

INTRODUCTION

Our interdisciplinary team was very pleased that the ZHD1 DRG-D (55) Special Emphasis Panel gave this proposed program a “positive recommendation of outstanding” based on numerous strengths and other “critical elements that bode well for the future success of this important program.” We were, however, equally disappointed that a priority score of 21 did not result in funding the program.

In this A1 application, we have made every effort to address any concerns noted in the summary statement and individual reviews. Beyond panel-recommended improvements, we have also enhanced the program strategically in some key areas. Following is a summary of changes made to the program plan in response to: (i) comments and recommendations in the Resume and Summary of Discussion; (ii) individual reviewers’ comments; and (iii) our internal strategic planning process in which we identified ways to enhance the program. There are **improvements and major edits to virtually every section** of the application; thus changes to the text are **not highlighted** because we thought they would be too distracting to the reader.

NOTE: Please note that the primary departments for the Program Director (Dr. Bamman) and additional Program Faculty (Drs. McMahon, Ramanadham, Schwiebert, Serra, and Thalacker-Mercer) merged during preparation of this A1 application. The two former departments (Physiology & Biophysics—McMahon, Ramanadham, Schwiebert, Thalacker-Mercer; Cell Biology—Serra) became the Department of Cell, Developmental, and Integrative Biology in late February 2012. Consequently, historical and other information contained in Data Tables and various sections of this application are listed for the two former departments separately in some cases, and for the new department in other cases, depending on the nature of the information.

Resume and Summary of Discussion

1. **Comment:** *More depth of rehabilitation science training in the predoctoral than in the postdoctoral program.* **Response:** We have substantially bolstered formal rehabilitation science training for postdoctoral trainees. Please see the summary of this revamped curriculum in Table D, which now includes a required workshop among the first activities after admission (for all incoming pre- and postdoctoral trainees). Please see Table D for a list of other required activities that will enhance translational rehabilitation research training. Further, postdoctoral trainees admitted to the program who are considered by the Executive Committee to be promising rehabilitation scientists, but deficient in aspects of formal rehabilitation science education, must now complete two graduate Rehabilitation Science courses in YEAR 1 as a condition of the Individual Development Plan.
2. **Comment:** *PD/PI’s time commitment at 4% may be inadequate.* **Response:** We agree that 4% was an underestimate of the effort that will be required to ensure optimal functioning of the program. The PD will now devote 10% effort to the program and this is fully supported by his department chair (Dr. Benveniste) and Dean Watts of the School of Medicine (see letters of support). The PD will work closely with the administrative staff. In fact, the administrative staff member supported as part of the Training Related Expenses allowance will be Ms. Stacey Torch, Administrator of the UAB Center for Exercise Medicine, whose office is directly adjacent to the PD’s office. This will facilitate daily program updates. Ms. Torch will serve as a valuable liason among the trainees, program faculty, and Executive Committee (see Figure 3).
3. **Comment:** *No discussion of a cross-program trainee organization, which may prove problematic for cohesion among the trainees and reliable student feedback.* **Response:** This is an excellent point. While research training opportunities in this program are intentionally diverse and focus areas will vary among trainees, we have constructed a plan in this A1 application called Cross-Program Cohesion to ensure that this program and its participants maintain a strong sense of cohesion—centered on the program’s unique identity as the institution’s singular rehabilitation medicine research training program. (i) All pre- and postdoctoral trainees in the program will be required to regularly attend the program’s Translational Rehabilitation Research Roundtable, which occurs twice monthly and is sponsored by the UAB Center for Exercise Medicine. The format of this roundtable alternates between a typical journal club and a nascent projects discussion forum. All trainees will be required to present on a rotation, discussing their own work in progress and/or exciting new findings recently published in the field. Primary mentors will also be expected to participate regularly. This is considered a critical component of the training experience. (ii) Via Trainee Pairing, each new predoctoral trainee will be assigned either a postdoctoral trainee in the program, or an advanced predoctoral trainee as a surrogate “big sibling”. This will provide the junior trainees with a more experienced colleague and confidant to reach for advice, general knowledge, etc. related to research training or simply related to life at UAB and in Birmingham. Such structured pairing has worked extremely

well over several decades among medical students and in the MSTP. Because our pre- and postdoctoral trainees will remain part of the program for as long as their training at UAB lasts, another advantage of Trainee Pairing will be the continued engagement of all trainees beyond the (typical) two years of T32 funding. (iii) Requiring all incoming pre- and postdoctoral trainees to attend our 2-day workshop together as their first training activity will be ideal for establishing a common understanding of the program and the state of the field, and for beginning relationships among the trainees. We are confident that these three initiatives will establish and maintain trainee unity and a sense of program cohesion that will also facilitate reliable student feedback about the program.

4. **Comment:** *Some concern among a minority of the panel about expanding the training slots too quickly.*
Response: Although this was a concern shared only by a minority of the panel, in response we have delayed by one year the expansion of traineeships from 3 pre- and 3 post-doctoral trainees to 4 of each. This will now occur in year 4 rather than year 3. Based on our recruitment histories for both pre- and postdoctoral trainees in relevant areas and programs, we are fully confident that these slots will be very competitive.

Individual Reviewers' Comments

Responses to individual reviewer's comments are provided below, but only in response to individual comments that are not already addressed above.

CRITIQUE 1

1. **Comment:** *Training in the Responsible Conduct of Research. Faculty interaction/participation was indicated but somewhat vague.*
Response: We certainly agree that faculty involvement in this key training component via direct interaction with trainees is important and frankly necessary. In this A1 we have now more explicitly describe direct trainee-faculty interactions as part of training in the responsible conduct of research.

CRITIQUE 2

1. **Comment:** *Preceptors/Mentors. Table 5A appears to be completed inconsistently and inaccurately. There appear to be many non-PhD candidates listed, and TGE seems to be inconsistently indicated.*
Response: We have followed the guidelines and corrected the A1 tables to the best of our ability.
2. **Comment:** *Trainees. A weak recruiting program specifically for this training program is described.*
Response: We have substantially strengthened the recruiting plan to establish a truly national recruiting base. Also, to help us consistently attract and recruit top notch candidates, in this A1 application we now include significant financial contributions toward recruiting efforts from the School of Medicine, School of Health Professions, and the UAB Center for Exercise Medicine (each \$2000/yr x 5yr x 3 donors = \$30,000).
3. **Comment:** *Trainees. There is no record of recruitment for the Rehabilitation Science program, since it just began. However, recruitment into physical and occupational therapy, which it is most closely associated with, is weak.*
Response: Since our original application, Dr. David Brown has been recruited from Northwestern U. to direct the Rehabilitation Science program. His addition to the faculty and to this program is indeed exciting. Under his leadership, the second year of recruitment was outstanding and an encouraging sign of growth to come. There were 12 applicants and the four top ranked applicants have accepted offers to join the program. Of the four applicants, two are underrepresented minorities and three are female. Areas of expertise include physical therapy and neuromotor control, exercise physiology, health education, and experimental psychology. Three of the four have already earned masters degrees. We fully expect recruitment into this burgeoning program to be stronger each year. We are not sure how to respond to the reviewer's second point here, since the Rehabilitation Science PhD program is truly interdisciplinary and therefore recruitment is not biased toward physical and occupational therapy.
4. **Comment:** *Training Record. ...there is not a strong record of training in physical or occupational therapy.*
Response: Some of the physical and occupational therapy faculty mentors in the proposed program have not traditionally been affiliated with a PhD program; thus their predoctoral training records are, as the reviewer pointed out, relatively weak. However, in this A1 application, the newly recruited faculty, Drs. David Brown and James Rimmer, bring solid records of training in these areas. Further, Dr. Bickel is the primary mentor for one of the first Rehabilitation Science PhD students and a co-mentor with Dr. Bamman for a current postdoctoral fellow (Ceren Yazar, PT, PhD). With this co-mentoring experience we have already begun the "Mentoring on Mentoring" program proposed in the application.

CRITIQUE 3

1. **Comment:** *Trainees. Tables are difficult to decipher. Not possible to unambiguously judge the quality of applicants.*
Response: We have made every effort to make the tables more clear. As shown in Tables 9a

and 9b, there are numerous TGE trainees currently in the mentors' laboratories who would be strong candidates for the program. Collectively these current trainees are indicative of an outstanding applicant pool recruited on a national scale, which is expected to improve even more with an established training program focused on integrating pathobiology and rehabilitation medicine.

Enhancements Resulting from Internal Strategic Planning

- **Recruitment of Dr. David Brown** from Northwestern U. to direct the Rehabilitation Science program. In this A1 application, Dr. Brown is a new addition to the Program Faculty and member of the Executive Committee.
- **Recruitment of Dr. Jim Rimmer** from UI-Chicago. Dr. Jim Rimmer is the second new addition to the proposed program faculty. The training environment for this training program was instantly enhanced by this recruitment, because in addition to Dr. Rimmer's expertise, he brought the CDC funded National Center on Health, Physical Activity and Disability (NCHPAD), and the NIDRR funded Rehabilitation Engineering Research Center on Interactive Exercise Technologies and Exercise Physiology for People with Disabilities (RERC RecTech). These will indeed be outstanding resources for rehabilitation research training involving persons with disabilities. Finally, Dr. Rimmer's appointment as Director of the Lakeshore Foundation/UAB Research Collaborative establishes a strong linkage between these two institutions. Lakeshore Foundation is one of the largest disability service providers in the U.S. that serves over 3500 people with disabilities on an annual basis in the areas of health promotion, sport and physical activity, and provides a strong base for conducting research on people with disabilities.
- **The environment for clinical and translational research and training** is further enhanced by the programs and services provided by the Center for Clinical and Translational Science, CCTS (the UAB CTSA). For this A1 application, Dr. Bamman worked closely with the CCTS Principal Investigator, Dr. Kimberly, and the CCTS director of education and research training (Dr. Chaplin) to bolster clinical and translational training activities for all trainees in the planned program. The CCTS is comprised of nine Components [Biomedical Informatics; Pilots; Drug Discovery; Research Ethics, Regulatory Knowledge and Support; Research Education and Training; Biostatistics, Epidemiology and Research Design (BERD); the Clinical Research Unit (CRU); One Great Community; and Cores] and the Research Commons. Detailed descriptions of CCTS programs that will be of great value to the trainees and mentors in our planned training program can be found in Facilities and Other Resources. The CCTS is well-integrated into this training program and CCTS leaders are clearly committed to fostering the development of our trainees (see letters from Drs. Kimberly and Chaplin).
- **Major Financial Investments.** We are very fortunate to have strong support from the major programs and Schools associated with this training program. For this A1 application, the Schools of Medicine and Health Professions have each committed \$5000/yr to support the annual interdisciplinary symposium as well as recruitment expenses (see letters from Drs. Ray Watts and Harold Jones). Similarly, we are fortunate to have received a generous contribution from the Nutrition Obesity Research Center (\$4000/yr) to support trainee travel for obesity related rehabilitation research. Finally, the UAB Center for Exercise Medicine has committed \$13,000/yr to support a number of enrichment activities including the annual symposium, bi-weekly research roundtable, journal clubs, and the Exercise Medicine Distinguished Lecture Series. All of these programs and efforts will have a significant, positive impact on our trainees' development and on the overall success of P&RMP. **These contributions total \$27,000 per year, or \$135,000 over five years**—real value added to the program by institutional support. Clearly, UAB is behind this program.