# Table of Contents

- Organizational Structure for the Graduate Program in Translational Biomedical Sciences ................................................................................................................................. 3
  - Administrative Structure: Overview .......................................................................................................................................................................................... 3
- Steering Committee .................................................................................................................................................................................................................. 4
- TBS Steering Committee Chair ........................................................................................................................................................................................................ 4
- Faculty Membership ...................................................................................................................................................................................................... 5
- Academic Program Oversight ................................................................................................................................................................................................. 5
- Composition and Responsibilities of Student Dissertation Advisory Committee .......................................................................................................................... 5
  - Composition ........................................................................................................................................................................................................... 6
  - Duties and Responsibilities ................................................................................................................................................................................... 7
- Review of TBS ............................................................................................................................................................................................................... 8
- Admission & Application Requirements .............................................................................................................................................................................. 8
  - Degree Required/Recommended ........................................................................................................................................................................... 8
  - Entrance Examinations Required/Recommended ........................................................................................................................................ 9
  - English Language Testing ...................................................................................................................................................................................... 9
  - Additional Requirements .......................................................................................................................................................................................... 9
- Application Materials ...................................................................................................................................................................................................... 9
- Admission Process ......................................................................................................................................................................................................... 10
- Ohio University Graduate College Translational Biomedical Sciences Program Timeline .............................................................................................................. 12
- Dissertation: Sequence of Events .................................................................................................................................................................................... 16
- Graduate Appointments ................................................................................................................................................................................................... 17
- Program Requirements ....................................................................................................................................................................................................... 17
  - Core Competencies in Translational Biomedical Sciences ..................................................................................................................................... 18
- Core Coursework ........................................................................................................................................................................................................... 20
- Elective Track Coursework .................................................................................................................................................................................................. 20
- Demonstration of the Ability to Conduct Independent Research and to Communicate Effectively the Results of that Work ........................................................................................................................................................................................................... 23
- Doctoral Dissertation .................................................................................................................................................................................................................. 23
- Ohio University Graduate College Translational Biomedical Sciences Coursework Planning & Form .......................................................................................................................................................................................... 24
  - General Instructions .................................................................................................................................................................................................... 24
- TBS Milestone 2 Requirements & Procedure .................................................................................................................................................................................. 26
  - 3.3. Demonstration of the Ability to Conduct Independent Research and to Communicate Effectively the Results of Said Work .............................................................................................................. 26
- Qualifying Exam ................................................................................................................................................................................................................. 27
- Dissertation Advisory Committee (DAC) .................................................................................................................................................................................. 29
Organizational Structure for the Graduate Program in Translational Biomedical Sciences

The following organizational framework is based on the highly successful interdisciplinary graduate program model developed by the University of Arizona. Initially, the Dean of the Graduate College will appoint the Steering Committee and select its chair. At the end of the first full academic year of the program, the graduate faculty will elect the Steering Committee and that elected group will then select the chair of the committee. To ensure continuity in leadership, the initial elected group will serve terms of one (1), two (2), or three (3) years.

Administrative Structure: Overview

- TBS will be administratively housed in the Graduate College, under the authority of the Dean of the Graduate College.

- The Faculty Director will be appointed by the Dean of the Graduate College for a fixed term, and will be responsible for central administrative issues of TBS.
  - To ensure rigor, the Faculty Director will conduct ongoing evaluation of the TBS program, following established assessment criteria, and present an annual report to the Graduate College.
  - The individual will be a voting member of the Steering Committee.

- The Dean and Faculty Director are advised on issues of policy and administration by the TBS Steering Committee, consisting of at least five (5) but not more than ten (10) members.
  - Steering committee members will serve a three (3) year term.
  - There will be no limit to the number of times an individual may be elected to the Steering Committee.
Steering Committee

The Steering Committee will be responsible for the academic and programmatic operations of the TBS. It shall:

- Establish program bylaws.
  - Such bylaws will be reviewed by the Steering Committee annually.
- Nominate new members to serve on the Steering Committee to ensure continuity.
- Develop and implement appropriate policies and procedures regarding admissions, curriculum, student supervision, and completion of degree program requirements and establish such standing committees as are needed for program operation.
  - In particular, the Steering Committee will be responsible for approving the composition of each student’s dissertation committee.
- Provide broad policy and associated management for the program, including budgets, funding, and polices for the appointment of new graduate faculty members to the program.
- Plan for future developments in the subject area.
- Ensure that Academic Program Reviews, consistent with Ohio Board of Regents requirements, are done promptly.
- Provide appropriate opportunities through seminars and forums to facilitate interactions between faculty and graduate students.
- Approve graduate faculty status for new applicants and review faculty membership annually to ensure active faculty participation in the TBS.

TBS Steering Committee Chair

The chair will act on behalf of the Steering Committee to:

- Convene and chair meetings of the Steering Committee.
• Serve as lead representative of the TBS to the university administration, granting agencies, prospective students, etc.

• Manage administrative matters according to university regulations.

• Review and approve annual reports of program activities and accomplishments prepared by the Faculty Director for the Dean of the Graduate College.

The chair may be called upon to document TBS contributions of participating faculty for P&T purposes.

Faculty Membership

TBS faculty members are proposed for appointment to the TBS program by the Steering Committee, based on established criteria (see Appendix B). A faculty member can hold graduate faculty status in this program as well as in one or more existing graduate programs.

Academic Program Oversight

• This graduate program will follow all the regulations of the Graduate College with respect to academic policy. [Website Link]

• All TBS course recommendations, modifications, and deletions shall be approved by the Faculty Director and the Dean of the Graduate College after review by the Steering Committee.

• Admissions, Academic Progress, and Annual Evaluation of Graduate Students reports will be conducted by the Steering Committee, according to the university policies and procedures.

Composition and Responsibilities of Student Dissertation Advisory Committee

Each student will have at least two mentors from different disciplines or fields, working with a Dissertation Advisory Committee to guide PhD study and research. The guidelines for student Dissertation Advisory Committees described below are more prescriptive than is usual for a disciplinary
doctrinal program. This recognizes the challenges of co-mentorship from the student perspective and provides a formal organizational structure that can support and advocate for the student if significant differences in proposed direction or focus of project were to arise between co-members, which would be detrimental to the student’s program.

Each student should form and meet with their Dissertation Advisory Committee as soon as possible after the qualifying exam is completed, with up to three months after admitted candidacy in the program is granted. The purpose of the committee is to follow the progress of the student, provide advice on the conduct of the dissertation research, and, ultimately, decide when the student is ready to complete the research and write a dissertation. The Dissertation Advisory Committee should convene every six (6) months.

Composition

The composition and duties of the Dissertation Advisory Committee follow a model used by the Harvard Medical School. In addition to the co-mentors, the Dissertation Advisory Committee includes three (3) additional members of the program’s graduate faculty whose areas of concentration relate to the direction of the dissertation project. These three members will be selected in a joint decision of the student, the co-mentors, and the chair of the program Steering Committee.

- There should be a broad representation of relevant disciplines involved in the student’s dissertation topic in the composition of the Dissertation Advisory Committee.
  - Additional members can be added to or replace existing members of the Dissertation Advisory Committee if there is a major shift in direction or new methodologies are to be employed.
    - This will need approval from the TBS Steering Committee.
- The chair of the Dissertation Advisory Committee must be a full member of the TBS graduate faculty and cannot be one of the student’s co-mentors.
Duties and Responsibilities

- Each student’s Dissertation Advisory Committee should meet at least every six (6) months; additional meetings should be called as needed.
  - In cases in which a student’s studies have not been completed by the end of year four (4), the Dissertation Advisory Committee will meet at least every four (4) months until the dissertation is completed.
  - The student, committee chair, or a co-mentor can call meetings.

- The student should provide a report to their Dissertation Advisory Committee members at least one week before each meeting.
  - This report should include a progress report and a proposed plan for future studies.
  - The meeting should conclude with a clear consensus regarding future priorities and research direction.

- Immediately after each meeting, the chair of the Dissertation Advisory Committee will write a report summarizing progress and assessing the effectiveness of the approach chosen by the student.
  - The report should include overall evaluation and specific comments of the student’s progress, and whether the research direction and/or progress can plausibly lead to a dissertation.
  - Each of the members of the Dissertation Advisory Committee will review the report and sign it, indicating their approval.
  - The signed report will be sent to the Faculty Director who will then send a copy to the student and to the chair of the program Steering Committee for review.
TBS Student Handbook

- One of the dissertation committee’s major contributions will be to help the dissertation co-
  mentors and the student decide when to end the experimentation and data-gathering stage
  and begin the dissertation writing stage.
- The Dissertation Advisory Committee will determine when the student’s thesis is ready for
  defense and the chair of the committee will schedule the time and place for this event in
  accordance with the rules of the Graduate College.
- The Dissertation Advisory Committee will also be responsible for providing career advice to
  the student in the later stages of the dissertation research period.

Review of TBS

TBS may be temporarily placed in a state of dormancy or permanently closed.

- TBS may be temporarily closed by the Dean of the Graduate College while assessing the
  viability of the program.
- TBS can be permanently closed, via normal university procedures for closing programs,
  when:
  - There are no students enrolled in the program or when the student census is too
    low to justify its existence.
  - Program activities decrease below an acceptable level.
  - The Steering Committee, with the consensus of the committee members, wishes to
    close the program or radically change its direction.

Admission & Application Requirements

Degree Required/Recommended

- Bachelor’s – a degree in a relevant discipline is required.
Entrance Examinations Required/Recommended

- Graduate Record Examination (GRE) – No*.
- Graduate Management Admission Test (GMAT) – No.
- Miller Analogies Test (MAT) – No.

*Although no testing information is required, any scores that are submitted must be official.

English Language Testing

Non-native speakers of English must meet the Graduate College’s minimum proficiency requirements.

Additional Requirements

- Minimum GPA – 3.00.
- Coursework Required – None.
- Resume or Vitae Required – Yes.
- Number of Letters of Recommendations – Three (3).
- Personal Statement – Yes.
- Supplementary Materials – Yes.

Application Materials

Prospective students must provide:

- Transcripts of all previous academic work.
- At least three (3) letters of recommendation.
  - The letters should be from individuals that can speak to your academic and research abilities.
- A Resume/CV.
• A personal statement that addresses the following areas:
  o Future career goals and how the Translational Biomedical Sciences program would help you meet those goals.
  o Expected research interest while in the program.
  o How your goals and research fit within the interdisciplinary nature of translational biomedical sciences.
• An essay detailing previous research experience and describing your current research interests.
  o Indicate potential mentors among the faculty of Ohio University.
    ▪ Note that the interdisciplinary dimension of the TBS doctoral program requires you to identify at least two mentors from two different disciplines.

*International students whose native language or academic language of instruction is not English must meet the University English language proficiency requirements as stated in the Graduate Catalog.

*Individuals wishing to apply for fall admission must have ALL materials submitted by January 31.

Admission Process

Once applications are submitted to Ohio University through GRADS, the TBS Steering Committee will review them. The committee may then decide whether the application is denied, accepted, or if more information is needed from the applicant.

• If denied, the application will be denied in GRADS by a program administrator.
• If accepted, the application will be sent to the potential mentors listed on the application.
  o If any of them are willing or able to take a graduate student, the TBS program administration will help to facilitate a meeting between the mentor and the applicant.
TBS Student Handbook

- If the mentor is willing to take on the student, the TBS program administration will work with the mentor to write a TBS Offer letter.
  - That letter will be sent to the student by email once they are formally accepted.

- In some cases, the committee or mentor(s) may require more information from the student.
  - If so, the TBS program administration will ask the student for that information.
    - Once obtained, the review process will continue.
**Program Timeline**

**STUDENT INFORMATION**

Name: _______________________________  PID: _________________________________

PhD Program Start Date: _________________________________

<table>
<thead>
<tr>
<th>Fall, Year 1</th>
<th>Timeline Item</th>
<th>Date When Completed</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Identify TBS faculty mentor whose research most closely aligns with initial student's interest</td>
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<td></td>
<td>Initiate a research project that will fulfill Milestone 2 requirements</td>
<td></td>
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<tr>
<td></td>
<td>Core competency coursework (including 2 sections of TBS seminar) and other coursework determined on a case-by-case basis</td>
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<tr>
<td></td>
<td>Research co-mentors</td>
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<table>
<thead>
<tr>
<th>Spring, Year 1</th>
<th>Timeline Item</th>
<th>Date When Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core competency coursework and other coursework determined on a case-by-case basis</td>
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<tr>
<td></td>
<td>Submit doctoral program planning form to TBS Steering Committee for review</td>
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<td></td>
<td>Present outline of planned research during TBS 6220</td>
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</table>
### TBS Student Handbook

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Activity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summer, Year 1</strong></td>
<td>Evaluation of student's progress by the TBS Steering Committee, including performance in coursework and in research to date</td>
</tr>
<tr>
<td></td>
<td>Identify and confirm second mentor</td>
</tr>
<tr>
<td><strong>Fall, Year 2</strong></td>
<td>By the end of year 2, schedule the completion of Milestone 2: Demonstration of the ability to conduct independent research and to effectively communicate the results of that work. This involves completion of a manuscript/proposal and an oral presentation. (See Milestone 2 Guidelines)</td>
</tr>
<tr>
<td></td>
<td>Schedule date/time for oral presentation (public) followed by closed session with Examination Committee members</td>
</tr>
<tr>
<td></td>
<td>TBS steering committee appoints an Examination Committee consisting of the student’s mentors, TBS Faculty Director, and two members from the TBS steering committee</td>
</tr>
<tr>
<td><strong>Spring, Year 2</strong></td>
<td>Complete Milestone 2 by end of year 2</td>
</tr>
<tr>
<td></td>
<td>After completion of Milestone 2, meet with co-mentors and identify a 5-member dissertation advisory committee (DAC) using the TBS Dissertation Committee Proposal Guidelines</td>
</tr>
<tr>
<td></td>
<td>Submit the TBS Dissertation Committee Proposal form to the TBS Steering Committee for review and approval</td>
</tr>
<tr>
<td></td>
<td>TBS approves DAC composition, determines the moderator, and moves the proposal to the Dean's office, using student’s proposal (=TBS committee proposal form) with a cover page</td>
</tr>
<tr>
<td>Period</td>
<td>Event</td>
</tr>
<tr>
<td>--------</td>
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</tr>
<tr>
<td>Summer, Year 2</td>
<td>TBS program notifies student and DAC, and schedules first DAC meeting as per guidelines.</td>
</tr>
<tr>
<td></td>
<td>Student prepares first progress report for DAC as per TBS Dissertation Committee Proposal Guidelines and distributes it 2 weeks before meeting.</td>
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<tr>
<td></td>
<td>DAC reviews planning form and decides with the student if any additional elective coursework is needed</td>
</tr>
<tr>
<td>Fall, Year 3</td>
<td>Student and DAC meet, format described in guidelines.</td>
</tr>
<tr>
<td></td>
<td>The student’s mentors provide a content summary, and the DAC Moderator prepares a meeting summary using the TBS Dissertation Committee Meeting Summary Form. All members of the DAC sign the form, and forward it to TBS program office</td>
</tr>
<tr>
<td>Spring, Year 3 and beyond</td>
<td>TBS program schedules next meetings (6-month interval) and the DAC meetings continue until the committee is satisfied that the student’s dissertation is ready for defense</td>
</tr>
<tr>
<td></td>
<td>Milestone 3: Demonstration of an in-depth knowledge of the specific subject, and successful defense of a research project</td>
</tr>
</tbody>
</table>

or email describing changes (if any) and recommendations for the Dean’s representative.

Dean's office approves DAC composition and representative using TBS Dissertation Committee Approved form provided, and returns it to TBS program.
that constitutes an original scholarly contribution towards the advance of translational biomedical sciences (within 7 calendar years of the date of initiation)

Comply with all Thesis and Dissertation ([https://www.ohio.edu/graduate/etd](https://www.ohio.edu/graduate/etd)) requirements and deadlines
Dissertation: Sequence of Events

- After a student has completed Milestone 1 and passes Milestone 2:
  - They will meet with their co-mentors to identify possible faculty members for the student’s Dissertation Advisory Committee (DAC) using TBS guidelines.
  - Once potential committee members have been chosen, the student completes and submits a TBS Committee Proposal Form.
  - TBS will then approve the DAC composition, determine the moderator, and provide any changes to or recommendations for the DAC to the Dean’s office for their approval.
  - After the DAC has been approved, TBS informs the student and their committee, and schedules the first DAC meeting per guidelines.
  - Two (2) weeks prior to the first DAC meeting, the student prepares the first progress report per TBS Dissertation Committee Proposal Guidelines and disperses it to committee members.
  - When the student and DAC meet, as described in the guidelines, the student’s mentors provide a content summary, and the DAC Moderator prepares a meeting summary using the TBS Dissertation Committee Meeting Summary Form which is signed by all members of the DAC and sent to the TBS program office.
  - TBS will schedule subsequent meetings at six (6) month intervals, each of which will have a progress report, content summary, and meeting summary.
Graduate Appointments

Students with a stipend or fellowship from Ohio University will receive a graduate appointment. For those students that secure funding from outside of Ohio University, an appointment may be provided depending on funding arrangements. Please refer to the guidelines on the Graduate College website with any questions.

Program Requirements

The PhD program in TBS transcends the model of a traditional disciplinary program, creating a flexible student-learning environment with a curriculum focus on three main components:

- Translational core competencies.
- Specific, individualized, knowledge content.
- Research skills.

The flexibility in design allows for different combinations of potential coursework depending on the student’s prior education and experience. Additionally, the program combines formal educational activities such as case studies, problem-based learning in small groups, presentations, seminars, and laboratory group meetings, with informal gatherings between graduate students, scientists, and faculty with experience in interdisciplinary team research, which will provide key networking opportunities.

The coursework and related experiences throughout the PhD in the TBS program provide students from all backgrounds with the opportunity to acquire and refine the skills necessary for teamwork, leadership, and competitive success in the field of Translational Biomedical Sciences. Additionally, a deep knowledge within a specific cross-disciplinary study area will result in graduates who are experts in their field, with both depth and breadth of knowledge. Upon successful completion
of the TBS program, graduates will be able to take advantage of their unique traits to lead scientific teams, engage the community in the quest for better health, apply innovative and entrepreneurial approaches to the improvement of the health of their community, and to reduce inequality in the access to healthcare.

All students will be required to complete a minimum of ninety (90) credits in graduate work beyond their BS/BA degree and meet all established criteria for the award of a PhD from Ohio University. The path to complete the program will contain a series of defined milestones, which will be governed by the program rules as approved by the Steering Committee, and organized as follows:

- **Milestone 1** – Demonstration of acquisition of the core competencies for Translational Biomedical Sciences.
- **Milestone 2** – Demonstration of the ability to conduct independent research and to effectively communicate the results of said research.
- **Milestone 3** – Demonstration of an in-depth knowledge of the specific subject, and successful defense of a research project that constitutes an original scholarly contribution towards the advance of Translational Biomedical Sciences.

**Core Competencies in Translational Biomedical Sciences**

- **Conducting research.**
  - Use theories and methods of multiple disciplines in developing and applying integrated theoretical and research frameworks, under the guidance of the approved research mentor.
  - Integrate concepts and methods from multiple disciplines in designing and implementing interdisciplinary research protocols.
  - Investigate hypotheses through interdisciplinary research.
  - Draft research proposal based on the evidence (with optional budget).
TBS Student Handbook

- Disseminate interdisciplinary research results within and outside his or her discipline.
- Author publications with research mentor and scholars from other disciplines.

- Communication.
  - Advocate interdisciplinary research in developing initiatives within a substantive area of study.
  - Express respect for the perspectives of other disciplines.
  - Read journals outside his or her discipline.
  - Communicate regularly with research mentor and scholars from multiple disciplines.
  - Share research from their discipline in language meaningful to an interdisciplinary team.
  - Modify their own work or research agenda as a result of feedback from faculty and interactions with colleagues.
  - Present in an interdisciplinary research setting.

- Interacting with others.
  - Interact in training exercises with scholars from other disciplines.
  - Engage colleagues from other disciplines to gain their perspectives on research problems.
  - Attend scholarly presentations by members of other disciplines.
  - Collaborate respectfully and equitably with scholars from other disciplines to develop interdisciplinary research frameworks.
Core Coursework

Acquisition of these core competencies will be facilitated by the following courses (to a minimum of 18 credits), which are required of all TBS graduate students (with additional track courses and other courses as recommended by mentor):

- One course in Biostatistics and/or Epidemiology that involves practical data analytical skills (3 credits) (see specific options).
- One course in Bioethics that includes Responsible Conduct of Research or taking an additional separate course in Responsible Conduct of Research (3 credits).
- One course in Technical Writing (3 credits).
- One course in Tools for Translational Research, TBS 5720 (3 credits).
- One capstone course in Translational Competencies, TBS 6500 (3 credits).
- Two seminars in Translational Biomedical Sciences Career Development, TBS 6220 (2 credits).
  - Students in the TBS program are expected to attend this seminar every semester until graduation.

Elective Track Coursework

Based on the student’s selected track, framing the research focus, the student is required to take the required courses to strengthen knowledge and skills in the specific area of research.

**Biological and biochemical**

*Select four (4) courses from the following list:*

- Biochemistry - CHEM 5901 (4 credits) and/or CHEM 5902 (4 credits)
- Mechanisms of Gene Regulation - BIOS 5270 (3 credits)
- Principles of Endocrinology - BIOS 5500 (3 credits)
- Biological Pharmacology – BIOS 5100 (3 credits)
- Immunology and Lab - BIOS 5860-5865 (3 credits)
- Molecular Genetics - BIOS 5260 (3 credits)
- Human Neuroscience BIOS 5130 (3 credits)
- Molecular & Cellular Neuroscience BIOS 5140 (3 credits)
- Principles of Physiology BIOS 5420 (5 credits)
Physiology of Exercise BIOS 5450 (3 credits)
Molecular Biology - MCB 7200 (3 credits)
Advanced Cell Biology - MCB 7600 (3 credits)

**Musculoskeletal and neurological physiology**

Select four (4) courses from the following list, including one class on advanced statistics:
- BIOS 5130 Neuroscience (3 credits)
- PT 7510 Neural Basis of Movement (3 credits)
- EXPH 6600 Advanced Biomechanics (3 credits) OR ME 5670 Engineering Biomechanics of Human Motion (3 credits)
- PSY 6220 Physiological Psychology (3 credits)
- PSY 6310 - Cognitive Processes (3 credits)

Courses in Advanced Statistics:
- PSY 6111 Advanced Statistics (3 credits)
- PSY 6112 - Intro to Linear Regression Analysis (3 credits)
- PSY 7130 - Advanced Regression (3 credits)

**Social and behavioral**

Select at least one (1) course in each of the four (4) categories from the following list:

<table>
<thead>
<tr>
<th>Advanced Biostatistics</th>
<th>IHS 5303 Secondary data analysis (SAS) (4)</th>
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<tbody>
<tr>
<td></td>
<td>BIOS 8700: Biostats 2 (R) (3)</td>
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<tr>
<td></td>
<td>COMS 7520: Measurement preliminary analysis (4)</td>
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<tr>
<td></td>
<td>PBIO 5150 Statistical methods (4)</td>
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<td></td>
<td>PSY 5110 Statistics behavioral science I (SPSS) (4)</td>
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<tr>
<td></td>
<td>PSY 5111 Statistics behavioral science II (SPSS) (4)</td>
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<td></td>
<td>PSY 6111 Adv stats behavioral science (SPSS) (3)</td>
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<td></td>
<td>PSY 7170 Health statistics (SPSS) (3)</td>
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<td></td>
<td>AT 6322 Adv stats II athletic training (multivariate) (R) (4)</td>
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<tr>
<th>Research Methods</th>
<th>MPA 6020 Research methods leadership pub affairs (3)</th>
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<tr>
<td></td>
<td>MPA 5580 Public program evaluation (3)</td>
</tr>
<tr>
<td></td>
<td>PSY 6120 Advance research methods (3)</td>
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<tr>
<td></td>
<td>EDRE 7510 Qualitative interviewing methods (4)</td>
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<tr>
<td></td>
<td>EDRE 7530 Qualitative data analysis, theory, imp (4)</td>
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<tr>
<td></td>
<td>EDRE 7700 Intro mixed methods (4)</td>
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<tr>
<td></td>
<td>GEOG 5711 Qualitative methods (4)</td>
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<tr>
<td></td>
<td>MPA 6030 Qualitative research methods (3)</td>
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<tr>
<th>Population health</th>
<th>HLTH 6720 Social behavioral sciences public health (3)</th>
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<tr>
<td></td>
<td>HLTH 6791 Chronic disease epidemiology (3)</td>
</tr>
<tr>
<td></td>
<td>IHS 5210 Fundamentals of global health (3)</td>
</tr>
<tr>
<td></td>
<td>IHS 6210 Globalization and health (3)</td>
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</table>
**Health policy**

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>HLTH 6080</td>
<td>Health policy (3)</td>
</tr>
<tr>
<td>IHS 5301</td>
<td>Fundamental health policy: concepts (3)</td>
</tr>
<tr>
<td>IHS 5301</td>
<td>Health policy making process (3)</td>
</tr>
<tr>
<td>IHS 5302</td>
<td>Health policy: current issues, trends, emerging (3)</td>
</tr>
<tr>
<td>MPA 5850</td>
<td>Policy analysis leadership public affairs (3)</td>
</tr>
<tr>
<td>NRSE 7803</td>
<td>Health policy (3)</td>
</tr>
</tbody>
</table>

**Biomedical Engineering**

Students must select at least two (2) courses from the following course offerings. If students have taken one or two classes from this list previously, they may substitute one or two graduate-level courses in their research focus area to meet this requirement. In addition, in consultation with their committee, students must complete at least four (4) additional hours of graduate-level courses in their research focus area.

[Link to courses](#)
Demonstration of the Ability to Conduct Independent Research and to Communicate Effectively the Results of that Work.

Following satisfactory completion of the competency requirements, students in the TBS program are expected to demonstrate the ability to conduct independent research and to effectively communicate research results. This is part of the process for admission to candidacy in the TBS doctoral program and fulfills the qualifying examination requirement.

As early as the first semester of graduate study, a student in the TBS program must begin to engage in research under the supervision of a TBS graduate faculty and register for credit hours of TBS 6940: Independent Research. Students will present in public the results for their independent research project, followed by a defense-style exam with three TBS faculty members. The examiners will meet with the candidate in closed session and probe for evidence of research creativity, formal thinking, and rigor. The Examination Committee will determine in advance the scope of the questions, and they will address not only the research presented, but also background and related material, to assess both depth and breadth of knowledge.

Doctoral Dissertation

After admission to candidacy, the student will formally select two mentors from different disciplines and form a doctoral advisory committee. In concert with this doctoral advisory committee, the student will define the dissertation topic and prepare a written research proposal in the format of (or substantially equivalent to) an NSF or NIH fellowship application. The doctoral advisory committee must approve this proposal and will be charged with determining the appropriate elective course work, that is, the content knowledge in support of the dissertation research.
General Instructions

Please read these instructions carefully. If you have any questions, contact your advisor or the faculty director prior to completing this form.

- The purpose of this form is to design a plan of study that will support your doctoral work.
  - Planning ahead allows you to anticipate course scheduling issues (such as irregular course offerings) and balance your workload.
  - Include a one-page description, in broad terms, of the scientific question you anticipate addressing with your dissertation, specifying the methodology required.

- This coursework planning form should be filled out in consultation with your initial mentoring committee and submitted for approval to the TBS Steering Committee before the end of the first spring semester in the program.

- Post-baccalaureate credits (i.e., all credits taken after completion of the bachelor’s degree) taken towards a master’s or doctoral degree, either at Ohio University or at another institution, may be recognized and may result in having to take fewer credits at Ohio University to complete the PhD.
  - Those courses must be appropriate to the doctoral degree being pursued and must have been taken at the graduate level (see specific conditions described in the Graduate Catalog).

- Prior coursework (including that which was part of an earned master’s degree) can be considered towards achievement of particular knowledge content, even if it does not count towards credit numbers.
TBS Student Handbook

- Enter those courses under Electives.

- Remember that if the courses listed were taken over six (6) years ago, the program will require that the student presents evidence of competency with the academic material.

- In all cases, the program will determine the acceptability of the course, based on the academic discipline, the number and nature of the courses previously taken, and the tendency of the academic discipline to be sensitive to recent changes.
3.3. Demonstration of the Ability to Conduct Independent Research and to Communicate Effectively the Results of Said Work

As early as the first semester of graduate study, TBS program students must begin to engage in research under the supervision of a TBS graduate faculty member and register for Independent Research credit hours. During this time, the student will interact with TBS faculty open to accepting TBS students into their established, collaborative interdisciplinary research programs. Students will be exposed to potential areas of study through the faculty presentations as part of the TBS Career Development seminar.

Following satisfactory completion of the competency requirements, students in the TBS program are expected to demonstrate the ability to conduct independent research and to effectively communicate research results. This is part of the process for admission to candidacy in the TBS doctoral program. There are two ways of demonstrating these abilities. Most frequently, students will present in public the results of their independent research project, followed by a defense-style exam. In case of unsatisfactory performance, the student may make a second attempt by the end of the fourth semester of study.

Another way to demonstrate research ability is to have significant participation in the design, data gathering, and writing of a peer-reviewed manuscript accepted for publication. Students who are authors or co-authors of such a paper, or major contributors to a well-known, refereed conference, and have given an officially announced talk in the TBS Career Development seminar, may apply to the Steering Committee for a waiver of the exam.
Qualifying Exam

To qualify for doctoral status, students must register for and pass the qualifying exam (Milestone 2). Only under extenuating circumstances, extensive need for remediation courses, or substantial language difficulties, will the TBS Steering Committee grant permission to defer the exam beyond the second year in the program. For each student, the TBS Steering Committee will appoint an examining committee consisting of the student’s mentors, two TBS Steering Committee members, and the TBS Faculty Director, who will coordinate the written and oral examination.

By the deadline specified by the Steering Committee (at least two (2) weeks before the presentation), the student must submit a written project report to the three members of the exam committee and schedule a time for a presentation. First, the student needs to demonstrate research ability and satisfactory written communication skills, as well as playing a significant role in the design, data gathering, and writing of either a manuscript sufficient for journal publication or a lengthy NIH/NSF style research proposal with preliminary data gathered by the student. Secondly, the student must also present the results of the independent research project, followed by a defense-style exam. Examples of previous Milestone 2 research projects can be obtained through the faculty director and program administrator.

The presentation will be public, will address both completed and future dissertation work, and must be attended by the three (3) examiners and mentors. Following the presentation and questions from the public, the examiners will meet with the candidate in closed session and probe for evidence of research creativity, formal thinking, and academic rigor. The Examination Committee will determine in advance the scope of the questions, and they will address not only the research presented, but also background and related material, to assess both breadth and depth of knowledge.

The outcome of the qualifying examination will be decided by the Examination Committee and reported in writing to the Steering Committee, who will vote on admission to PhD candidacy. This
decision will be based on the recommendations of the Examination Committee as well as consideration of the student’s academic record and performance in all aspects of the TBS program. If a student is not admitted, the members of the Examination Committee may direct or advise the student to make another presentation or request a second attempt at the exam.

A student who fails the qualifying exam two (2) times will be required to leave the program. A terminal masters’ degree will be awarded to students that have made a significant research contribution but are unable to complete the doctoral program at this point, or any point after Milestone 2. The student may appeal the decision to the Dean of the Graduate College, following the university’s established policies and procedures.
Mission

The DAC has three main missions:

- The DAC is a scientific advisory committee that will provide expert advice on all aspects of the dissertation, extending from experimental paradigms to project feasibility within the timeframe of the PhD work to the scientific impact of the work.
- The DAC will help monitor student progress to ensure that the major objectives and standards (discussed below) for completing a PhD dissertation are being met promptly.
  - In this capacity, the DAC determines whether the student’s research meets the requirements of the program, and when the student may begin drafting the dissertation.
  - In addition to evaluating completed experiments and manuscripts, progress will also be considered with respect to maturity in scientific judgement.
- The DAC will help resolve any conflict between the student and advisors or other lab members.

Notes on Forming a DAC

Translational Biomedical Sciences requires that the DAC have at least five members – two (2) mentors, one (1) moderator, one (1) representative of the Dean’s office, and one (1) additional member from outside of Ohio University. If the fifth member is from outside the university, their CV must be included with the DAC proposal form, and they must be approved by the TBS Steering Committee and the Dean of the Graduate College. All university faculty members on a student’s committee should become TBS graduate faculty.
It is suggested that the student choose committee members who are generally accessible and with whom they would feel comfortable consulting in an informal setting. Students should consult with their dissertation co-mentors about possible DAC members early in the program. Students should choose a DAC able to serve for the duration of their dissertation, regardless of changes in the scientific direction of the project. If a DAC member is unable to continue to serve on a student’s DAC, or if the scientific direction of the dissertation project changes, DAC members may be replaced – or additional members added – at the discretion of the student and co-mentors, and with the prior approval of the TBS Steering Committee.

Policy on Conflict(s) of Interest: Mentors’ Obligations to Students & Trainees in Industry Sponsored Research

The following should be discussed at the beginning of the first DAC meeting, if applicable. Should concerns arise, please bring them to the attention of the TBS Program office.

- Trainees must always be encouraged to conduct research in areas that optimize their training.
  - Particular care must be taken to assure that a trainee’s research is not designed to (and does not appear to) enhance their mentors’ fiscal interests and is not adversely affected by that interest or by contractual aspects of the sponsored research agreement that inhibit scientific communications or that commit intellectual property rights to the industry sponsor.
- Before embarking on a research project, a trainee must be provided by their mentor(s) with a clear description of any
  - Corporate support of the research to be undertaken.
  - Personal financial interest in a sponsoring business by their mentor(s).
  - Restrictions that might be imposed on the scientific communication of the data.
• Written approval must be obtained before a trainee can be assigned to conduct research which is sponsored by a business, or which involves technology to which the business has license rights, and in which the mentor(s) hold(s) a financial interest.
  - In the case of TBS graduate students, permission must be given by the TBS Steering Committee, after consultation with the Dean of the Graduate College as needed.
• A trainee may appeal their involvement in any industry sponsored research or research which involves technology to which a business has license rights when the trainee believes that they are being adversely affected by any conflict of interest (real or apparent) resulting from their mentor(s)’s relations with the sponsoring business or any business which may benefit from the trainee’s research or from the sponsored research agreement.
  - The appeal should be made to the TBS Steering Committee and moved to the Dean of the Graduate College if needed.

The DAC Moderator

The DAC has a key role in charting and facilitating the progress of students in the program. The DAC Moderator is responsible for making sure that the views of the DAC are effectively communicated to the student and that any major concerns of the DAC are effectively communicated to the TBS program. The DAC Moderators are also expected to guide DAC members in TBS policies and standards of practice for advising [FIND AND INSERT LINK].

Because of the importance of the moderator in overseeing the DAC and maintaining consistent DAC process, all DAC Moderators should have prior experience as members of at least one DAC and must be a member of the TBS faculty. The faculty member serving as DAC Moderator will be appointed prior to the first official DAC meeting so that moderator responsibilities can be assumed. The DAC Moderator will be chosen from the student’s committee, excluding the co-mentors.
Representative of the Dean of the Graduate College

The dean’s representative will be appointed by the Dean of the Graduate College, with recommendations from the TBS Steering Committee. The dean’s representative should be outside of the primary mentor’s college, but they can be a TBS graduate faculty member.

Although adherence to policy is the concern of all DAC members, it is the special responsibility of the dean’s representative to represent the Graduate College and the university to ensure that all policies and procedures of the TBS program and Graduate College are followed. In particular, the dean’s representative will provide impartial oversight for the DAC and should:

- Ensure fair, equitable, and reasonable expectations and treatment of the student by the DAC.
- Maintain TBS program rigor by ensuring that the student’s dissertation work is progressing and is at an appropriate graduate level.
- If the dean’s representative does not feel the DAC is maintaining appropriate standards, these concerns should be conveyed to the Graduate College.

The dean’s representative will serve as a regular member of the student’s DAC from the time it is first convened and must be present for the full dissertation defense and serve to adjudicate the defense. Upon recommendation of the dean’s representative, the Dean of the Graduate College may rule an oral examination to be invalid.

Setting Up DAC Meetings

To ensure consistency and timeliness, regular DAC meetings will be scheduled by the TBS Program Manager. However, additional meetings can be set up by the student, the co-mentors, or the DAC Moderator as needed.

The initial DAC meeting must be held within four (4) months of completing Milestone 2. Students will work with the Program Manager to start the process of scheduling this meeting as soon as possible, given the complexities and time often required to establish a working date for all involved.
Subsequent DAC meetings will be held every six (6) months, and in some cases more frequently depending on DAC recommendations.

Content of DAC Meetings

Initial DAC Meeting Report

The student write-up for the initial DAC meeting takes the form of a grant proposal in which a biomedical question is proposed for in-depth investigation. The Milestone 2 project can serve as a starting point for this document, but it is not expected that the aims of the DAC meeting write-up will necessarily be the same as those laid out in the Milestone 2 presentation. It is also anticipated that the content and focus of the dissertation may change over the course of the research process. The initial DAC meeting write-up is expected to be a substantial document (but no longer than 15 pages excluding figures) and should be structured as follows:

- Specific Aims – the direction in which the dissertation research will go.
  - 1-2 pages.
- Background & Significance – a concise review of scientific literature relevant to the proposal, with emphasis on critical knowledge gaps likely to be filled, at least in part, by the proposed dissertation research.
  - 3 pages.
- Preliminary Results – data that is directly relevant to the proposal, including data generated by the student (although in many cases the student will not yet have generated substantial data) and by other members of the research group; it is anticipated that this may be an exploratory period.
  - 2-5 pages.
- Research Methods – describe the proposed methods of research by aim, including how the data will be interpreted and possible pitfalls and alternative approaches.
Subsequent DAC Meetings & Progress Reports

For each subsequent DAC meeting, the research progress report prepared by the student should not exceed three (3) pages (excluding figures) and should consist of:

- **Specific Aims** – if the aims of the original DAC meeting write up have changed, the revised aims and the reasoning behind the modifications should be presented.

- **Studies & Results** – the studies directed toward specific aims and the positive/negative results obtained should be presented, as well as any technical problems encountered and how they were addressed.

- **Significance** – a brief discussion of the significance to the scientific field of the findings.

- **Plans** – a summary of plans to address the remaining specific aims of the dissertation research, including any important modifications to the original plans.
  
    - If major changes in dissertation aims happen, submit a longer document.
    
    - In all cases, the initial DAC write-up should be appended to the progress report upon distribution to DAC members prior to the meeting.

Beginning in year four (4) of graduate studies, in addition to the research progress report, the student should prepare a brief (one (1) page) draft conceptualizing how current directions might be compiled into dissertation chapters. This outline might take the form of possible titles for chapters in the dissertation, and the hypothesis, questions, or technical developments likely to be addressed. For example, a dissertation often contains chapters structured as follows:

- **Chapter 1** – an introduction, giving a brief review of the scientific literature relevant to the proposal, with a clear description of the overall hypothesis being tested in the dissertation.

- **Chapter 2** – a presentation of a question or hypothesis being tested and its relationship to the dissertation's overall hypothesis.
TBS Student Handbook

- Chapter 3 – as appropriate, additional data chapters should be included.
- Chapter 4 (or higher) – a discussion that summarizes accomplishments and significance of findings.
- Appendix – methods and findings that are somewhat peripheral to the main thesis, but which nonetheless deserve representation within the dissertation as a whole and which can benefit the student and the lab by having this material organized in one easily accessible document.

Organization of the DAC Meeting

- Student leaves the room.
  - To provide the DAC members an opportunity to communicate on a confidential basis, the meeting will start with the student leaving the room.
    - In the absence of the student, the co-mentors will have a chance to present their assessment of the student’s progress and whether the student is on course to graduate in a timely manner.
    - The student may communicate their own assessment of their progress and whether their co-mentors and the research group environment have provided the support that they needed.
      - This may happen at any point, either openly during the meeting or privately to the DAC Moderator or the Faculty Director (see also Graduate College Handbook).

- Student presentation.
  - The bulk of the meeting (20-40 minutes) will consist of a presentation by the student of their research results and plans.
  - Committee members will typically interrupt the presentation with questions, and the presentation is followed by a discussion of progress and future plans.
• The co-mentors should interject minimally to allow the student the opportunity to demonstrate mastery of the field and scientific maturity surrounding ongoing and future work.

• Assessment of progress.

• The student’s progress will be assessed by the DAC in several areas:
  • Progress on a line (or multiple lines) of experimentation having potential to lead to one or more first-author publications.
  • Development of an ability to think independently, including the development of hypotheses, practical approaches for testing hypotheses, critical interpretation of data, understanding relevance of results considering current thinking in the field, and judging how to objectively pursue the line of investigation.
  • The development of the student’s capabilities in scientific writing.
  • The student’s ability to understand and analyze scientific literature relevant to their field of investigation.

• Note that it is helpful to the student that scientific maturity and independence are discussed as these are often areas in which students excel yet are not always able to reflect appropriately in their manuscripts.
Overall Timeline and Benchmarks

The dissertation proposal should be crafted with the goal of completing all the work required for a PhD within five years. This takes planning and careful evaluation of the main aims of the project. We realize that progress is unpredictable and sometimes the most fruitful approaches are also the most challenging and take longer to bear fruit. Thus, exceptions are anticipated. Below is a general timeline of the dissertation process.

Year One (1)

- Complete all required coursework (Milestone 1).
- Define the broad scope of the overall PhD work.

Year Two (2)

- Complete additional elective coursework.
- Complete Milestone 2 requirements.
- Have a clear plan for a dissertation project presented at the first DAC meeting (late summer or early fall of year three (3)).
  - It is understood that plans will evolve over the course of the dissertation, especially given that creativity is highly encouraged yet often comes with risk and, often, delays.

Year Three (3)

- Have unambiguous evidence of progress toward meeting the goals of the dissertation proposal.
- A preliminary list of potential dissertation chapter titles is encouraged to start thinking about the overall dissertation hypothesis and the diverse ways the evolving work could be packaged as a dissertation.
Year Four (4)

- Solidify directions as relates to dissertation chapters, which should include a body of work that will form the basis of one (1) or two (2) first author, peer-reviewed, primary research papers.
- While publication is not a degree requirement, bringing a body of work through to publication is an important skill to learn, thus we encourage that a plan for possible first author publication(s) begin to be discussed at DAC meetings even as early as Year Three (3).

Year Five (5) and Beyond

- Continue filling in the outline of the dissertation with data and discussion.
- Continue discussions as relates to plans for publication(s).
- Because bringing a story to closure in the form of a publication is an important skill to learn, we encourage manuscript submission prior to the PhD defense.
- Please know that we strongly encourage creativity and realize that it is often accompanied by longer timelines.
Requirements for Granting the PhD in Translational Biomedical Sciences

TBS requires that each student complete a body of primary research of publishable quality. While we do not require a first-author research paper for degree attainment, we hope that the vast majority of graduating students will have at least one (1) publishable first author, peer-reviewed, primary research paper submitted by or largely completed prior to graduation. In addition to evaluating completed experiments and manuscripts, readiness to graduate will also be considered with respect to maturity and independence in scientific judgement – there are indeed cases where maturity outpaces publications, and this should be acknowledged positively and considered.

When the DAC agrees that the student has met the requirements for earning a PhD and is ready to begin drafting their dissertation, the committee will indicate this fact on the student’s DAC meeting report. The student’s dissertation defense must take place within three (3) to six (6) months of the date on which the decision was made; to delay the defense beyond this time requires that the student petition the TBS Steering Committee for permission.
Attributions to the Dissertation

While the student does all the work for the dissertation in some cases, often portions of the dissertation result from collaborative research. In all dissertations containing collaborative results, the dissertations should indicate concisely who contributed to the work. For example, a chapter containing multi-authored, published work must include a complete reference and a brief description of the candidate and their colleague(s)’s contributions. For work that is not published but which resulted from multiple researchers, the contributors must be named, and respective attributions made clearly. This policy allows stylistic flexibility – depending on the amount of collaborative work in the dissertation, and the status of the publication(s), the attributions can be together at the end of either the Acknowledgements or Introduction sections of the dissertation, or before each relevant chapter. It is permissible for more than one student to include work from the same collaboration(s) or publication(s) as long as the required attributions are clear, justified, and complete.
Dissertation & Graduation Requirements

The TBS Program has two degree granting pathways: a master’s degree and a doctorate degree. We do not recruit or admit students to the master’s program, but it may be used by doctoral students who do not feel they will be able to complete the requirements for a PhD.

Masters

The TBS master’s is not considered a thesis degree. It requires completion of Milestones 1 and 2. The student will need to be registered for at least one credit in their final semester and apply for graduation on time.

PhD

Students who plan to obtain a TBS doctoral degree must follow the dissertation guidelines set by Ohio University’s Thesis and Dissertation Services (TAD). Please refer to their website for deadlines, checklists, and required forms. They update these frequently, so make sure you are working with the most current information. Please work closely with the TBS Program administrator and your mentors to ensure you will complete all paperwork on time.
TBS Student Exit Survey

1. Name (please also provide your name at the time you were in the program if it has changed)
2. Permanent Mailing address
3. Permanent (non-Ohio University) Email
4. Phone number
5. Year of Graduation
6. Are you currently employed or have you been offered a position related to your field of study?
   a. Yes
   b. Employed, but not in field of study
   c. Not employed
7. If yes, what type of institution?
   a. Academic
   b. Industry
   c. Government
   d. Other (fill in text): _________________
8. What type of position?
   a. Post-doc
   b. Research scientist/technical
   c. Research faculty, non-tenure track
   d. Instructional faculty, non-tenure track
   e. Tenure track faculty
   f. Science Policy
   g. Science writer/editor
   h. Other (fill in text)
9. Briefly describe your new position
10. Please indicate for each competency listed below, how effective the TBS program was in helping you develop those skills (very effective, effective, somewhat effective, not effective)
    a. Think analytically
    b. Apply major field knowledge to new problems
    c. Acquire new skills and understanding on my own
    d. Write well
    e. Create and make oral presentations
    f. Evaluate and choose between alternative courses of action
    g. Understand and address ethical issues relating to experimentation, science issues and working as a scientist
    h. Organize and supervise the work of others
    i. Work in a team setting
11. Please list any other competencies you developed while in the program, which you consider important for your professional career.
12. Which of the required course(s) listed above did you find the most useful and why?
13. Which course(s) did you find the least useful and why?
14. Are there any subjects/courses you wish you had taken, but didn’t and why?
15. What do you feel are the strengths of the TBS Program?
16. What do you feel are the weaknesses of the TBS program?
17. How well do you feel you were supported for your research? (Very well supported, supported, neutral, not supported, very dissatisfied)
   a. By the University
   b. By the Graduate College
   c. By the TBS program
   d. By your mentor(s)

18. What research equipment or resources were lacking/inadequate to support your research?

19. How satisfied were you with your educational experience in the TBS program?
   a. Extremely satisfied
   b. Somewhat satisfied
   c. Neither satisfied nor dissatisfied
   d. Somewhat dissatisfied
   e. Extremely dissatisfied

20. Do you have any additional comments?