Women in Bio

Fixing Leaky Pipelines, Smashing Glass Ceilings

Professional ladders across the sciences and science-based industries share a worrisome demographic feature: few women on the highest rungs. Despite progress toward equality over the past several decades, gender disparities persist, and they increase as men and women advance toward positions in executive suites and the highest levels of academic administration.

Studies conducted by social scientists, federal agencies, and professional associations show that women in the sciences and high tech industries move through "leaky pipelines" and run into "glass ceilings." They fall out of science education and science-related careers at higher rates than men, and their professional ascents tend to reach earlier plateaus—even where formal criteria for promotion appear to be strictly merit-based.

In certain respects, gender demographics are shifting faster in the life sciences than in other technical fields. Since 2005, women have outnumbered men in life sciences doctoral programs, and since 2009, they have received more than 50 percent of PhD degrees. Still, as of 2010, women occupied only 26 percent of tenured professorships in the life sciences, and they are considerably less likely than male colleagues to commercialize research or become involved in entrepreneurial ventures.

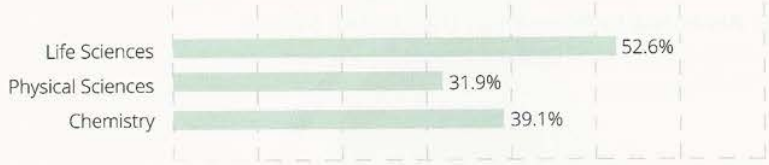
The scant figures on women's participation in life science commerce hint at comparable shortfalls. A recent report by the Association for Women in Science (AWIS) showed that among forty biotech companies making initial public offerings of stock in 2013, only one had a female CEO, and just 8 percent of directors were women. The upper echelons of life science professions remain dominated by men.

Several women's organizations have been formed to address these problems. They are working to promote gender equality, and to provide women in the life sciences and related fields with opportunities for mentoring, networking, and career development.

Women In Bio

Twelve years ago, Women In Bio (WIB) became the first dedicated organization for women in the biotechnology industry. It was started by Robbie Melton, senior program manager at the Maryland Technology and Development Corporation, and Cynthia Wong Hu,

Percentage of PhD Degrees Received by Women in Science Fields in the U.S. in 2009-2010



source: Catalyst.org

attorney with Entremed, as a networking group for professionals working in "DNA Alley" along the I-270 corridor in the northern suburbs of Washington, DC. Melton and her colleagues were tired of feeling invisible at male-dominated conferences and industry events. Other women in the profession felt the same way. The women decided to help each other.

They began by meeting informally to share information and resources. The meetings were popular. Word spread, and more and more women showed up. Soon a structured organization was put in place, and it grew larger, too. In 2009, the group began expanding across the country, with support from the Biotechnology Industry Organization (BIO). It grew from one chapter with 250 members, to ten chapters in the United States and one in Canada with more than 1,500 members.

Today, WIB is a well-established international organization that nurtures aspiring business leaders and entrepreneurs in many ways—it offers moral support, networking opportunities, education, and mentoring. Members pursue careers in the biotech and pharmaceutical industries, in academic settings, and in related supporting professions including law, accounting, marketing, and public relations. Its programs are designed to meet the needs of a diverse membership with wide-ranging interests and goals.

WIB is sustained largely by the dedication of volunteers, including many high-ranking women who struggled on their own to attain career goals and are now passionate about helping others achieve. Their efforts are premised on the idea that, as social, cultural, and demographic conditions change, the life sciences industry must accommodate the needs and interests of increasingly heterogeneous pools of professional talent on which it depends for survival, progress, and growth.

To make progress, WIB has focused on strategies that professional women can use individually and collectively to advance in their careers, and to foster equality, fairness, and diversity in scientific and high tech workplaces.

Celebrating Role Models, Breaking Stereotypes

"Leaky pipelines" and "glass ceilings" have left women underrepresented in positions of leadership in the biotech industry. Having fewer role models at the top tempers the aspirations of young women who are just starting out, so WIB aims to surround them with compelling role models and mentors at every stage of their professional lives. According to Chris Meda, chief business officer of InCellDx, and chair of WIB's San Francisco chapter, there is a need for women in biotech "to see what's possible in their own careers and to explore those possibilities by speaking to women already in those positions."

With this end in mind, WIB shines a spotlight on successful professional women at every opportunity. WIB president Simone Fishburn, executive editor at BioCentury publications, explains the strategy and describes the desired outcome. "WIB showcases women presenters, panelists, and speakers, almost exclusively," she says. "This is not because men aren't good speakers, but because we want to put successful female role models in front of women, and in front of men. We're trying to change perceptions, to familiarize people with what a female CEO looks like, and to show our members that successful

Robbie Melton, cofounder, WIB

Chris Meda, chair, WIB-San Francisco

Doctorates Awarded to Women in the United States

Women have made signifcant strides in educational attainment over the past 30 years.

Percent of women doctorate recipients, 2012	%
All fields	46.2
Life sciences	55.6
Biological and biomedical sciences	53.2
Medicinal and pharmaceutical sciences	47.8
Bioengineering and biomedical engineering	35.5

source: National Science Foundation

Gain between 2002 and 2012	% change
Biological and biomedical sciences, women	76.4
All fields, women	29.9
Biological and biomedical sciences, men and women	48.2
All fields, men and women	27.4

Gain between 1982 and 2012	% change
Life sciences, women	306.7
All fields, women	133.4
Life sciences, men and women	108.8
All fields, men and women	63.8
All fields, men	29.6

women are just like they are—they walk like them, and talk like them. This is a very simple but very powerful way of creating change."

In essence, WIB is in the business of breaking gender stereotypes, unwarranted generalizations about men and women that are pervasive in modern society. Social scientific studies have consistently shown that, in work settings, gender stereotypes induce subtle biases that affect important decisions concerning recognition, reward, and advancement. These biased judgments—made by men and women alike—reflect the influence of tacit assumptions and prejudices that permeate the broader culture. It appears that, in the "collective mind," the archetype of the savvy, dynamic, highly functional, and highly successful professional usually takes a masculine form.

WIB is attempting to remedy this situation by constantly reinforcing the notion that professional attainment is something to which women can and should aspire. All of its programs are designed to undermine the assumption that the talents, skills, and personal qualities required for high performance and leadership are somehow gender-specific.

WIB is also working to counteract popular media portrayals of science as nerdy and unfeminine.

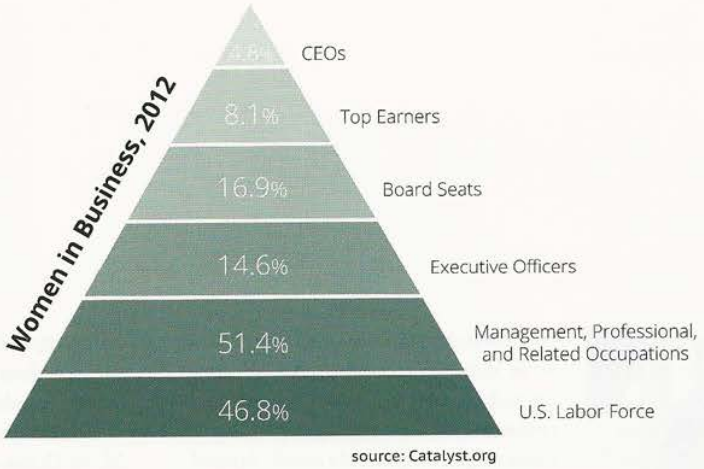
Christine Frankovic, a senior director of business development at KCAS Bioanalytical Services, and communications chair of WIB-San Francisco, emphasizes that combatting such preconceptions is a formidable but crucial task. "We need to redefine the visual images that we conjure up when we think about women in science, like that 1990s photo of a woman wearing a lab coat, high heels and glasses," she says.

To help teenage girls "unlearn" such negative stereotypes before they become entrenched, WIB has created a program called "Young Women in Bio." Available in a few chapters around the country, the program takes middle school and high school students on day tours of R&D facilities at biotech and pharma companies and introduces them to the realities of scientific careers in industry. Other WIB chapters have initiated university outreach programs that collaborate with undergraduate, graduate, and post-doctoral training programs to educate and encourage aspiring young female scientists in a variety of ways.

Simone Fishburn, executive editor, BioCentury Publications

Learning the "Soft Skills:" Leadership and Networking

While role models are inspirational, mentors and coaches actively help women achieve their goals. To facilitate sustained contact with mentors, WIB has organized the MAPs (Mentors, Advisors, and Peers) program, which matches members with a mix of peers and industry veterans based on their individual career goals. MAPs groups meet monthly in informal settings so that mentors and mentees can establish close professional relationships and share personalized advice, guidance, and strategies.



WIB has also developed educational programming to teach leadership skills in seminars and workshops. In most cases, leaders are made not born. It usually takes considerable effort and practice to exude authority and acquire an "executive presence." As marketing consultant and WIB-San Francisco program chair Patty Harrington points out, "People don't often realize it, but most senior executives, male and female, are taught to act the part by executive coaches."

WIB offers coaching sessions to help women gain confidence and improve their leadership skills at all career stages. Earlier this year, the San Francisco chapter held an event called "Your Personal Branding" to impart strategies for effective self-presentation. And Harrington adds that simply participating in the organization can provide invaluable experience: "Volunteering to serve on or chair committees within an organization like WIB is hands-down the most effective way to build practical leadership skills."

WIB also devotes a lot of time, energy, and resources to helping women build professional networks. In contemporary high tech industries, networks are vital resources for career advancement. To land a job, launch a business, or attract venture capital, familiarity is an indispensable boost. But many professional women have not been shown how to make and sustain network connections.

For this reason, WIB hosts hands-on workshops that teach effective techniques for generating and cultivating social ties in many different professional settings. Chris Meda reports strong demand. "All of our networking events fill up and completely sell out," she says. "Clearly, we are answering a need for women who are seeking contacts, help, and advice. They're seeking the content that we offer in our programs."

The organization hears repeatedly from members that WIB networking events have afforded serendipitous new connections and launched careers in new directions, but making contacts is not effortless, and many women have family responsibilities that leave little time for informal professional socializing. "What I tell members," Meda says, "is that you have to get out there and do it for yourself. We may be dog-tired after we finish work, but we've got to get out there and network."

Adding a new twist in order to accommodate members' busy schedules, WIB-San Francisco has inaugurated "speed networking." Since 2011, it has become one of the group's most popular activities. Modeled on speed dating, it comes complete with buzzers that instruct participants to switch partners and make a new contact every five minutes. It's a stress-free, high efficiency meet-and-greet format perfectly suited to the needs of women with over-extended work and family schedules.

Because of its low barriers to participation, speed networking attracts a broad spectrum of male and female biotech professionals, including job-seekers,

Christine Frankovic, communications chair, WIB-San Francisco

Patty Harrington, program chair, WIB-San Francisco

Lynn Johnson Langer, board member, WIB

recruiters, senior executives prepared to serve as mentors, and aspiring entrepreneurs looking to commercialize a new molecule, device, or diagnostic test. The gatherings are relatively small, capped at fifty participants. "This is the kind of function that WIB does especially well," WIB's Frankovic notes.

WIB appreciates the value of cozy interactions, but it also simultaneously promotes communication across broader social and geographic distances. Members are encouraged to attend events held at distant chapters when travelling, for example. "It is doubly important for us," says Fishburn, "to enable virtual networks, to enable cross-fertilization regionally." Links between chapters benefit members, and they sustain WIB's organizational machinery as well. WIB has no physical premises. It exists entirely in communications.

Waiting for Cultural Change

Networked organizations can be powerful, but women in the biotech industry still face certain challenges beyond the reach of professional associations. For example, while perceptions regarding the place of women in the working world are rapidly changing, corresponding changes in role expectations for men and women in families haven't kept pace. Women often acquire new responsibilities on the job without being relieved of traditional responsibilities for managing households or taking care of children.

In individual cases, the costs of carrying disproportionate shares of domestic labor may be slight, but when multiplied repeatedly in countless instances as careers unfold, they place women at a significant collective disadvantage. The deficit is cumulative and self-perpetuating. What can be done? The problem is not directly actionable. There is no legislative solution.

WIB's approach is to raise awareness. Many chapters are formally affiliated with biotech and pharmaceutical companies and leading academic institutions. They are urging corporate and institutional partners to adopt family-friendly policies for their work organizations. "As WIB grows," says Frankovic, "there will be more opportunities to talk about issues that are important to women in this industry. If we can change perceptions, that counts as positive change."

The Future of Women in Biotech

Precisely because WIB is thriving, one of its biggest programmatic challenges is meeting the needs of all of its members. Lynn Johnson Langer directs programs in regulatory science and entrepreneurship at Johns Hopkins University and serves as a member of WIB's national board. She says, "Some women want to work their way up in companies that have already started. Some want to be CEO, and some want to start their own business. WIB aims to help all women progress in their careers in the bio-related industries, to reach whatever level they are interested in."

The organization is currently developing executive roundtables for women CEOs, presidents, and vice presidents. Relatively few women have moved into these high-level positions. WIB believes that it is critical to build strong peer networks to support those who have. "These people are at or near peaks in their career trajectories, but even at this level, issues crop up that they can't seem to get past," Patty Harrington says. WIB is committed to helping high-flying

women find solutions to their problems.

In the long term, the organization intends to extend its reach across the biotech industry, to include more women, and more men as well. The group recognizes that changing gendered attitudes and assumptions, and making scientific workplaces friendly to both men and women requires the active participation and buy-in of men. Simone Fishburn calls inclusion a necessity. "Men and women together make up this ecosystem. Men have to be included. They will have to take part in the change that we're trying to introduce," she asserts. This is the party line: healthy working environments for women require the cooperation, support, and solidarity of male colleagues.

WIB's ultimate goal is gender equality in science and business. Christine Frankovic stresses that, in order to generate broad support for this ideal, WIB and sister organizations such as the Association for Women in Science and the Healthcare Businesswomen's Association need to emphasize spillover benefits. "When we have more women in leadership roles, it's good for families and good for companies," Frankovic says. "Every business has challenges, and women bring slightly different perspectives on them and different approaches to handling them. More women mean a more diverse work culture, and I think that's better for business."

– Ramya Rajagopalan

Organizing Change

The Association for Women in Science (AWIS)

The Federation of American Societies for Experimental Biology (FASEB) began holding annual conferences in 1966. At the first meeting, biologist Virginia Upton organized an informal cocktail gathering for female attendees. The event was popular and was included on the schedule in subsequent years. By 1970, Stanford senior research associate Judith Pool felt it was time for FASEB to address women's concerns formally. She organized a steering committee. The following year, the Association for Women in Science (AWIS) was established to promote gender equity in all science and engineering professions. Through its local chapters, publications, and online presence, AWIS provides a wide range of resources and services to women, from mentoring to legal advice.

The Healthcare Businesswomen's Association (HBA)

The Healthcare Businesswomen's Association (HBA) was formed in 1977 by women working on the East Coast to promote the advancement of women in the healthcare industry. The organization now numbers 7,000 members with chapters across the United States and Europe. It holds more than 300 networking and educational events annually. Members work in all healthcare fields from insurance to professional support services.

The organization's centerpiece event is its annual "Woman of the Year Awards" ceremony held to recognize female leaders and celebrate role models. This year marks the event's twenty-fifth anniversary. Carol Meerschaert, HBA's director of marketing, explains that such recognition is important "to make sure people know about all the great things women do."

Golden Seeds and Astia

Golden Seeds and Astia are investment firms that supply financial and intellectual resources to technology ventures led by women. They provide startup and early stage funding drawn from networks of angel investors, and they mentor female entrepreneurs through the business development process. Both organizations invest broadly in tech fields, including healthcare, medical technology, and life sciences. According to Una Ryan, chair of the Bay Area BioEconomy Initiative, these organizations provide an indispensable service: "Having an idea is one thing," she says, "but the hardest thing for women who want to carry out a mission, follow a dream, or achieve a goal is to get the money in place." When Wall Street veteran Stephanie Newby established Golden Seeds in 2005, female entrepreneurs were receiving less than 5 percent of venture capital investment dollars. Golden Seeds and Astia are dedicated to unleashing the entrepreneurial potential of women in technology industries.

MedTech Women

Deborah Kilpatrick and Amy Belt Raimundo, former colleagues at the medical device manufacturer Guidant Corporation, founded MedTech Women in 2010. They were tired of attending industry meeting with no female speakers or panelists on the program, and decided to organize the first "MedTech Vision" conference in Menlo Park, California to highlight the contributions of women to the medical technology industry. Four annual "MedTechVision" conferences—consecutive sellouts—have now gathered women in the field gather to discuss a range of industry issues.