MEDICAL PHYSICS AND DIVERSITY: OPPORTUNITIES AND STRATEGIES

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MEDICAL PHYSICS AND DIVERSITY: OPPORTUNITIES AND CHALLENGES

- TAKING STOCK OF THE CURRENT LANDSCAPE
- WHERE ARE THE OPPORTUNITIES?
- WHAT ARE POTENTIAL STRATEGIES?

TAKING STOCK OF THE CURRENT LANDSCAPE

RADIATION ONCOLOGY: CURRENT LANDSCAPE

Assessment of the Current US Radiation Oncology Workforce: Methodology and Global Results of the American Society for Radiation Oncology 2012
(International journal of radiation oncology, biology, and physics)

- 6795 of a potential 35,2014 respondents including radiation oncologists, residents, medical dosimetrists, radiation therapists, medical physicists, nurse practitioners, nurses, physician assistants, and practice managers/administrators responded
- **75% of radiation oncologists, residents, physicists who responded were male**; **2/3 in other segments, female**

Diversity Based on Race, Ethnicity, and Sex, of the US Radiation Oncology Physician Workforce
(International journal of radiation oncology, biology, and physics)

- Publicly available data sources were used e.g. AAMC and US census registries
- Women **(33.33**%) and URM **(6.9**%) are underrepresented as **residents**
- Women **(23.8%**) and URM (**8.1%**) are underrepresented as faculty and practicing physicians**, 25.5%** and **7.2%** respectively
- **No trend towards diversification in 8 years**

Vichare, A, Washington R et al. Int J Radiat Oncol Biol Phys. 2013

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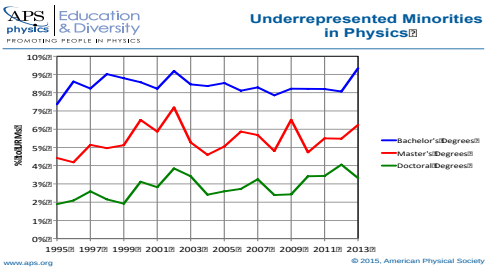
ARE WE RECRUITING AS MANY ETHNIC MINORITIES AS WE CAN RECRUIT?



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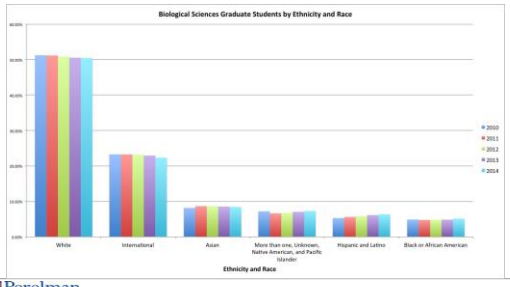
Source: APS.org, Accessed July 2016

PHYSICS IS BELOW ALL BIOLOGICAL SCIENCES WITH REGARD TO URM REPRESENTATION



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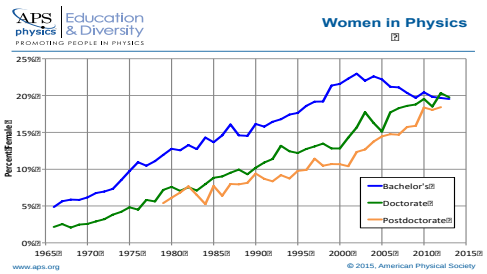
Source: NSF.gov, Accessed July 2016

ARE WE RECRUITING AS MANY WOMEN AS WE CAN RECRUIT?



Source: APS.org, Accessed July 2016

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WHERE ARE THE OPPORTUNITIES?

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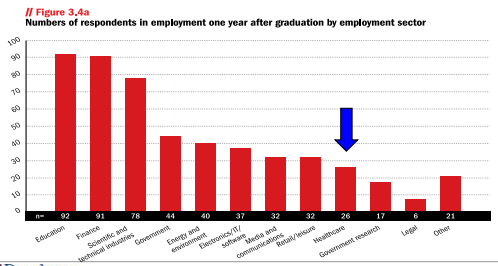
PHYSICS MAJORS ARE ATTRACTED TO OTHER SECTORS BESIDES HEALTHCARE



Source: IOP.org, Accessed July 2016, Institute of Physics, UK; 5737 respondents

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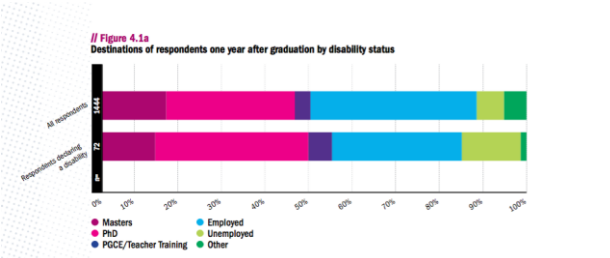
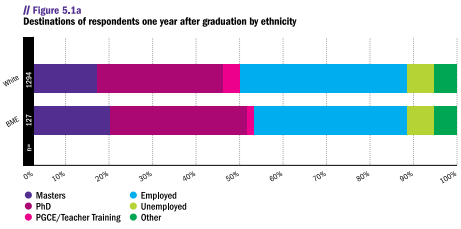
PROPORTIONALLY MORE PHYSICS MAJORS WITH DISABILITIES ARE GETTING PHYSICS PHD DEGREES



Source: IOP.org, Accessed July 2016, Institute of Physics, UK

PROPORTIONALLY MORE BLACK PHYSICS MAJORS ARE GETTING EITHER PHYSICS MASTERS OR PHD DEGREES

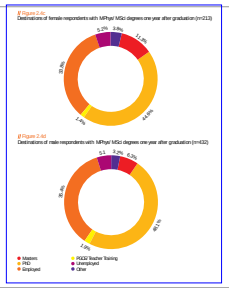


Source: IOP.org, Accessed July 2016, Institute of Physics, UK

Significant proportions of men and women are completing masters and doctoral degrees. However more women than men are choosing Masters degrees rather than PhD's.

WOMEN: 55.9%

MEN: 54.4%



Source: IOP.org, Accessed July 2016, Institute of Physics, UK

WHAT ARE POTENTIAL STRATEGIES?

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WHAT ARE POTENTIAL STRATEGIES?

- **LEADERSHIP THAT FOCUSES ON THE IMPORTANCE OF INCLUSION AND DIVERSITY**
  - Clear articulation of the importance of diversity in the vision and mission statements of the organization
  - Alignment of inclusion/diversity goals with the central vision/mission of the organization
  - Dedicated members/staff organized to facilitate the achievement of these goals and charged with the responsibility of holding the leadership accountable for these goals
  - Policies related to harassment/bullying

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WHAT ARE POTENTIAL STRATEGIES?

- **REMAINING INCLUSIVE IN AAPM'S DEVELOPMENT OF ANNUAL MEETINGS AND CULTURE**
  - Attention to the demographic balance of speakers
  - Travel scholarships for promising new additions to the Society
  - Develop supportive mentoring program
  - Outreach with local undergraduate institutions during conferences
  - Development of the programming of annual meetings and culture

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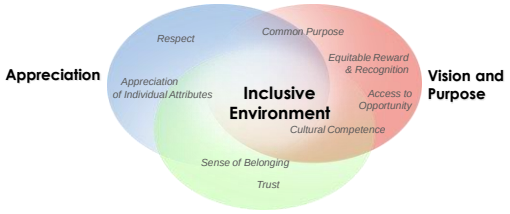
Components of an Inclusive Culture



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WHAT ARE POTENTIAL STRATEGIES?

- **Active recruitment to the field at all levels of education/training. Consider the following:**
  - "In 2003, 25.6% of employers offering MP positions in the AAPM bluebook *required* a candidate to hold a PhD. By 2009 that percentage increased to 32.2% of employers"*
- **Active recruitment of candidates from other fields. Consider the following:**
  - "Almost half (47%) had a previous career and 9% obtained their highest degree in a country other than the U.S. This cohort was the least likely of all professional cohorts to have an academic concentration in medical physics at the master's degree level (28%) and was more likely than other cohorts to have learned about the profession during doctoral studies (17%), fellowships (10%), or other employment (18%)."* *(*Workforce study of Medical Physicists in the US, AAPM, 2009-10)*

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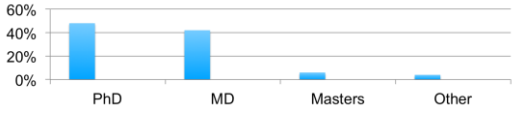
Early Exposure to Radiation Oncology Encourages Students to Seek Advanced Degrees and Introduces Students to the Field

- **Summer Undergraduate Program for Educating Radiation Scientists**
  - SUPERS@PENN is a ten week summer research program hosted by the Department of Radiation Oncology at the Perelman School of Medicine. The program has been funded by the NCI since 2010, with additional support by the School of Medicine since 2015.
  - The core aspects of the program are an individualized curriculum, hypothesis-driven laboratory research, and pairing students with faculty mentors.



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Data from Dr. Steve Tuttle at the University of Pennsylvania

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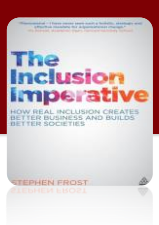
Why Is Inclusion Important?

FIGURE 1. Inclusion and diversity are core values that are fundamental to stimulating innovation and creating impact.

"Diversity is a reality, inclusion is a choice..."

Stephen Frost
The Inclusion Imperative, 2014



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