics Faculty Confirmation Form
- Preference List for lab Rotation
- Preference List for Final Lab Assignment
- Rotation Evaluation by Faculty
- Student Rotation Evaluation
- Preliminary Examination Checklist (DocuSign form)*
- Research Proposal Form (DocuSign form)*
- Request and Announcement of the Final Examination (DocuSign form)*
- Written Dissertation Approval Form (DocuSign form)*

***All Grad School DocuSign Forms are available online at: https://grad.tamu.edu/knowledge-center/forms**