WORK-LIFE BALANCE, DOMESTIC EQUILIBRIUM AND RESEARCH EXCELLENCE

Quest for Research Excellence
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LANDMARKS OF POST-GRAD LIFE

PROFESSIONAL

1967  -  Grad school
1972  -  PhD,
   -  Postdoc
1977  -  Research Scientist
   -  Assistant Professor
1987  -  Professor
1997  -  Election to NAS
   -  Alice Ev Award
2007  -  Distinguished Professor
2012

DOMESTIC

Marriage to George Belfort
3 Babies
Irvine, Ca., Jerusalem, Israel
Albany, NY
Babies grow into men
Empty nest
Grand babies
(5.4)
RESEARCH INTEGRITY: COMMITMENT TO EXCELLENCE, TRUSTWORTHINESS, TO LAWFULNESS.

- Data management
- Research misconduct
- Animal subjects
- Human participants
- Collaboration
- Mentoring
- Peer review
- Publication & authorship
- Conflict of interest
- Health and safety
• Collaboration
• Women in science
• Advice to young scientists
BELFORT SCIENTIFIC COLLABORATIONS
MAP OF SCIENTIFIC COLLABORATION BETWEEN RESEARCHERS

Map of scientific collaborations from 2005 to 2009
Computed by Olivier H. Beauchesne @ Science-Metrix, Inc.
Data from Scopus, using books, trade journals and peer-reviewed journals
COLLABORATIONS USA
GUIDELINES FOR NEGOTIATING SCIENTIFIC COLLABORATION

1. Sharing of reagents and data
2. Design of Experiments
3. Division of labor
4. Publication of results
5. Co-authorship order
6. Access to unpublished data
7. Intellectual property issues

TRUST
“the formal structures of bureaucracy reduce the need for high levels of trust”
ON-LINE COMMUNITIES

1. Science Collaboration Framework (SCF)
   - MGH and Harvard Computing
   - Linked to external, heterogeneous knowledge repositories of life science resources (genes, antibodies, cell-lines or model organisms)

2. Internet Groupware for Scientific Collaboration
   - shared e-spaces
• Collaboration
• **Women in science**
• Advice to young scientists
STILL FEW WOMEN AT THE TOP

Gains for women come extremely slowly in the executive ranks of the chemical industry directors and holding top executive positions in the chemical industry. C&EN examined annual report proxy statements for 2000 to look down the boards of directors and annual reports and 10-K reports of the Securities & Exchange Commission to examine the demographics of directors at different public companies. The chemical industry in the U.S., isn't shy about taking credit for ways that it has enhanced partnerships. It talks about products and programs that increase an injury in programs that safety to work in industry safer to work in environments that are increasing the health of the workplace and the worker.

BAD PRESS

Athena Unbound

The Advancement of Women in Science and Technology

Henry Etzkowitz, Carol Kemen, and Brian Uzzi

MARRIAGE AND FAMILY

Marriage and children can act as a women's career in academic science. At any time, having a child during graduate school or marriage at the time of seeking a job and program prior to tenure. In addition, we found some rearrangement of marriage during the graduate student career. Women, not men are sometimes thought to be less than serious about their career if they do not have a family while in graduate school. A female graduate, student recalled: When I first interviewed to work here, I was single. On my first day of working, I had an engagement regimen

Women in Academic Medicine: New Insights, Same Sad News

The New England Journal of Medicine

In this issue of the Journal, Nonnenmacher reports the full-time careers in academic medicine and the success of medical students. She asked whether that is most important to getting into academic positions. The study also findings that the important was not that the method from single measures, departments, or specialties. Women who failed to define a condition with what seemed to distinguish women doctors from male doctors. This report does not mean for the sex of the sex and mortality of a sex.

The data for advancement also based on prior reports are not significant. Women do not have the sex of the sex and mortality of a sex. It appears that more women need to be regarded as having special traits and characteristics. They are not necessarily the sex of the sex and mortality of a sex. It appears that more women need to be regarded as having special traits and characteristics. They are not necessarily the sex of the sex and mortality of a sex.
BAD NEWS AND GOOD NEWS of WIS

![Graph showing academic biochemist percentages by gender and career stage.](ASBMB_Today_February_2012)
MOST INFLUENTIAL FACTORS IN CAREER CHOICES

![Bar chart showing the most influential factors in career choices for women and men. The factors include departmental culture, child care, partner's work, work-life balance, and departmental culture again. The chart indicates higher percentages for departmental culture and child care for women compared to men.]
Survival Analysis of Faculty Retention in Science and Engineering by Gender

Deborah Kaminski¹* and Cheryl Geisler²

Individual assistant professors (a total of 2966 faculty) hired in science and engineering since 1990 at 14 United States universities were tracked from time of hire to time of departure by using publicly available catalogs and bulletins. Results of survival analysis showed that the chance that any given faculty member will be retained over time is less than 50%; the median time to departure is 10.9 years. Of all those who enter as assistant professors, 64.2% were promoted to associate professor at the same institution. Overall, men and women are retained and promoted at the same rate. In mathematics, however, faculty leave significantly earlier than other disciplines, and women leave significantly sooner than men, 4.45 years compared with 7.33 years.
GOOD PRESS

The win-win potential for motherhood and science

Women wishing to combine children with a research career should not be seen as taking a backstep but as bolstering both activities, argues Marlene Belfort.

Discrimination at any level cannot be tolerated. The tenure time-line needs to be adjusted for women with young children to relieve some of the pressures created by the ticking of the biological clock and the tenure clock in the same compressed time-frame. There must be more tolerance of unusual schedules, of non-traditional career paths, of exit and re-entry. Finally, concessions need to be made so that the fathers of our children can pitch in without sacrificing their careers.
SCIENTIFIC WORKFORCE

NSF Touts Family-Friendly Policies as Boon to Women

Young women are forever asking Me, an astrophysicist at Yale University, what issues generally applaud what NSF is trying to do. Wondel of the University new-mom postdocs who couldn’t work nights and weekends in the lab. In 2004, she

Lending a hand. First Lady Michelle Obama applauds the work of young women in science at a White House event.
MUTUALLY REINFORCING ROLES OF MOTHERHOOD AND SCIENCE

• Developing common skills
  – Resourcefulness and problem-solving
  – Nurturing (children, students, post-docs)
  – Multi-tasking and juggling
  – Cooking up experiments and designing meals

• Balancing ups and downs

• Developing perspectives - spills and thrills

• Balancing outside opportunities and home comforts
Mother knows best

Sir — In his otherwise excellent News and Views “The grand assault” (Nature 419, 493–494; 2002), Russell F. Doolittle writes: “Eukaryotes can be loosely defined as organisms whose cells have nuclei and cytoskeletons, distinguishing them from the Bacteria and the Archaea, neither of which has introns in their coding sequences.”

Bacteria and the phage that infect them do contain introns in their genomes. The first example of an intron in a bacterial system was found in the thymidylate synthase gene of bacteriophage T4 (F. K. Chu, G. F. Maley, F. Maley and M. Belfort Proc. Natl Acad. Sci. USA 81, 3049–3053; 1984) — the last author being my mother. Since then, hundreds of introns have been found in archaea, bacteria and their phage.

It has been a long time since I uttered these words, but I couldn’t be more proud to say: “Mommy told me so.”

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Emotional Abyss; Physical Cause?

By MARLENE BELFORT
Published: October 30, 2007
"If anyone can balance a career with motherhood and state-sponsored terrorism, it's Jeannie."
• Collaboration
• Women in science
• Advice to young scientists
Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty

1: Obtaining and Negotiating a Faculty Position
2: Understanding University Structure and Planning for Tenure
3: Laboratory Leadership in Science
4: Staffing Your Laboratory
5: Mentoring and Being Mentored
6: Time Management
7: Project Management
8: Data Management and Laboratory Notebooks
9: Getting Funded
10: Getting Published and Increasing Your Visibility
11: Understanding Technology Transfer
12: Setting Up Collaborations
13: Teaching and Course Design
Some fraction of the audience is always asleep during any talk, no matter how exciting the subject. Find a few people who are listening attentively and give your talk to them.

-Johannes Walter, Harvard Medical School

If I had one piece of advice to give it’s that although you’ve been hired for your scientific skills and research potential, your eventual success will depend heavily on your ability to guide, lead, and empower others to do their best work.

-Thomas Cech, HHMI
ADVICE TO A YOUNG SCIENTIST
(Dr. Peter Medawar-1979)

“Any scientist of any age who wants to make important discoveries must study important problems”

Marlene Belfort

• PROBLEMS
• PASSION
• PAPERS
WHY IT’S SO DIFFICULT - ACADEMIA

- Dependent on outside funding
- Geographic constraints
- Long/unpredictable hours
- Narrow choice of employers
- Relatively low income

But...

- Independence
- Freedom of thought
- Freedom of time
- Ownership
“Bad news, Phil - due to federal funding cutbacks, We can’t afford to put your head back on.”
ARE WE REALLY TRAINED?

• Accounting
• Communication
• Grant writing
• Lab design
• Patent law
• Prioritizing
• Psychology
WHAT IT TAKES

- Boundless reading
- Competence
- Compromises
- Energy, optimism, persistence
- Flexibility
- Good fortune
- Passion, commitment, hard work
- Sacrifices (play and $)
- Support - partner, family, institution, community
HELPFUL CIRCUMSTANCES/ATTITUDES

• Comfort with conformity and non-conformity
• Education in supportive environment (eg. Nuturing quantitative skills, Women’s schools)
• Minimizing obstacles
• Role models and confidence-builders
“Can I call you back? We’re in the middle of transitioning from tree-frog allergies to bioterrorism.
IT’S EVEN HARDER FOR SCIENTISTS

• Narrow choice of employers
• Geographic constraints
• Dependent on outside funding
• Relatively low income
• Long/unpredictable hours
THE INGREDIENTS

- Competence
- Passion, commitment, hard work
- Support - partner, family, institution, community
- Sacrifices (play and $)
- Compromises
- Energy, optimism, persistence