Investment Fund for the Future (IF2) – Entry #164

A. PROPOSAL SUMMARY

Title: Student Engagement: Preparing for Research at Brockport and Beyond

Project Lead Name: Adam Rich
Biology

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Amount Requested: 7500

Name of Sponsor 1: **Jose Maliekal**
Science & Mathematics

Name of Sponsor 2:
Name of Sponsor 3:

A-1. Description of the Initiative

Scientific research requires exceptional abilities and creativity. Groups of talented scientists from diverse backgrounds are needed to provide expertise and different perspectives while addressing complex problems. The ambitious goal of this initiative is to generate motivation and interest in underrepresented students for STEM research careers near the start of their college education by providing a 1 week fellowship experience in a research laboratory with a faculty mentor.

Underrepresented students interested in developing professional careers as research scientists will be identified before or during the freshman year and will be offered a 1 week fellowship in a faculty mentor's laboratory at Brockport during the summer to learn more about science and research. Transfer students may also be identified. Students will interact with other students performing research, will attend workshops on science communication, preparation and opportunities for PhD programs, leadership, and will attend a 1 afternoon research symposium held during the summer undergraduate research program (SURP). Each day the students will meet to share experiences and to develop comradery. Breakfast and dinner, as well as evening activities will be provided. A peer mentor will help guide students. It is hypothesized that this week-long first research experience will stimulate engagement in undergraduate research during the following academic year and that this will contribute to student success at Brockport, and ultimately a research career.

The need for underrepresented students in STEM disciplines is recognized by the NIH. The National Academy of Sciences report Expanding underrepresented minority participation (2006) documents the underrepresentation of minorities in STEM fields. Long term support for underrepresented students is possible by the NIH/NIGMS funded Research Initiative for Scientific Enhancement program (RISE). RISE is designed to assist underrepresented students enter and compete PhD programs in biomedical and behavioral sciences. I will submit a NIH proposal, due in May 2017, to develop RISE at Brockport for Brockport students. RISE will specifically pay student hourly wages (15 hours/ week during the academic year and 40 hours/ week during the summer), will supply modest funding for laboratory supplies, and will pay for travel to national meetings. Competition for all NIH funding is extremely competitive and

successful proposals must show that the environment supports the RISE objectives. This initiative will provide important preliminary data for a RISE proposal because it will show that The College at Brockport supports students with interest in STEM fields and is actively working to enhance motivation and perseverance that are needed to succeed in STEM careers.

A-2. Impact Statement: What change will this project deliver in the short term? What are the expected longer term impacts?

Underrepresented minorities enter college with plans to complete a STEM degree as often as non-underrepresented students but they leave STEM majors at much higher rates in US colleges and Universities (Increasing persistence in undergraduate science majors. Toven-Lidnsey etal, CBE Life Sci. 2015). At Brockport the attrition rate during the first year for all Biology majors is high. This 1 week experience is designed to help students imagine a future in research, to help them to better understand the process of scientific research as well as the process of becoming a scientist, and to begin to develop skills and relationships that will help this process. It is possible that this week-long experience early in a college education will contribute to a sense of belonging and comradery that will enhance persistence and success.

The short term impact will be to help a group of underrepresented students to succeed in STEM majors at Brockport. A second short term impact will be to support a NIH RISE proposal that will support underrepresented students and their faculty mentors in STEM fields at Brockport and beyond.

Long term impacts hinge in a successful RISE proposal. If this 5 year grant is funded underrepresented students will be supported during the academic year and during the summer performing research with faculty mentors at Brockport, and at other universities. The overall goal for the RISE program is completion of a PhD in STEM fields, and therefore an increased number of Brockport students will pursue graduate training. RISE funding can be used to support Brockport students to completion of a MS degree at Brockport. The overall impact could therefore be less attrition and increased completion of STEM degrees which will contribute to the overall student population at Brockport.

There is great potential that increased success of underrepresented students in STEM fields at Brockport would enhance recruitment efforts for students wishing to pursue STEM degrees. A week long program after the freshman year and supported summer-long fellowships with faculty mentors may be excellent programs to feature during recruitment and student orientation. A culture of engagement at Brockport exists currently and this program aligns with those efforts. Both the short term and the long term goals of this initiative support Brockport's mission with student success as it's highest priority. Successful students are the very best recruitment data for

B. STRATEGIC ALIGNMENT

B-1. To be a Great College at which to Learn

Student Engagement: Preparing for Research at Brockport and Beyond will directly support students working with faculty mentors in research laboratories at Brockport. This practice is considered to be 'high impact' and it will contribute to student success. Reducing attrition, and successfully completing a

BS degree in a STEM field is the short term goal. Preparing for a research career in a STEM field, and entering a PhD program is the long term goal.

B-2. To be a College engaged with its Community

Student Engagement: Preparing for Research at Brockport and Beyond seeks to increase success in STEM fields by underrepresented minority students and therefore contributes to diversity and inclusion within the college. Participation in active learning and engaging in research activity with a faculty mentor will decrease attrition by underrepresented minority students in STEM majors at Brockport.

B-3. To be a Sustainable Institution for the 21st Century

Student Engagement: Preparing for Research at Brockport and Beyond will begin to address a need for transformation in underrepresented students vision of their personal goals for the future. Higher attrition in STEM majors for underrepresented students may result from feeling of not belonging, or from not performing at the highest level. This program will begin to develop a sense of belonging to a group of students working with faculty to solve problems, to learn, and to ultimately pursue research careers. Beginning with learning what is possible and how to achieve a degree, followed by participating with faculty and also with peers on research projects, and finally on entering PhD programs in STEM fields this initiative is a process of growth and change. This initiative can be the start of a transformative experience for Brockport students. Student success will create a culture of success, driving recruitment of new students.

B-4. To be a Great College at which to Work

: Student Engagement: Preparing for Research at Brockport and Beyond will fund a week long experience where students engage with faculty and staff on campus doing research. It is well known that engagement promotes student success. Engagement also invigorates faculty, and is a core value for Brockport faculty. This initiative expands opportunity for engagement by underrepresented students at Brockport and promotes a several-year-long relationship between faculty mentors and students. It is intended that this initiative will be the first step towards a college experience that includes a continuous engagement experience in undergraduate research by participating students with faculty. Faculty at Brockport agree that this is extremely rewarding.

C. IMPLEMENTATION PLAN AND BUDGET

C-1. Identify the specific activities to be funded from the Investment Fund, estimated time-line for implementation, and for activities anticipated to be ongoing, plans for continued funding.

Item 1: **Student stipends**

Item 1 Amount: 3500

Item 2: Peer Mentor

Item 2 Amount: 500

Item 3: UG student assistant

Item 3 Amount: 500

Item 4: Meals

Item 4 Amount: 2000

Item 5: Programming

Item 5 Amount: 1000

Item 6:

Item 6 Amount:

Item 7:

Item 7 Amount:

Item 8:

Item 8 Amount:

Item 9:

Item 9 Amount:

Item 10:

Item 10 Amount:

TOTAL EXPENSES, ALL ITEMS: 7500

Matching Fund:

In-Kind Services: Provide FTE and name of personnel who have committed to in-kind services.
Student Housing

workshop presentors (faculty and staff)

Adam Rich's Time

Checked

D. ASSESSMENT PLAN:

D-1. What are the anticipated outcomes and specific measurements for success?

The overall goal for this program is to increase persistence to a STEM degree by underrepresented students, primarily by reducing attrition. A secondary goal for the program is to facilitate entrance to PhD programs in STEM fields, and ultimately research careers. Participating students will complete surveys upon entering the program, and when the week is complete. The progress to degree completion by these students will be tracked, as well as participating in undergraduate research.
I anticipate that some students will continue to do research and that a sense of belonging, and a motivation to continue research will develop. Students participating in this program and continuing to perform undergraduate research will be viewed as a successful outcome for the short term. Students

graduating with a STEM degree and entering PhD program in a STEM field are successful long term outcomes.

E. ADDITIONAL INFORMATION

E-1. Please provide any additional information to assist in the review of the proposal, including why the initiative cannot be funded from divisional resources.

This is an ambitious new program that is not fundable from divisional resources because it is likely too speculative, we do not yet know if it will work to decrease attrition. It is also a challenge in times of very limited resources.

I plan to submit a RISE proposal in May 2017. If successful funding will not begin until May 2018. Rise funds will support underrepresented students working with faculty mentors during the academic year as well as summers. It will pay an hourly wage and therefore encourage active participation in research. Importantly, it will also provide support for students and faculty to travel to national meetings, and it will provide some funds to support research activity in the mentor's lab. Therefore the summer students will be ideal candidates for RISE support for the following 3 years while completing the UG degree as well as while completing the MS degree if desired.

Upload up to three supplemental files here (not required): [On file]

Signature of Project Lead: [on file]
Email: arich@brockport.edu

Signatures of sponsors are on file in the Administration and Finance Division.

Sponsor 1 Comments:

Sponsor 2 comments:

Sponsor 3 Comments:

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