Office of Research
Performance Plan FY2005

Report to Faculty Senate

March 31, 2004

Arthur C. Sanderson
Vice President for Research
Research Portfolio Activities

1. Research Management and Strategy
2. Research Development
3. Research Outreach and Marketing
1. Research Management and Strategy

- Review and refinement of strategic plans – working with schools
- Development of Federal and State Research Initiatives
  - Examples: Homeland Security and Defense Systems
  - Science, Technology, and Community
- Strategic Development of Partnerships
  - Regional Consortium for Biotechnology
  - Sloan Consortium – Arch/HSS/Lally
- Space planning
- Technology commercialization linkage
- Financial and information management and reporting
2. Research Development

Faculty Services
Workshops
Mentoring
Colloquia
Research Development

- Support for faculty, student, and staff research development and effectiveness
- Mentorship of faculty toward building strategic research programs
  - Linkage to federal and state agencies, corporate sponsors
  - Refinement of individual and collaborative research plans
- Administrative support for proposal development, information dissemination, coordination
  - Emphasis on multi-investigator and interdisciplinary
  - Proposal preparation and support

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**Press Release**

FOR RELEASE: IMMEDIATE  
October 3, 2003

CONTACT: Joely Johnson  
johnsi2@rpi.edu  
(518) 346-6089

Major National Institutes of Health Grant Awarded to Rensselaer To Further Research on Healing Bone Injuries

TROY, N.Y. — George Plopper, assistant professor of biology at Rensselaer Polytechnic Institute, has been awarded a four-year, $2.6 million grant from the National Institutes of Health to continue research into the development of what Plopper refers to as “bone sparkle,” an engineered tissue that may one day be used to help bone injuries heal faster and stronger.
Research Development

- Faculty Development Support Services
  - Cost Share on Major Proposals
  - Mentoring of Faculty in Proposal Development
  - Tuition Cost Share Develops Graduate Research
  - Exploratory Research Seed Program
  - Research Development Coordination Committee
Exploratory Research Seed Funding Program

Impact and Status Report on Completed Projects

First cycle of awards: January, 2001
20 awards selected from 73 Proposals submitted
Investment: $936,000 - average of $47,000 per award

OUTCOMES:

- 80% of Seed Projects have resulted in new external awards.
- $14 million in new funded awards.

- 31 external proposals are still pending, totaling $15 million.
- 27 additional external proposals are in preparation.

- Publications: 46 journal papers, 56 conference papers, and 8 book chapters
Research Development

- ** Proposal Development
  - Proposal preparation – writing, graphics, review
  - Agency and corporate liaison and travel
  - Mentoring, workshops, and agency visits
  - Weekly bulletin of research opportunities
    - Extend to HSS (Done) and Lally
  - Monthly newsletter of research news
  - Web pages
  - Contracts and grants office (Finance) supports proposal, budget development, and formal interface to sponsors

Research FY05 Performance Plan
Office of Research Bulletin – Volume 69

September 13, 2002

In an effort to keep the Rensselaer research community apprised of current announcements and news regarding funding agencies, foundations and corporations, we regularly distribute an Office of Research Bulletin. If you would like further information regarding these other research news and opportunities, please contact our office at extension 4853.

National Science Foundation Program Announcement: Information Technology Workforce (ITWF)

NSF 01-33

The U.S. risks losing the scientific, economic and human resource advantages it now enjoys without an IT workforce that is large enough to meet both the public and private sectors' growing demand, and that is adept at using and producing information.


National Center for Research Resources Program Announcement: Extramural Research Facilities Improvement Program

PA NUMBER: PAR-01-130

The National Center for Research Resources (NCRR) is authorized under Sections 481A and 481B of the Public Health Services Act, as amended by Sections 303 and 304 of Public Law (PL) 106-505, to "make grants or contracts to public and nonprofit private..."
3. Research Outreach and Marketing

- Develop a coherent and effective web presence
  - Research web presence

- Enhance visibility among principal constituencies
  - Academic, Government, Corporate, Students, Alumni, Public
  - Marketing tools and materials

- Selectively expand published materials
  - Research report
  - Monthly newsletter of research activities and awards
  - Weekly bulletin of research opportunities
**Chips That Zip**

Researchers at Rensselaer are collaborating with IBM using silicon germanium to create an efficient programmable chip—one that could improve image processing 100-fold. These chips, with user-programmable hardware, could set the standard for future high-speed digital circuits.

**NSF Awards Rensselaer $10 Million For Nanotechnology Center**

At a standing-room-only press conference last Wednesday, Rensselaer President Shirley Ann Jackson announced the selection of Rensselaer by the National Science Foundation as one of six national Nanoscale Science and Engineering Centers. Rensselaer will receive $10 million over five years from NSF to fund the center, with additional funding from New York state, Rensselaer, and industry.

- More Research News...
Performance Plan: Key Actions

- **Enhance Cross-cutting Research Themes**
  - Policy, Ethics and Impacts
  - Experimental Media and Visualization
  - Environmental Science and Technology
  - Cognitive Science and Learning
  - Infrastructure and Energy Systems
  - Entrepreneurship and Management

- **Research and Education**
  - Expand Undergraduate Research Program

- **Libraries and Knowledge Infrastructure**
Sponsored Research Awards – FY03

Total Awards – $63.89 M

Contracts and Grants: $58.22 M

Memb., Fdtns, Gifts: $5.67 M

Research FY05 Performance Plan
Annual Indirect Cost Revenue

IDC Annual Revenue Dollars (millions)

Projected FY 2004

Actual December

FY2001 FY2002 FY2003 FY2004
Federal Research Awards – FY03

Increasing Portions of NIH (HHS) and DOD

NSF
DOD
NASA
DOE
HHS
Other

Research FY05 Performance Plan
## ACTIVE NIH AWARDS

### NIH Grants at Rensselaer:

<table>
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<tr>
<th>Year</th>
<th># of Awards</th>
<th>Total Active Awards</th>
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<tr>
<td>FY 2000</td>
<td>3</td>
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<tr>
<td>FY 2004</td>
<td>30</td>
<td>$24,053,853</td>
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### Faculty with NIH Grants:

- Abrajano*
- Belfort*
- Bennett
- Brunski
- Breneman
- Colon
- Cramer
- DePaola*
- Dordick
- Drew*
- Hess
- Ji*
- Kane (2)
- Koretz
- Maniatty
- McLoughlin
- Moore
- Palazzo
- Peterson*
- Plopper
- Rea*
- Roysam*
- Stenken
- Vashisht
- Wentland
- G. Xu
- J. Xu
- Zuker

(* - Subcontracts)
Distribution of Research Awards – FY 2002
By School Affiliation of Faculty

$ ( Millions )

Arch/LRC  ENG  HSS  MGMT  SCI  CTR FAC

0  5  10  15  20  25  30
Distribution of Research Awards – FY 2002
By Department Affiliation of Faculty
School of Engineering

<table>
<thead>
<tr>
<th>Department</th>
<th>BME</th>
<th>CEE</th>
<th>CHE</th>
<th>DSES</th>
<th>ECSE</th>
<th>MANE</th>
<th>MSE</th>
<th>ENG</th>
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<td>$ (Millions)</td>
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<td>4</td>
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- BME
- CEE
- CHE
- DSES
- ECSE
- MANE
- MSE
- ENG
Distribution of Research Awards – FY 2002
By Department Affiliation of Faculty

School of Science

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<td>PHYS</td>
<td>6.0</td>
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<tr>
<td>SCI</td>
<td>0.5</td>
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</table>
Distribution of Research Cost Share
By School and Center – FY2003

( Institutional cost share is provided only as a sponsor requirement. )

(* Tuition cost share not included. )
Distribution of Seed Funding
By School and Center – FY2001-2003

( Total of 110 faculty recipients in 41 projects over three years. )
Increasing Portions of NIH (HHS) and DOD
WIDER PERSPECTIVE: National Trends and Issues

Total R&D by Agency: FY 2003
Budget Authority in billions of dollars

- Total R&D = $112.0 billion (revised)
- DOD 49%
- HHS (NIH) 25%
- NASA 10%
- DOE 7%
- NSF 2%
- USDA All Other 4%

President’s Budget Proposal 3/02.
National Trends and Issues

Total BASIC RESEARCH by Agency: FY 2003
Budget Authority in billions of dollars

- HHS (NIH): 57%
- NASA: 9%
- DOE: 10%
- NSF: 13%
- USDA: 3%
- All Other: 3%
- DOD: 5%

Total basic research = $25.5 billion (revised)

President's Budget Proposal 3/02
National Trends and Issues

Obligations in billions of constant FY 2002 dollars

Research FY05 Performance Plan
National Trends and Issues

obligations in billions of constant FY 2002 dollars

* - Other includes research not classified
   (includes basic research and applied research;
   excludes development and R&D facilities)
Security Related Research at Rensselaer

1. Decision Technology for Critical Infrastructure Protection
   - Methods of analysis and decision tools
     - Support of first responders
   - Multiobjective decision and planning methods
   - Water and environmental monitoring, detection of biohazards
   - Security of information systems and networks, cybersecurity
   - Analysis and monitoring of energy systems
   - Intelligent transportation systems
   - Microrobotics for use in hazardous environments
   - Policy, impacts, social and political issues

2. Detection of chemical and biological agents
   - Biochips and sensors for detection, monitoring and drug delivery systems
   - Terahertz imaging for detection of biohazards,
     Multiple sensor, “sensitive skin” for bio and chemical detection

Research FY05 Performance Plan
Environmental Research at Rensselaer

Rivers and Estuaries Center on the Hudson
Upper Hudson Satellite Center

Scientific Approach:
- Aquatic Environmental Microbiology
- Distributed Sensor Networks
- Focus on River and Estuary Systems

Networked infrastructure:
- Geographically dispersed
- Interacting and dynamically changing variables
- Complex models for analysis and prediction

Interdisciplinary Themes:
- Educational Outreach – Web Access
- Environmental Policy and Management
- Defense and Security Systems

Research FY05 Performance Plan