

MULTIDISCIPLINARY ACTIVITIES

\$40,000,000

The FY 2009 Request for the Office of Multidisciplinary Activities (OMA) is \$40.0 million, an increase of \$7.30 million, or 22.3 percent, over the FY 2008 Estimate of \$32.70 million.

Multidisciplinary Activities Funding
(Dollars in Millions)

| | FY 2007 Actual | FY 2008 Estimate | FY 2009 Request | Change over FY 2008 Estimate | |
|-------------------------------------|-------------------|---------------------|--------------------|---------------------------------|--------------|
| | | | | Amount | Percent |
| Multidisciplinary Activities | \$32.64 | \$32.70 | \$40.00 | 7.30 | 22.3% |
| Major Component: | | | | | |
| Research and Education Grants | 32.64 | 32.70 | 39.90 | 7.20 | 22.0% |
| Centers Programs | - | - | 0.10 | 0.10 | N/A |

About OMA:

OMA enables and facilitates MPS support of particularly novel, challenging, or complex projects of varying scale in both research and education that are not readily accommodated by traditional organizational structures and procedures. This is done primarily in partnership with the five MPS disciplinary divisions to encourage multidisciplinary proposals from all segments of the MPS community and especially to encourage activities by multi-investigator, multidisciplinary teams pursuing problems on a scale that exceeds the capacity of individual investigators. Most often, these cooperative undertakings involve two or more partners – within MPS or beyond – that join with OMA to foster new directions of scientific understanding and that broaden and enrich education and research training activities in the MPS disciplines. Such partnerships are critically important to the pursuit of the strategic goals of NSF and of the MPS community and contribute significantly to the preparation of a diverse workforce for the new century that is broadly trained, flexible, and globally competitive. Facilitation by OMA of both disciplinary partnerships and organizational partnerships is vital to the accelerated discovery of new ideas, the development of new tools, and the broadened training necessary to enable the Nation’s workforce to meet new and rapidly evolving demands.

The portfolio of OMA is expanded this year to include some resources to address strategic planning for future facilities, again, in partnership with MPS divisions. This recognizes a long-standing need, as the costs for development of large projects are substantial and distort divisional budgets. This role is consistent with OMA primary function of enabling and facilitating complex projects with transformational scientific reach.

Because OMA plays a catalytic role in initiating new multidisciplinary activities and enabling broadening participation, the portfolio includes relatively few commitments from prior years. Approximately 37 percent of requested funds will be available for new research awards. Additional funds will be available for education grants and cooperative agreements supporting projects such as large centers and facilities. Most awards are managed in MPS divisions with co-funding from OMA.

OMA Priorities for FY 2009:

Enabling the creativity of and long-term impact of the MPS community by facilitating partnership-enabled multidisciplinary and high-risk research that extends the intellectual frontiers of the MPS disciplines. Such activities include fundamental multidisciplinary research at the interface between MPS

and the life sciences that provides insights into the molecular basis of life processes, bio-inspired and biomimetic materials, and biological physics; research addressing the fundamental science that will be critical to move future computing and communications technologies beyond Moore's Law; cyber-enabled discovery and innovation; and team efforts by scientists, mathematicians, and engineers aiming to develop next-generation instrumentation, particularly at the mid-scale level, that enables fundamental advances across a wide spectrum of disciplines.

Catalyzing the development of a diverse, well-prepared, internationally competent, and globally engaged Science, Technology, Engineering, and Mathematics (STEM) workforce includes MPS participation in NSF-wide programs and in other activities that leverage the directorate's research investment. These activities enrich education and training at all levels and facilitate the formation of research-based partnerships that not only increase diversity and broaden participation in the STEM enterprise directly, but also build the physical and intellectual capacity of educational institutions, particularly minority serving institutions (MSIs), to produce larger, more diverse cohorts of graduates who are well prepared to both support and to lead the Nation's STEM enterprise in the 21st Century.

Changes from FY 2008:

- Funding for **broadening participation in the MPS disciplines**, including diversity-targeted partnerships involving minority-serving institutions and MPS-supported groups, centers and facilities, and diversity-building partnerships with MPS professional societies, increases by \$1.50 million to a total of \$5.0 million. These co-investments with the five disciplinary MPS divisions enable research-based collaborative activities primarily between MPS-supported research groups, centers and facilities, and MSIs. These collaborative interactions build research capacity of the MSI faculty; strengthen the research infrastructure of the MSIs; and engage, stimulate, retain, and develop an increasingly diverse cadre of students in the MPS disciplines at the undergraduate and graduate levels.
- Support for **collaborative public education and outreach** activities at MPS-supported research centers and facilities will be maintained at the FY 2008 level of \$3.0 million. This investment supports activities that enable effective leveraging of the MPS research investment for public science education, and clear public articulation of crosscutting science themes with significant MPS involvement, such as cyber-enabled discovery and innovation and science and engineering beyond Moore's Law.
- The OMA investment in the **Research Experiences for Teachers** activity (RET) will be sustained at the FY 2008 level of \$2.50 million, to provide more than 250 pre-service and in-service K-12 teachers with discovery-based learning experiences in the MPS disciplines. Support for the **NSF Graduate Teaching Fellows in K-12 Education** program will be maintained at the FY 2008 level of \$3.0 million.
- Investment in cooperative **international research and training** will be increased by \$200,000 to a total of \$1.60 million to enhance the global competitiveness of U.S. scientists, engineers, and students.
- Investment in support of research addressing environmental health and safety aspects of **nanoscale science and engineering** will be increased by \$500,000 to a total of \$1.0 million.
- Investment in support of **cooperative activities between academic research groups and industry** will be increased by \$750,000 to a total of \$1.50 million.
- Support for the new **Center for Research at the Interface of the Mathematical and Biological Sciences** will be \$100,000. This will be matched by funding from the MPS Division of Mathematical Sciences. This center is predominantly supported by the Directorate for Biological Sciences.

The above take place primarily in the context of **disciplinary and interdisciplinary research** and are strongly aligned with goals of the ACI and the America COMPETES Act. Increases in selected areas will be accomplished through a combination of new funds and the redirection of existing funds.