

# EVALUATION OF THE CENTER FOR RESEARCH ON REDOX PROCESSES IN BIOMEDICINE: REDOXOMA

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**February 5 and 6, 2015**

## **Executive Summary**

- The Center currently consists of 9 outstanding senior investigators and 12 associate investigators. They are led by Dr. Ohara Augusto and Dr. Francisco Laurindo, who are internationally renowned leaders in basic and applied redox research, respectively.
- The Center also currently includes 3 dedicated postdoctoral fellows and a project manager, under the direction of Dr. Augusto. Many additional postdoctoral fellows and PhD students supported by other sources contribute very significantly to the Center's mission. Laboratory technicians are scarce and not currently supported by the Center. *The Center would benefit by more flexibility in the use of funds to allow for support of technicians' salaries.*
- The postdoctoral fellows are a key to promoting collaborations and synergism among laboratories. *An increase in the number of Center-dedicated postdoctoral fellows from 3 to 4 would be beneficial.* Their participation in at least some of the steering committee meetings is also encouraged.
- Due in part to the USP financial crisis, the animal care facilities are poor and are likely limiting progress in certain research areas. *Some arrangement must be made in the near future to improve the laboratory animal facilities. In addition, a center for the development of genetically modified animals that is located on campus is needed.*
- Core facilities, e.g., those for NMR, genomics, proteomics, and metabolomics are very good but need additional expert personnel to maintain them.

- The Center organizational structure is very strong and based primarily on the 4 complimentary Aims of the Center. In addition to regularly held research meetings, seminars, and newsletter updates, *the Center should hold an annual retreat off-site where all participants, including students, can share their research results and ideas.*
- Considering the excellent international research collaboration that already exists, *expansion of collaboration between Center faculty and investigators in other countries is encouraged and could be enhanced by graduate student and postdoctoral fellow exchange programs.* Such collaboration could be particularly helpful for translating discoveries into clinical practice.

In summary, the redox topic of the Center has and will be a hot topic for many years and is highly relevant to many fields of medicine. The Redoxoma group of research investigators and educators is extremely strong. Redoxoma has performed exceptionally well in all dimensions incorporated to the CEPID, including Education, Research, Innovation and Dissemination. The leadership and organization of the Center is excellent but could benefit by promotion of synergistic collaboration by the Center project manager, the dedicated postdoctoral fellows, and an annual research retreat.

### **Meetings between Reviewers and Center Investigators**

All three reviewers were present at all meetings which occurred from 0900 to 1700 on February 5 and from 0900 to 1500 on February 6. Additional informal interactions between the reviewers and the investigators occurred during coffee, lunch, and dinner breaks.

Dr. Augusto opened the meeting with a description of the Center development, its' mission, relevance, and potential. The 4 primary Aims of the Center were presented together with the associated faculty. Each Aim was then presented by a coordinator, who highlighted recent progress and publications and plans for the near future. Following these presentations, there were presentations and discussions related to Technology Transfer and Innovation and Education/Knowledge Diffusion, exemplifying the potential of the Center for conducting Multidisciplinary High Impact Science.

After the meeting was closed by Dr. Augusto, the reviewers met privately to discuss their evaluation of the Center and to develop recommendations. The reviewers then met with the Center Steering Committee and discussed their conclusions.

### **Center Strengths**

- Outstanding leadership by the Director and Co-Director and the other members of the steering committee.
- Excellent organization of the center based on four complimentary Aims plus Technology Transfer and Education and Science Dissemination.
- Multiple mechanisms of communication ranging from meetings of investigators associated with specific Aims to a well-constructed internet newsletter, highlighting recent progress and publications.
- World-class scientific expertise in redox chemistry applied to physiology and medicine.
- A very strong history of productive collaboration among the senior and associated investigators, resulting in approximately 60 peer-reviewed publications in the last 5 years.
- Evidence of translation from laboratory to clinical research, with excellent potential for high impact technology transfer.
- Outstanding dedication to Education and Science Dissemination, ranging from stimulating interest among young students in chemistry to educating the general public about health and disease.

### **Center Challenges**

- Maximization of synergistic collaboration
- Efficient distribution of effort between Center-based research, additional research projects, education, and administration
- Poor laboratory animal facilities
- Lack of a transgenic and knockout animal facility
- Aging research laboratories
- Recruitment and retention of excellent staff to maintain core research facilities
- Difficulties in obtaining university or extramural funding for patents
- Difficulties in translating scientific discoveries to clinical applications

## **Recommendations**

- Expand the number of Center-funded postdoctoral fellows to 4, preferably one for each Aim. Charge them and their advisors with promoting collaboration among all appropriate labs.
- Increase the scope of responsibilities of the Project Manager to reduce the effort spent by members of the steering committee on scheduling, logistics, etc.
- Maintain the existing formal lines of communication but include an annual retreat (offsite if possible) where all students and postdocs present their research as short talks or posters.
- Work with USP to immediately improve the animal care facilities.
- Encourage collaboration between Center investigators and eminent scientists in other countries.
- Develop a plan for future establishment of a transgenic and knockout animal facility on campus.
- Focus additional effort on translational research, where appropriate.
- Works with USP to improve opportunities for technology transfer.