

# Overview of the Council of Graduate Schools Professional Science Master's Initiative

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# Professional Science Master's (PSM) - What is it?

*A new kind of degree that:*

- Prepares graduates for work—outside academia—involved in active science.
- Combines technical competencies with workforce skills, e.g. management, policy, communications, law – “Science Plus!”
- Leads to a wider variety of career options than provided by traditional graduate programs – jobs in business, government, non-profit (“BGN”) sectors.

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SCIENCE MASTER'S





# What else is it? Technical Leadership Development

- Technical depth and leadership skills are hard to find in one person, but essential in many employment areas (director/manager in technical and financial fields).
- PSMs produce technically knowledgeable leaders.
- Needs for such people increase with complexity.
- This is vital for US global competitiveness.





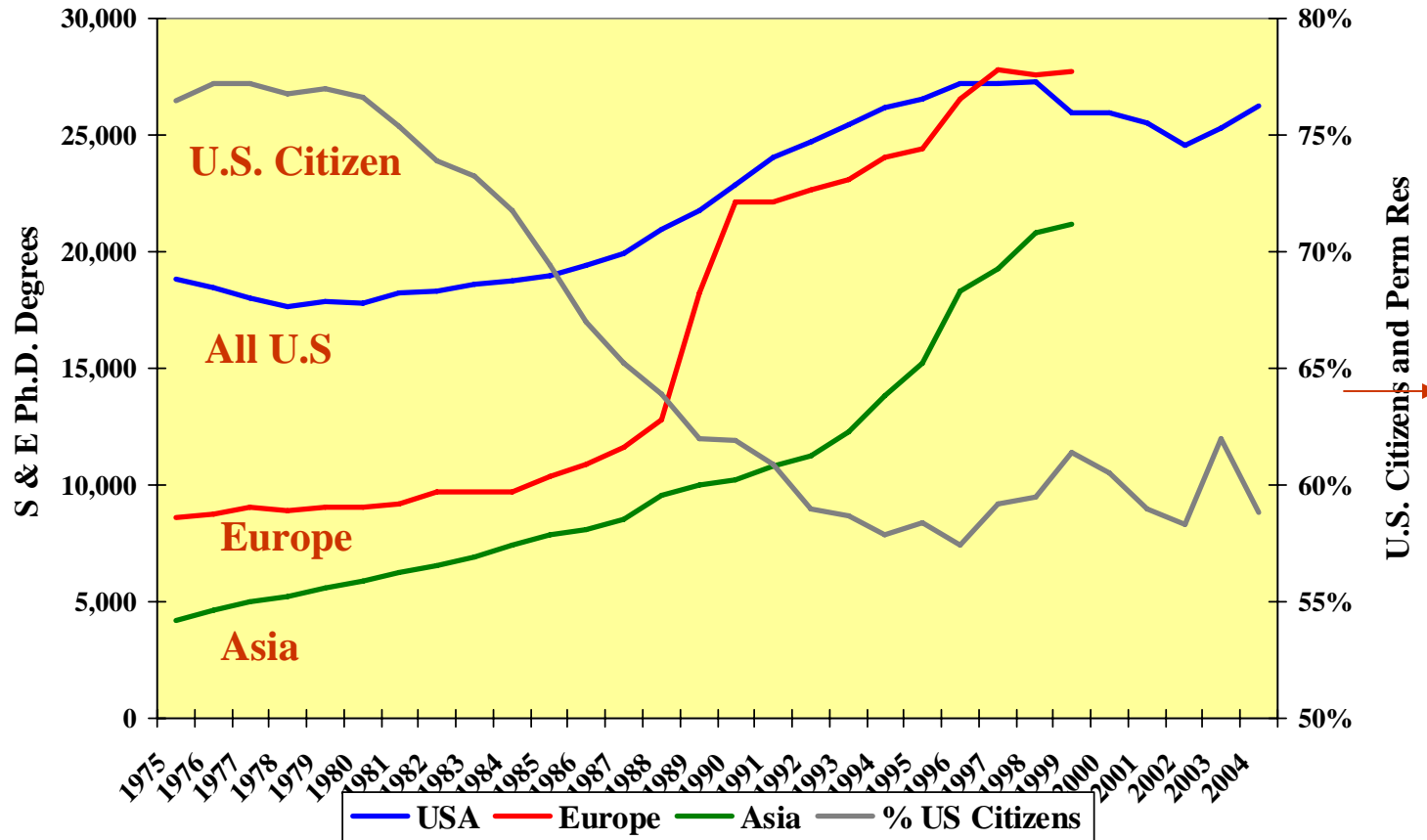
# Professional Science Master's Degree - Why?

- Odd Gap in U.S. Science Graduate Education
  - Strong: Bachelors, PhDs in science.
  - But BA/BS insufficient for science career.
  - Master's considered merely as entry to (or exit from) the PhD.
  - But PhD too long, with uncertain prospects.
  - Attractiveness of PhD declining among domestic students; < 20% of majors continue in science/math graduate programs.





# Doctoral S&E Degrees by World Region



Source: National Science Board, Science and Engineering Indicators 2004

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# PSM – Why?

## Science Students Ask:

- If I take time to obtain an advanced degree, will I be able to enter my chosen profession?
- Can I aspire to a level of compensation roughly comparable to my peers in other professions?
- Is a career in science compatible with “having a life”?





# PSM Programs Are For:

## Highly motivated students who want to work in:

- Non-academic sectors
- Interdisciplinary careers
- Team oriented environments
- Managerial or other professional level positions
- Emerging areas of science and scientific discovery

## Or who are:

- Seeking career advancement in government, industry, and technology
- Looking to gain a competitive edge in the job market
- Re-entering the workforce looking to refine professional and technical skills
- Seeking career growth





# Variations in PSM Programs

- A few (increasing) cater to working professionals (all 4 Illinois Institute of Technology programs).
- Some use “cohort” model – students go through program requirements as a group (Keck).
- Some use case studies for teaching (North Carolina State U.).
- Bundled program components, especially the “plus” modules, offered as a certificate (Mich. State U.).
- A few (e.g. Case Western) focus on preparing entrepreneurs.





# PSM - A Brief History

- 1997 - Sloan Foundation initiative for research universities. Resulted in about 60 new programs/tracks.
- 1997 - Keck Foundation initiative – \$50M grant to start the Keck Graduate Institute. Offers “Master of Bioscience” degree in 5 specialty areas in (coincidentally) PSM model.
- 2000 – Sloan funds “single-track” PSMs in bioinformatics. Resulted in 16 new programs.





# History - continued

- 2002 – Sloan/CGS partnership for “master’s-focused” institutions. Two-part feasibility and implementation awards resulted in about 30 new PSM programs/tracks.
- 2005 (and continuing) Sloan “scale-up/sustainability” initiative targeting system-level adoptions of PSM (notably U. North Carolina and California State U.)
- 2006 – Sloan/CGS “institutionalization” initiative.





# The CGS/Sloan PSM Initiative

- The CGS project consolidates multiple PSM activities under the CGS umbrella.
- Goal: “The institutionalization and promotion of the PSM degree as a regular feature of graduate education.”
- We expect to achieve the following objectives:
  - Continuation and improvement of existing PSM programs.
  - Encourage and assist in the development of new PSM programs.





# The CGS/Sloan PSM Initiative

- Significant increase in the number of students enrolled in all PSM programs.
- Expansion of funding by NSF and other agencies to include PSM programs.
- Increase in the number and variety of employment sector champions of the PSM.
- Support of states through work with NCSL and NGA.
- Advocate for PSM in federal legislation.





## Why Should Universities Consider Establishing PSM Programs?

- The bulk of the new jobs being created are in the non-academic sector; these programs prepare students for employment in non-academe.
- Most universities have a commitment to outreach. PSM programs fit perfectly as they provide well-educated graduates who will apply their skills to endeavors within the state.





# Why Should States Consider Supporting PSM Programs?

- Because master's graduates typically are a less mobile group than PhD recipients.
  - About two-thirds of S&E master's degree graduates were employed in the state in which they earned a degree.
  - About one-fourth of S&E doctorate recipients plan employment in the state in which they earned their PhD.
- PSM programs are more popular with women and domestic students than traditional master's programs in Natural Sciences.





# Benefits of the PSM

- For the student – alternative way to remain in science without getting a PhD.
- For the university - provide students with another career option and help solve community workforce needs.
- For the employers – local, regional, state – have a technically trained cadre of workers.





# PSM Movement is Growing

- In last 2 years added about 25 programs.
- About 12 additional institutions offering PSM degrees.
- Now have approximately 123 programs at 62 institutions.





# Increased Involvement of Program Directors in Outreach and Promotion

- Program directors and deans present at CGS and regional affiliate meetings. (Session at WAGS tomorrow morning.)
- Programs directors serve on National Advisory Board.
- Program directors assist with presentations at CGS partner organizations (NCSL, NGA).





# Collaboration with the NPSMA as Lead Partner

- The NPSMA has direct contact with programs.
- Survey of program data and graduates.
- PSM alumni association.
- Mobilize employer support through networking local advisory boards.
- Co-host meetings (such as this one).

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# Increase Advocacy Efforts to Garner New Funding

- Update program directors at critical points in the political process.
- Assist program in mobilizing employers to assist with this effort.
- Put more effort on coordinating with state strategies for economic development.





# Efforts to “Brand” the PSM

- Disseminate guidelines for and benefits of PSM affiliation widely.
- Promote common designs for websites and promotional materials, and provide examples and assistance when requested.
- Encourage institutions to provide uniquely identifiable coding for PSM degrees (help in tracking data).





**QUESTIONS?**

**SUGGESTIONS?**

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