NIH Research Opportunities in Bioengineering and Bioinformatics

Richard E. Swaja

Office of Extramural Research

National Institutes of Health

What is Biomedical Engineering?

Biomedical engineering integrates physical, chemical, mathematical, and computational sciences and engineering principles to study biology, medicine, behavior and health. It advances fundamental concepts, creates knowledge from the molecular to the organ systems levels and develops innovative biologics, materials, processes, implants, devices and informatics approaches for the prevention, diagnosis and treatment of disease; for patient rehabilitation; and for improving health.

(NIH Working Definition of Bioengineering – July 1997)

Bioengineering Research Areas

- Biomechanics
- Bioprocessing
- Bioelectrics, Ion Channels and Organ Function
- Clinical Medicine and Drug Delivery
- Functional Genomics – Microarray Technology, Integrated Systems and Analysis Tools
- Nanotechnology
- Imaging
- Informatics and Computational Applications

Bioengineering Research Areas

- Medical Implants, Biomembranes and Sensors
- Complex Biological Systems
- Organ Culture Systems and Organogenesis
- Rehabilitation and Prostheses
- Cell and Tissue Engineering and Biomaterials
- Tissue Regeneration
- Integrative Physiology
- Drug Bioavailability

Biomedical Engineering at the National Institutes of Health (NIH)

- Benefits all research institutes and centers
- Supports NIH mission of improving the quality of human health
- BME programs conducted by individual Institutes and collections of Institutes and centers

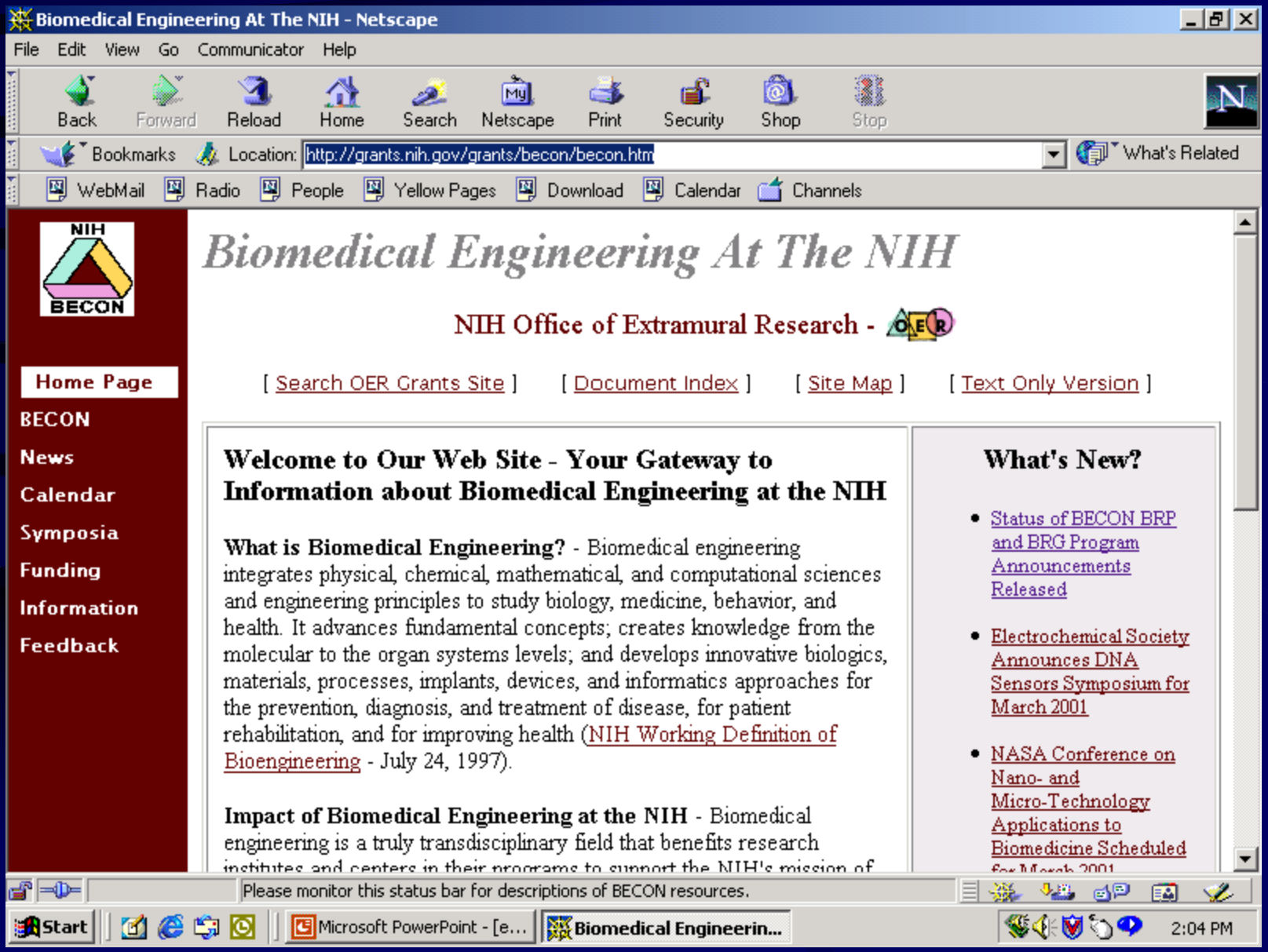
NIH Bioengineering Awards

Fiscal Year	Total Awards (M$)
1997	412.6
1998	501.1
1999	697.5
2000	771.2

NIH Bioengineering Consortium (BECON)

- Established – February 1997
- Consists of representatives of all NIH Institutes, centers and offices and other federal agencies
- Chaired by Dr. Wendy Baldwin – NIH Deputy Director for Extramural Research.
- Web site – http://www.nih.gov/grants/becon/becon.htm

BECON Homepage



NIH/BECON Symposia

- February 27-28, 1998 – Bioengineering: Building the Future of Biology and Medicine
- June 25-26, 1999 - Biomedical Imaging: Visualizing the Future of Biology and Medicine
- June 25-26, 2000 - Nanoscience and Nanotechnology: Shaping Biomedical Research

BECON 2001 Symposium

- Reparative Medicine: Building Tissues and Organs
- Focus on tissuegenesis and organogenesis – functional tissue engineering
- June 25-26, 2001
- Natcher Conference Center

BECON Activities – Research

- Bioengineering Research Grants (BRGs)
- Bioengineering Research Partnerships (BRPs)
- SBIR/STTR Bioengineering Awards

Bioengineering Research Grants (PA-00-009)

- R01 awards – Apply basic bioengineering design-directed or hypothesis-driven research to an important biomedical area.
- Aimed at single or small groups of researchers.
- Applications due on normal R01 dates – February 1, June 1, October 1.
- Total BRG funding for FY99 and FY00 – 12.7 M$ (Average award – 280 k$).

Bioengineering Research Partnerships (PAS-00-006)

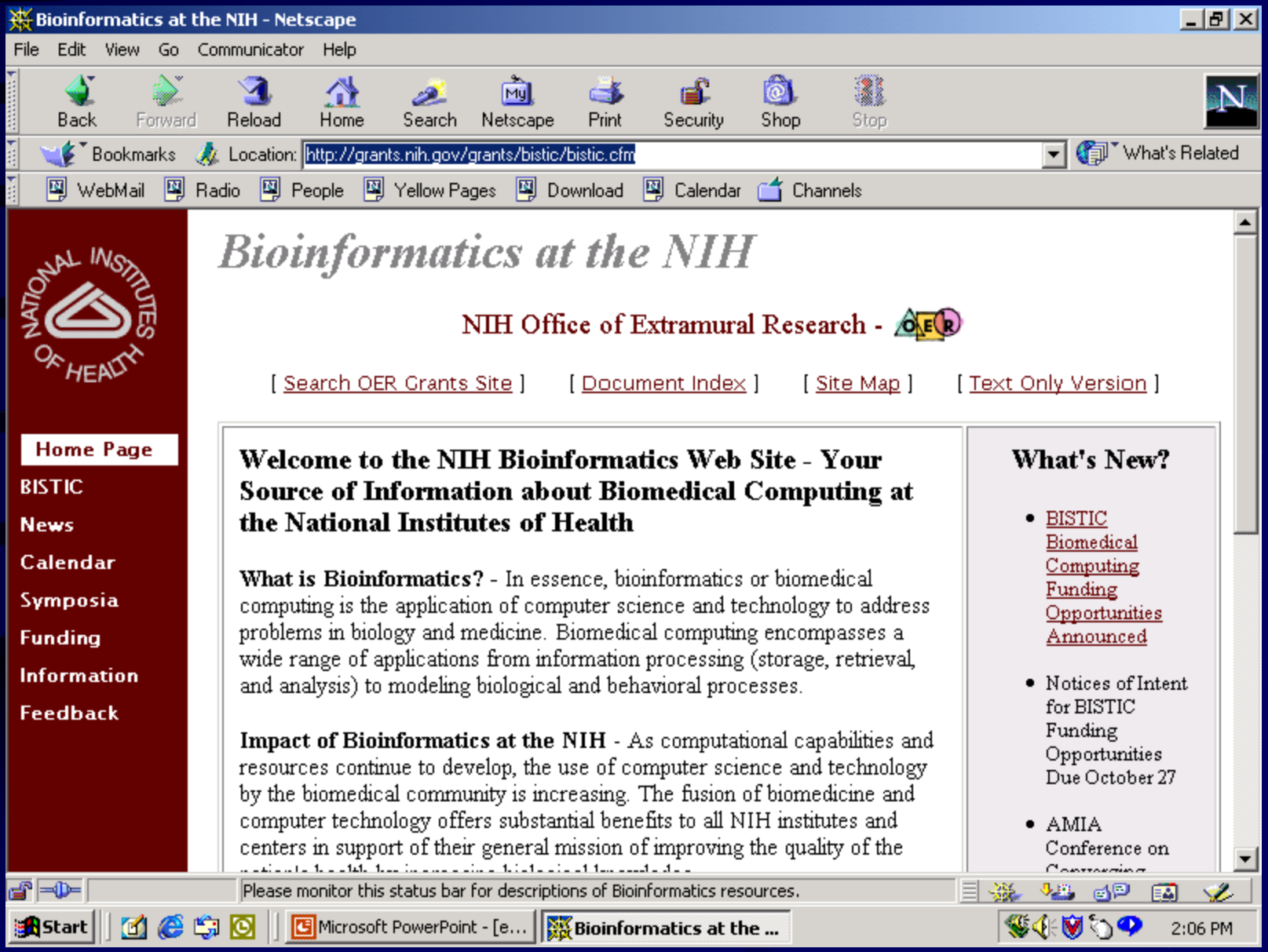
- R01 awards – special review
- Requires a multi-disciplinary research team applying an integrative, systems approach to solve a biomedical problem.
- Partnership must include bioengineering expertise and basic and/or clinical investigators.
- FY2000 status – 27 BRP awards – total funding of 25.8 M$ (Average award - 952 k$)

Status of BRP and BRG PA's

- Current BRP PA ended with August 10, 2000, application deadline.
- A new BRP PA is in preparation and will be released soon.
- BRP application deadlines will be in mid-January and mid-August.
- BRG PA is currently being revised to include innovative research support.

NIH BISTI Consortium (BISTIC)

- Consists of representatives of all NIH Institutes, centers, and offices
- Chair – Dr. Wendy Baldwin – NIH Deputy Director for Extramural Research
- Coordinates bioinformatics and biomedical computing initiatives at NIH
- Web site – http://grants.nih.gov/grants/bistic/bistic/htm


Bioinformatics at the NIH - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://grants.nih.gov/grants/bistic/bistic.cfm
What's Related
WebMail Radio People Yellow Pages Download Calendar Channels
NATIONAL INSTITUTES OF HEALTH
Home Page
BISTIC
News
Calendar
Symposia
Funding
Information
Feedback
Bioinformatics at the NIH
NIH Office of Extramural Research - OER
[Search OER Grants Site] [Document Index] [Site Map] [Text Only Version]
Welcome to the NIH Bioinformatics Web Site - Your Source of Information about Biomedical Computing at the National Institutes of Health
What is Bioinformatics? - In essence, bioinformatics or biomedical computing is the application of computer science and technology to address problems in biology and medicine. Biomedical computing encompasses a wide range of applications from information processing (storage, retrieval, and analysis) to modeling biological and behavioral processes.
Impact of Bioinformatics at the NIH - As computational capabilities and resources continue to develop, the use of computer science and technology by the biomedical community is increasing. The fusion of biomedicine and computer technology offers substantial benefits to all NIH institutes and centers in support of their general mission of improving the quality of the
What's New?
BISTIC Biomedical Computing Funding Opportunities Announced
Notices of Intent for BISTIC Funding Opportunities Due October 27
AMIA Conference on
Please monitor this status bar for descriptions of Bioinformatics resources.
Start
Microsoft PowerPoint - [e...
Bioinformatics at the ...
2:06 PM

Bioinformatics Research Areas

- Data collection
- Archiving large data sets
- Data visualization
- Databases, querying approaches and information retrieval
- Analysis of large data sets
- Computing algorithms and new methods for social science research

Bioinformatics Research Areas

- Data integration
- Platform-independent translational tools for data exchange
- Modeling or simulation environments
- Interoperability
- Web-based tools for data sharing
- Electronic communication

BISTIC Activities - Research

- Planning Grants for National Programs of Excellence in Biomedical Computing (NPEBC)
- Innovations in Biomedical Informatics Science and Technology (R21/R33)
- SBIR/STTR Biomedical Computing Awards (PA-00-118)

NPEBC Planning Grants (PAR-00-102)

- Grants to support planning of programs (P20) – develop collaborations, plan internal programs, recruit expertise, develop courses, etc.
- Up to 3 years
- No annual budget limit
- Applications due on November 27, March 27, and July 27 until 2002

NPEBC Objectives

- Conduct bioinformatics research that advances biology and medicine.
- Develop informatics tools for biomedical research.
- Train a new generation of biomedical computer scientists.
- Establish collaborations between the biomedical and computational communities.

R21/R33 Research Awards

- Phased Innovation Awards
- Can apply for R21/R33 package or only R33 award
- R21 – Developmental – 2 years - 100 k$ per year limit
- R33 – Research – 3 years – no limit
- Package – 4 years – no limit
- Application deadlines – Same as NPEBC

OB3 – NIBB ?

- Office of Bioengineering, Bioimaging and Bioinformatics
- National Institute of Bioimaging and Bioengineering