



National Science Foundation

4201 Wilson Boulevard
Arlington, Virginia 22230

June 13, 2003

Subject: Interdisciplinary CAREER proposals in the molecular biosciences and the physical and mathematical sciences

Dear Colleague:

In the post-genomic era, the biological sciences are experiencing a major change in the scientific approaches that are needed to advance the science in a major way. In this evolutionary process the connections between the biological sciences and the mathematical and physical sciences are becoming critically important. This need has been clearly stated in the recent National Academy study BIO2010 - *Transforming Undergraduate Education for Future Research Biologists*. This study concludes that “life science majors must acquire a much stronger foundation in the physical sciences... than they now get.” This could be phrased the other way around as well. Physical and mathematical scientists, who work at the interface with biology, need to develop a stronger foundation in the biosciences. The demand for quantitative tools, together with the intellectual ferment that currently characterizes the biological sciences, is creating major opportunities for NSF investments at the interface between the biological, physical, and mathematical sciences. The payoffs on such an investment extend from understanding the living world at the most fundamental level to serving society by the economic, environmental, and health benefits that will invariably follow from an enhanced understanding of life processes.

A memorandum from the Office of Science and Technology Policy and the Office of Management and Budget, *FY2004 Interagency Research and Development Priorities*, took note of the importance of this emerging new area and identified “Molecular-level Understanding of Life Processes” as one of the major scientific priorities of the present administration. The memorandum noted that the “sequence and structure data, coupled to modern computational power and to our ability to manipulate biological systems at the molecular level, will yield new experimental approaches that have the potential to unravel the complexity of life at the molecular-, cellular-, and organismal levels.”

Recognizing the needs and opportunities posed by this rapidly advancing interface, particularly in the areas where the molecular biosciences and the molecular physical sciences overlap, the Divisions of Chemistry (CHE), Materials Research (DMR), Mathematical Sciences (DMS), and Physics (PHY) in the Directorate for Mathematical and Physical Sciences (MPS) and the Division of Molecular and Cellular Biosciences (MCB) in the Directorate for Biological Sciences (BIO) encourage proposals at these interfaces and plan to collectively review proposals that involve research and education that merges the

mathematical and physical sciences with the biological sciences. In FY2004, this collective review process will emphasize proposals submitted in response to the FY04 CAREER solicitation.

Experts from both the mathematical and physical sciences and the biological sciences will review proposals in this joint area. Successful proposals will be those that develop and use the newest quantitative approaches to research and education problems of mutual interest to both mathematical and physical scientists and biologists, while at the same time meeting the NSF merit review criteria [http://www.nsf.gov/pubs/2003/nsf032/032_3.htm#IIIA]. CAREER proposals should also address the specific criteria established by the CAREER program, as described in the program announcement at the URL: <http://www.nsf.gov/home/crssprgm/career/start.htm>.

Proposals should be submitted according to the instructions and deadlines of the relevant program, i.e. CAREER program announcement, or Grant Proposal Guide [<http://www.nsf.gov/pubsys/ods/getpub.cfm?gpg>] and Divisional target dates and deadlines. We strongly urge potential applicants to contact the Contact Personnel listed below to discuss research plans in this area in advance of submission.

Contact Personnel:

Dr. Kamal Shukla, Division of Molecular and Cellular Biosciences, Directorate for Biological Sciences, 703-292-8444, kshukla@nsf.gov

Dr. Donald Burland, Division of Chemistry, Directorate for Mathematical and Physical Sciences, 703-292-4949, dburland@nsf.gov

Dr. Denise Caldwell, Division of Physics, Directorate for Mathematical and Physical Sciences, 703-292-7371, dcaldwel@nsf.gov

Dr. Bruce Taggart, Division of Materials Research, Directorate for Mathematical and Physical Sciences, 703-292-4941, gtaggart@nsf.gov

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About the National Science Foundation

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NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly

encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

Sincerely,

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