

Program in Neuroscience at University of Utah

2009 Review

Report of the External Review Committee (Drs. Michael Levine, Frank Margolis, and Alan Sved)

Part I. General

Program Overview

The Program in Neuroscience (PIN) at University of Utah (UU) is an interdepartmental doctoral training program. Training faculty are drawn from more than a dozen departments across campus. Students apply to and are admitted into the program, which is a well-designed mix of coursework and laboratory-based research. The program successfully recruits quality students and trains them well to go on to more advanced research training. Overall, the External Review Committee found this to be an excellent program in all aspects.

Faculty

In general, the faculty of the PIN are excellent. They represent a wide mixture of interests and areas of neuroscience. In terms of diversity, and as stated in the report, the low percentages of women and minorities in the faculty pool reflect departmental and University recruiting. According to the table virtually all of the faculty have extramural support for their research and all publish in high quality journals. The faculty as a whole compare very favorably with those in other neuroscience departments and programs and they represent a major asset to the program. Teaching is divided among faculty in a number of departments. For any particular course, the teaching faculty contribution tends to reflect the particular department with the most expertise in that area. Overall the Committee was extremely impressed by the excellence of the faculty and their commitment to the PIN.

In terms of faculty, the Committee had one area of concern: the ability of the PIN to recruit faculty to participate in teaching and service. This is not a unique problem to this program and occurs in numerous neuroscience programs nationally especially when the program is interdepartmental as at UU. The problem also was identified in the previous review (pp. 5-6 in the Self Review). The previous review stated, "A more formalized procedure for replacement of faculty in administrative and teaching positions needs to be implemented. The current strategy is that the faculty member who wishes to rotate off a position must first find a replacement." In the program's response (at least that is what it appeared to be in the text) they state, "We plan to list the available positions each year in the Spring NeuroNews to involve more faculty."

In the first meeting with the Committee, the Chair indicated that faculty still teach and serve on committees until they find their own replacement but the procedure has become more formalized, with a letter of agreement to serve. It remained somewhat unclear if these letters have specific time commitments for faculty to teach in courses or serve on committees. In subsequent meetings this problem was discussed several times and in more depth during the meeting with the Curriculum Committee. In general recruitment of faculty to teach and serve on committees in interdepartmental programs is a problem primarily because these

programs depend on the combined good will of department chairs to have their faculty provide teaching and service. In some universities, chairs provide departmental relief time from teaching and service for faculty who teach in interdepartmental programs, but this is not always the case. In addition, as is done in the PIN the interdepartmental programs can provide recognition for teaching and service by faculty in letters which are used as an incentive because both of these areas are important for faculty advancement and promotion.

In the PIN, it was apparent that faculty staffing for the great majority of the courses was not a major problem, at least at present. However, there were some departments (or chairs) that appeared to be less willing to have their faculty teach. One of the issues concerned how teaching funds were redistributed back to departments. The Committee was informed that the process for redistributing the funds was being changed and a new program for redistribution of funds is under consideration. The Curriculum Committee also indicated that staffing for the core courses was not the major problem, but staffing for some of the other course, especially the Professional Skills Course was difficult and neuroscience students were enrolling in a similar course taught in the Department of Pharmacology and Toxicology.

Students

Overall we were very impressed with the quality of the students and their sense of community and commitment to the PIN and of the PIN to the students. This was particularly apparent in the attitude of the more advanced students who still viewed themselves as members of the PIN community despite being distributed in their thesis labs across various departments. This is due in no small part to the supportive attitude of the faculty leadership and to the concerted effort to engage student involvement and leadership in multiple activities such as the seminar program, annual retreat, grad student recruitment, Brain Awareness activities, community outreach etc. The receipt of a T32 training grant from NIH attests to the quality of the PIN and the student body.

Recruitment of high quality students is key to the success of any training program. The quality of students that elect to matriculate at UU PIN is high by all objective measures, including GPAs and GREs. The percentage of students that visit and are accepted and who ultimately matriculate is high. This is a measure of the quality of the faculty and the program and also of the lifestyle available to matriculated students. The difficulty with recruiting relates to obtaining sufficiently high numbers of well-qualified applicants. The Committee believes that there is a perception problem among the potential applicant pool associated with the geographical location of UU; based on the quality of this program, it should be receiving a larger pool of high caliber applicants from around the country. There are several actions that can be taken to try to remedy this. Students search for programs using the internet more than by any other means. Therefore, it is critical to upgrade the website and become more web savvy regarding how students use the web to find programs. For example, steps could be taken to ensure that the UU PIN program website moves higher on the Google or other search engine display pages when a search is conducted. More aggressive outreach by current students to recruit from their undergraduate alma maters is also a very valuable approach and should be increased. When faculty members travel to other institutions, they should use that opportunity to advertise the graduate program. This will not change instantaneously but will take a concerted effort and commitment and patience.

The diversity of the student population is an issue that many programs struggle with, and UU PIN is in that position. This is a chronic problem nationwide and will only change with

increasing numbers of minority and disadvantaged students enter undergraduate programs in fields related to neuroscience and then elect graduate study as a viable career choice.

It is standard that neuroscience programs guarantee students stipend support throughout their training, and the stipend for the UU PIN doctoral students is highly competitive, especially factoring in the cost of living for students at UU. Students have a course intensive program for nearly two years and in recent years have been supported for these first two years. However, the ability to maintain this level of support by the program and expand the program will require additional resources even if the duration of stipend support is reduced to an average of 1.5 years. Furthermore, because some of this stipend support during the first two year derives from an NIH training grant that the UU PIN has received, this continued level of support of the students is predicated on renewal of the training grant. The T32 can provide stipend support for year two for a limited number of students but requires utilization of an internal stipend in order to bring the training grant stipends up to parity with internal stipends. Thus, it seems likely in the future that the duration of stipend support will need to be reduced to 1.5 years, though this will be complicated by the fact that training grant slots can only be awarded for full years. Furthermore, since the students are in the PIN but affiliated with the department where their faculty mentor resides, the loss of PI funding means that the home department becomes responsible for maintaining the student stipend. It would seem desirable for the UU PIN to have access to funds committed to provide “bridge funding” to protect students in these unfortunate situations. Access to TA stipends appears to be quite limited. The availability of TA positions and differential stipend support between “upper and lower” campus also should be addressed.

Strong student mentoring is a characteristic of successful graduate programs. There appears to strong mechanisms in place for student advising with appointment of a faculty mentor and Big Brother/Sister on arrival, followed by selection of a thesis mentor/committee at the beginning of year two. In addition, the Director and Directorate seem strongly committed to the students and to ensuring their success. It was made clear to us by the students that the PIN leadership is concerned and responsive to student needs and requests whenever possible.

A mark of a successful doctoral program is that its graduates are in demand. In this regard, PIN graduates appear to readily obtain post-doctoral training positions in top tier labs. The track record for the program graduates ultimately moving into positions as university faculty or non-university research organizations seems reasonable.

Overall, this program attracts very good students and trains them well; and the current students appreciate that.

Curriculum and Programs of Study

Curriculum and Programs of Study

The UU PIN incorporates a thoughtfully designed curriculum and course of study. While this training program is a little on the course-heavy side compared to other programs the requirements and qualifying exams and thesis proposal and defense are appropriate and are of a sort that is becoming rather standard. The fact that this program has received a training grant from NIH to cover training in the first and second year means that the requirements have been well-vetted.

The course of study is strong with an emphasis on molecular and cellular aspects of the nervous system but not to the exclusion of other areas. Thus, the students receive a broad exposure to many areas of neuroscience. The initial summer “boot-camp” practical in biochemistry and in electrophysiology was viewed as a very strong component that should continue to be strongly encouraged and supported. While many comparable programs include a teaching requirement for the students, that is not a component of this program and some students indicated a desire for more opportunities to teach, e.g. in undergraduate Behavioral Neuroscience, to obtain more exposure to this area of academic neuroscience. However, no program can be all-encompassing and playing to the clearly apparent strengths is important. In general, students in graduate programs with significant departmental concentration in medical schools tend to suffer from a lack of opportunities to involve graduate students in teaching. Therefore, this is not unusual but clearly the PIN is making efforts to address this aspect. While not all students desire a teaching experience, more of an effort could be made to identify opportunities for those students who do want more teaching experience. Some students also commented that increased incorporation of clinical topics into the curriculum might be useful.

It was suggested that the PIN Curriculum Committee meet annually to evaluate faculty and student input and assess the range of course content to generate balance between basic and clinical aspects of the field. This will be important as emphasis on “translational” research increases. Some students indicated a desire for more opportunities/emphasis on critical evaluation of journal publications, and this should be considered.

The post-coursework aspects of the program (e.g., qualifying exam, dissertation proposal, dissertation defense) are all well designed and implemented.

The program pays appropriate attention to issues of professional development. Students have opportunities to attend national professional meetings. They coordinate the PIN seminar series that provides them with opportunities to meet with visiting faculty and gain networking contacts and with potential for research collaborations and contacts for future postdocs. The current NIH funding situation precludes that all grads will become university faculty so that more attention should be paid to providing information to students about alternative career opportunities in biomedical science. The proximity of a very strong biotech corridor nearby could provide the opportunity for student internships or rotations and the UU PIN should facilitate such opportunities where possible. Students also noted that more of an effort could be made to expose them to careers other than academic researcher at universities.

As part of the program, students are encouraged to be involved in community outreach activities and most students take advantage of this set of opportunities. The local activities associated with national Brain Awareness Week are a major component of this.

Program Effectiveness and Outcomes Assessment

Mechanisms are in place to assess outcomes of the training program in both the short- and the long-term. Student feedback is obtained for the courses and the program in general, and this student feedback is evaluated by the appropriate committees of the PIN. It appears that this feedback is readily utilized to optimize the training program. The longer term assessment is in the form of alumni surveys and tracking the progress of alumni. It appears that the response rate of these alumni surveys is quite high, which is not surprising, given how connected the students feel to the program.

As the PIN increases in size and has a larger pool of alumni, this long term outcome assessment will likely become more time consuming. The task of collecting the data falls to the administrative assistant. Ms. Tracy Marble, the PIN Administrative Assistant, does an admirable job. However, as the program expands more and more responsibility will fall on the Administrative Assistant and at some point the workload will exceed that of a single individual.

Facilities and Resources

The facilities available to the PIN are excellent, though spread across many laboratories and departments around campus. Still, the facilities required to train students in modern neuroscience are all in place and are made available to the students. With the influx of resources provided by the Brain Institute, this will only become even better over the next few years.

However, as noted in the section on Recommendations, the PIN would benefit from having centralized administrative and meeting space.

Part II. Commendations

This is an excellent doctoral training program in neuroscience, deserving of strong support so that it can not only maintain its current status but expand. This program, and UU, should be proud of what they have accomplished. The external review committee was impressed with all aspects of the program. A thoughtfully designed training program has been developed and has now matured. The interdepartmental group of faculty that comprise the training faculty are excellent and they are committed to the success of the program. The program recruits very good students and trains them well. The training that the students receive serves as a good launching off point for them to continue their training and ultimately secure appropriate professional positions.

Administering an interdepartmental program within an institution with a departmental structure is a challenge that is being met well. The Director, Administrative Assistant, and the Directorate Committee are all outstanding. The program runs efficiently and effectively because of the efforts of these individuals. In particular, the efforts of Dr. Mary Lucero and Ms. Tracy Marble must be acknowledged. The faculty members feel allegiance to both the PIN as well as their home department and are willing to work toward the success of both. Still, as will be discussed in the section on Recommendations, the tension between departmental responsibilities and PIN needs is something that will require ongoing attention and department chairs will need to fully support the involvement of their faculty in the activities of the PIN.

Part III. Recommendations

As noted above, this is an excellent doctoral training program in neuroscience, deserving of strong support so that it can not only maintain its current status but expand. Other than recommending that the program receive strong support from the University to continue its efforts, the External Review Committee has noted three areas that need to receive particular attention.

Interplay between the PIN and departmental administrative structure

The PIN relies on the efforts of its faculty who are full-time members of their home departments. Thus, their time engaging in PIN-related activities may be viewed as taking time away from their departmental activities. Teaching is a good example. Many faculty in the PIN are required to teach in their home department, while at the same time being asked to teach in the PIN curriculum. In the present structure, it does not appear that faculty receive departmental recognition for their teaching in the PIN curriculum, unless the department chair is willing to do this. Ideally, some formal policy needs to be developed to provide faculty fair and equitable recognition at the departmental level for their efforts in the PIN.

The issue of departmental recognition of time spent by faculty with PIN activities relates also to faculty members that spend considerable effort in the administration of the PIN. Serving as Director of the PIN is quite time consuming, and a faculty member can only do this with the understanding and support of their department chair. This has not been a problem in recent years because Mary Lucero has done a fantastic job and has had the full support of her department chair. At some point the directorship will transition to another faculty member and this may become an issue. Therefore, in anticipation of this eventual change in leadership it would be advisable to establish guidelines now rather than later.

The relationship between departments and the PIN also shows up in terms of budgetary support. The PIN needs continued strong financial support from the University in the way that is more typically reserved for departments. The program is doing quite well at present, but will not be able to withstand cuts to its budget. Furthermore, much of what it accomplishes can only be done with support coming from the component departments, and if their budgets are stressed this will likely impact the PIN. Space is also an issue, as the PIN needs administrative space to house its administrative staff and records, as well as to serve as a focal gathering point for PIN students, especially in their early years.

Teaching of the important introductory lab course in the PIN is also, at present, totally dependent upon departments for equipment and space. While this is pieced together each year, it would be advantageous if there were a formal structure in place to insure that the PIN will have access to the resources that it needs to appropriately run its curriculum.

Interplay between the PIN and the Brain Institute

At the same time that the PIN is dealing with issues related to its interdepartmental structure, the Brain Institute is gaining momentum and growing. It is clear that in the coming months and years the Brain Institute will assume a larger and larger role in the neuroscience landscape at UU. Thus, the relationship between PIN and the Brain Institute needs to be addressed, and the PIN should take a pro-active role in this process. It is easy to imagine a structure in which the Brain Institute is the over arching neuroscience entity on campus, with the PIN being the unit that administers graduate education. Whatever the structure evolves, and different universities have dealt with similar issues in different ways, the PIN needs to be actively involved in these discussions. The present "wait and see approach" that is being taken on the part of the PIN, while the Brain Institute continues to move forward will increase the likelihood that problems will develop in the future. The upper level administration at UU should encourage and facilitate this relationship between PIN and the Brain Institute.

The External Review Committee noted that space is being constructed for the Brain Institute at a central location on campus. Having the PIN officially housed in this space will provide numerous benefits. These include, for example, a central and non-isolated location for the PIN administrative offices. Housing the PIN administrative assistant near the Brain Institute administrative staff will allow for interactions and flexibility. Using Brain Institute space for PIN seminars and classes will provide a central location on campus for these events. At present, the complex geography of neuroscience on the UU campus often interferes with attendance at seminars and events. Space in the Brain Institute might also be used for the development of teaching laboratories and serve as a focal gathering point for PIN students, especially in their early years.

Increased advertising of the program to increase graduate student recruitment

The PIN is an excellent neuroscience graduate training program and a factor most limiting its progress at the present time is the number of quality applicants to the program. The program is well-poised for expansion, but this cannot be accomplished without increasing the number of applicants. The External Review Committee felt that this is mainly a problem of exposure; more of an effort needs to be made to advertise the program. These efforts should include increased attention to the website in an internet savvy manner, increased outreach by students and faculty to undergraduate institutions that can provide applicants, and increased visibility of the graduate program at national (and international) meetings.