

# MCB NEWS

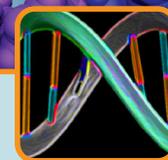
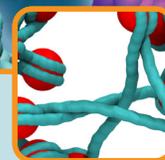
ISSUE 1

SUMMER 2013 EDITION

PREDICTIVE BIOLOGY THROUGH INTERDISCIPLINARY RESEARCH

The Division of Molecular and Cellular Biosciences (MCB) supports fundamental research and related activities designed to promote the understanding of complex living systems at the molecular, subcellular, and cellular levels.

The Division supports research across a broad spectrum of experimental systems and approaches, ranging from in vivo studies of model organisms, such as plants and microbes, to the use of in vitro and in silico strategies.



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## A WORD FROM THE DIVISION DIRECTOR, DR. PARAG CHITNIS



Welcome to MCB's first newsletter. In the past couple of years, the Division has undergone a transformation in its scientific emphasis areas and in various aspects

of the proposal review process. We used to accept proposals broadly in cell and molecular biology at two deadlines a year. However, the exciting advances in molecular biosciences and budgetary realities of the current times require us to focus our portfolio of investments and to change our practices to reduce unnecessary burden on the scientific community and staff. The changes were based in part on community feedback from our Committee of Visitors and in part on an extensive analysis of our awards.

The Division's scientific emphasis was refocused following a series of discussions

in the Division and with a group of prominent researchers, which resulted in branding the Division as the hub for supporting interdisciplinary research targeted at quantitative, predictive and theory-driven science. This leading edge will transform biology from a descriptive science to a predictive science, something that astronomy went through in the 17th century when Kepler and Newton combined physics and astronomy. The Division solicitation and cluster descriptions have now been revised to reflect the new emphasis on quantitative and predictive science at the intersections of biology and physical/mathematical/engineering sciences.

Another major change in the Division was the change in the proposal acceptance method and the deadline date. In the past, proposals were accepted two times a year in response to a general program description. For Principal Investigators who were not funded, this timeframe did not allow much time for a substantive revision.

Consequently, we increased the time between the two deadlines by moving to an 8 month-cycle. However, the additional two months for revision were found to be insufficient to increase funding chances for the revised proposals. Therefore, starting in November 2013, the Division will have one deadline per year. The annual deadline is November 15. This change will allow ample time for revisions of declined proposals. An added benefit will be to enhance our ability to review proposals at the intersections of different disciplines with other divisions that also have a yearly submission deadline in the fall/winter.

In future newsletters, I will explain a number of other processes in the Division, which are aimed at promoting our scientific emphasis areas. For example, next time I will discuss how we handle review of interdisciplinary proposals. Meanwhile, we welcome comments about any of the items in this newsletter. We hope that the information will be useful to you.



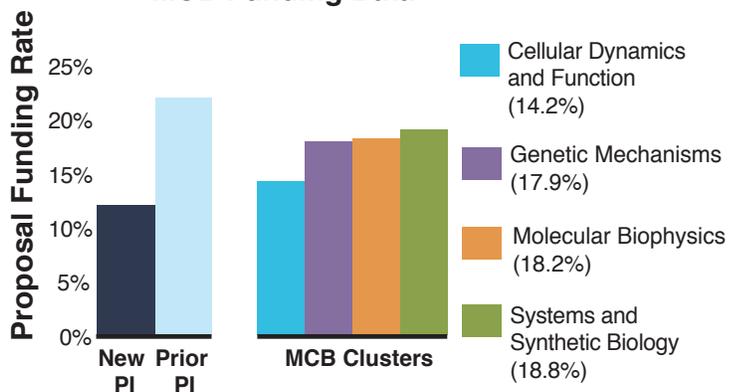
### DID YOU KNOW?

MCB gives high priority to research projects that use theory, methods, and technologies from physical sciences, mathematics, computational sciences, and engineering to address basic biological questions

MCB welcomes projects that address emerging areas of single molecule or single cell studies, molecular dynamics, small RNA and chromatin biology, predictive modeling of complexity at molecular and cellular levels, and synthetic biology

MCB's overall funding rate for research grants in FY 2010-2012 averaged 17%. (NSF Enterprise Information System 04/27/13)

MCB Funding Data



MCB Funding Data for FY 2010-2012. The average funding rate for research grants from new PIs was 12% and for PIs with prior NSF awards was 22%. The average rate of proposals funded by each cluster is also shown. Source: NSF Enterprise Information System 04/27/13



## MCB AWARDEE SPOTLIGHT: DR. BENJAMIN GARCIA



Dr. Garcia is currently an Associate Professor in the Department of Biochemistry and Biophysics at the University of Pennsylvania Perelman School of Medicine, Philadelphia, PA.

Dr. Benjamin Garcia received a National Science Foundation Faculty Early CAREER award for 2010-2015. The CAREER award is one of NSF's most prestigious awards in support of the early career-development activities of teacher-scholars. Dr. Garcia is also a recipient of the 2011 Presidential Early Career Award for Scientists and Engineers (PECASE). PECASE is the highest honor bestowed by the United States government on science and engineering professionals in the early stages of their independent research careers.

Dr. Garcia's award has supported projects focused on systems-wide quantitative analysis of histone modifications and their influence on gene expression under different biological conditions. Dr. Garcia's research team is interested in identifying what type of effect distinct combinations of simultaneously occurring modifications (Histone Codes) have upon transcriptional events. They're employing novel approaches that utilize quantitative proteomics in combination with

modification specific in vivo labeling for temporal analysis of the Histone Code. With these techniques, rapid comparison of histone modifications from multiple cellular states and with hundreds of combinatorial Histone Codes can be analyzed.

The CAREER award also supports Dr. Garcia's education initiatives that involve training of community college students as next generation systems biologists. To facilitate student training, Dr. Garcia has set up a summer proteomics workshop for community college educators to be educated and trained in theory and practice of modern proteomics research. The workshop offers classroom lectures and laboratory training for the attendees so they can learn to prepare samples, acquire and interpret data and learn post-acquisition data processing. A website containing tutorials, reviews and other resources is available to the community college educators to continuously update their proteomics training upon returning to their campuses.



## CONGRATULATIONS!

The Division of Molecular and Cellular Biosciences is proud to acknowledge MCB-funded researchers who have been elected as 2013 members of either the National Academy of Sciences or the American Academy of Arts and Sciences. The 2013 National Academy of Sciences members were elected in recognition of their distinguished and continuing achievements in original research. The 2013 American Academy of Arts and Sciences members have been elected into one of the nation's most prestigious honorary societies. The American Academy of Arts and Sciences members contribute to Academy publications and studies that include science and technology policy, energy and global security, social policy and American institutions, the humanities and culture, and education

MCB recognizes that membership into these academies is a widely accepted mark of excellence in science and is considered an extraordinary accomplishment.

### Congratulations to the 2013 National Academy of Sciences Members!

#### **Jef Boeke**

*Professor of Molecular Biology and Genetic*

Department of Molecular Biology and Genetics,  
Johns Hopkins University School of Medicine,  
Baltimore, Maryland

#### **Mary Lidstrom**

*Vice Provost for Research and Jungers Professor*

Office of Research, University of Washington,  
Seattle, Washington

#### **Xuemei Chen**

*Investigator, Howard Hughes Medical Institute  
and the Gordon and Betty Moore Foundation  
and Professor*

Department of Botany and Plant Sciences  
University of California, Riverside, California

#### **Stephen Quake**

*Investigator, Howard Hughes Medical Institute,  
and Lee Otterson Professor*

Departments of Bioengineering and of Applied  
Physics, Stanford University, Stanford, California

#### **Xing-Wang Deng**

*Daniel C. Eaton Chair of Plant Biology*

Department of Molecular, Cellular and  
Developmental Biology, Yale University,  
New Haven, Connecticut

#### **Gerhard Wagner**

*Elkan Rogers Blout Professor of Biological Chemistry  
and Molecular Pharmacology*

Department of Biological Chemistry and  
Molecular Pharmacology, Harvard Medical School,  
Boston, Massachusetts

#### **Martin Gruebele**

*James R. Eiszner Professor of Chemistry*

Department of Chemistry University of Illinois,  
Urbana-Champaign, Illinois

#### **Graham Walker**

*Professor*

Department of Biology, Massachusetts Institute  
of Technology, Cambridge, Massachusetts



## CONGRATULATIONS!

### Congratulations to the 2013 American Academy of Arts and Sciences Members!

**Shelley Berger**

*Daniel S. Och University Professor*

Department of Cell and Developmental Biology,  
University of Pennsylvania School of Medicine,  
Philadelphia

**Elliot Lawrence Elson**

*Alumni Endowed Professor*

Department of Biochemistry and Molecular  
Biophysics, Washington University in  
St. Louis School of Medicine, St. Louis

**Susan Marqusee**

*Professor of Molecular and Cell Biology*

Division of Biochemistry and Molecular Biology,  
University of California, Berkeley

**Jerry Workman**

*Investigator*

Stowers Institute for Medical Research,  
Kansas City

**Bonnie Bartel**

*Ralph and Dorothy Looney Professor of  
Biochemistry and Cell Biology*

Department of Biochemistry and Cell Biology,  
Rice University, Houston

**Kerry Bloom**

*Thad L. Beyle Distinguished Professor*

Department of Biology, University of  
North Carolina at Chapel Hill, Chapel Hill

**Randall Moon**

*Professor*

Department of Pharmacology,  
University of Washington, Seattle

**Suzanne Ruth Pfeffer**

*Professor*

Department of Biochemistry,  
Stanford University, Stanford

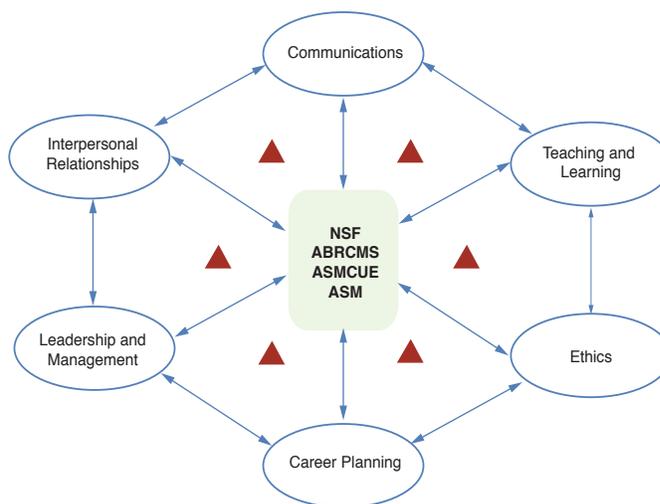


## NEW RESOURCE FOR PRINCIPAL INVESTIGATORS

NSF and the American Society for Microbiology (ASM) are working together to establish the ASM-NSF Leaders Inspiring Networks and Knowledge (LINK) program – an initiative to build strong “links” among research investigators, educators and mentees. The LINK program objectives are to:

- 1 Increase understanding about NSF opportunities in emerging areas of the molecular, cellular, and microbial biosciences
- 2 Develop mentee skills to compete successfully for resources and expertise in emerging and interdisciplinary areas of the molecular, cellular, and microbial biosciences
- 3 Develop a robust community of scientists actively engaged in sustained mentoring, networking, and collaborating. The mentees include early-career scientists, postdoctoral fellows, post baccalaureates, and students

### Building Bridges, Communities, and Career Competences



Above is an illustration of the bridges, communities, and competencies that will be generated through the LINK program. The center block depicts the melding of four unique stakeholders and audiences; triangles depict a suite of professional development activities, webinars, discussions, orientation and reflections, listservs, and other activities key to a successful structured-mentoring experience; circles indicate communities formed around six career competencies; and arrows illustrate numerous bridges and connections.

The LINK program offers multiple opportunities to its mentors (NSF investigators) and mentees. These opportunities include:

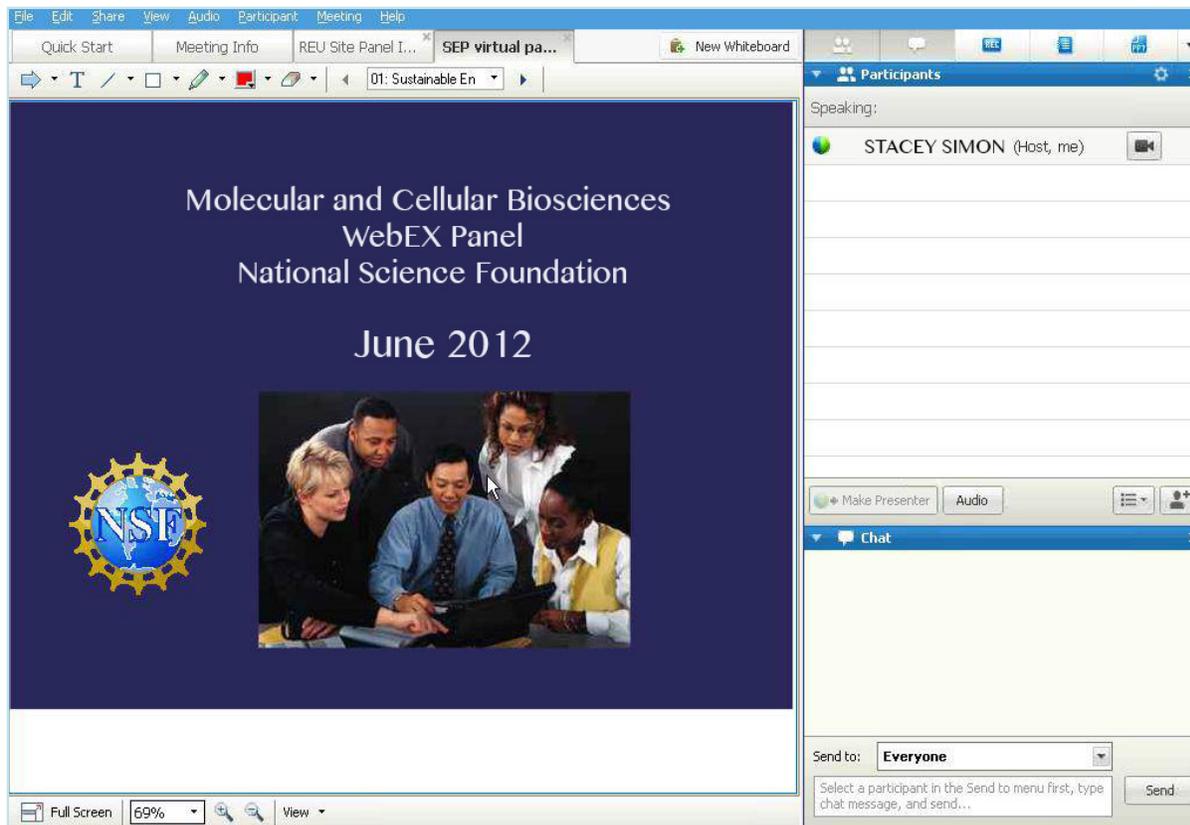
- 1 **Activities where** prospective mentors and mentees (LINK teams) connect, share ideas and advance relationships initiated at the Annual Biomedical Research Conference for Minority students (ABRCMS; <http://www.abrcms.org/index.html>) and the Annual ASM Conference for Undergraduates Educators (ASMCUE; <http://www.asmcue.org>)
- 2 **Training Experiences** to build skills needed to compete successfully in emerging and interdisciplinary areas of the molecular, cellular, and microbial biosciences. Skill-building topics cover communications, teamwork and relationship building project management, career planning, teaching and mentoring, and ethics.
- 3 **Mentorship Awards** for LINK teams to strengthen collaborations in interdisciplinary research and education.
- 4 **A Community of Practice** that advances interdisciplinary research and education. The community includes NSF investigators, educators, early-career scientists, postdoctoral fellows, post baccalaureates, and students.

For more information, please visit <http://www.asmlink.org>



## VIRTUALIZE THIS! MCB AND VIRTUAL REVIEW PANELS

In virtual panels, panelists participate via WebEx from their remote locations and interact via video conference using NSF's Interactive Panel System (IPS).



Nearly half of MCB's review panels were conducted virtually in fiscal year 2012. MCB will continue to run virtual panels because it helps us broaden participation by a diverse group of reviewers.

Virtual panels are especially beneficial for reviewers who may have family obligations, disabilities that make travel difficult, work commitments that will not permit them to leave their institutions for several days, or long transit times to and from NSF.

Virtual panels allow participation from reviewers from anywhere in the US, Puerto Rico, Virgin Islands, and other U.S. jurisdictions. Some panelists also participate from abroad.

Reviewers can be from a range of institutions, including two-year and four-year colleges and universities, Master's level and Ph.D.-granting universities, industry, profit and non-profit institutions, K-12 systems, informal science institutions, and government.

Panelists benefit from serving as a reviewer because it increases their familiarity with NSF programs, knowledge of the state of research and education nationally, and increases their awareness of elements of a competitive proposal.

**Would you like to serve on a panel as a reviewer? Volunteer! To learn more about virtual panels and serving as a review panelist please contact your program director.**



## JOIN THE NSF TEAM!

Become an NSF Rotator and you'll be in a prime position to influence new directions in the fields of science, technology, and education! Oversee NSF's "gold standard" merit review process and make recommendations about which proposals to fund. Interact with potential collaborators, develop leadership skills and gain a more multi-disciplinary scope, all while continuing your own research at your home institution. To learn more about the responsibilities and benefits of an NSF Rotator, please visit: [http://www.nsf.gov/about/career\\_opps/rotators/index.jsp](http://www.nsf.gov/about/career_opps/rotators/index.jsp)



## MCB AT YOUR FINGERTIPS

MCB would be delighted to visit your institution for either virtual or in-person outreach. We recognize the importance of beneficial dialogue, so we encourage you to communicate with your program director about program opportunities, general information on proposal preparation and the merit review process.

## MCB WILL BE AT A MEETING NEAR YOU!



Plant Biology 2013,  
July 20-24, 2013, Providence,  
Rhode Island



## MCB AT WORK: PROGRAM DIRECTOR HIGHLIGHTS

**MCB Program Directors (PD) make numerous outreach presentations at meetings and to diverse institutions across the country. The outreach presentations aim to increase the community's participation and success in NSF programs by educating the science community on grant writing, funding opportunities, and the mission of NSF.**

**Mike Koonce and Greg Warr** (PD for Cellular Dynamics and Function) discussed funding opportunities at the American Society for Cell Biology Annual Meeting, December 15-19, 2012.

**Michele McGuirl** (PD for Molecular Biophysics) participated in the Bioinorganic Chemistry Gordon Research Seminar that is held in conjunction with the Metals in Biology Gordon Research Conference, January 20-25, 2013.

**Mike Koonce** (PD for Cellular Dynamics and Function) presented at the 27th Fungal Genetics Conference, March 12-17, 2013 on funding opportunities.

**Kamal Shukla** (PD for Molecular Biophysics) participated in the American Physical Society meeting, March 18-22, 2013.

**Martha Peterson** (PD for Genetic Mechanisms) discussed funding opportunities for PIs at RUI and PUI institutions and participated in the workshop "Drosophila Research and Pedagogy at Primarily Undergraduate Institutions" at the 54th Annual Drosophila Research Conference, April 3-7, 2013.



## MCB SPECIAL ANNOUNCEMENTS

July 22, 2013 is the next deadline for CAREER proposals.

November 15, 2013 is the next deadline for accepting proposals submitted to core programs in MCB. MCB will accept investigator-initiated research proposals only in response to solicitation [13-510](#). See the Division's [website](#) for additional information.

**Important information and revision notes for PIs regarding NSF Proposal & Award Policies & Procedures Guide (PAPPG):**

Beginning on March 18, Principal Investigators (PIs) and co-PIs will use [Research.gov](#) to meet all NSF project reporting requirements, including submission of annual, final and interim project reports, as well as the Project Outcomes Report.

### Revision Summary

Please review the revised solicitation [13-510](#) for updated cluster descriptions and guidelines.

Here's what's new:

Division Description is modified to articulate its emphasis on interdisciplinary, quantitative, and predictive research and on development of resources and methods for such research.

Names of three clusters and descriptions of all clusters are revised to clarify the cluster's scope for accepting proposals and priorities for funding.

Beginning in November 2013, the Division will have one deadline per year for accepting proposals in response to solicitation [13-510](#). In addition to this submission date, MCB will continue to accept research proposals through other mechanisms, such as CAREER proposals in July and EaGER proposals throughout the year.

The limit on the maximum number of proposals per investigator is removed to encourage submission of collaborative proposals at the interface between two or more disciplines. However, researchers are strongly encouraged to submit only one proposal as the lead principal investigator, but can be a co-principal investigator on other proposals.



## MCB CLUSTER LEADERS



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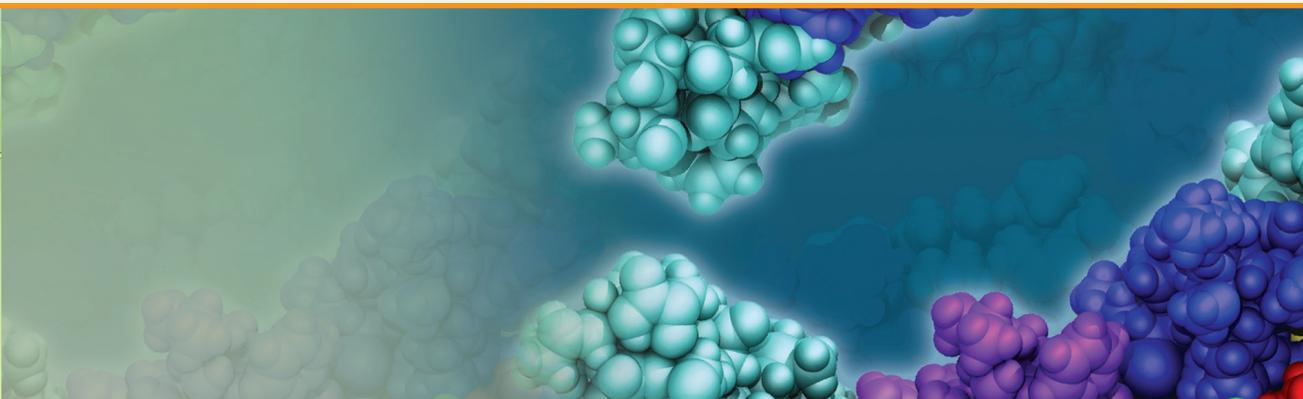


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## WE WANT TO HEAR FROM YOU!

MCB News welcomes comments on topics covered in the newsletter and on topics of interest to the Division. Please contact your program director with questions and/or ideas. The best way to contact a Program Director is via email - many questions can be answered most quickly and effectively this way. If you have a more complicated issue that requires a phone conversation, or would just like to speak by phone, please indicate this in your email and a Program Director will contact you. In any event, please include a phone number in your email.



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Please note that the information in this newsletter is current at the time of publication.

See program website for any updates or revisions:  
<http://www.nsf.gov/bio/mcb/about.jsp>