Challenges and Opportunities in Peer Review

A Vision for Ensuring Its Strategic National Value

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National Institutes of Health

U.S. Department of Health and Human Services

Peer Review at CSR

CSR Activities

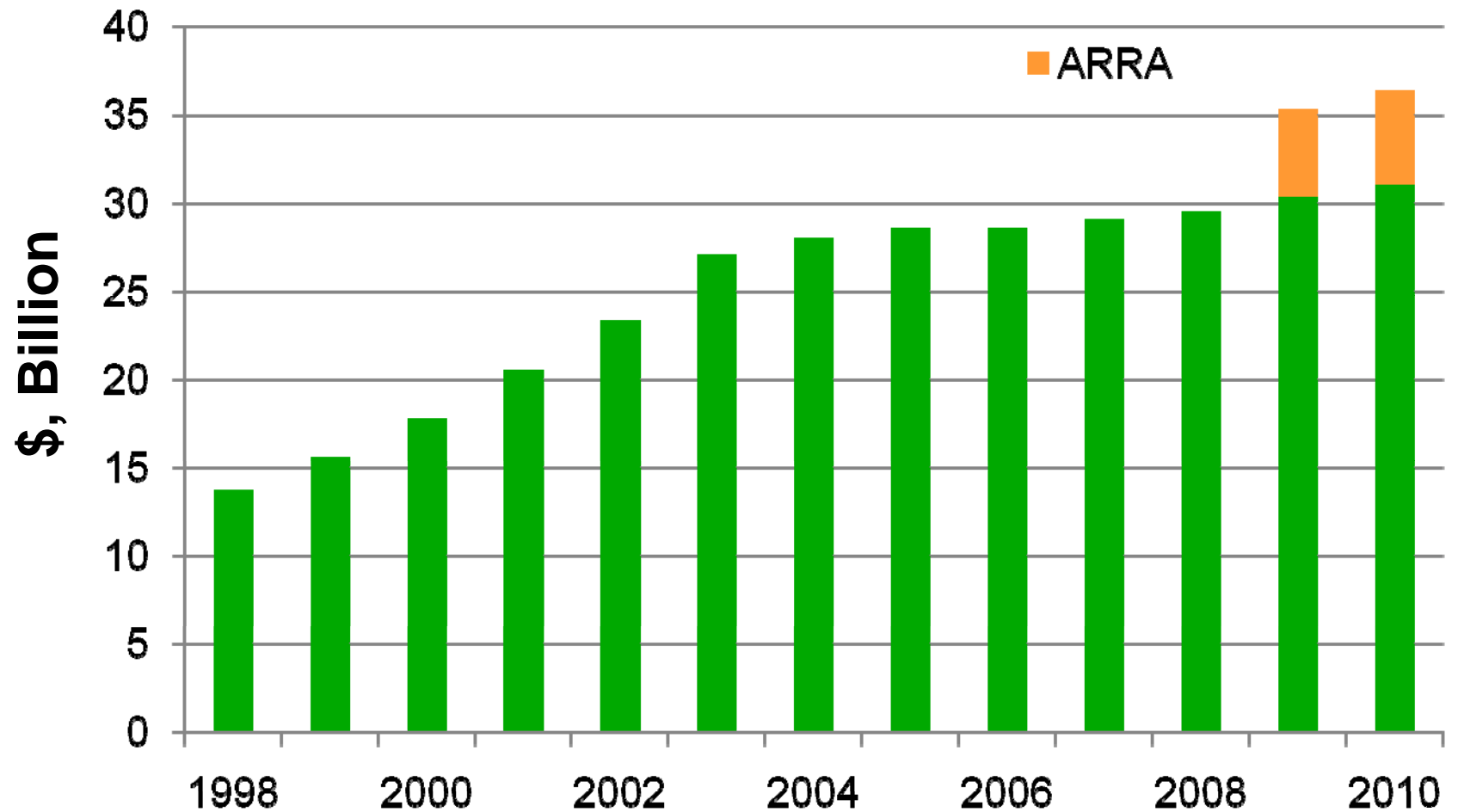| Fiscal Year	Applications Received	Applications Reviewed	Number of Study Sections	Number of Reviewers	Number of SROs
2008	73,000	51,000	1,600	16,000	240
2009	113,000	78,000	2,200	39,000	240
2010	88,000	64,000	1,700	17,000	240

This is CSR

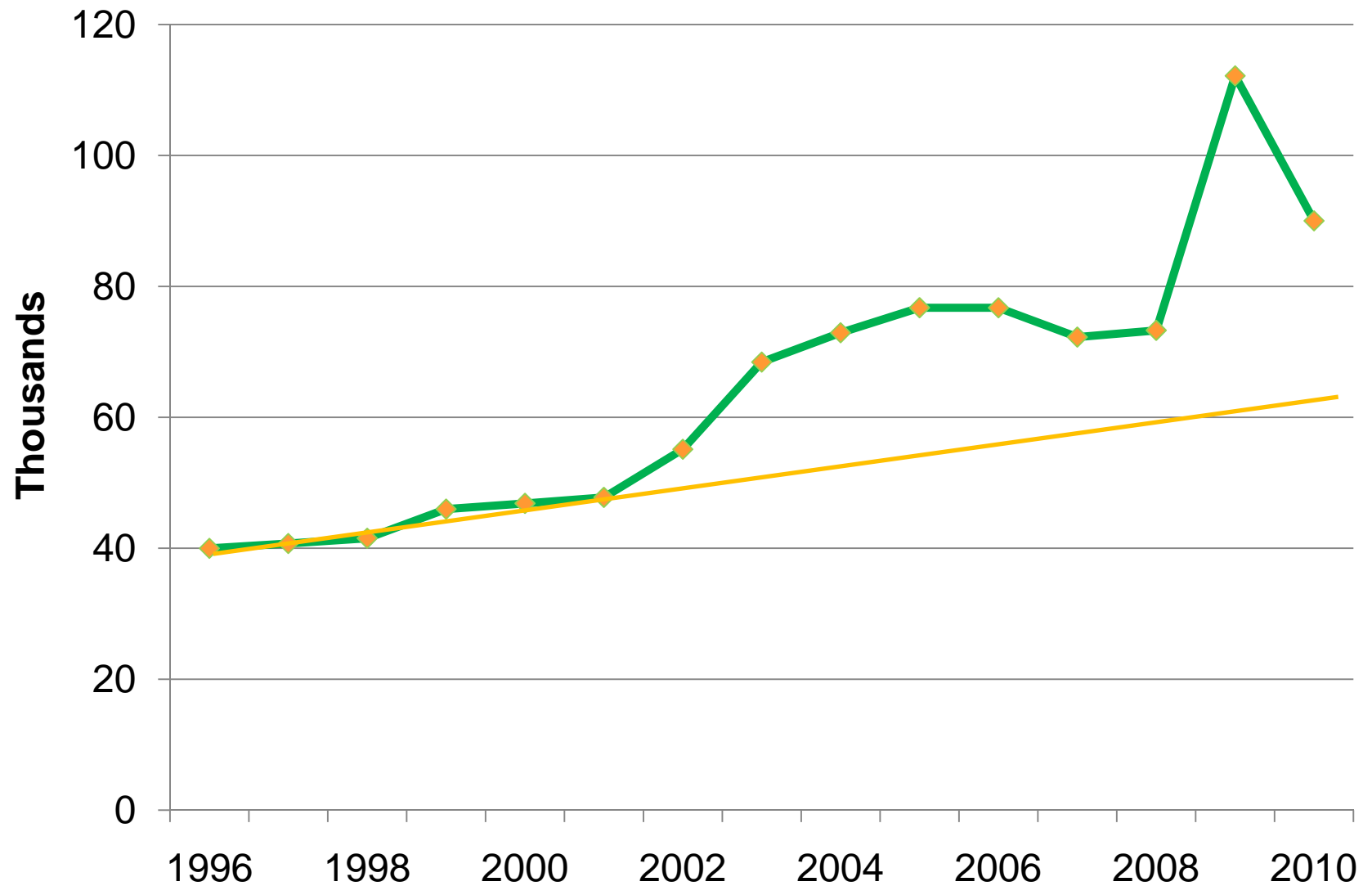September 2009

The Drivers for Change
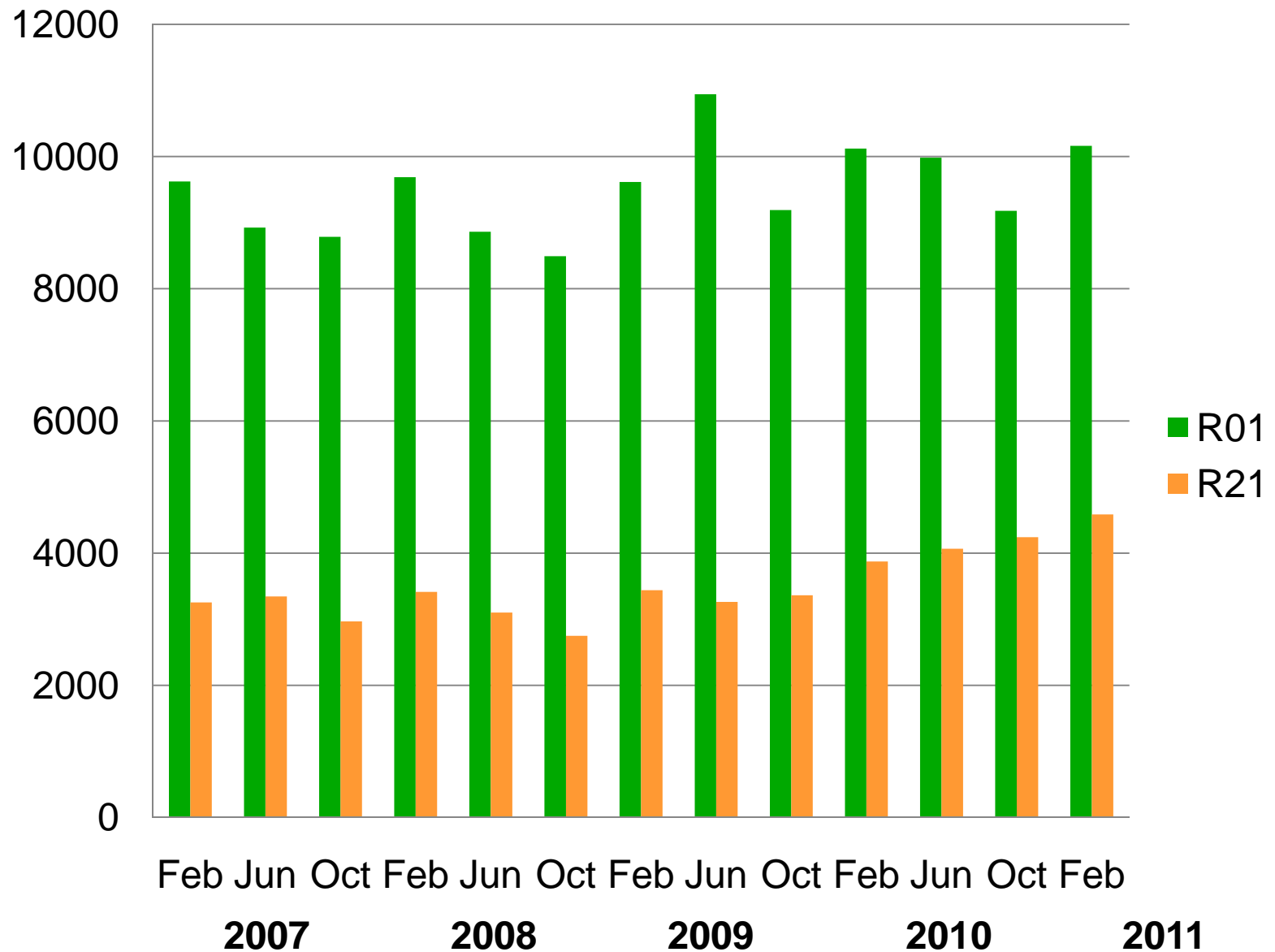
1st Driver: The NIH Budget

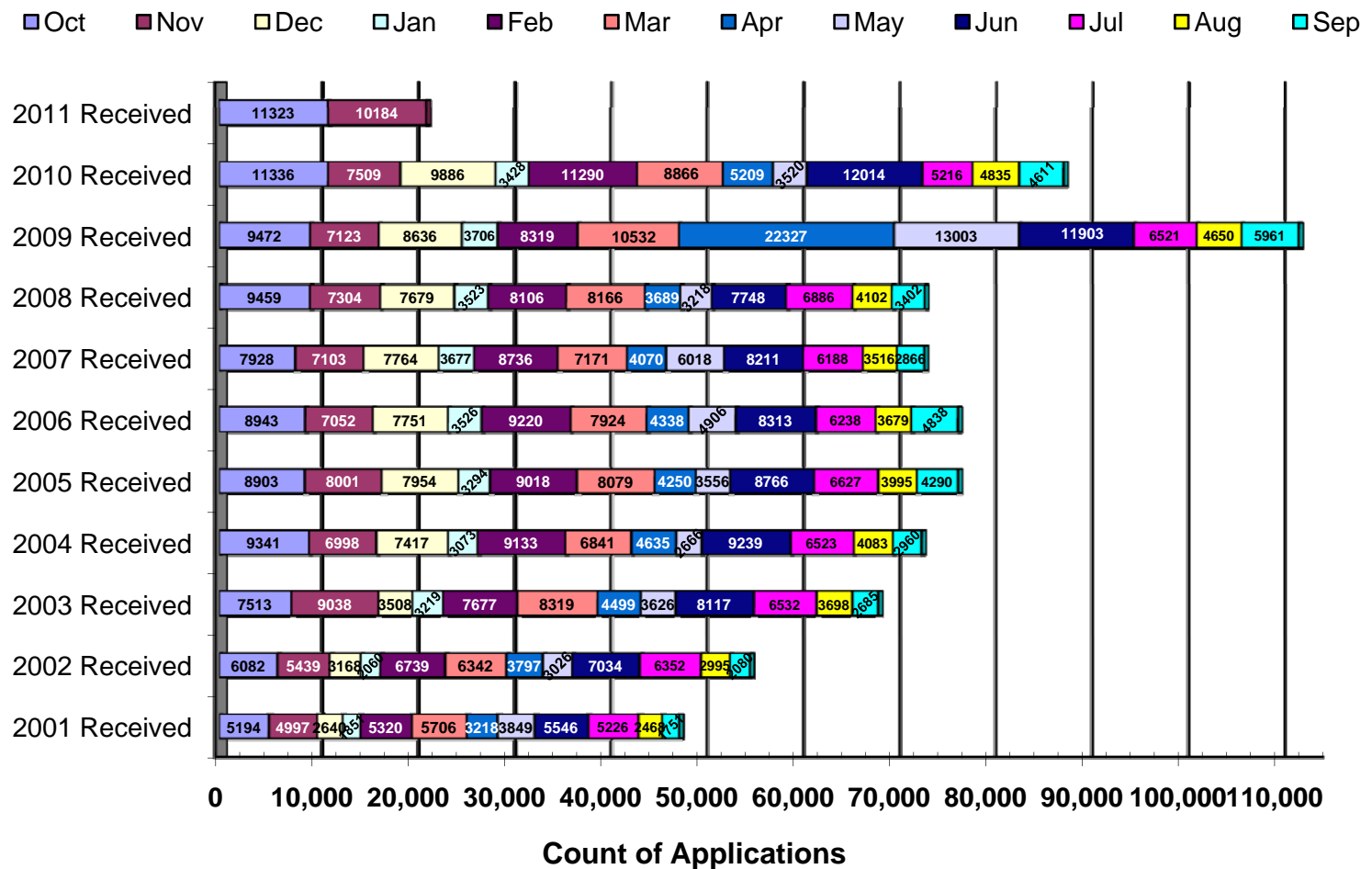# 2nd Driver: Number of Applications
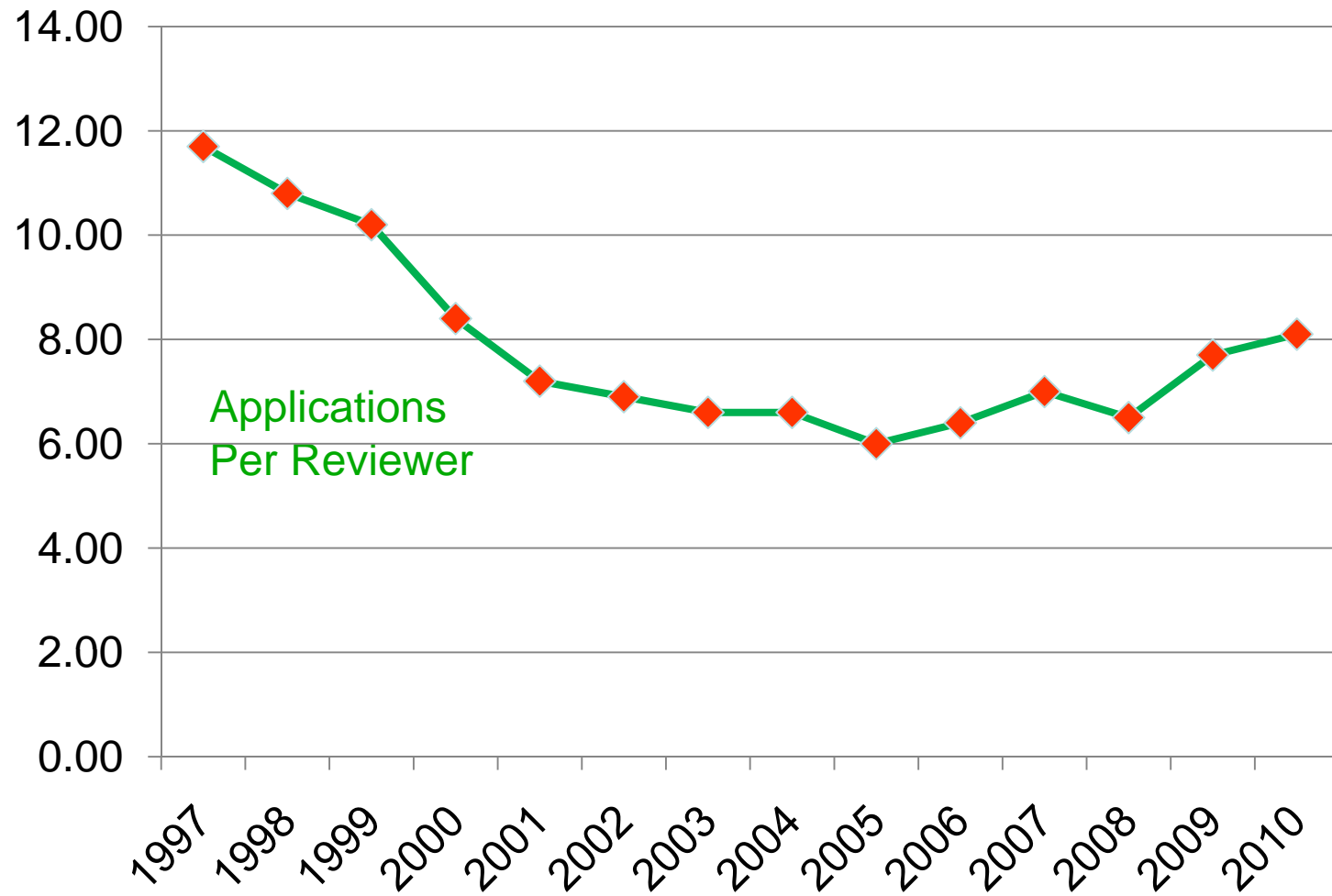
R01 and R21 Received for CSR Review

Application Received By Month of FY

Legend: ☐ Oct ☐ Nov ☐ Dec ☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2011 Received	11323	10184										
2010 Received	11336	7509	9886	3428	11290	8866	5209	3520	12014	5216	4835	4611
2009 Received	9472	7123	8636	3706	8319	10532	22327	13003	11903	6521	4650	5961
2008 Received	9459	7304	7679	3525	8106	8166	3689	3218	7748	6886	4102	3402
2007 Received	7928	7103	7764	3677	8736	7171	4070	6018	8211	6188	3516	2866
2006 Received	8943	7052	7751	3526	9220	7924	4338	4906	8313	6238	3679	4338
2005 Received	8903	8001	7954	3294	9018	8079	4250	3556	8766	6627	3995	4290
2004 Received	9341	6998	7417	3075	9133	6841	4635	2666	9239	6523	4083	2960
2003 Received	7513	9038	3508	3219	7677	8319	4499	3626	8117	6532	3698	3685
2002 Received	6082	5439	3168	3060	6739	6342	3797	3026	7034	6352	2995	3081
2001 Received	5194	4997	2640	1635	5320	5706	3218	3849	5546	5226	2468	1675

Count of Applications

Axis: 0, 10,000, 20,000, 30,000, 40,000, 50,000, 60,000, 70,000, 80,000, 90,000, 100,000, 110,000
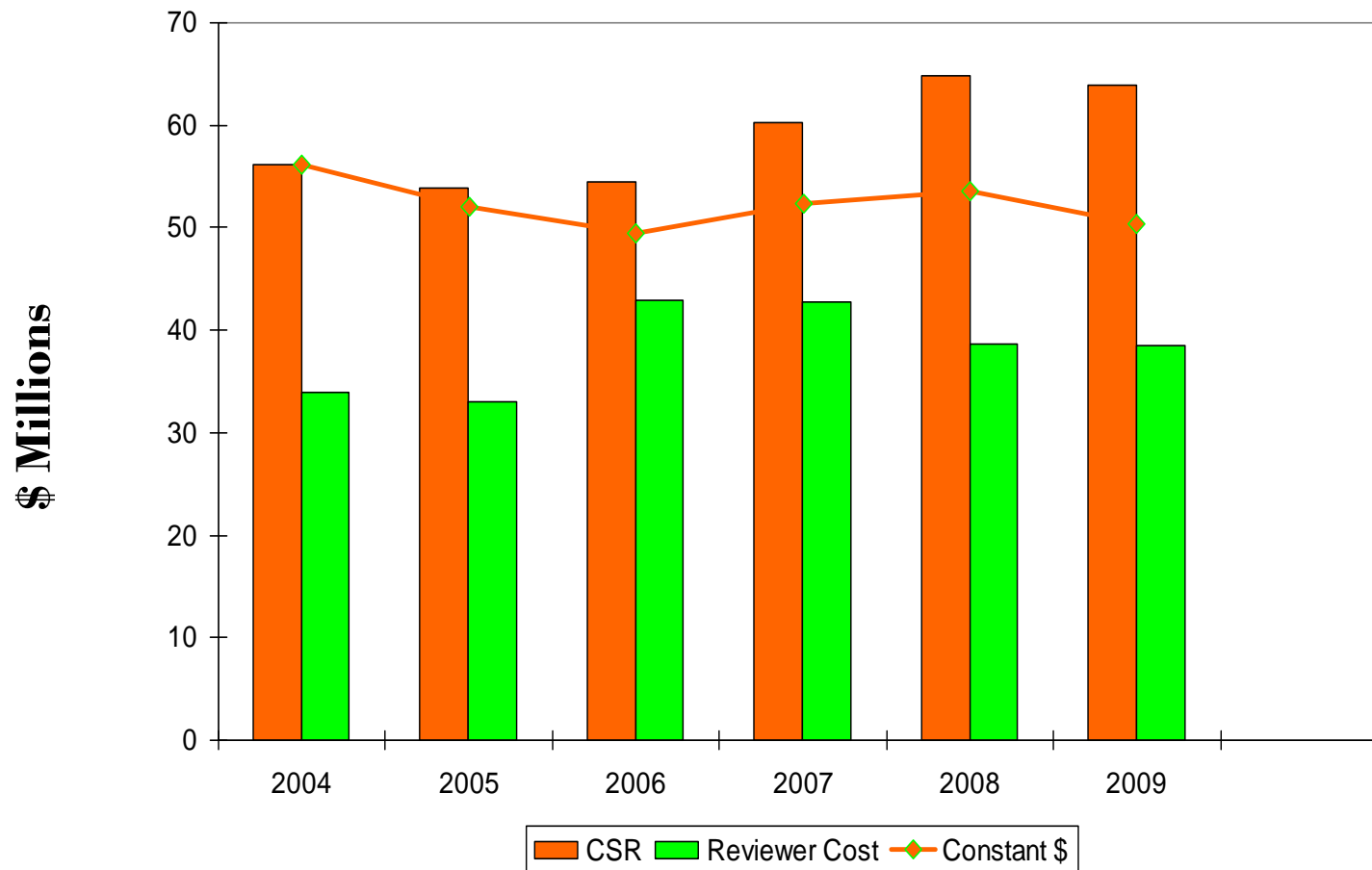
3rd Driver: Reviewer's Load

Applications Per Reviewer

4th Driver: CSR Budget

Cost of Peer Review, including travel and small honorarium for 20,000 Reviewers is 0.4-0.6% of the funds requested

Annual Savings in Reviewers' Expense Budget

- **Non-refundable tickets with one possible change**
  - $17 million
- **3,000 fewer reviewers**
  - $3 million
- **20% reviews using electronic platforms**
  - $6 million
- **One meeting a year on the West Coast**
  - $1.8 million
- **Replacing CDs with zApp**
  - $ 1 million

Enhancing Peer Review

Major Complaints About NIH Peer Review

- The process is too slow

- There are not enough senior/experienced reviewers

- The process favors predictable research instead of significant, innovative, or transformative research

- The time and effort required to write and review are a heavy burden on applicants and reviewers

Enhancing Peer Review

1. **Addressing Review and Funding for New Investigators**

2. **Reviewing Transformative Research**

3. **Funding Promising Research Earlier**

4. **Shortening the Review Time**

5. **Improving Study Sections Alignment with Science**

6. **Recruiting and Retaining the Best Reviewers**

7. **Advancing Additional Review Platforms**

8. **Focusing More on Impact and Significance**

9. **Saving Reviewer's Time and Effort**

10. **Enhancing Peer Review Training**

11. **Continuously Reviewing the Changes**

Enhancing Peer Review

1. Addressing Review and Funding for New Investigators

- Use different paylines for New Investigators and Early Stage Investigators (Only R01)

- Cluster the reviews of New Investigator R01 applications so they are discussed together

Funding New Investigators

New and Experienced Investigators on R01 Equivalent Grants and New Investigators as a Percentage of All Competing R01 Awardees (FY 1962 - 2010) preliminary
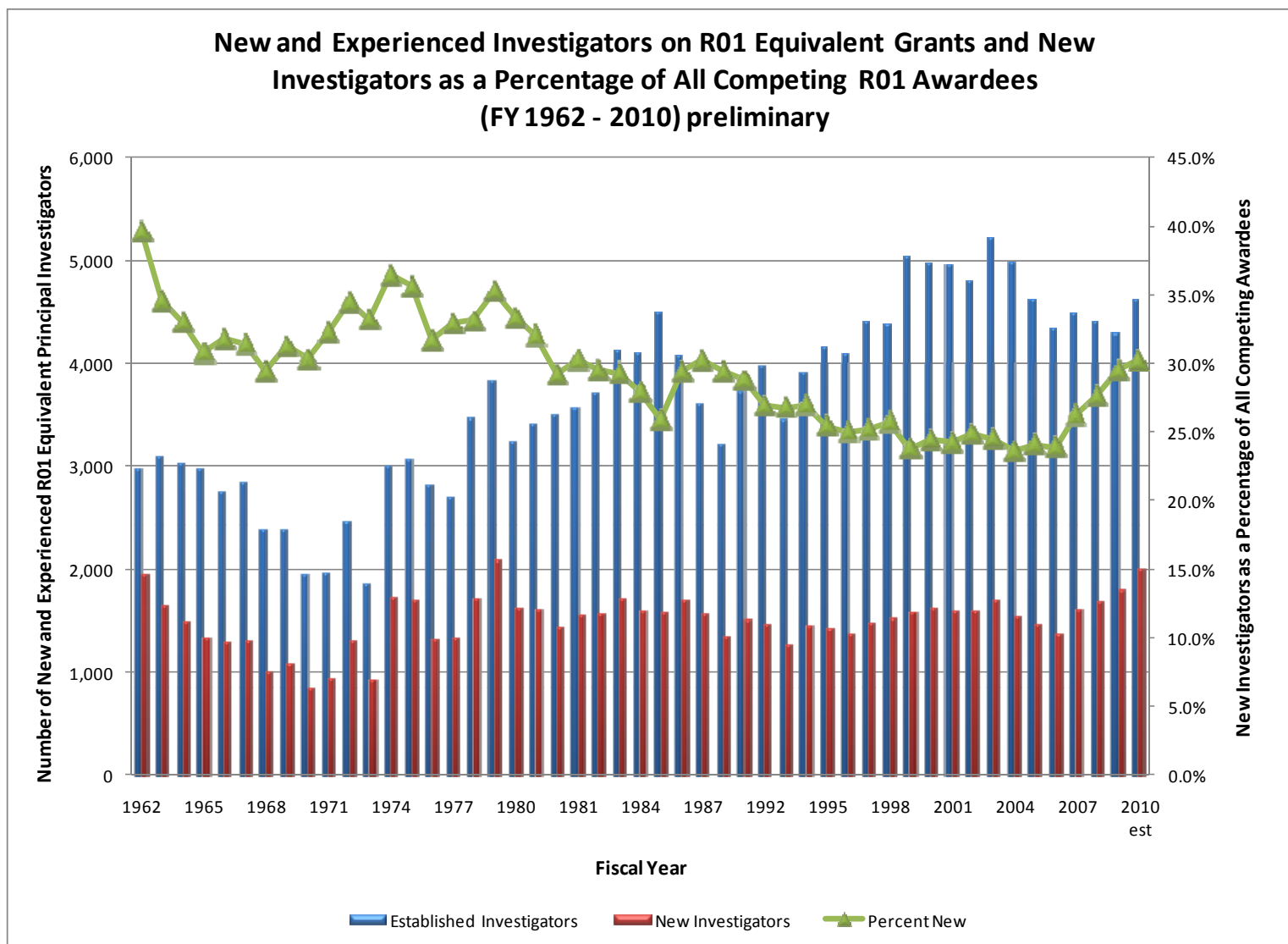
Funding Longevity of NIH Investigators
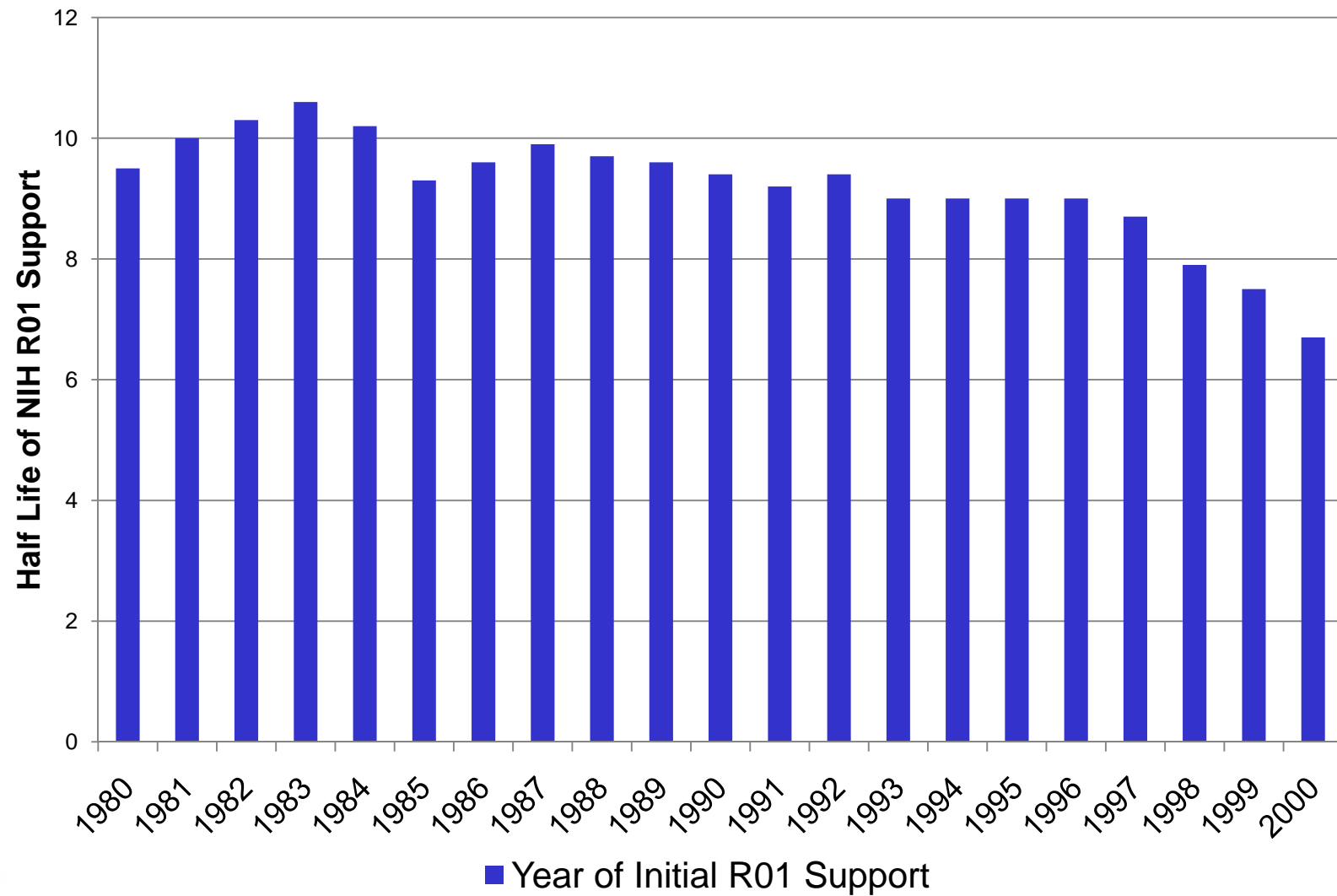
Enhancing Peer Review

2. Reviewing Transformative Research

- Editorial Board Review (3 Stages)
  - Initial scoring based on innovation and potential science transformation by a small study section of distinguished, broad-science reviewers (the editors)
  - Specific science reviewed by appropriate reviewers (subject experts-the editorial board)
  - Final ranking by editors in face-to-face meeting

Enhancing Peer Review

3. Shortening the Review Time
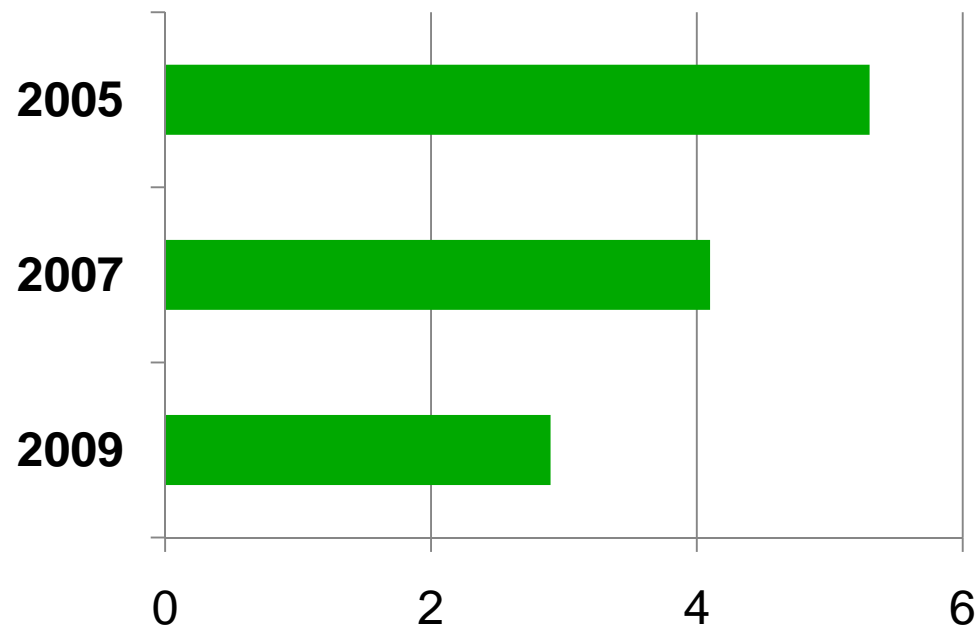
Months: Submission to Posting Summary Statements

Enhancing Peer Review

4. Funding the most promising research earlier
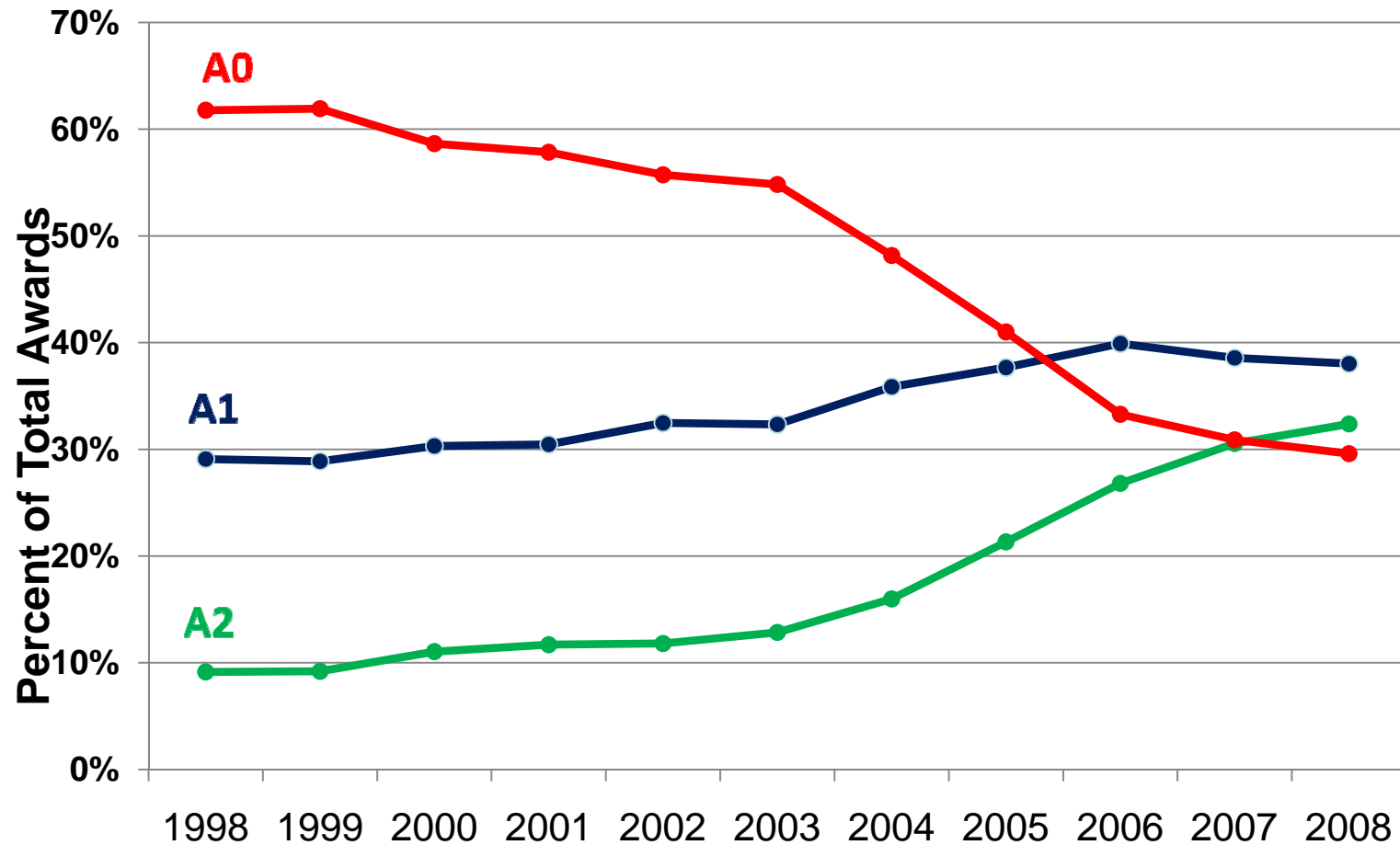
Funding the most promising research earlier
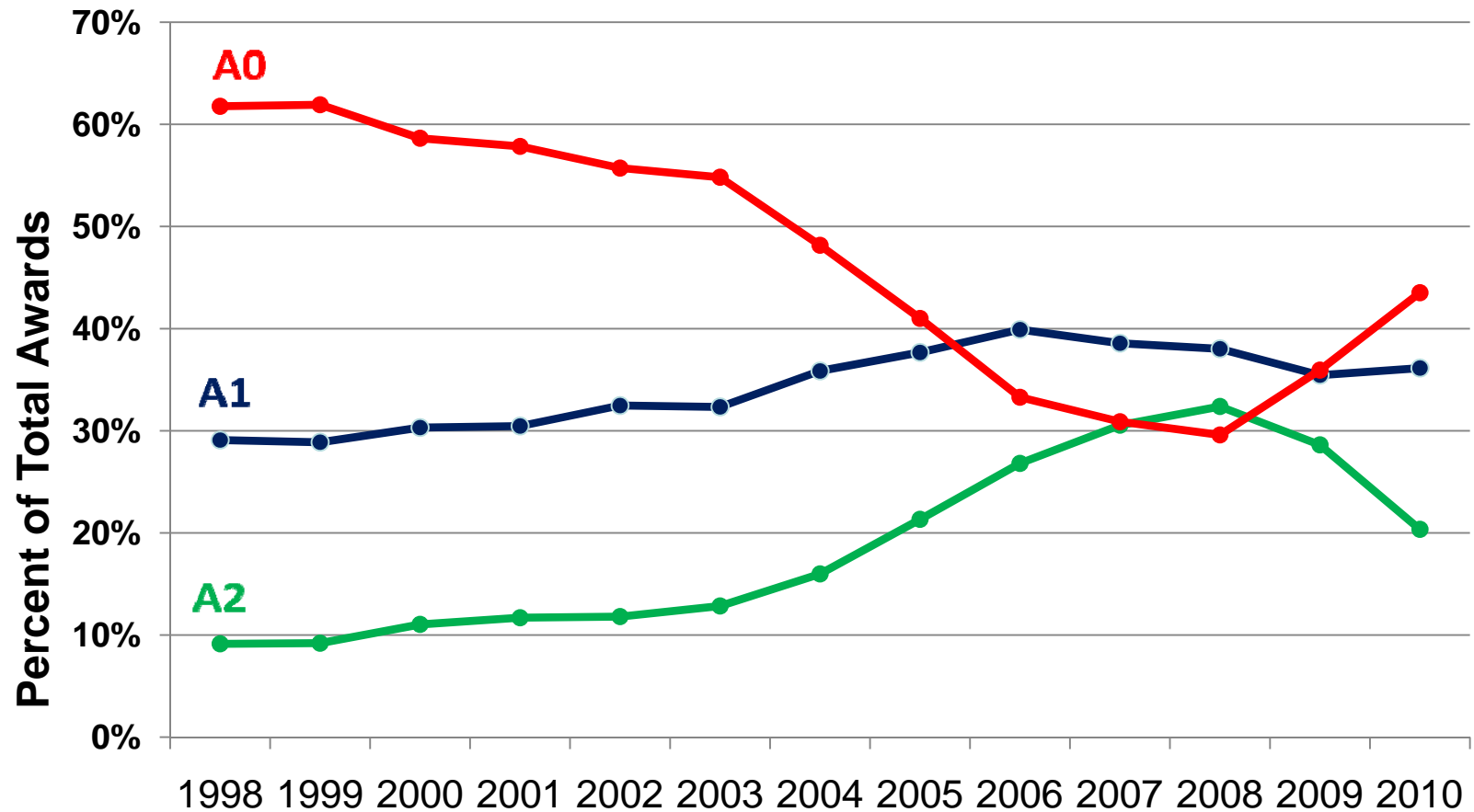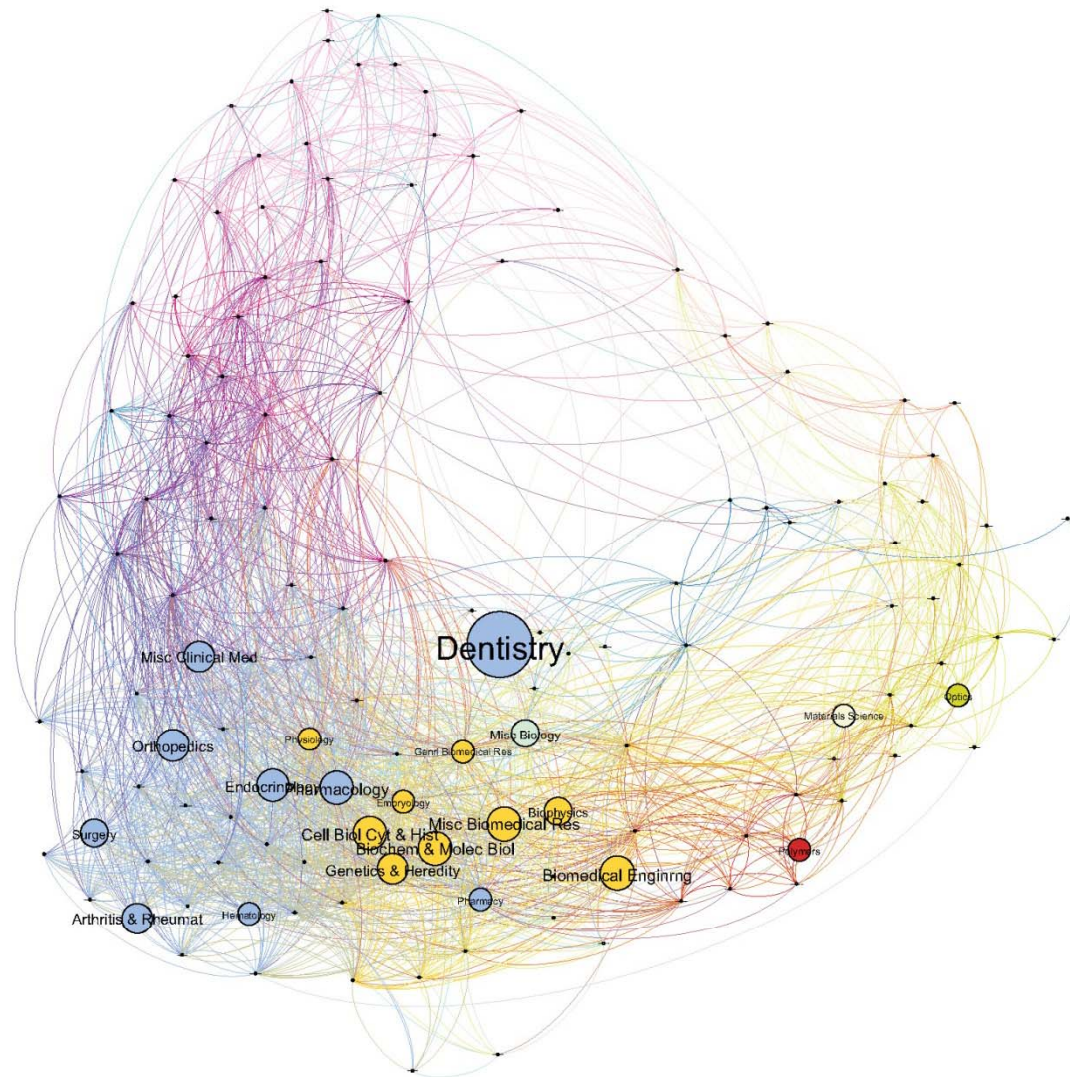
Enhancing Peer Review

5. Improving Study Section Alignment

- **Input from the community**

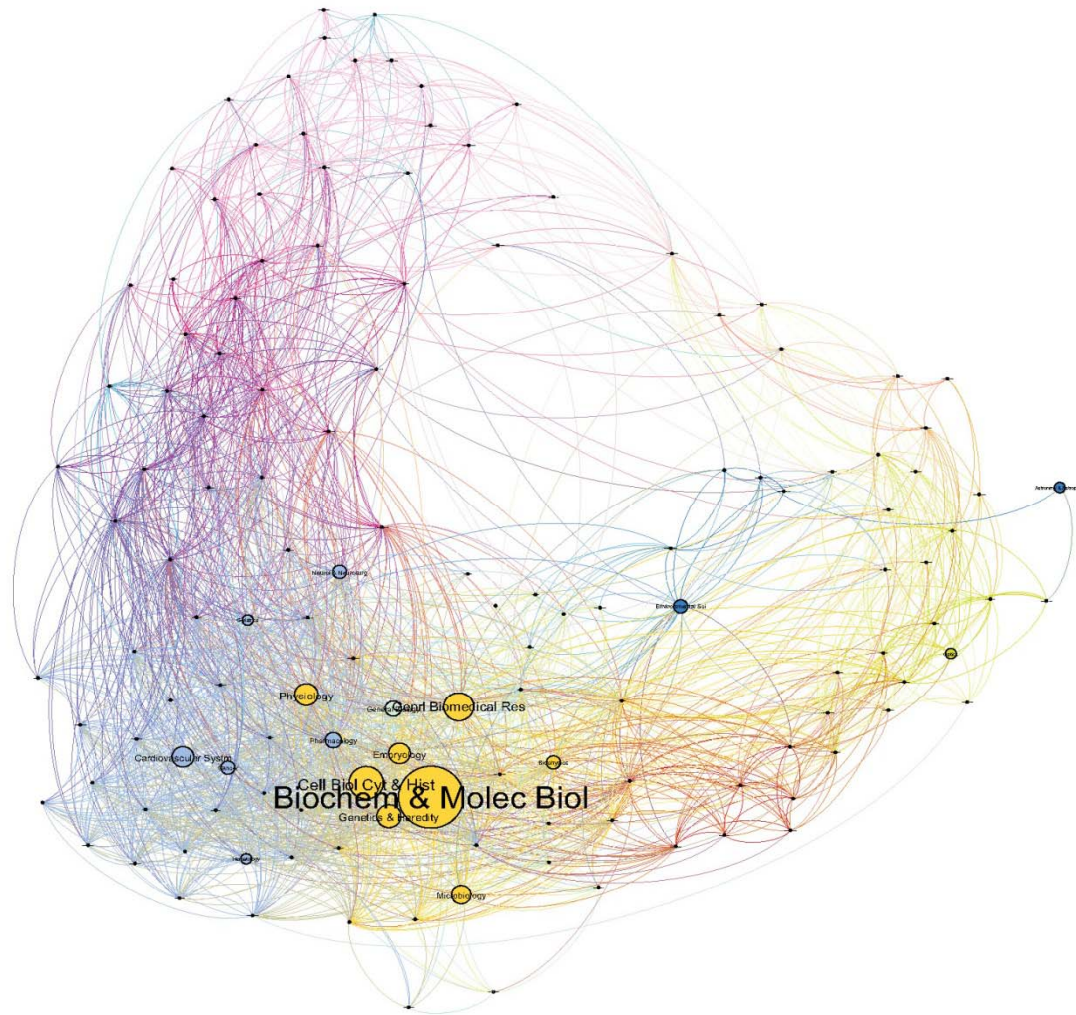- **Internal IRG reviews**

- **Open houses**

- **Advisory Committee**

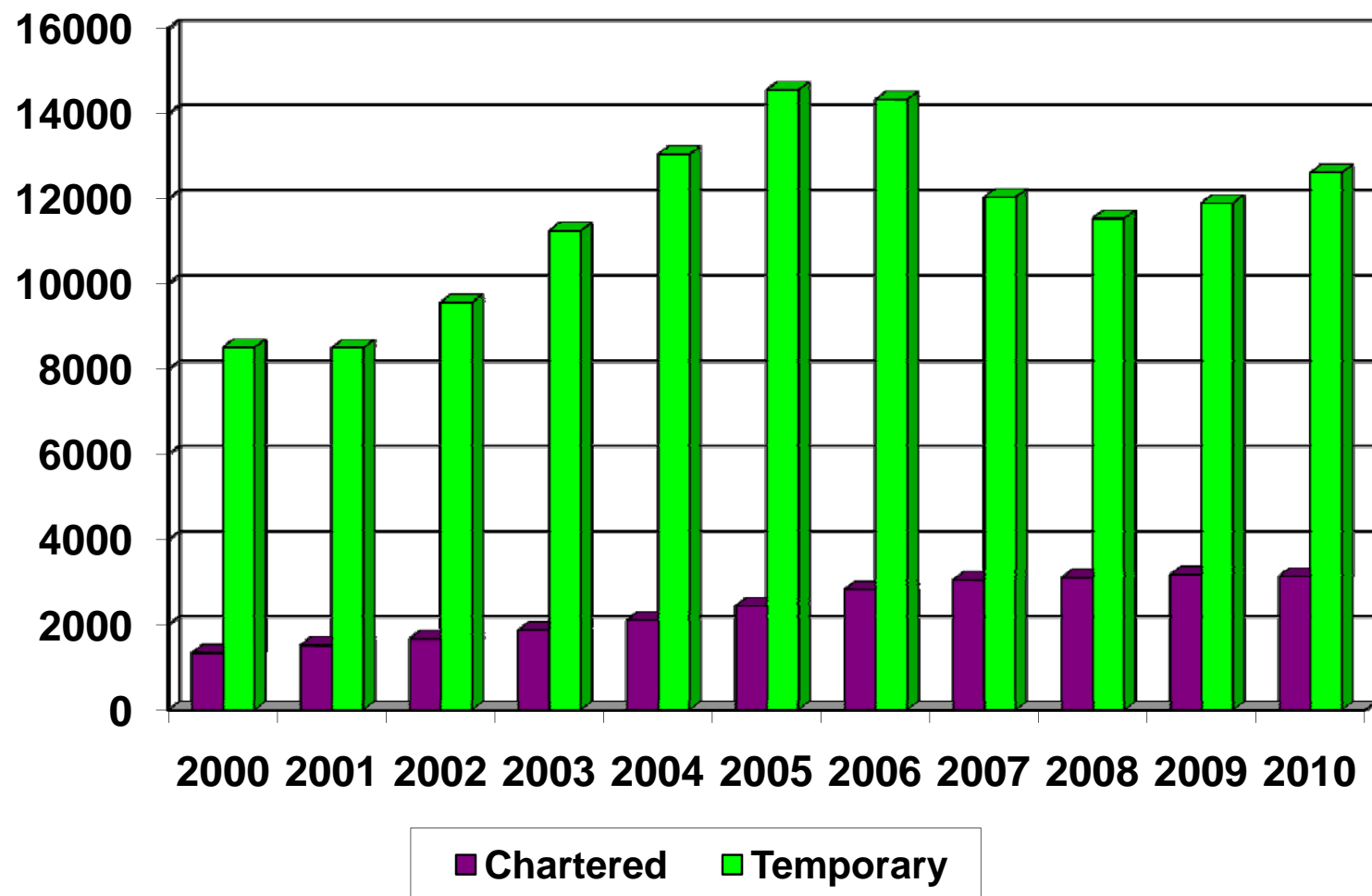# Positional Map of Musculoskeletal Tissue Engineering Study Section

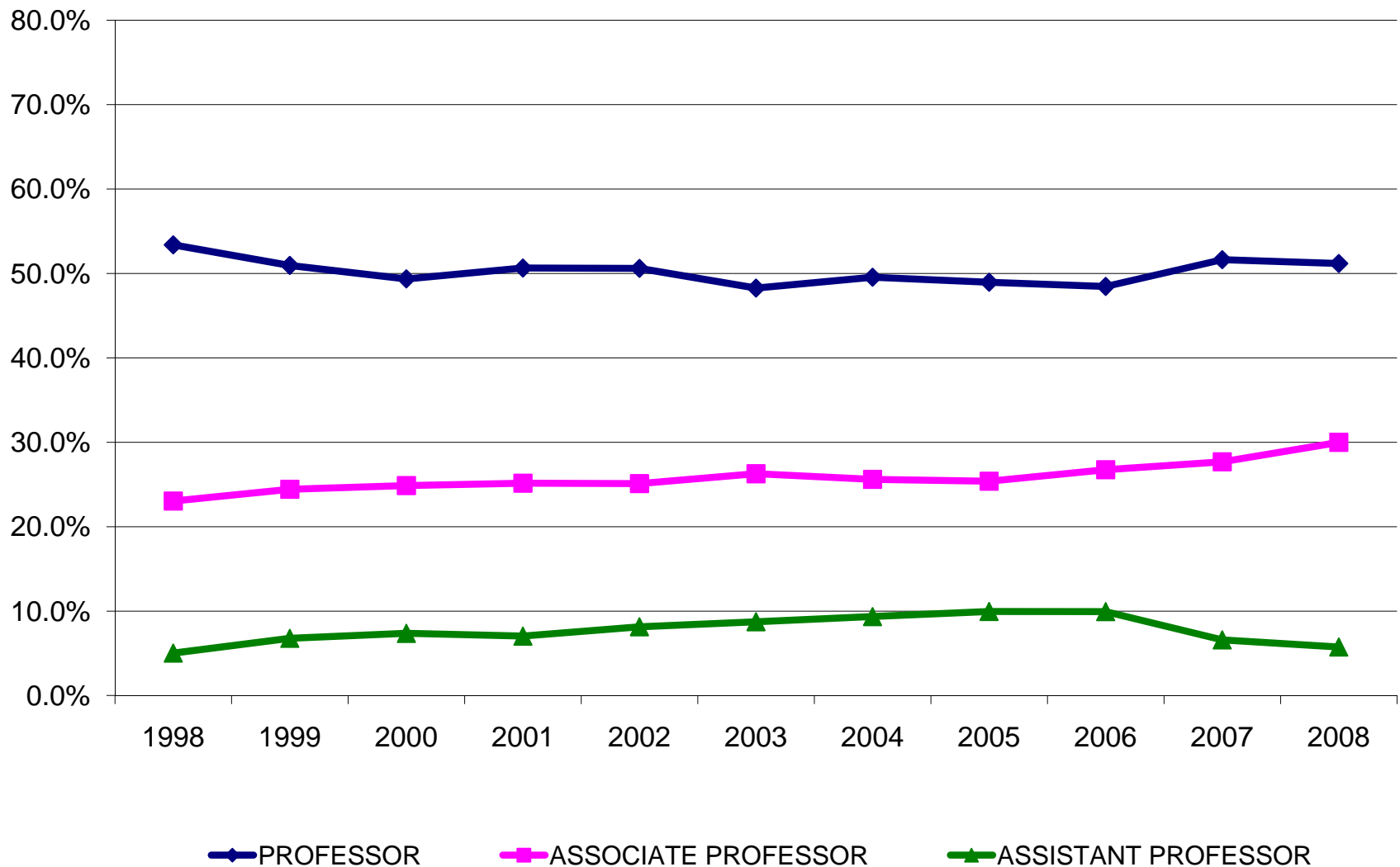# Positional Map of Membrane Biology and Protein Processing Study Section

Enhancing Peer Review

6. Recruiting the Best Reviewers

6. Recruiting the Best Reviewers
Academic Rank of ALL CSR Reviewers

PROFESSOR   ASSOCIATE PROFESSOR   ASSISTANT PROFESSOR

Recruiting the Best Reviewers
Some Successful Strategies

- **Move a meeting a year to the West Coast**

- **Additional review platforms**

- **Develop a national registry of volunteer reviewers**
  - Searchable database with 5,000 reviewers

- **Provide tangible rewards for reviewers**
  - No submission deadlines for chartered members of study sections (effective February 2008)

- **Provide flexible time for reviewers**
  - Choice of 3 times/year for 4 years or 2 times/year for 6 years
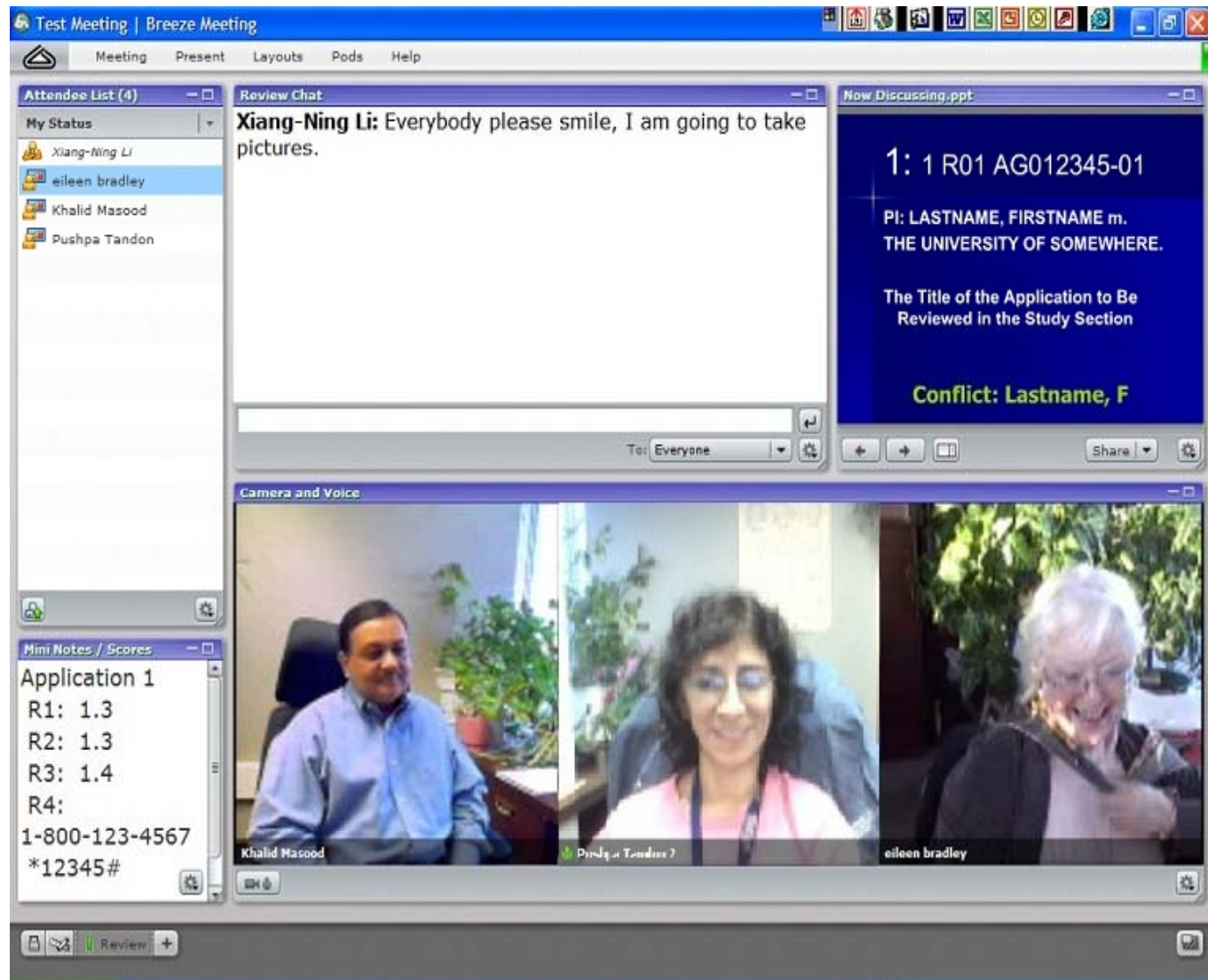
Enhancing Peer Review

7. Advancing Additional Review Platforms

- Additional Review Platforms Help Recruiting Reviewers

- Electronic Review Modes Reduce Travel

- Electronic Reviews
  - Telephone Assisted Meeting
  - Video Assisted Meeting
  - Internet Assisted Meeting (previously AED)

Advancing Additional Review Platforms
What It Looks Like: Video Assisted Meeting

Telepresence Study Sections

Enhancing Peer Review

8. Focusing More on Impact and Significance and Less on Approach

- Shorten Applications (13 or 7 pages instead of 25 or 12)
- Scoring Significance
- Discussed applications receive additional overall impact score
- Training of Reviewers and Chairs

Enhancing Peer Review

9. Saving Reviewers Time

- Shorter Applications
- Bullet Critiques
- Additional Review Platforms

Template-Based Critiques

- **The objective is to write evaluative statements and to avoid summarizing the application**

- **Comments should be in the form of bullet points or if necessary short narratives**

- **The entire template is uploaded to IAR to become part of the summary statement.**

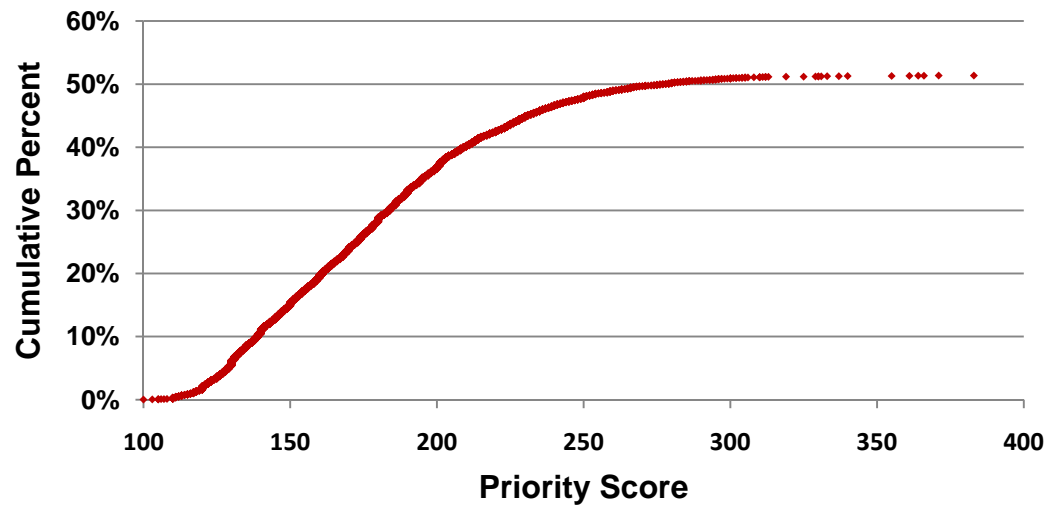| 1. Significance	Please limit text to ¼ page
Strengths • • **Weaknesses** • • •	

How is it going?

Scoring

Impact	Score	Descriptor
High Impact	1	Exceptional
	2	Outstanding
	3	Excellent
Moderate Impact	4	Very Good
	5	Good
	6	Satisfactory
Low Impact	7	Fair
	8	Marginal
	9	Poor

How is it going?

Scoring
Priority Scores of R01 and R21 Reviewed by CSR

June 2008
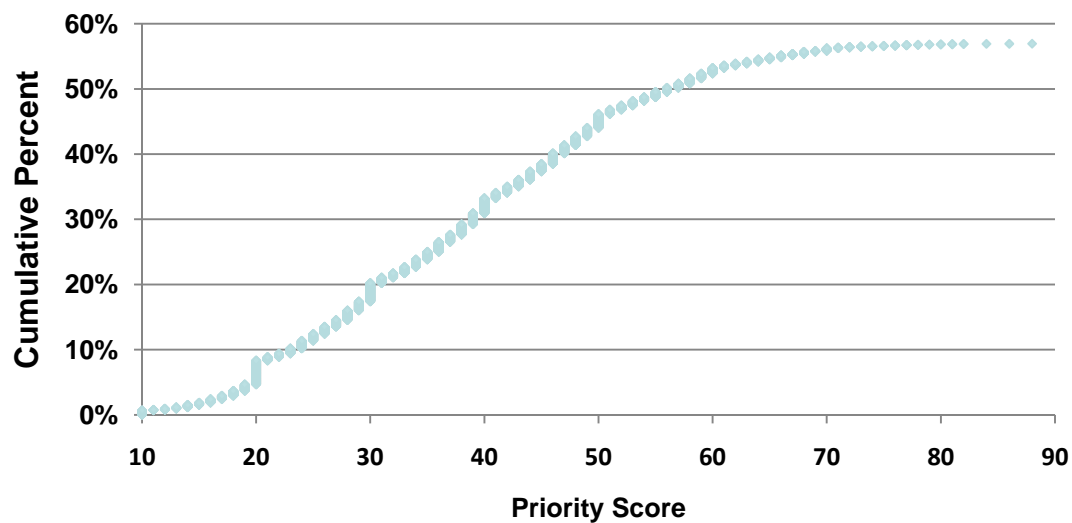
June 2009

Scores of R01 and R21 Reviewed by CSR

Cumulative Percent vs. Overall Impact Score

- ● Oct/Nov 2009 Meetings
- ▲ Feb/March 2010 Meetings
- ◆ June/July 2010 Meetings
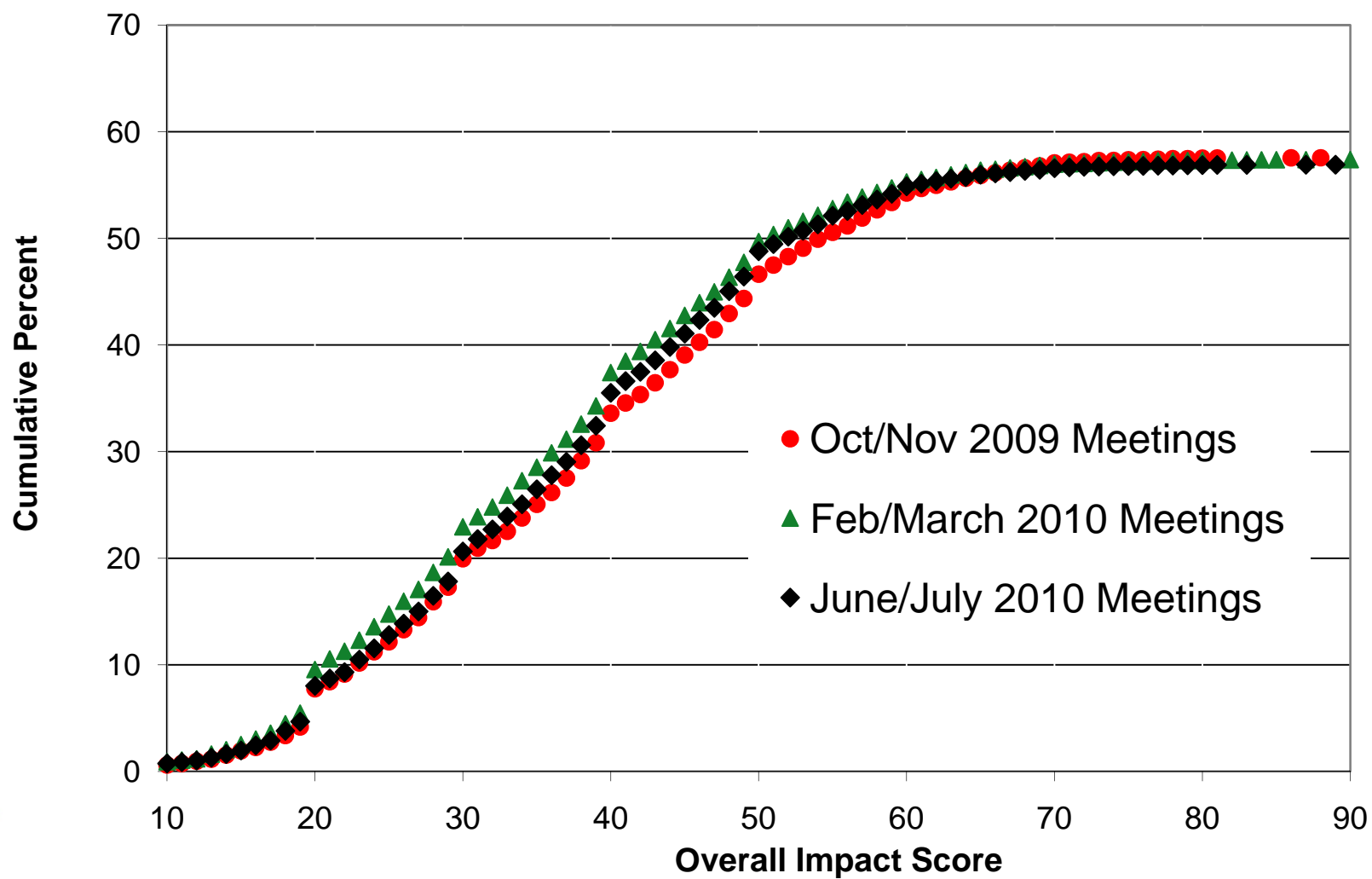
Order of Review

Why?

- **Concern of variation of scores during different times of the meeting.**
  - The original plan was to recalibrate scores at the end of the meeting

Solution:

- Recalibrate dynamically by discussing in order of average preliminary scores from assigned reviewers.

Requirement:

- Reviewers must participate in entire meeting

How is it going?

Enhancing Peer Review

10. Enhancing Peer Review Training

- **CSR and NIH Review Staff**

    - 6 face to face training sessions, January 2009
    - 6 face to face training sessions, April 2009
    - Continuous updating

- **Chairs**

    - For Chairs 17 sessions in 2009
    - For Chairs appointed in 2010, 9 sessions so far, 4 more planned

- **Reviewers**

    - Training material (Power Point, interactive training, frequently asked questions, mock study section video
    - Senior CSR staff at the first meeting in May-July 2009

How is it going?

Enhancing Peer Review

11. Continuously Reviewing the Changes

- 12/09   Applicant and Reviewers Survey (64% response)

- 1/10   Advisory Council Survey (291 responses)

- 5/11   Planned Survey on Shorter Applications

Key Findings from Reviewers and Councils

- Councils have necessary information to make decisions

- Reviewers like 9 point scoring scale

- Overall impact score is NOT the average of criteria scores

- Approach is most influential criteria score (easiest to assess)

- Clustering works --no difference in scoring ~ ESI/established

- New change—have reviewer write overall impact paragraph

Changes in Peer Review

If we want things to stay as they are,
  things will have to *change*

The Leopard

Giuseppe Tommasi,
Prince of Lampedusa