

# STEM Faculty Hiring: Where Did All the URM PhDs Go?

NSF Alliances for Graduate Education and the  
Professoriate National Conference II

# Is There a Crisis?

- ▶ Professoriate–tenure track
  - A formal secure appointment until retirement, at an educational institution after working on a temporary or provisional basis.
- ▶ 30+ year minimal commitment.
- ▶ \$2,376,000 gamble based on 4.5 years of assessment; Assumes a \$60,000 starting salary with no raises.
- ▶ Assessment based on internal and external evaluations.

# STEM Employment

- ▶ Data Sources
  - Self-reported to Professional Organization
  - American Chemical Society
  - 7,400 usable surveys of 20,753 sent out
- ▶ Reported by Employer
  - College and University Personnel Association
  - 282 Public and 484 Private Universities
- ▶ Comparisons: Within \$200–\$700 annually

# Academic STEM Employment

Survey done in March 2008, with strong economy

“Since then, numerous companies have laid off large numbers of employees including many chemists, and some universities have stopped hiring new professors. The higher salaries and low unemployment figures in this survey are not likely to resurface in the near future.”

C& E News p. 40 March 9, 2009

# Chemists In General Salaries

- ▶ Salaries have increased every year since 1985. On average over this 23 year period from 100% to 125% increase with the higher number going to Ph. D. chemists.
- ▶ In constant 1984 dollars, however, salaries have remained relatively flat with no more than total of a 10% increase over the 23-year period.

# Academic Chemists 9-month Salaries

Rank	Median 2008	Current \$	2007 Constant \$ 4.0 % inflation
Professor	\$92,000	+3.4%	-0.6%
Associate	\$64,120	-1.4%	-5.4%
Assistant	\$57,000	+7.5%	+3.5%

# Academic Chemists 9-month Salaries

Rank	Non-Ph. D. Institution	Ph. D. Institution
Professor	\$76,000	\$120,000
Associate	\$60,000	\$72,000
Assistant	\$52,000	\$69,000

# Chemists 2007 Racial Data

US and foreign

Degree US Ave	White %	Asian %	Black %	Latino %	Native %
Bachelor	74	13	5	6	<2
Masters	62	20	7	9	<2
Doctorate	57	32	5	5	<1
US Ave	66	4.3	12.3	15.1	2.3



# Changing the Odds

- ▶ National Science Foundation  
(AGEP Opportunities)
- ▶ Make Broadening Participation a priority
  - Foundation-wide templates
- Solicitation Criteria
  - NSF award, grant, contract cooperative agreement.
  - Annual progress reports
- Need for reliable, consistent and detailed data from PIs about students, postdocs, and staff

# Changing the Odds

- ▶ National Science Foundation  
(AGEP Opportunities)
- ▶ Make Broadening Participation a priority
  - What should NSF Program Officers DO?
  - What should PIs DO?
  - What should External Advisory Boards DO?
  - What are the Instructions to Review Panels?
  - What is the Institutional Impact?

# Changing the Odds

- ▶ National Science Foundation
- ▶ (AGEP Opportunities)
- ▶ What About the Broader Impacts Statement?
  - Five groups of activities – but only one specifically mentions gender, ethnicity and disability.
  - Why not weave Broadening Participation issues of diversity and equity into each of the five Broader Impacts criteria?

# Changing the Odds

- ▶ National Science Foundation
- ▶ (AGEP Opportunities)
- ▶ Engage ALL directorates
- ▶ Engage Broadening Participation as a Required Response within the Broader Impacts criterion.

# Summary

## National Science Foundation

- ▶ Address shortfalls in outcomes for broadening participation– NSF Core Value
- ▶ Develop a Quantitative Reporting System
- ▶ Address shortfalls in Broader Impacts Statement
- ▶ Request feedback early and often
- ▶ Implement data driven findings

# Changing the Odds

## STUDENTS and FACULTY

### ▶ Develop a WRITTEN PLAN

#### (AGEP Opportunity)

- Work with the librarian, the department chair, your search committee, your mentor.
- Develop a plan with time-lined objectives.

#### (AGEP Opportunity)

- Develop an external network to whom you send preprints, reprints, and invite to campus.

#### (AGEP Opportunity)

# Changing The Odds

## STUDENTS and FACULTY

- ▶ Research (HAVE A PLAN!)
  - Learn Grantsmanship (AGEP Opportunity)
    - Apply early, apply often
  - Learn Intellectual Property (AGEP Opportunity)
    - Bayh–Dole Act, Patent Basics, Copyright Basics, Materials Transfer Agreements, Confidential Disclosures, Royalty Agreements, Technology Transfer...

# Changing The Odds

- ▶ Research (HAVE A PLAN!)
  - Learn from submissions  
(AGEP Opportunity)
    - Read reviews whether funded or not!
  - Invite Research leaders to campus  
(AGEP Opportunity)
    - Improves local credibility, national visibility
  - Attend talks, workshops, conferences internally and externally (internationally???)  
(AGEP Opportunity)



# Changing the Odds

## STUDENTS and FACULTY

- ▶ Research, continued
  - Serve as an External Reviewer for NSF or NIH  
(Post-AGEP Opportunity)
  - Review student or research assistant progress periodically (say, bi-weekly)
  - Require students to take notes at this meeting, and submit them (email) within 24 hours.
  - Saves you time, you now know if they know, and you get a permanent record.

# Changing the Odds

## STUDENTS and FACULTY

### ▶ Teaching

#### ◦ Build portfolio NOW (AGEP Opportunity)

- Treat students as honored GUESTS!
- Tutorials (AGEP Opportunity)
- Always be on time to “class.”
- Always make office hours ON TIME.
- NEVER reveal anything in e-mail that you would not shout across the world! No to grades, No to health concerns, No, No, No!
- Actuarial rates for the death of kin always rise near major exams.
- Review list of excuses.

# Changing the Odds

## STUDENTS and FACULTY

### ▶ Service (External)

- Serve on departmental, center and institute review committees. (AGEP Opportunity)
- Serve as external examiner on Ph. D. committees. (AGEP Opportunity)
- Consult, where possible, for industry and government.
  - Learn the value of your time.
- Develop international network (AGEP Opportunity)
- Discover SBIR, STTR (AGEP Opportunity)

# Personal Considerations

## STUDENTS and FACULTY

### ▶ Outside Income

- Keep consultant income to yourself and well within the time commitments allowed by the university!
- For a nine-month appointment divide salary by 165 to get your daily pay. Multiply by 2 to account for FICA, medicare, “expert status.”
- Charge less for non-profits, use federal rate for government based organizations.

# Changing the Odds

## STUDENTS and FACULTY

### ▶ Service

- NEVER serve as Department Chair
  - Unless you are a tenured full professor with a masochistic wish. Yes you can do it as an associate professor, but your promotion to full professor will be delayed or perhaps never happen.
- ▶ NEVER be a penny-ante thief!
  - Avoid misuse of the copier, postage, telephone, Xerox.

# Changing the Odds

- ▶ Departmental Politics
  - NEVER choose sides in departmental politics. Find a way to be absent if necessary.
- ▶ Joint Appointments
  - Seek tenure in ONE department. You will be on your own otherwise.
- ▶ Editorial Boards
  - Only after tenure, and preferably at full professor.

# Changing the Odds

## ▶ Public Image

- Six degrees of separation
- In a college town: three

## ▶ Collegiality

- If you can't say it publicly, DON'T SAY IT!
- Especially if the Dean, Chair, or Professor X is a jerk!!!
- Always keep a positive attitude, some of these "out of department" faculty will evaluate you.

# Your Concerns and Strengths

## STUDENTS and FACULTY

- ▶ Administrative Aides
  - Scarce resource, treat as such.
- ▶ Teaching Assistants and Graders
  - Treat with professional respect, nurture, groom, reward.
- ▶ Research Assistants
  - Treat with professional respect, nurture, groom, reward.
- ▶ Physical Plant
  - Appreciate their efforts, and if appropriate, tip generously.



# Personal Considerations

- ▶ Minimize stress
- ▶ Get on a health and fitness program

# Summary

## STUDENTS and FACULTY

- ▶ Make a WRITTEN PLAN
- ▶ Be Positive and seek out the Positive
- ▶ Request feedback early and often
- ▶ Develop a bullet-proof ego
- ▶ Become nationally visible
- ▶ Stay healthy and happy