

**Mathematical body weight regulation
models from bench to bedside:
Navigating translational research**

A Mathematician's Perspective

**Diana M. Thomas, Ph.D.
Montclair State University, Montclair, NJ**

Overview

- What is Translational Research?
- Team formation
- Publications
- Conferences
- Funding
- Tenure, Promotion, Institutional Advancement



What is Translation Research?

- To improve human health, scientific discoveries must be translated into practical applications
- Such discoveries typically begin at **“the bench”** with basic research in which scientists study disease at a molecular or cellular level then progress to the clinical level, or the **patient's “bedside”**

-NIH Roadmap



Overview

- What is Translational Research?
- Team formation
- Publications
- Conferences
- Funding
- Tenure, Promotion, Institutional Advancement



Ingredients for a solid translational team

Team Formation

Team ingredients that foster modeling from the bench to the patients bedside:

- Mathematician
- Physiologist, Nutrition Expert
- Clinician
- Director of a research program
- Computer Programmer (java)




Overview

- What is Translational Research?
- Team formation
- Publications
- Conferences
- Funding
- Tenure, Promotion, Institutional Advancement



How does the publishing culture differ?

Publications



The screenshot shows a web browser window displaying the AMS website. The browser's address bar shows the URL <http://www.ams.org/profession/leaders/culture/culture>. The page title is "Information Statements on the Culture of Research and Scholarship in Mathematics - Windows Internet Explorer provided by CSAM C". The browser's toolbar includes navigation buttons, a search bar, and various utility icons. The website header features the AMS logo and navigation links for MathSciNet, CML, Bookstore, Journals, Employment Services, and Give to the AMS. A secondary navigation bar includes links for Login, Customer Services, My Cart, FAQ, and a Google Custom Search box. The main navigation menu is a red bar with links for Publications, Meetings, The Profession, Membership, Programs, Math Samplings, Policy and Advocacy, In the News, and About the AMS. The page content is organized into several sections: a breadcrumb trail, a main title, a paragraph of text, a list of statements, and sidebars for navigation and quick links.

Information Statements on the Culture of Research and Scholarship in Mathematics - Windows Internet Explorer provided by CSAM C

<http://www.ams.org/profession/leaders/culture/culture>

AMS
AMERICAN MATHEMATICAL SOCIETY

MathSciNet® | CML | Bookstore | Journals | Employment Services | Give to the AMS

Login · Customer Services · My Cart · FAQ

Google™ Custom Search

Publications Meetings The Profession Membership Programs Math Samplings Policy and Advocacy In the News About the AMS

The Profession

- Data on the Profession
- For Department Leaders
 - Workshops for Department Chairs
 - Culture Statements
- Employment Services
- Career Information
- Directory of Institutions
- Prizes and Awards
- Professional Directory

Information for

- Authors
- Faculty
- Librarians
- Media

You are here: Home > The Profession > For Department Leaders > Culture Statements

Information Statements on the Culture of Research and Scholarship in Mathematics

In 2004, the AMS Committee on the Profession decided to create a series of information statements relating to the evaluation of mathematicians. The goal of this series of statements on the culture of research and scholarship in mathematics is to highlight the ways in which the traditions in mathematics differ from those in other disciplines, especially other sciences and engineering.

All statements are posted in PDF format.

- 2004 Statement: Joint Research and Its Publication
- 2005 Statement: Directing Ph.D. Theses
- 2006 Statement: Rates of Publication
- 2007 Statement: Postdoctoral Positions
- 2008 Statement: Funding

Quick Links

- Programs that Make a Difference
- Achievement Award
- Graduate Students
- Undergraduate Students
- Increasing Diversity

News

Bass Nominated for National Medal of Science Committee

U.S. IMO Team

Christodoulou and



Where should I publish?

Publications

Pros

Cons

Math Journals

- Experience

- Application, Slow, Lack of Impact in medical field

Biomed Journals

- High Impact, Fast

- Structured, Fast



Can we publish mathematics in biomed journals?

Publications

Background: Energy intake (EI) during weight loss is difficult and

To publish in biomed journals you need to:

1. Make research relevant to medical applications.
2. Demonstrate that your model “works” and detail the limitations.
3. There are items reviewers are looking for-don’t take your own route.

limits.

Conclusion: The validity of the newly developed EI model was



Diana M. Thomas, Ph.D.

Overview

- What is Translational Research?
- Team formation
- Publications
- Conferences
- Funding
- Tenure, Promotion, Institutional Advancement



Presentations at Math Conferences

Conferences

A one hour presentation where...

- The general audience should understand 10 minutes of your talk
- Your talk should include a proof or major simulation



Presentations at Non-math Conferences

Conferences

A one hour presentation where...

- The audience should understand most of your talk
- The presentation is structured by Purpose, Methods, Results, and Conclusion
- There is reduced amount of formulas and equations
- There is inclusion of answers to questions such as:
Does it work? Is it clinically applicable? How can a non-mathematician access the model?



Overview

- What is Translational Research?
- Team formation
- Publications
- Conferences
- Funding
- Tenure, Promotion, Institutional Advancement



Is funding affected by culture?

Funding

- Mathematicians are usually funded by NSF for small amounts of money
- Most mathematicians are not funded
- Proposal writing is considered extraneous to scholarship

Do I take time away from publishing to write a proposal which has a low probability of getting funded and does not give me “time”?

SMB Survey Results

“My impression is that the NIH funding is not geared for biomathematics.”



Why seek funding?

Funding

Obvious Reasons

- Less pre-calc more research time
- Obtain computing equipment, travel money, student help

Less Obvious Reasons

- Page Costs
- Site visits
- Student training
- Payment for your collaborators time
- Ability to conduct your dream clinical trial



Tips for applying for federal funding

Funding

- Search NIH site for guidance – Video of a mock study section reviewing proposals
- Read books: Research Proposals, Third Edition: A Guide to Success Thomas E. Ogden
- Read proposal summaries on NIH Reporter
- Talk to successfully funded colleagues in mathematics (Evelyn Sander) and your translational research team for advice
- Read successful grant proposals!!
- Use Adobe Read Out Loud feature



Overview

- What is Translational Research?
- Team formation
- Publications
- Conferences
- Funding
- Tenure, Promotion, Institutional Advancement



Crossing departmental silos

Tenure, Promotion, Institutional Advancement

- Obtain support from your chair and dean
- Forge relationships across campus (Cross-Disciplinary classes, collaborative studies, sharing students)
- Apply for every possible university-wide internal funding mechanism
- Talk often to your chair and your dean to make sure they know the unique challenges you face
- Maintain your relationships with departmental colleagues



Thank you to my collaborators!

Questions????



Diana M. Thomas, Ph.D.



Diana M. Thomas, Ph.D.