

**SELF-ASSESSMENT  
SUMMARY OF GOALS AND ACTIVITIES  
NCSU- MICROBIOLOGY**

- Condition #1:** *The right people apply for doctoral study.*  
**Condition #2:** *The right applicants are admitted as doctoral students*  
**Condition #3:** *Students and faculty form productive working relationships*  
**Condition #4:** *Students experience social support from fellow students*

Conditions	Goals /Activities	Timeline
#1.	<p>The research interests of our faculty coalesce around two major themes; Microbial Genomics &amp; Metabolism and Viral Pathogenesis &amp; the Host Immune System. Unfortunately, significant numbers of our PhD applications continue to emphasize research interests in areas clearly distant from these. While we try not to overlook any applicant, the flavor of our current applicant pools suggest our areas of specialization and the unique training opportunities we can provide in these areas are not being effectively communicated to prospective applicants.</p> <p><b>Goal#1: Our goal is ensure the current composition, research interests and activities of our faculty are effectively communicated at critical “points of contact” in the application process.</b></p> <p>The Department of Microbiology attracts applications for its PhD program from a wide variety of domestic and international sources. Our domestic applicant base includes undergraduates from peer Research-Extensive institutions in the South Eastern region, as well as students from smaller undergraduate institutions in North Carolina and neighboring states. An atypical feature of our applicant pool is the significant number of applicants who have one or more years experience with bioscience employers. We believe these different portions of our potential applicant pool can be most effectively contacted and directed to our program through recommendation and endorsement by well-informed advisors and mentors. <b>Goal#2: Our goal is to increase the size of our applicant pool by better communicating the scope and capabilities of our PhD program to key advisors, mentors and colleagues in local /regional academic institutions and bioscience employers</b></p> <p><b>ACTIVITIES:</b> The specific activities we propose are as follows:</p> <p><b>Goal #1:</b> Our two main sources of information for potential applicants are our own Department web page and the “prospects” section of the NCSU Applyyourself on-line application system. The immediate objective will be to upgrade the relevant sections of the departmental web site to more clearly communicate our areas of</p>	

	<p>specialization and the opportunities provided by our PhD program. The relevant sections of our current web page currently do not serve as an advertisement for our research programs but simply list rules and regulations. These sections may be important for current students but they do little to attract new ones.</p> <p>Specific modifications will include an overview page more clearly explaining our program focus areas in conjunction with a “positions available” section that advertises current projects potential applicants could be involved in as students. We would also include an overview of positions taken up by our recently graduated PhD students. We believe this could help communicate the training provided by the Department has a strong pedigree in academics as well as industry and government agencies.</p> <p>Our specific modifications to the on-line application process will be to develop a small (<math>\leq 100</math> kb) pdf-based I-mail (informational e-mail) that can be automatically sent to prospects that make inquires <i>via</i> the on-line application system. The automated features of the on-line application system would enable this web-enabled and easily adaptable document to be rapidly and inexpensively distributed in immediate response to prospects who might otherwise “go off the boil” having to wait for a manually-generated reply. The I-mail would specifically address (and advertise) the research areas of the department. It would also provide, <i>via</i> text and hot links, other pertinent information (stipends, employment opportunities, attractions of NCSU and the local environs) needed to answer key questions relevant to potential applicants.</p> <p><b>Goal #2:</b> Our objective will be to increase the productivity of our direct interactions with potential applicants and our indirect interactions with these individuals through key advisors, mentors, and colleagues in academic and industrial environments.</p> <p>Specific actions to be taken will include a quantitative analysis of the distribution patterns for our PhD applicants over the last 5 years to identify regions and specific schools from which we have attracted the most high quality applications in the recent past. The Director of Graduate Programs (DGP) will contact key personnel in these institutions and make arrangements to discuss our current program strengths and provide support literature</p> <p>General faculty will also be provided with I-page printed version of our I-mail that can be distributed to schools and institutions where these faculty make presentations. This will also include poster sessions at regional, national and international conferences.</p> <p><b>MEASURES OF SUCCESS:</b></p> <p>Our main measures of success from these approaches will be to determine whether the number of applications we receive from the various identified potential applicant pools increases. These increases will be determined from our quantitative analysis of</p>	<p>These modifications will be implemented over the next academic year</p> <p>These modifications will be implemented over the next academic year</p>
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	application trends.	
#2.	<p><i>The right applicants are admitted as doctoral students</i></p> <p>The NCSU Department of Microbiology currently takes a targeted or directed approach to PhD student recruiting. This approach aims, within limits, to match interests among students with existing projects and positions in faculty laboratories. In practice this approach means that we actively recruit the best applicants we can in specific areas rather than simply chase the best qualified applicant (<i>e.g.</i> highest GREs, GPAs), irrespective of their research interests. This targeted approach is rationalized by the recognition that it is in nobody's best interest, especially as far as student retention and degree completion is concerned, to encourage students to join a department or program if the expected opportunities are not really available. The success of our targeted recruiting approach can be measured by the fact we typically make a limited number of offers to our program (&lt;15/year) and 50% or more of these offers are accepted and lead to enrolled students.</p> <p>To facilitate this targeted approach our Admissions Committee consists of several <i>standing</i> members and several <i>ad hoc</i> members. The standing members rotate on and off the committee every few years and provide institutional memory, continuity and consistency. The <i>ad hoc</i> members participate based on their current desire to recruit new PhD students. Our current approach for helping ensure the right applicants are admitted is to quickly engage high quality applicants in personalized telephone-based discussions with our Director of Graduate Programs (DGP) and then faculty members with whom the applicants would likely work if admitted to our program. Applicants are initially contacted by e-mail and then by telephone when a completed application package has been received. Following a telephone interview the admissions committee discusses each candidate and determines which applicants should be asked for an on-site interview. These interviews are short events in which the aim is as much about looking for synergies and mutual interests as it is about formal interviews. As we run several of these visits each Spring the approach also provides great flexibility to both applicants and faculty. As small numbers of applicants and faculty are involved these visits are relatively easy and cost-effective to organize and they provide a personal touch that is consistent with the dialog established during the earlier steps of the admission and application process. This approach contrasts with the impersonal blur of interviews, the logistical difficulties, and the large expense we experienced when we ran more traditional, larger scale, weekend-long recruiting events.</p> <p><b>Goal #1. Our main goal with what we feel is a currently successful evaluation and recruiting approach is to allow more time for visiting applicants to interact with existing graduate students (and potentially some program alumni) and to provide more opportunity to show visitors a few of the key resources available on the NCSU campus and the local environs.</b></p>	

	<p><b>Goal #2. Our second goal is to make our student support package more competitive.</b></p> <p><b>ACTIVITIES:</b> The specific activities we propose are as follows:</p> <p><b>Goal#1:</b> Currently our visitors arrive the afternoon/evening the day before their interviews and meet with faculty members for an evening meal. They then leave Raleigh in the late afternoon/early evening the following day. We could achieve our goals by having our visitors arrive earlier and having their evening meal with existing graduate students. This would leave more time in the following day to provide overviews of Raleigh and NCSU.</p> <p><b>Goal#2:</b> As funds allow we will increase our stipend to nationally competitive levels over the next 2 years.</p> <p><b>MEASURES OF SUCCESS:</b></p> <p>In both cases our measures of success will be whether these approaches increase in our ratio of offers made to offers accepted.</p>	<p>This modification will be implemented this current academic year.</p> <p>This modification will be implemented over the next 2 years.</p>
<p>#3.</p>	<p><i>Students and faculty form productive working relationships</i></p> <p>Developing strong and productive working relationships during an intensive PhD program requires effort from both students and their supervisors. We believe our recruiting approach outlined above jump-starts this process by trying to ensure prospective students and supervisors have the potential to be well-matched even before students even enter our program. This process continues after students are admitted and join our program. Incoming students participate in a semester-long rotation course involving ~6 weeks in 3 different laboratories. During this time we look at student interest in and aptitude for particular types of research as well as synergies between potential students and individual PIs. In the vast majority of cases after the rotations have been completed locate students in their preferred laboratory.</p> <p>While we appear to do well with the softer side of this relationship building, one area we need to improve is the harder side of the equation dealing with student performance monitoring and evaluation after students permanently join individual laboratories. One concern is we currently do not either adequately state or consistently apply the same expectations to every student within the department. A lack of transparency and consistency in applying these expectations can lead to misunderstandings that can, and do, erode productive working relationships. <b>Goal #1: Our goal is to improve the communication of departmental expectations to both PIs and students and to develop methods to consistently apply the standards generated by these expectations.</b></p> <p>Another area where we feel we could make improvements is in the</p>	

	<p>area of professional development for students. We have excellent front-office support that relieves PIs of the large majority of the administrative details associated with graduate student activities. This relief leaves PIs with as much time as possible to focus on important career development issues for their students. In some areas of professional development we do well. For example, we have enthusiastic and high levels of student and faculty participation in local and regional conferences. However, despite these pluses, until this year our PhD curriculum only required a single seminar presentation course and, by necessity, two laboratory-based teaching experiences. This combination provided the barest possible professional teaching training for future academicians and essentially nothing for students who will eventually work in industry or government positions. A current lack of grant writing training is particularly significant as our written preliminary exam for PhD students involves writing a 15-page NIH-styled research proposal. Providing training in this area would be expected to greatly increase the standard of proposals and change the current practice of evaluating students in a critical “make or break” situation based on their first real attempt to write a proposal. <b>Goal #2: Our goal is to develop and continually improve a comprehensive professional development course that is required by all PhD students.</b></p> <p>A final area where we feel we could improve is in formal student faculty communication channels. We currently have an official student position in our Graduate Curriculum Committee but there is no other clearly established conduit for communication between graduate students and faculty members that will ensure student opinions can be voiced. <b>Goal #3: Our goal is to increase the interaction between our Graduate student association (MBGSA) and our DGP to ensure that students concerns and suggestions can be communicated to the general faculty.</b></p> <p><b>ACTIVITIES:</b> The specific activities we propose are as follows:</p> <p><b>Goal#1:</b> An important step towards our goal of expressing and adhering to our departmental expectations will be to first establish a faculty consensus on these expectations and then communicate these expectations to students. Specific steps will take towards this goal will be to have our Graduate Curriculum Committee develop a draft series of expectations that will then be discussed and ratified by all faculty members. A copy of these expectations will be given to each student and PI and the significance of the expectations will be discussed with the students by the DGP.</p> <p>Another specific steps towards maintaining consistency will be to ensure that all students have a graduate committee meeting once a year. Currently committee meetings tend to coalesce around major events (<i>e.g.</i> identification of prelim proposal topics) and the opportunity for more frequent updates and progress evaluations is not taken. The appropriate mechanism to achieve more frequent committee evaluations of student progress will be developed by our Graduate Curriculum Committee.</p> <p><b>Goal #2:</b> Our curriculum committee has recently submitted the</p>	<p>These modifications will be implemented over the next academic year.</p> <p>This modification will be implemented over the next academic year.</p>
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	<p>appropriate paperwork to NCSU administration concerning the adoption of a research ethics courses within the Microbiology PhD curriculum. The next step will be to obtain the same authorization for a professional development course.</p> <p><b>Goal #3:</b> The DGP will initiate a regular once a semester meeting with the officers of the MBGSA. This meeting will provide an opportunity for students to direct concerns and questions to the faculty and for the DGP to provide early input towards student concerns.</p> <p><b>MEASURES OF SUCCESS:</b></p> <p>It is difficult to quantify the productivity of a working relationship. For example, making sure that students publish their research findings is important but quantifying the number of papers published is a crude and unwarranted extension of the “publish or perish” mindset into graduate education. Our main measure of success will therefore be a qualitative assessment of the quality and strength of all of the products of our students. These metrics will include papers, posters, RIP presentations and prelim proposals.</p>	<p>This modification will be implemented over the next academic year.</p>
<p>#4.</p>	<p><i>Students experience social support from fellow students</i></p> <p>In a relatively small unit like NCSU Microbiology the majority of the social support between students is generated through their own interactions that develop independently of organizations and approaches implemented by the Department. The Department provides support for the major annual activities organized by the MBGSA. These events include a Fall Picnic that aims to welcome new students to all of our graduate programs. The MBGSA also organizes the annual Research Symposium where our PhD students provide a day-long retreat with platform and poster presentations. One area we feel we can help provide some level of professional/social support is to involve students in making less formal presentations to their peers outside the confines of the Research Symposium. Ideally this type of presentation would represent a short informal presentation in a non-critical arena where the intention is not to find fault with work but to be constructive. This would achieve two things. First, it would improve the general awareness of all students to the projects currently in progress in the Department. Second, it would provide opportunities for students to swap notes and ideas about strategies, approaches and common problems. In combination these effects would be expected to increase the level of social and scientific interaction between students both within individual laboratories as well as between laboratories. <b>Goal #1: Our goal is to develop an mechanism that will allow and encourage students to interact in a non-critical and supportive scientifically-oriented arena.</b></p> <p><b>ACTIVITIES:</b> The specific activities we propose are as follows:</p> <p><b>Goal#1:</b> Our Department currently runs a monthly Research in</p>	

	<p>Progress meeting that replaces our normal weekly seminar. This 2-hour long meeting involves a presentation by PIs about the ongoing work in their laboratories and is designed to provide an opportunity to gather input from faculty and students about possible avenues and approaches. Participation and social interaction is encouraged by dedicating the second half of the meeting to food and social interaction. Our intention would be to extend the same principle to students and incorporate student presentations into the existing established format.</p> <p><b>MEASURES OF SUCCESS:</b></p> <p>Our measures of success will be qualitative and will be judged by the level of participation and interaction observed during these meetings. The expectation is this approach may require some time to become accepted and achieve the desired and intended non-critical format.</p>	<p>This modification will be implemented over the next academic year.</p>
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