

**Division of Mathematical Sciences
Annual Update to 2007 Committee of Visitors Report
May 27, 2008**

DMS received a 3.2% increase for FY 2007 after several years of flat or declining budgets. Together with internal reallocations this enabled an increase in the number of research awards (from 685 to 769), an increase in the funding rate (from 30% to 35%), and an increase in the annualized median award size (from \$54.4K to \$61.8K) over the previous fiscal year.

In the summary section of the Division's response to the Committee of Visitors Report, dated March 29, 2007, DMS undertook to provide annual updates in four areas of interest.

Improve the community's understanding of the Broader Impacts criterion

A Dear Colleague letter entitled *Broader Impacts Review Criterion* was published on the DMS website on August 29, 2007. It provided a concise description of the Broader Impacts criterion, some background discussion, and illustrative examples well in advance of the first FY 2008 proposal submission windows. The letter was also distributed widely to mathematical sciences departments around the country.

In general, all panel briefings include a discussion of Broader Impacts and Program Officers ensure that these are addressed in panel summaries and PO comments. But part way through the FY 2008 review season, the Division adopted two new procedures for preparation of panels and panel summaries. First, the managing Program Officer provides the Dear Colleague letter to panelists when they receive their proposal review assignments in advance of the panel. Panelists are advised to read the letter for guidance when preparing reviews. Second, panelists are instructed to examine the Results of Prior Support section of proposals for Broader Impacts as well as for Intellectual Merit. If a proposal contains no discussion of the broader impacts of prior support, panels are instructed to note this omission in the panel summary. By providing guidance early in the proposal review process and feedback to PIs in their panel summaries, Division management expects these procedures will heighten awareness and deepen understanding of the Broader Impacts criterion within the mathematical sciences community

In addition, Division management and program Officers continue to meet with panels and to make stewardship visits to universities and institutions around the country and uses these opportunities to discuss broader impacts with representatives of the community.

Assess the breadth and scope of institute programs

After an extended period of discussion within DMS and with the Institute Directors, the Division decided on a course of action to assess the breadth and scope of the institutes activity as well as its balance within the larger DMS portfolio. DMS will base its assessment on data available on the institutes' websites and on data that is required in

each institute's annual report. The former consist chiefly of program descriptions and workshop descriptions. The latter includes lists of participants and their institutional affiliations. These data will be used to gauge the relationships among institute programs, organizers and participants going back to calendar year 2002, the inaugural year of the newest institutes, and their relationships to the discipline and the rest of the Division's investments. We expect a preliminary report by the end of the 2008 calendar year addressing specific questions of the COV:

1. how [institute] activities are related to DMS's research portfolio;
2. whether institute activities appropriately express the dynamic balance among core and emerging areas in the mathematical sciences;
3. how well institute activities reflect emerging research opportunities at both the interfaces between core areas of mathematics and the interfaces of mathematics with other disciplines;
4. the balance of short-term workshops/conferences with longer (one-semester or one-year) programs.

In engaging these questions, the Division has come to appreciate the complexity of the task of answering them satisfactorily and the need for on-going assessment of the investment. Accordingly, DMS intends to lay the ground work that will enable it not only to answer the COV's questions but also to inform its management of the institutes portfolio over the long term.

Broader participation by women, under-represented minorities and institution-type

A succinct way to report on broader participation is to provide funding data for research awards in categories tracked by NSF.

Underrepresented Minority consists of American Indian or Alaska Native, Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, as indicated on the NSF information request form for Principal Investigators. Please note that PIs may choose not to declare their gender, race or ethnicity; hence the data cannot be understood to represent fully and accurately the funding rate for women and underrepresented minorities. For comparison purposes, we also included data for all PIs and for PIs who choose not to declare their status. The reported percentage is the number of awards divided by the number of submissions in each category while the number in parenthesis is the actual number of awards.

Funding Rate	FY 2006	FY 2007
All	30% (685)	35% (769)
Women	25% (79)	34% (102)
Underrepresented Minority	28% (34)	23% (34)
Minority Status Undeclared	21% (39)	35% (67)

One notes an improvement in the number of awards and funding rate for women while there is no change in the number of awards for underrepresented minorities and a decline in the corresponding funding rate.

NSF also tracks award data for the Research in Undergraduate Institutions program (RUI) which is one measure of institutional diversity. PIs from non-PhD granting institutions are eligible to submit proposals with an RUI designation as are PIs from PhD granting institutions, if the PIs department does not have a doctoral program and meets certain additional requirements. As above, PIs eligible to submit under RUI may choose not to do so; hence the data cannot be understood to represent fully and accurately the funding rate for PIs from non-PhD granting institutions.

RUI/FY 2006

24% (17)

RUI/FY 2007

27% (17)

Support of graduate students, postdocs and junior researchers

NSF collects data on graduate student stipend support, postdoctoral stipend support and also the number of such individuals supported on NSF awards. The dollar amount reported below is the total spending in a given category and the number in parenthesis is the total number of individuals supported. Please note that since individuals may receive differing amounts of support, and be supported for differing lengths of time on different awards, no inference can be made from the data reported here about full time equivalent (FTE) number of individuals supported.

Funding

Graduate student

Postdoc

FY 2006

\$26.60M (1941)

\$12.22M (318)

FY 2007

\$27.76M (2133)

\$13.20M (351)

One notes an increase in support for graduate students and postdocs of \$2M. For comparison purposes, the DMS budget was \$199.5M in FY 2006 and \$205.7M in FY 2007 so one can also note that roughly 19.5% of the DMS budget was spent on graduate student and postdoctoral support in FY 2006 and that increased to 19.9% in FY 2007.

A succinct way to report on support for junior researchers, and to put such support in context, is via a table of funding rates on research awards by PhD age:

FY 2006

Years past degree	Awards	Proposals	Funding Rate
1-5	110	421	26%
6-10	150	547	27%
11-15	92	290	32%
16-20	87	268	32%
21-25	67	195	34%
26-30	51	132	39%
31-35	45	113	40%
36-40	33	87	38%
41-45	10	27	37%
>45	3	17	18%

FY 2007

Years past degree	Awards	Proposals	Funding Rate
1-5	129	440	29%
6-10	156	489	32%
11-15	114	318	36%
16-20	89	264	34%
21-25	81	200	41%
26-30	67	176	38%
31-35	55	117	47%
36-40	37	92	40%
41-45	13	34	38%
>45	5	21	24%

One notes an increase in number of awards made and an increase in the funding rate for junior researcher as defined, say, as those researchers within 5 years of the PhD and within 10 years of the PhD. One can also note that the largest numbers of awards are made in these two categories. However, funding rates in these categories remain below the overall funding rate for the division.

For ease of inspection and comparison, graphs of these data are attached below.

