

## RESEARCH FACULTY RETREAT - 2006

### WORKING GROUP #1

#### ***DEVELOP STRATEGIES THAT FOSTER SCIENTIFIC COLLABORATIONS WITHIN WFUSM AS WELL AS WITH WFU***

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**Group members:** Tom Hollis, Jackie Fetrow, Pete Santago, Richard St. Clair, Shannon Mihalko, James Yoo, Scott Rhodes  
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### **EXECUTIVE SUMMARY**

#### **Overview**

The Working Group on Scientific Collaborations was charged with the responsibility to identify existing benefits/challenges of collaboration and foster future strategies for collaborative efforts within Wake Forest University School of Medicine, as well as with Wake Forest University.

#### **Findings:**

Collaborative research already exists between both campuses but it can be expanded and promoted more widely. Research collaborations can provide a sense of inclusion in a group with common interests which can help develop communication skills, expand one's networking opportunities, disseminate information, and foster new initiatives while mentoring junior faculty. Attention should however be paid to clear communication, possible additional administrative procedures, conflict of interests and appropriate recognition for academic advancement.

#### **Recommendations:**

The group developed recommendations related to the following topics:

- Active Institutional Encouragement of Collaboration
- Increasing Information Dissemination to Facilitate Collaboration
- Facilitating Idea Exchange
- Remediating Barriers to Cross-Campus Collaboration
- Making the Culture of Collaboration Friendly
- Monitoring/Evaluating Progress and Impact

Specific suggestions are provided below.

## **I. Description of workgroup focus**

The focus of the workgroup was to define collaborative research and to identify its benefits and challenges. The group also deliberated on the University's current activities to support and encourage collaboration at all levels and to identify new ways in which collaborative opportunities could be enhanced.

## **II. Approach**

The group reviewed current centers, cores and programs that serve to enhance collaboration at the University. Through group deliberations, discussions with peers and colleagues and research developed by other institutions, the group identified the benefits and challenges of collaborative research, barriers and facilitators of collaboration, and developed recommendations to promote successful and productive collaborations at the University.

## **III. Analysis**

### Data

Cross Campus collaborations already exist and in 2006 four awards were given. A list of the awards and the Research support fund for 2004-2005 is attached. References to a better understanding of research collaboration and its interdisciplinary component are provided below.

### Definition of Collaborative Research

*Collaboration* has been defined as a formal body established by two or more autonomous partners, none of whom is under contract to another but whose aim is to attain substantive or symbolic goals that no partner could achieve independently (Fishbough, 1997).

Collaborative research can be formal or informal and can include faculty members, staff and students. Collaborative teams can include members from different Schools, Departments, Centers, Institutes, Core Facilities or Offices of Research. The benefits and challenges of collaborative research are defined below.

### Benefits of Collaborative Research

*A collaborative team is more than the sum of its parts.*

Collaborative research:

1. Provides access to patients or participants otherwise unavailable.
2. Increases the probability of developing innovative research proposals which in turn increase research funding revenues.
3. Allows individuals to contribute their talent according to their expertise and comfort level.
4. Helps in overcoming intellectual isolation.
5. Provides a forum for the transfer of knowledge and intellectual input at an early stage of the research that can contribute to 'set breaking' understanding, leading to different approaches and frameworks.
6. Helps in the development of social and communication skills to work as part of a team.
7. Expands individual networks allowing face-to-face contacts and including members of disciplines that may otherwise remain apart from each other.
8. Enhances rapid dissemination of new knowledge leading to better scientific proposals.
9. Serves as a mentorship tool for junior faculty, staff and students.
10. Provides a better understanding of focused area when researchers from different disciplines bring their expertise to a specific problem.

11. Provides a better understanding of different environments (different administrative procedures, different lab procedures, different research approach, etc.) through the members of the collaborative team.

### Challenges of Collaborative Research

Collaborative research:

1. Demands more time to prepare proposals or scientific articles, to make sure all participants are fully informed and to coordinate work from different locations.
2. Requires the coordination of additional and different administrative procedures (transfer of resources, authorship, patents, etc.) from different participating institutions, schools or departments.
3. May be affected by spatial proximity limiting informal communication.
4. May leave out individuals who are not peers, limiting contribution from individuals at other ranks and the possibility of mentoring for junior individuals.
5. May affect credits for promotion if recognition of collaboration is not recognized appropriately.
6. May generate conflict of interests if access to equipment or patents is involved or if industry is involved.
7. May lead to a loss of research focus if too much effort is required to establish collaborations.

## **IV. Summary/Conclusions**

The work group concluded that collaboration is a way to increase the breadth and innovation in research. The importance of collaborative research increasingly is being recognized by the NIH, which is allocating more and more resources to collaborative and translational research.

Collaboration cannot be forced but it can be facilitated. The University should make as much information available as possible to help faculty identify collaborative partners and should actively promote activities and programs that encourage collaboration.

Of the kinds of collaborations identified, special efforts should be made to encourage collaboration between the Reynolda and Medical School faculty and between basic and clinical researchers. Several opportunities can arise through research collaborations including a sense of inclusion in a group with common interests which can help develop communication skills, expand one's networking opportunities, disseminate information, and foster new initiatives while mentoring junior faculty. Attention should however be paid to clear communication, possible additional administrative procedures, conflict of interests and appropriate recognition for academic advancement.

## **V. Recommendations**

### General

- Collaboration should be actively promoted at Wake Forest University.
- Pilot funding that targets new collaborative ventures should be set aside.
- Centers, being multi-disciplinary and transdepartmental by design, have a special responsibility to facilitate and nurture collaboration.
- The University culture should develop the common understanding that collaboration is becoming an increasingly important component of the research enterprise, and this should be recognized in tracks of academic advancement.

## Specific

### **Active Encouragement of Collaboration**

- *The cross-campus collaborative pilot fund program should be maintained and widely publicized.*

This program has provided 22 awards from 2000-2005 and these have resulted in 11 grant applications. While there is no way to know for certain, the workgroup felt that many of these joint projects may not have occurred without this stimulus.

- *A pilot program to foster collaboration between clinical and basic sciences should be implemented and evaluated.*

This program would help stimulate the translation between the basic and clinical sciences and help to grow our external funding portfolio in this area.

### **Increasing Information Dissemination to Facilitate Collaboration**

The failure to find good collaborations can be due to lack of information. Specific recommendations to increase the availability of information useful to finding collaboration include:

- *Develop an internet “kiosk” accessible to all faculty members, where announcements of the availability of internal pilot funds such as the CCCR programs could be posted.*
- *Make available in a searchable form for the Office of Research database showing grants, topic areas and investigators for submitted and funded grants.*
- *Provide a search engine to search the Wake Forest public and intranet websites.*
- *Publish new grants awarded in “Pursuit.”*
- *Develop Center, Cores and Resources web-page with a description and key individuals to contact.*
- *Include a module on collaborative opportunities during new faculty orientation.*

### Facilitating Idea Exchange

- *Form a committee to identify good methods to provide opportunities for social interactions between faculty members from diverse backgrounds.*

Many collaborative opportunities come from unplanned or casual interactions between faculty members. In addition, these casual interactions are one of the satisfactions of academic life. Ideas for increasing the opportunities were considered including: designating places for people to gather for such exchanges, organize planned but unstructured gatherings like tea's or receptions, brown bag lunches to exchange faculty between departments or programs, and a faculty club. However, it was not possible to arrive at a considered set of recommendations, and so to explore this avenue further the committee recommends a committee to make recommendations to the academic leadership.

### Remediating Barriers to Cross-Campus Collaboration

- *Widely distribute teleconferencing or computer conferencing technology.*

As the campus units become more dispersed it becomes more burdensome to have face-to-face meetings. However, face-to-face meetings are important for developing consensus and establishing trust-relationships. Technology can be used to help ameliorate these barriers.

- *Set inter-campus shuttle times to reduce the down- time for meetings when they are at different campuses. Specifically, set pick-up times at :15 and :45.*

#### Making the Culture Collaboration Friendly

- *Academic advancement should acknowledge and reward collaborative contributions and this should be clearly defined in promotion guidelines.*
- *Sponsor yearly programs of the “how-to” of collaboration.*
- *Make sure that research meetings include representatives of both campuses.*

#### Monitoring/Evaluating Progress and Impact

- Track collaborative grant programs to see if the assumption that they stimulate new, successful collaborations is warranted.

### **REFERENCES**

Fishbough, M. S. E. (1997). Models of collaboration. Needham Heights, MA: Allyn & Bacon

Rhoten, D. *A Multi-Method Analysis of the Social and Technical Conditions for Interdisciplinary Collaboration* – The Hybrid Vigor Institute, San Francisco, CA

Katz, J. Sylvan, Martin, Ben. R., 1995. *What is research collaboration?*, Science Policy and Research Evaluation Group, ESRC Centre for Science, Technology, Energy and Environment Policy, Science Policy Research Unit, University of Sussex, Falmer, Brighton BN1, 9RF, UK

### **APPENDICES**

- *“A Multi-Method Analysis of the Social and Technical Conditions for Interdisciplinary Collaboration” – The Hybrid Vigor Institute, San Francisco, CA., Diana Rhoten, Ph.D., Principal Investigator ([Overview Attached](#))*
- Katz, J. Sylvan, Martin, Ben. R., 1995. *What is research collaboration?*, Science Policy and Research Evaluation Group, ESRC Centre for Science, Technology, Energy and Environment Policy, Science Policy Research Unit, University of Sussex, Falmer, Brighton BN1, 9RF, UK. ([Abstract Attached](#))
- Cross Campus Collaborative Research Support Fund – 2004-2005
- Cross Campus Spring 2006 Grant Awards

## OVERVIEW OF RESULTS

At the 1999 Annual Meeting of the History of Science Society, Sheila Jasanoff, professor of science and public policy at Harvard University and then president of the Society for Social Studies of Science, made the following remarks:

Both historical and contemporary studies have done much in recent years to bring greater transparency to the inner workings of science and technology. Making the process of science more accessible by illuminating the normally invisible backstages of laboratories and other scientific spaces, ... much wisdom can be gained from looking at science and technology as social institutions in which people collaborate and compete, struggle for credibility, seek to make livings, and yearn for success or glory ... [However,] science's specialness derives from the objects of its quest, not from the strategies by which scientists try to achieve it (Jasanoff, 2000: 621).

While we agree with Jasanoff that there is value in examining the internal workings of scientific institutions, we agree with this sentiment precisely because of the importance we attribute to the process, as well as the products, of science. This project has concerned itself with the strategies of collaboration, and specifically with those strategies as implemented in and emerging from interdisciplinary research centers. In recent years, interdisciplinarity has become synonymous with all things modern, creative and progressive about scientific research. The interdisciplinary imperative has arisen not from a simple philosophic belief in "interdisciplinarity" or "heterogeneity" but from the character of problems currently under study, many of which require the combined efforts of scholars trained in different disciplines. Thus, just as industry has used flexible, cross-disciplinary teams to spark innovation, many academics now seek new kinds of intellectual alliances to address complex social and scientific problems. As a result, interdisciplinary research centers have sprung up at universities around the country, hosting agendas, affiliates, and activities that span traditional epistemological as well as organizational boundaries.

At the same time that interdisciplinary research centers have become increasingly important at universities in the United States, we have learned little about how they originate and operate. There is a vast body of theoretical literature in the sociology of science about how interdisciplinary research should be organized, how scientists might behave in interdisciplinary collaboration, and how such activities could be facilitated through better management. However, to date, there is a lack of empirical work dedicated to understanding how centers are organized, how researchers do behave, and how their activities are facilitated. Thus, while there is a general acceptance of interdisciplinary collaboration as both a worthy and authentic component of "new" science and scientific research in theory, the idea remains largely misunderstood, misconstrued, and mismeasured in practice.

We believe that before funding agencies, university leaders, and individual scholars promote and pursue these centers further, the academic, science and policy communities should have a better understanding of the factors that influence their formation and functionality. Thus, we challenge Jasanoff's conclusion, arguing that the emergence of new interdisciplinary research centers begs investigators from the various communities of science studies to find new ways of talking about the objects of science at the same time that it also demands scholars of organizational studies to develop new ways of framing and assessing the strategies that scientists employ in their quests for these objects.



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Research Policy 26 (1997) 1–18



# What is research collaboration?<sup>1</sup>

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Accepted 11 January 1995

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## Abstract

Although there have been many previous studies of research collaboration, comparatively little attention has been given to the concept of ‘collaboration’ or to the adequacy of attempting to measure it through co-authorship. In this paper, we distinguish between collaboration at different levels and show that inter-institutional and international collaboration need not necessarily involve inter-individual collaboration. We also show that co-authorship is no more than a partial indicator of collaboration. Lastly, we argue for a more symmetrical approach in comparing the costs of collaboration with the undoubted benefits when considering policies towards research collaboration. © 1997 Elsevier Science B.V. All rights reserved.

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## 1. Introduction

Over recent years, there has been increasing interest among researchers and within science policy circles in the notion of research collaboration<sup>2</sup>. It is widely assumed that collaboration in research is ‘a good thing’ and that it should be encouraged. Numerous initiatives have been launched with the aim

of developing collaboration among individual researchers—bringing them together, for instance, in new or larger centres of excellence, or alternatively in interdisciplinary research groups. There have also been policies aimed at improving the links between science and technology through fostering research collaboration across sectors—in particular, between university and industry. Furthermore, most governments have been keen to increase the level of international collaboration engaged in by the researchers whom they support in the belief that this will bring about cost savings or other benefits.

Implicit in this enthusiasm for research collaboration and in policies aimed at fostering it are a number of assumptions:

1. that the concept of ‘research collaboration’ is well understood;
2. that we are dealing with essentially the same phenomenon, whether we are concerned with col-

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<sup>1</sup> The authors are grateful to the Economic and Social Research Council for support, first through the programmes on ‘Academic Research Performance Indicators’ and ‘The Interface Between Corporate R&D and Academic Research’, and currently through the ESRC Centre for Science, Technology, Energy and Environment Policy (STEEP). They would also like to thank Dr. Diana Hicks, Phoebe Isard and Dr. Terttu Luukkonen for comments on an earlier version of the paper.

<sup>2</sup> In what follows, we are concerned primarily with collabora-

## Memorandum

April 12, 2004

TO: Marty Dozier, Director – Sponsored and Special Funds  
WFUSM Controller's Office

SUBJECT: Cross Campus Collaborative Research Support Fund

Marty, listed below are three approved 2004-2005 Cross Campus Collaborative Research projects. The source of funds to be used is the School venture fund account.

<b>PIs/Project Title</b>	<b>Total Grant Amount</b>	<b>WFUHS Portion</b>
<b>Dale Dagenbach/Terrence Stanford</b> <i>Effects of Deep Brain Stimulation on Executive Functioning among Parkinson's Disease Program</i>	\$9,840	\$4,920
<b>Martin Guthold/Roy Hantgan</b> <i>Novel Investigation of the Mechanical Properties of Individual Fibrin Fibers by a Combined Atomic Force/fluorescence Microscope</i>	\$15,000	\$7,500
<b>Bernie Brown/Suzi Torti</b> <i>Ferritin and Kininogen Interaction</i>	\$15,000	\$7,500
	\$39,840	\$19,920

Thank you for your assistance. Please let me know if you have any questions.

Sheila Vrana

SV/ah

## Cross Campus Collaborative Research Support Fund

May 3, 2005

<b>PIs/Project Title</b>	<b>Total Grant Amount</b>	<b>WFUHS Portion</b>
<b>David Goff/W. Jack Rejeski</b> <i>Translating Research into the Prevention of Diabetes Mellitus (TRIP DM) Pilot Study</i>	\$14,978	\$7,488.50
<b>Jason Grayson/Jacque Fetrow</b> <i>Computational Modeling of Reactive Oxygen Intermediate Signaling in CD8+ Cells</i>	\$15,000	\$7,500
<b>Gary Miller/Tongjian You</b> <i>Does Weight Loss Following Laparoscopic Roux-en-Y Gastric Bypass Improve Physical Function?</i>	\$15,000	\$7,500
<b>Joel D. Stitzel/David L. Carroll</b> <i>Development of Electrospinning Apparatus for Tissue Engineering</i>	\$14,700	\$7,350
<b>Mary Lou Voytko/Carole Browne</b> <i>Effects of Estrogen on Cholinergic Indices in Surgically Menopausal Monkeys</i>	\$15,000	\$7,500
	\$37,339	\$37,339

Thank you for your assistance. Please let me know if you have any questions.

Paula M. Means

PMM/ah

**Cross Campus Spring 2006**

<b>PI1 Name</b>	<b>PI2 Name</b>	<b>Title</b>	<b>Amount Awarded</b>
S. Bruce King, Chemistry	Charles Morrow, Biochemistry	Structural Requirements of Nitrated Fatty Acids - Natural cellular signaling agents and nitric oxide (NO) donors	\$ 20,000.00
Jacquelyn Fetrow, Physics and Computer Science	Elizabeth Hiltbold, Microbiology & Immunology	Modeling Networks of Dendritic Cell Maturation Induced by Bacteria	\$ 20,000.00
Jack Rejeski, HES	Edward H. Ip, Public Health Services	Adaptive and Standardized Assessment for Functional Ability in Older Adults	\$ 20,000.00
William H. Turkett, Jr., Computer Science	Susan Sergeant, Biochemistry	Integration of Neutrophil Function and Signaling Networks with Computational Modeling	\$ 20,000.00