**Collaborative: RCN on Integrative Pollen Biology**


Pollen tubes are specialized plant cells whose function is to transport sperm to fertilize the egg, thus they are crucial for plant reproduction, agricultural productivity and species preservation. The vegetative cell that extends a tube from the pollen grain is widely recognized as an excellent model system with which to study cell growth. Interactions between pollen and pistil (the female reproductive organ) govern tube growth, direction, and sperm discharge are excellent models for cell-cell communication studies. In recent years research on pollen has entered a new phase of exciting, transformational advances stimulated by adoption of new tools in molecular genetics, functional genomics and live-cell imaging. This model cell system has also attracted increasing numbers of new and established investigators with backgrounds in different biological areas. The Research Coordination Network (RCN) on Integrative Pollen Biology will aim to provide a coordinated forum for the expanding pollen community to work together synergistically, exchange information, share tools and resources and discuss working models. The Network will focus on activities to nucleate and broaden the research community and facilitate collaborative experimental and computational approaches to achieving a systems understanding of pollen. A short course on basic pollen research methods will provide a head start to establish a variety of research methods specialized for pollen study, thus lowering the barriers newcomers face when considering initiating research with pollen. There is a proliferation of information stored in multiple public and private databases, one of the major goals of the RCN will be to extract this information, share it and work in collaborative groups in order to expedite and facilitate research advances in the next decade. The RCN will establish a "Wiki pollen" site to facilitate integration of biochemical, physiological and cellular data obtained from different laboratories towards a pilot effort in modeling pollen tube growth, from which further hypotheses may be generated to obtain a deeper understanding of this cell growth process. The RCN will also sponsor Summer Internships for graduate students to bridge training at the interface of biology and computer science. The RCN sponsored interns will develop data mining, analysis and integration projects, and the outcomes of these projects will be accessible on the RCN website. Since few laboratories have the expertise to take advantage of the ever increasing spectrum of research tools available for biological research, the RCN will subsidize traveling expenses to facilitate collaborations between groups with complementing interest and expertise. In facilitating research effectiveness among the pollen community, the RCN's ultimate goal is to promote pollen research at the cutting edge of science and technology for years to come.


The RCN will sponsor mutual visits of faculty and students between primarily undergraduate institutions (PUIs) or minority-serving institutions and research universities within the network laboratories. These two-way visits, especially with scientists from research universities visiting PUIs, will effectively reach more undergraduates and the impact on research activities in these PUIs will be more sustainable after these visits. To broaden the pipeline for future biologists from an early stage, the RCN will also sponsor Summer Internships and Workshops for high school teachers, who will in turn bring the exciting developments in plant reproduction to students in high schools.

**RCN Core group**

| | |
|---|---|
| Alice Y. Cheung, PI | Professor, University of Massachusetts, Amherst, MA |
| Sheila McCormick, senior personnel | PI, Plant Gene Expression Center, USDA/ARS, Albany, CA |
| Bruce McClure, senior personnel | Professor, University of Missouri, Columbia, MO |
| Heven Sze, senior personnel | Professor, University of Maryland, College Park, MD |
| Ann Loraine, collaborator | Associate Professor, UNC-Charlotte |
| Mark Johnson | Assistant Professor, Brown University, Providence, RI* |
| Jeff Harper | Professor, University of Nevada, Reno, NV* |
| Zhenbiao Yang | Professor, University of California, Riverside, CA |
| Erik Nielsen | Assistant Professor, University of Michigan, Ann Arbor, MI |
| Anna Edlund | Assistant Professor, Lafayette College[#], Easton, PA. |
| Jose Feijo | Professor, Gulbenkian Institute of Science, Oeiras, Portugal |
| Weihua Tang | Professor, Institute of Plant Physiology and Ecology, Shanghai, China |