

# Graduate Student Handbook School of Biomedical Sciences

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## Table of Contents

Background: Organization of the School and Programs.....	2
Application Procedures.....	2
Admissions Procedures and Requirements.....	2
Financial Aid: Policies, Awards and Requirements.....	3
Orientation: Activities, Procedures, FLASHcards and Flashline.....	3
Advising: Lab Rotations and Advisor Appointment.....	4
Program Requirements:.....	5
Courses and Grades.....	5
Outline of PhD and MS Requirements.....	6
Program of Study.....	6
Candidacy Exam.....	6
Prospectus.....	8
Publications.....	8
Dissertation.....	8
Thesis (MS).....	9
Time to Completion.....	9
Service Commitments.....	10
Vacations, Leaves and Dismissals.....	10
Grievances.....	10
Academic Integrity: Cheating and Plagiarism.....	11
Transportation.....	11
Campus and Local Environments.....	11
Career Development.....	12
Helpful Hints.....	13

## Background

The School of Biomedical Sciences supports a graduate program dedicated to training researchers and educators involved in all areas of the basic sciences related to biomedicine. This inter-institutional, interdepartmental organization includes more than 100 graduate faculty, whose primary appointments are at Kent State University (KSU), the Northeastern Ohio Medical University (NEOMED), the Lerner Research Institute (LRI) of the Cleveland Clinic (CC), the University of Akron (UA) and Youngstown State University (YSU). Approximately 80 graduate students join these faculty in five program areas: Biological Anthropology, Cell and Molecular Biology, Neuroscience, Pharmacology and Physiology. Our students are expected to excel in all areas of the graduate experience, including course work, teaching and research. The following student handbook details these expectations, as well as procedures involved in obtaining the graduate degree.

## Application

Prospective students must apply to one of the five Program Areas listed above. In addition, those interested in the Cleveland Clinic program should make note of that in the *Statement of Purpose* portion of the application. The procedures to apply for graduate student status in the School of Biomedical Sciences are detailed under the link **Apply Now** found on the opening page of the School's web site, which is located at [www.kent.edu/biomedical](http://www.kent.edu/biomedical). Applications must include 1) official copies of all post-secondary school transcripts, 2) scores from the general GRE test, 3) a Statement of Purpose and 4) three letters of recommendation. International students who have not earned a higher degree in the U.S. or other English-speaking country must have a minimum score of 100 on the iBT TOEFL exam, or 7 on the IELTS as evidence of proficiency in English. Applications must be received before the December 15<sup>th</sup> deadline for international students and the January 1<sup>st</sup> deadline for domestic students.

## Admission

Applicants must have an undergraduate grade point average (GPA) of at least 3.0 on a 4 points scale. However, meeting this minimum is not sufficient for admission. Our programs are competitive and fewer than 15% of applicants are offered admission to the program. Competitive applications average a GPA of around 3.5, with GRE scores in the 60<sup>th</sup> percentile or above, strong letters of recommendation, and research experience either as undergraduates, masters students, or on the job. The deadline for applying is December 15<sup>th</sup> for international students and January 1<sup>st</sup> for domestic students. Completed applications are reviewed by each program's admission committee. All applications are rank-ordered and decisions are made for the following Fall semester. There is no admission during the spring or summer semesters. Positive admission decision letters are sent to prospective students, along with offers of graduate assistantships. Other information pertinent to the contract being established is also included in the offer letter.

## **Financial Aid**

As of Academic Year (AY) 2015/16, graduate assistantship stipends are \$22,000/yr. This amount increases to \$23,000 for Ph.D. students following successful completion of the Candidacy Exam. Please note that all stipends are for 12 months. Students are expected to participate in graduate education, teaching and research throughout the year, including summers. Being awarded a stipend involves a service commitment as described below. Also, be aware that supported students must not engage in any other work for pay without the written consent of the Director of the School and the Dean of the Graduate School. Financial aid also includes full tuition remission for supported students. In addition, the School subsidizes students enrolled in the student health insurance plan by covering approximately 70% of the cost. Finally, all registered students have free access to the Student Recreation and Wellness Center. Upon arrival on campus, all funded students must complete paperwork in order to receive a paycheck. Contact Judy Wearden at [jwearden@kent.edu](mailto:jwearden@kent.edu) to arrange to complete these forms. US citizens or permanent residents will need to present a Passport or Social Security card, along with a current Driver's license or State ID. International students must provide an I-9 form (eligibility to work in the US), which has been verified by the Office of Global Education in Van Campen Hall. In addition, international students must complete a Tax Withholding form in the Payroll Office, located in the Michael Schwartz Center. In all cases, Direct Deposit of pay must be arranged through the Payroll Office, or on line through Kent State's web portal, Flashline.

Please be aware that failure to perform any required duties at acceptable levels will result in the termination of funding, regardless of the source of that support. All students are evaluated on an annual basis in order to determine if funding is to be continued for the coming year. Also be aware that funding is normally limited to 5 years of assistantship support. Those who have not completed their studies in the allotted time may remain in the program, but they will not receive financial support unless there are extenuating circumstances. Any student not making substantial progress towards the completion of their degrees may be dismissed, regardless of the funding situation.

## **Orientation**

There are a variety of orientation events for incoming graduate students. Many of these are organized under Graduate Student Orientation (GSO). This begins the week before fall semester classes. Incoming students will receive information on the when and where of these events directly from the Graduate Studies Office well before the orientation begins. Incoming students must keep that week free for orientation activities. In addition, international students will meet with GSO officials the weekend prior to the general orientation. Again, these students must keep those times free, in order to attend. Incoming students may direct questions about these orientation activities to the organizer, Dr. Kate McAnulty, Assistant Dean Graduate Studies at [kmcanult@kent.edu](mailto:kmcanult@kent.edu).

The Director of the School of Biomedical Sciences meets with incoming students during orientation week. In addition, the Director will meet individually with each new student as needed to advise them and answer any questions they may have. Each student must access Flashline as soon as possible after receiving a Letter of Admission. Flashline is the University portal to connect with the graduate catalog and

course schedules. It is also used to register for courses each semester, apply for parking permits, obtain information on financial aid and receive notifications on campus-wide items of interest. In order to use Flashline, each student must click on "Get User Name and Login Help" under the word Flashline, which may be found on the University's opening web page. Open "I'm new to Kent State" and follow the instructions to get started. Help in establishing a Flashline account can be obtained at the Help Desk at 2-4357, or online at support.kent.edu. Students must retain: user name, email address and Kent State ID number, in order to maintain communications with the University.

The FLASHcard is the official University ID and is required for all BMS students. New students must take identification with them to the FLASHcard Office located on the first floor of the Student Center, in order to be issued a card. These cards are used for many things on campus, including using the Wellness Center, checking out library materials and obtaining the 10% discount provided to students at the University Bookstore.

Please keep in mind that the email accounts issued to all students, faculty and staff are used for all official University business. All students, faculty and staff must use their University provided email accounts. All information disseminated to BMS students is through their kent.edu e-mail addresses.

Parking permits are available to BMS students for a fee. The faculty/staff permit is the most convenient. However, it is more expensive than the student permit. You may purchase a permit through Flashline and have the fee deducted directly from your paycheck.

## **Advising**

New incoming graduate students consult with the Director of the School regarding their courses for the first semester. Prior to the start of the semester, admitted students are provided a list of graduate faculty interested in advising graduate students. Students can read their research descriptions and identify those that interest them. The Director can assist in this process. Ph.D. students will then do three laboratory rotations during the first year, in order to find the best match between student and advisor. The first rotation will be determined before or at the start of the first semester. Faculty interested in advising students may provide brief presentations on their work during the fall semester seminar series to help students with subsequent rotation selection and to familiarize students with the different types of research going on in the program. Students may contact potential advisors, but they must get the approval of the Director, prior to starting a rotation in that faculty member's lab. An approval form must be signed by the advisor and the Director prior to commencing each of the rotations.

Each of the three lab rotations are expected to last approximately half a semester. Students must send an evaluation of the experience to the Director, immediately upon completion of the rotation. The evaluation form is found on the web site. In addition, the rotation advisor will provide the Director with a brief description of the student's efforts during that rotation.

Each student must complete a summary form, following the third rotation. This form is also found on the web site and must include a rank-ordered list of potential advisors. Both the students' summaries and the faculty evaluations will be used during

the spring semester to match students with the most appropriate advisor. While it is hoped that each student will be placed with her/his first choice, this might not always be possible, due to financial constraints. Any student who applies to our program with the expressed desire to work with a specific faculty member may not be required to complete all three rotations. The same is true for students who are admitted to the program with funding through a specific faculty member.

Students are expected to engage fully in the research experience during each rotation. Students should read the advisors' publications, examine grant proposals, master lab methodologies and become familiar with the questions each faculty member seeks to answer. Students should attend lab meetings and interact with other lab members, as well as the advisor. Whether or not students fully engage in these processes will be obvious from the evaluations written by the students and the advisors. M.S. students will work with the Director to find an advisor before or at the start of the fall semester, based on their interests. M.S. students do not do formal laboratory rotations.

Although it is rare for a student to change advisors following the above selection process, it can be done. Students or faculty wishing to terminate the advising relationship must first discuss this with the Director. The Director will then bring the issue to the School's Executive Committee, if no simple resolution can be found. The Committee will then direct the student to an appropriate advisor. However, be aware that any student who cannot identify a willing advisor is subject to dismissal. Although a student who does not find a suitable advisor following three rotations may be allowed to add a rotation, the inability to find an advisor by the end of the Summer, or after a reasonable length of time in program, will lead to dismissal.

### **Program Requirements**

All funded students must register for at least 8 credits in fall and spring semesters and 6 credits in summer semesters, in order to be full-time and, therefore, receive a stipend. Failure to maintain those credit levels may result in cancellation of financial support. Although the school administration checks on registration, it is the student's responsibility to make sure that they are properly registered by the start of each semester.

All BMS students are required to take a set of core courses. These are Introduction to Biomedical Sciences, Responsible Conduct of Research, and one from a choice of statistics courses. The course numbers and the course options may be found under course work on our web site. Similarly, each program area stipulates core courses and electives, which may be found on the web site. Course substitutions must be approved by the Director.

Students must maintain a GPA > 3.0. Failure to do so may result in dismissal from the program, since a GPA > 3.0 is required to graduate. In addition, students must accumulate no more than four credit hours of C grades or worse, or seven hours of B-grades or worse.

Shortly after each student is matched with an advisor, she/he must form a Guidance Committee. This Committee consists of the advisor plus two graduate faculty members in the student's program area. The choices are made by the student with input

from the advisor. It is best to select members with some interest in the area of research, because they are likely to be more useful as the student progresses.

The requirements that must be completed, in order to earn a doctorate are:

- Course work, including 20 credits of graded courses, with GPA > 3.0
- Program of Study
- Candidacy Exam
- Prospectus
- Publications
- Dissertation

The requirements for MS students are:

- Course work, including 20 credits of graded courses, with GPA > 3.0
- Program of Study
- Thesis Topic Approval
- Thesis

The program requirements that need to be met are explained below:

#### *Program of Study:*

The Program of Study form is two pages and is available for downloading from our web site, along with an example. The information submitted includes the courses the student has taken, or plans to take, at the graduate level. It also includes the make-up of the student's Guidance Committee and the organization and timing of the Candidacy Exam. This form should be completed during the third academic semester, with signed approval of the student's Guidance Committee. This committee consists of the student's advisor and two other graduate faculty from that Program Area. For example, a student in the Neuroscience program will need to have an advisor in that area, as well as two other faculty members with graduate appointments in that area. 6 The Program of Study is used to: 1) determine the adequacy of the student's coursework, including the completion of 20 credits of graded courses, 2) establish the make-up of the student's Candidacy Exam and 3) estimate completion times for the various exams and defenses. The Guidance Committee must agree on the student's course work and the arrangement of the Candidacy Exam. The procedures for this exam are described below. Once the Program of Study is completed and signed, it is delivered to the School office for the approval of the Director and placement in the student's file.

#### *Candidacy Exam:*

The candidacy (or qualifying) exam can be completed in one of two fashions:

##### Option one:

- The written portion of the exam will consist of a grant proposal written by the student, with no input from faculty members. The format of the proposal will be the NIH NRSA fellowship or other common fellowship format. If the NIH format is used, it will consist of three parts, the Specific Aims (1 page max), the Research Strategy (6 pages max, includes Significance and Background and Approach), and Literature Cited.

- The topic of the proposal may NOT be the student's area of research, but may be in a related field. For example, if the student were studying the role of serotonin receptors in regulating feeding behavior, they could write their proposal on some other aspect of serotonin function, or some other aspect of feeding behavior regulation.
- The student and the committee will meet 6-8 weeks prior to the due date of the candidacy exam to have a preliminary discussion of potential topics. The student will then look into these topics and report back to the committee (can be via e-mail) on the topic they have selected. The committee members must then approve the topic. The student should have approximately 5 weeks to write the proposal.
- The committee will then evaluate the proposal to judge the student's knowledge of the background material and the logic of the scientific approach. If they are satisfied, the exam will proceed to the oral portion of the exam, in which the committee members can ask questions about the proposal or background material to ascertain the student's depth of knowledge on the topic, and ability to justify his/her experimental approaches.
- If the written proposal is judged to be unacceptable, then the student may be given a second chance, at the discretion of the advisory committee.
- As before, students will be assigned a grade of either Pass, Fail, or Conditional Pass. Conditional Pass should be used infrequently and only in special circumstances.

Option two:

The written portion of is divided into three parts: the Major, Minor I and Minor II. The questions for each portion are conceived by the Guidance Committee member assigned that section, as shown on the Program of Study form. The committee members suggest readings for the student related to each section. The readings for the Major should provide information more general to the Program Area. For example, a student in Cellular and Molecular Biology might be assigned chapters from text books previously used in graduate courses. Readings for Minor I should be more related to the student's future area of research, while those for Minor II should be closely aligned with the student's research. This section is normally handled by the student's advisor. The written portion must be taken within a one week period. Testing for the Major should be tailored to be completed within eight hours, while the questions for Minor I and Minor II should require approximately four hours each to complete. An example of the labeling of the sections might be: Major – Neuroscience, Minor I – Neurochemistry and Minor II – Neurodegeneration.

The written portion of the exam can be graded as pass, fail or conditional pass. With a conditional pass, the committee assigns further conditions that must be met by the student, in order to pass the exam. For example, they may provide more material and follow-up questions, or they may require more study by the student, followed by questioning similar to the original exam. In the case of a failing grade, the committee members may allow the student to retake the exam, or they may recommend the student not be allowed to pursue a doctoral degree.

The oral portion of the candidacy exam should be held as soon as possible following successful completion of the written portion. Most commonly, committee members ask for more detailed answers to questions previously posed on the written part. The oral portion may be done by teleconferencing, or conference calls, if the distance between committee members is a problem. Still, an in-person oral defense is

preferred. Should the student fail this portion, another opportunity to succeed may be offered, or they may be failed for the Candidacy Exam, which leads to dismissal from the doctoral program.

*Prospectus:*

The Prospectus is a brief document in which the student describes the work that they plan to do to complete their dissertation. Preliminary data may be included if available. The purpose of the prospectus is to allow a student's committee to give feedback on the research plan and ascertain that the student understands what it is that he or she is proposing. From the student's perspective, approval of the Prospectus provides an indication that if they complete the proposed work their committee will find it sufficient for their dissertation.

The Prospectus should be prepared similar to the research narrative portion of a grant proposal. The format involves specific aims, a research strategy, which includes the significance of the proposed research, as well as potential innovations, the approach to be used, preliminary data and references. **The prospectus is to be completed within six months of passing candidacy exams.** One does not need "more data" to write a prospectus. Research plans can always change in the face of the first experiments done, and the student should keep their committee up to date about major deviations from the plan in the prospectus.

The student's guidance committee is expanded at the time of the Prospectus, to include an addition faculty member who is not faculty in the student's program area. For example, the added member may come from Neuroscience, if the student is in the Pharmacology program area. Faculty from non-BMS departments at Kent State can also serve as outside members. Alternatively, an accomplished scientist from outside the school's faculty may be appointed given temporary graduate faculty status in order to act as the outside member of the committee. This committee evaluates the written Prospectus and convenes for the oral prospectus defense. This is not an exam like the candidacy exam – this is an opportunity for the committee to evaluate the student's knowledge of their research plan and for the student to get feedback. The committee may pass the prospectus defense or may require the student to make additional changes to the plan. The approved Prospectus acts as a contract that describes the research to be completed by the student. A major change to the student's research requires the approval of a majority of the Committee and the Director of the School.

*Publications:*

Prior to the final submission of the completed dissertation, students are expected to have, at a minimum, one peer-reviewed journal article published or in press, or two articles submitted to journals and under review.

*Dissertation:*

The Dissertation should be written and defended by the end of the fifth year in the program. Prior to identifying a defense date, the student will request that a Graduate Faculty Representative be appointed by the Associate Dean of Arts and Sciences to complete the Dissertation Committee. This is done through a form on the College of Arts & Sciences web site The Graduate Faculty Representative is involved in all aspects



of the defense, including voting on the outcome. The Dissertation must be prepared according to the Style Guide provided at <http://www.library.kent.edu/about/departments/technical-services/electronic-theses-dissertations>. The completed Dissertation is provided to all committee members. After ten days, the members vote on the defensibility of the document. If all agree to proceed, the oral defense can be made no sooner than ten days later. So, committee members must have a minimum of 20 calendar days from the time they receive the Dissertation until its defense. Should a majority of the committee find the Dissertation to be inadequate, the student must comply with suggested changes. Once the committee is satisfied with the document, the defense may take place.

A Moderator may be added to the Dissertation Defense Committee, in order to maintain the decorum and timing of the defense. The Moderator may be selected by the advisor, or the Graduate School Representative may assume this role.

While the procedures involved in the defense may vary at the discretion of the examining Committee, the defense normally commences with a short presentation by the candidate. The Committee members then pose a round of questions, with each member limited to ten minutes. The second round is most commonly limited to five minutes of questioning from each member. Questions from the audience are encouraged and may take place before or after the Committee's questions, depending on the sequence agreed to prior to commencing the defense. Ultimately, the student may pass, fail with an opportunity to make another attempt at a future date, or fail with a recommendation for dismissal from the program. The outcome is based on a majority of votes.

Each semester, the deadline for completing the defense and submitting the Dissertation, in order to attend graduation ceremonies that semester, are provided by the College early in the semester.

#### *Thesis:*

The Master's Thesis should be prepared according to the Style Guide found at <http://www.library.kent.edu/about/departments/technical-services/electronic-theses-dissertations>. The committee for the oral defense consists of the initial Thesis Committee and the defense proceeds according to the procedures shown the Thesis Final Guidelines document at the above link. Similarly, the deadline for completing the defense and submitting the Thesis, in order to attend graduation ceremonies that semester, are provided by the College early in the semester.

#### **Time to Completion**

The State of Ohio provides revenues to the University based on a number of criteria, including Time to Degree Completion. Therefore, support for doctoral students is only offered for a five year period. However, additional support may be provided for a limited period of time contingent upon documentation of extenuating circumstances.

In addition, it is important to be aware that post-graduation placement may be affected by the amount of time it takes to complete the program. So, proceeding with alacrity will benefit job searches.

## **Service Commitments**

All students receiving a stipend have service commitments. There are two major classifications: Graduate Assistant - Teaching and Graduate Assistant – Non-Teaching. Teaching Assistantships (TA) require service as instructors, most commonly in a laboratory setting. These assistantships may require up to 20 hours effort per week for 30 weeks during the academic year. Service performed during Summer semester will be counted towards that 600 hour total.

Graduate Assistants – Non-Teaching are most commonly Research Assistants (RA). These students are funded from an advisor's non-School funds; typically a federal grant. RAs are not expected to teach, but are required to apply their service commitments to research efforts. Normally these efforts benefit the students, since they are carrying out their dissertation research.

It is important to note that in each case, the stipend is for a 12 month appointment. Funded students are expected to continue research throughout the year, with vacation time coordinated with the respective advisor. In addition, any student unable to comply with the service requirement will lose financial support and be dismissed from the program. In the case of a TA, that student must complete each semester's teaching assignment. Also, the TA must provide acceptable teaching, as indicated by student and faculty evaluations. Failure to do so will result in the cancellation of financial support. Similarly, each RA must provide an acceptable level of engagement in the advisor's research activities, or be subject to contract termination.

## **Vacations, Leaves and Dismissals**

Stipend support for a student is based on a 12 month appointment. Vacations are not guaranteed during this period, but they are encouraged. They must, however, be taken with the approval of the advisor. Vacations may not be taken by a TA during a teaching semester, without prior approval of the Director.

Leaves of Absence may be taken for a legitimate reason. This requires the student to submit a request for a leave to the Director of the School. The letter of request must include the reason for the request, as well as the time frame involved. The Director presents the request to the Executive Committee and their recommendation is forwarded to the Dean of the College for approval, or denial. Extended leaves commonly involve suspension of financial support.

Students may be dismissed from the School for failing to meet program requirements. These include poor academic performance (GPA < 3.0), failure to make timely progress through the program (e.g. too long to Candidacy), poor teaching, or unethical activities (e.g. cheating/plagiarism). In this case, the Director submits a recommendation for dismissal to the Executive Committee and their recommendation is forwarded to the Dean of the College for approval, or denial.

## **Grievances**

Academic complaints should follow the procedures found at [http://www2.kent.edu/policyreg/policydetails.cfm?customel\\_datapageid\\_1976529=2037960](http://www2.kent.edu/policyreg/policydetails.cfm?customel_datapageid_1976529=2037960). For other issues, students should feel free to approach the Director with issues that need to be resolved.

## **Academic Integrity: Cheating and Plagiarism**

Unethical activities by BMS students will not be tolerated. All students must take the BMS course: Responsible Conduct of Research, which characterizes such activities. Of course these include cheating and plagiarism. The course professor is normally allowed to establish the punishment for cheating or plagiarizing in a course, but dismissal is encouraged. Cheating or plagiarizing in the scientific arena will always result in dismissal from our graduate program. The University's guidelines on these issues can be found at 3-01.8 of the University's Policy Register, which may be accessed through Flashline.

Clearly, unethical academic or scientific behaviors will have a negative impact on a developing career. Formal letters detailing the cheating, or plagiarism are kept in the student's file and are available to potential employers, as well as journal editors.

## **Transportation**

Transportation is an important issue, given the distances between the various institutions that participate as members of the School. The Kent campus is approximately five miles from the NEOMED campus and all students will travel between them. In addition, the Cleveland Clinic campus is about a 45 minute drive from the Kent campus. Most commonly, students use their own automobiles. However, students who lack autos can find rides with other students. Although transportation is ultimately the responsibility of the student, the School office will attempt to coordinate ride sharing, when needed.

## **Campus and Local Environments:**

KSU, NEOMED and the CC provide unique and engaging environments for BMS students. KSU was established in 1910 on the banks of the Cuyahoga River. There are approximately 28,000 students on the main campus and 42,000 students on all eight campuses of the KSU system. It is ranked as one of the top 200 universities in the world and has 28 doctoral programs. The University offers a wide variety of educational, cultural, athletic and outdoor activities, as might be expected of the second largest university in the state. These include intercollegiate sports, on-campus concerts, the Black Squirrel Festival, art and fashion shows, and the first-class Student Recreation and Wellness Center, which offers popular forms of recreation and athletics. Again, BMS students have free access to this Center. Of course you can find maps, directions and learn more about campus attractions and activities at <http://www.kent.edu>.

The KSU campus is located in the city of Kent, Ohio, which has its own attractions and activities. The city sponsors a Heritage Festival in the Summer and a nationally recognized Folk Festival in the Fall. In addition, the Kent Stage draws top level folk and jazz artists throughout the year. The surroundings are pastoral and offer excellent opportunities for hiking, biking, kayaking and cross country skiing. You may find more on the city of Kent at <http://www.Kentohio.net>.

NEOMED was founded in 1973 and is located in Rootstown, Ohio, about five miles from the Kent campus. It is a community-based, state university. It is located in a semi-rural area, which offers a relaxing environment. It houses medical and pharmaceutical education and research. You may learn more about the graduate

program, the facilities, as well as find maps and directions at <http://www.neomed.edu>. In contrast, the Cleveland Clinic is located in an urban environment with its 41 buildings in proximity to University Circle in Cleveland, Ohio. The CC was founded in 1921 and is ranked as one of the top four medical centers in the country. The graduate faculty associated with BMS are housed primarily in the Lerner Research Institute, which provides substantial contributions to the more than \$258 million in NIH funds garnered annually by CC researchers. You can find maps and directions, in addition to more information on the facilities and the faculty, at <http://www.clevelandclinic.org>.

Nearby to the three main campuses you can find a myriad of cultural, social, athletic and outdoor activities. For example, Akron, Ohio is located about 12 miles from the Kent campus. It is the fifth largest city in Ohio. It is the site of concerts and plays at Akron Civic Theater, E.J. Thomas Hall, Blossom Music Center and Lock Three. It also supports a minor league baseball team which plays at Canal Park, the Soap Box Derby, the PGA Championship and various museums. You may learn more on the activities in Akron at <http://www.ci.akron.oh.us/attract.html>.

There is much to do and see in Cleveland, one of the largest cities in the country. The city sponsors a world class Symphony Orchestra, as well as nationally known art and natural history museums. The city also supports professional baseball, football and basketball teams, in addition to a variety of performing arts venues, such as Severance Hall, Cain Park and the Nautica Stage. The city also houses world-class restaurants and the much appreciated Great Lakes Brewery. You can learn more about Cleveland attractions at [www.cleveland.oh.us](http://www.cleveland.oh.us).

### **Career Development:**

Our graduate students must excel in courses, teaching and research. Successful students attend classes and are not tardy. They focus on the lectures and assignments. Most commonly, the good students recopy notes shortly after each lecture and they read ahead, in order to more fully appreciate the presented materials. The best students also ask questions and it is imperative to study in preparation for exams. Written assignments must be organized, well-written and turned in on time. Transcripts are part of every job application and, therefore, they must be excellent, in order to obtain desired positions in the future.

Teaching is an important aspect of career development. Experience in this area will become an important part of future job applications. It is expected that all BMS students will develop into excellent teachers. To do so, organize the material and present it clearly and in a logical fashion. Attend all prep sessions. Examine past notes, quizzes and exams, in order to help you organize the materials, as well as gain understanding into what information is supposed to be transmitted to the students. Create detailed notes for every presentation and practice their delivery. Be sure to use visual aids and provide straight forward quizzes and exams. Written materials should be graded in an objective manner using a detailed key. Always be fair and understanding. Act like your favorite teachers. You will be evaluated by both your students and the faculty member in charge of the course. Take pride in your teaching.

Success in research is most important. What you do in the lab and how you disseminate your data will define your graduate career. Your future depends on the research you publish. There are a number of practices that will help you develop into a

first rate scientist. You must depend on the scientific method; asking pertinent questions that can be tested and, therefore, answered. You must master the literature in your area. This allows you to ask the pertinent questions and define the methods necessary to answer those questions. Of course those methods must be mastered. This requires planning and execution. It requires focus.

Success in research requires excellent communication skills. You must learn to write in a scientific manner, as well as provide clear and organized oral presentations. You may develop these skills by learning from good writing and speaking. Your advisor will help you with this. Finally, developing as a scientist requires engagement in the process. It is important to attend seminars and learn from them. It's important to join a society and attend its meetings, in order to present your work, learn about the research that is developing in your area and network with like-minded scientists. Of all areas that are part of your graduate experience, research is the most important. So, seek your advisor's help. Learn to experiment and communicate.

### **Helpful Hints:**

Here are some suggestions to help you succeed.

- Know your advisor's scientific legacy; read her/his papers and grants
- Check your email every day
- Question everything, but be polite
- Ask questions
- Know the literature
- Be dependable
- Work harder than everyone; it will be rewarded
- Never be late
- Don't wait to seek help if you are struggling
- Learn from every seminar, lecture, journal club and conference
- Start writing early; organize your prospectus, dissertation and papers into sections; fill them in as you go
- Remember the Pi effect: everything takes 3.14 times longer than you think
- Use <http://www.kent.edu/biomedical> ; it has all forms, course requirements, etc.
- Only you are responsible for your success