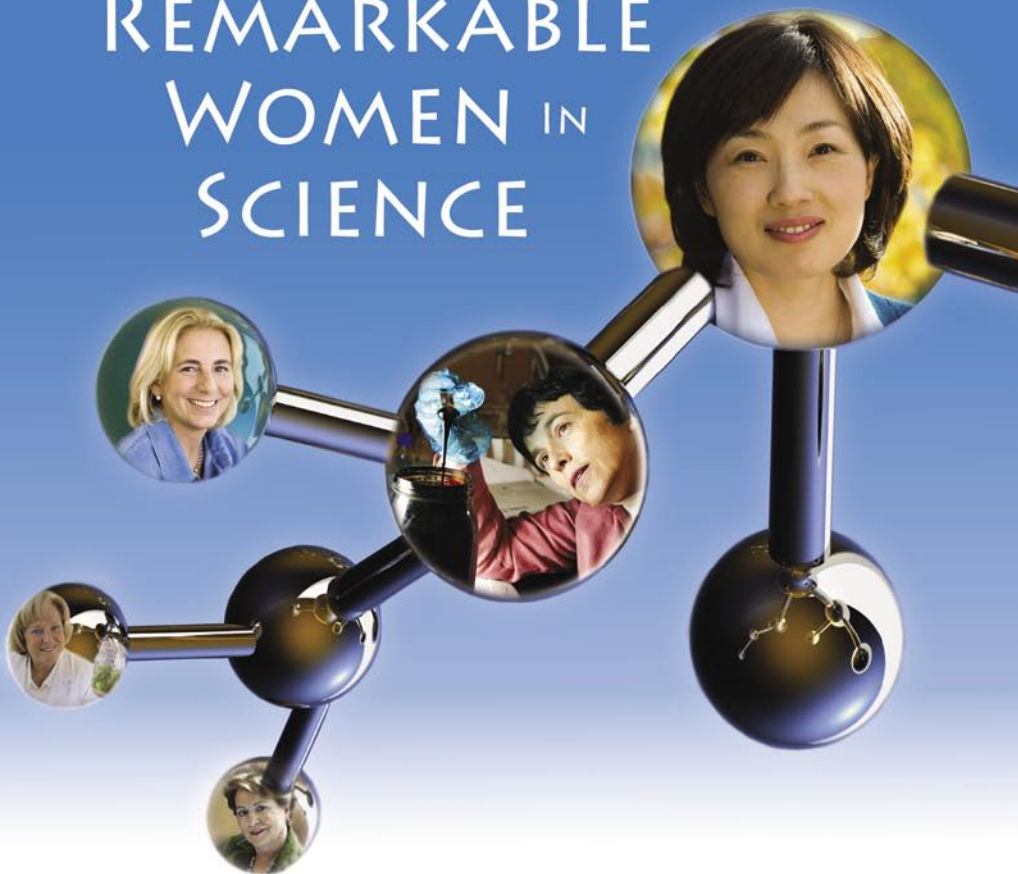


BEATING THE ODDS
REMARKABLE
WOMEN IN
SCIENCE



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1998
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United Nations
Educational, Scientific and
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"NOTHING IN LIFE
IS TO BE FEARED.

IT IS ONLY
TO BE UNDERSTOOD."

—MARIE CURIE



On the cover: Left to Right: Gloria Montenegro, Ana Belén Elgoyhen, Ligia Gargallo, Dominique Langevin, V. Narry Kim
On this page:
Clockwise from top: Fumiko Yonezawa, Jennifer Thomson in her garden and as a young girl

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WANTING, BELIEVING, DOING

"NO ONE CAN MAKE YOU FEEL INFERIOR
WITHOUT YOUR CONSENT."

—ELEANOR ROOSEVELT, REFORMER, JOURNALIST, DIPLOMAT (1884 - 1962)

In many countries, young women considering science or engineering as a profession today can look forward to increased awareness of discrimination in the workplace and real efforts to ensure their rights to pursue the career path of their choosing. But this has not always been so and is certainly not true in all countries around the globe.

Many women over the past century have worked hard to gain equal representation, equitable advancement, and fair recognition for their work in the male-dominated scientific world. They have had the courage to quietly—and sometimes not so quietly!—challenge those who told them that they could not do science because they were not clever enough ... or because they were not men. It is on the shoulders of these women that the next generation of women scientists now stands.

In this booklet, we bring you the stories and advice of some of these exceptional women. They are not necessarily famous, but rather are women who have been true to themselves and followed their passions. They have achieved in spite of adversity... and sometimes because of it. Many have been balancing a successful career with raising a family; some have had to overcome physical disabilities. They may have faced discrimination or come up against cultural restrictions that prevented them from taking certain jobs. Whatever the hurdles, these women demonstrate to us all how to be strong, and determined yet collegial, when challenged, how to work with the system to make changes from the inside, and how to be both active and unintentional role models to those around them. They are from all over the world, from all levels of society, and from very different backgrounds. But what they all have in common, besides their

gender, is a passion for their work and the inner strength to never take "no" for an answer and to show the world, their peers, themselves that they can do whatever they set their minds to.

The year 2008 marks the 10th anniversary of the L'Oréal-UNESCO For Women in Science awards. The development of this program has helped women all over the world to pursue excellence in research and conquer gender discrimination at a grass roots level. Although this decade of generosity is to be celebrated, we should at the same time strive for the day when, as one of our interviewees, Vijayalakshmi Ravindranath, so perfectly puts it, women who devote their lives to research are known and accepted simply as *scientists*, rather than as *women scientists*.

My personal hope is that the stories and words of wisdom contained in these pages will inspire you, the future thinkers and achievers, to take on the exciting challenges that science and engineering have to offer. And that the day will come there will be nothing unusual about women entering and succeeding in these fields, leading subsequent generations to wonder why we ever found it necessary to focus on efforts specifically for women in science.

Sean Sanders, Ph.D.
Commercial Editor, *Science*

ENCOURAGING STUDENTS

ADVICE TO THE NEXT GENERATION



Dominique Langevin

“Girls, don’t let anyone tell you science is only for boys!”

The future is full of challenges and science needs the special talents of women to help us meet these challenges head-on,” writes physicist **Dominique Langevin** in an online forum of women scientists (www.agora.forwomeninscience.com/agora).

Girls can sometimes be intimidated by science and engineering classes, thinking they are either too difficult or the domain of boys. But many women have found rewarding and exciting careers in these fields—their advice: give them a try!

Dominique, who was a 2005 L’Oréal-UNESCO For Women in Science laureate, was steered toward science by her father. “My father had wanted to be an engineer but was not able to complete his studies because of [World War II],” she recalls. So at age 18, Dominique, the older of two daughters, was encouraged by her father to enroll in the École Normale Supérieure in Paris—

the most prestigious institution of higher education in France—to study physics.

Today, Dominique is one of the most widely recognized leaders in the study of soft matter. “It is an exciting type of work. I am always doing and learning something different,” she says. “And I meet a lot of interesting people.”

One of the accomplishments she is most proud of is understanding the behavior of microemulsions—clear mixtures of liquids that don’t normally like to mix, such as oil and water, and are used in many products like cleaners and pesticides. Dominique’s pioneering studies have had important applications to the petroleum industry.

Now that her four children are out of the house, Dominique is typically in her laboratory at the Université de Paris-Sud in Orsay from 8 am until 8 pm, although it does not even feel like work to her. “The more you do research and understand things, the more you want to find out,” she says laughing.



Entering male territory

Not many girls choose physics as their major in college. As an undergraduate student at Princeton University, **Susan McKay** was initially pursuing a major in psychology with an interest in a career in elementary education, traditionally a “woman’s field.” Her adviser, who was a mathematician, suggested that Susan take a course in mathematical physics. Susan tried it and loved it. “It was really fun and I was doing well in it,” she recalls.

By the time she was a sophomore she was hooked. “I found that when I was studying physics the time really flew by,” she says. “I loved using math to figure things out.” Susan took some time off between each of her degrees—including a brief break following her master of science when her elder daughter was born—but always came back to research. “Sometimes students think that if they take a break they will not be as competitive. But I have seen many students take some time off and come back as stronger students,” she says. “We have to get rid of this myth.”

Today, she is a professor of physics at the University of Maine. She returned to her original interest in education by creating a research center at the university focused on improving the way in which science is taught, so that more students will want to stick with it. “Teaching is fun and the research is really exciting,” she explains. “I always advise students to pursue science. Sometimes they don’t even realize that science is something they are good at.”

“ I loved using math to figure things out. ”

Giving science a try

How do you know if science is right for you? “By doing it,” says biologist **Carol Greider**. “If you have the opportunity to get into a lab as an undergraduate and do experiments and you find that you are having fun, it is probably a good choice for you,” she says.

Growing up in California, Carol was initially drawn to marine biology, but several experiences in different labs steered her toward cells and molecules. In 1984 she accepted a position as a graduate student at the University of California, Berkeley laboratory of Elizabeth Blackburn, who was recently named as a 2008 L’Oréal-UNESCO For Women in Science laureate.

Blackburn had been investigating how the pond organism *Tetrahymena* maintained the special caps, called telomeres,

How do you know if science is right for you? By doing it!

on the ends of its chromosomes. Carol set out on an ambitious quest to find a hypothetical enzyme thought to be responsible for maintaining these telomeres. On Christmas Day, nine months after joining the lab, Carol spotted signs of its existence. The finding helped kick off a huge field of research that is helping scientists understand aging and diseases like cancer.

For their work on this enzyme, called telomerase, Carol, her graduate supervisor Blackburn, and Jack Szostak, a researcher at Harvard Medical School, received the 2006 Lasker Award. Often dubbed the “American Nobels,” the Laskers are considered among the nation’s most prestigious honor for biomedical research.

Carol, now director of molecular biology and genetics at the Johns Hopkins Institute of Basic Biomedical Sciences in Baltimore, Maryland, encourages her students to seek out as many research experiences as possible. “What you think you like may not necessarily be where the intellectual excitement is for you,” she says. “Science takes a lot of hard work. If you are excited, it will not feel like work.”

For the love of it

Ana Belén Elgoyhen, a neuroscientist in Argentina and a Howard Hughes Medical Institute (HHMI) international research scholar, also encourages her students to pursue careers in research. After completing a successful postdoctoral fellowship at the Salk Institute for Biological Studies in California, Belén decided to return to her home country. “I have an eight-year-old son and I want him to be raised in this culture,” she explains. She was recently named as a 2008 L’Oréal-UNESCO For Women in Science laureate.

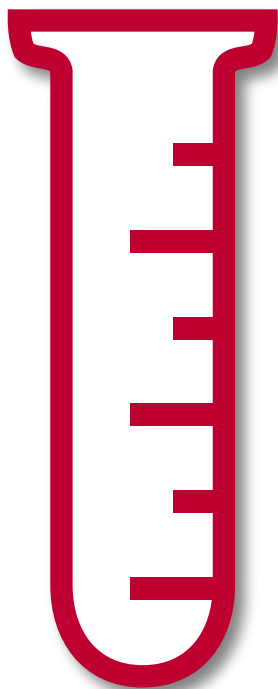
Today, Belén’s research is considered among the best in the world in the field of neuroscience. She would like the scientists she trains to follow in her tracks by returning to Argentina and establishing equally successful labs. “You have to balance what you want in life,” she says. “Coming back to Argentina is not the end of a career. If someone is good abroad, she will also be good in Argentina.” Explaining her love for science, Belén says, “What I enjoy most is the freedom of asking questions, finding the way of answering them. I am in glory when I find something totally unknown.”



Ana Belén Elgoyhen



Susan McKay with daughters Tracy and Betsy



Joan Steitz, an investigator with the HHMI and professor at Yale University, shares the same excitement and love for discovery. But Joan did not know what research was when she began her studies. “When I was in college there weren’t any women faculty,” she recalls. “I knew a few women physicians, so at first I wanted to do medicine.”

But after obtaining her B.Sc. in chemistry at Antioch College in Yellow Springs, Ohio, Joan spent a summer in the laboratory of Joe Gall, then at the University of Minnesota. “I had worked in labs previously but only as a technician for someone else,” she explains. “Having my own project and my own goals was so entrancing. It made me realize that I really wanted to do a Ph.D.”

Joan went to Harvard University in 1963 to join the laboratory of James Watson—the Nobel laureate who had discovered the double helix along with Francis Crick—as his first female graduate student. “At the time I never envisioned I would be a professor, because there were not any role models,” says Joan. “I just focused on doing good science rather than on a career.”

But after spending three years as a postdoctoral fellow at the MRC Laboratory of Molecular Biology in Cambridge, UK, she joined the faculty at Yale University in 1970. (Her husband, Tom Steitz, is a faculty member in the same department.) At Yale, Joan quickly established herself as a pioneer and leader in the study of tiny but important molecules called small nuclear RNAs and small nuclear ribonucleoproteins. In 2001, she was honored as a L’Oréal-UNESCO For Women in Science laureate.

“I get as excited about a new discovery as when I started,” she says. “If it brings you joy to figure things out, then research is something you should consider.”

“What I enjoy most is the freedom of asking questions, finding the way of answering them.”



Joan Steitz



EMBRACING DIVERSITY

The paths leading to science careers are as diverse as the people traveling them.



Jill Bargonetti

JILL BARGONETTI started off as a dance major at the State University of New York at Purchase taking only a few science courses. She eventually exchanged her dance shoes for a lab coat, enrolling in graduate school at New York University. "Some scientists in the field made me feel bad because I was always interested in art and in fashion," she recalls. Jill stood out for another reason. She was one of the few African American students in her department.

Until recently, simply being a woman studying science meant being different. But in the past 20 years the number of female students in scientific fields has grown, as has the number of women holding senior positions in academic departments and in industry. Despite these changes, women from certain ethnic and racial minorities and women with disabilities remain greatly underrepresented. For many of them, being a minority has made them more determined to succeed and to help others follow in their tracks.

Not fitting the mold

After obtaining her Ph.D. (in molecular biology) and completing her postdoctoral training, Jill decided to seek a position at a college with a large number of minority students. In 1994, at age 31, she became one of the youngest faculty members to join the department of biology at Hunter College, City University of New York.

"One of the things that I really try hard to do is to expect the best from all my students," she says. "I tell them, 'You need to work hard, you have to be organized, you have to be articulate.'" But having learned from her experiences she also encourages her students to pursue a wide range of interests, even if these have nothing to do with research. "There is not a particular lifestyle or look that you can associate with being a good scientist," says Jill, who married in 1991 and has two sons. "You need to be passionate about science to do well, but you can be passionate about more than one thing."

“I hope that the fact that I have done it will make it easier for other women to do it.”

Trying harder

Taipei-born **Jackie Ying** also knows what it means to stand out. In her undergraduate class at The Cooper Union in New York City, the typical student ratio was about eight men to every woman. “Some of the floors did not even have bathrooms for women,” she recalls laughing.

She landed a position in 1992 as the only Asian American female faculty in the chemical engineering department of the prestigious Massachusetts Institute of Technology (MIT) in Cambridge. At age 32, she became the youngest scientist to obtain tenure in her department’s history.

She is appreciative for the support and encouragement she received from senior colleagues at MIT and in her field. “Being a minority you always have to prove yourself and work harder than everyone else, but there are also a lot of people who really want to see you succeed,” she says.

In 2003 Jackie left MIT to lead Singapore’s Institute of Bio-engineering and Nanotechnology, a government-supported research institute that opened in March 2002. “This was a unique opportunity,” explains the 41-year-old, who has already seen her staff grow 10-fold. “It has been a lot of fun to recruit excellent young scientists, engineers, and medical doctors and to create an environment where we can do really exciting research.”



Shirley Malcom

As head of the American Association for the Advancement of Science’s (AAAS) education and human resources program, **Shirley Malcom** has dedicated her career to helping young people achieve. Her commitment comes, in part, from her own life experience. Shirley was born and raised in Birmingham, Alabama, under strict racial segregation. “In high school all my teachers were black and all the students were black,” she explains.

Inspired by the excitement surrounding the US space program in the 1960s, Shirley went to the University of Washington to study science but she almost failed her chemistry labs. “I had come from a poor school and had not seen any of that equipment before,” she recalls. An African American teaching assistant helped her get through the class. “I convinced him that I was not dumb, just underprepared,” she says. “If I had

not done well I would have given up.” Later, a faculty adviser invited Shirley to join his research lab and encouraged her to go to graduate school at Pennsylvania State University.

Shirley says that as she was advancing through her career it sometimes felt tiring to always have to prove that she had a right to be there. “I hope that the fact that I have done it will make it easier for other women to do it,” she says. “I am not exceptional. I am married with children. I have struggled with all the same issues of juggling family and career as any other woman.”

For students who are interested in science and research, Shirley says to “go for it!” even if it seems an odd choice to your friends and family. “It has always been fun and interesting and challenging. To be able to build a life around something that carries these attributes is pretty cool!”

Focusing on accomplishments

Ameenah Gurib-Fakim was an outsider both when she left her native Mauritius to attend university in the United Kingdom, and when she returned home 10 years later. “I was the only woman who had come back with a postgraduate degree at the Ph.D. level,” recalls Ameenah, who obtained a Ph.D. in organic chemistry from the University of Exeter, UK, before moving back home to a position at the University of Mauritius.

“In a way I feel like I have broken the glass ceiling.”



Ameenah Gurib-Fakim

A mother of two young children and the 2007 L'Oréal-UNESCO For Women in Science Award laureate for Africa, Ameenah was the first woman to be promoted to the rank of full professor at her university. She is currently pro-vice chancellor of the university. "In a way I feel like I have broken the glass

ceiling," she says. Being a minority was not always easy, but Ameenah says she always focused on what she wanted to accomplish. "You have to really believe in what you are doing and develop a mindset that you will not pay attention to people who say you cannot do it."

Seeking mentors

Being a minority did not keep German-born **Imke Durre** from a successful career as a scientist in the United States. A physical scientist with the National Oceanic and Atmospheric Administration, Imke is among a fairly small number of female researchers in the field of atmospheric science. She is also blind. "Some people think that being a woman and having a disability is like a double whammy, but I don't see it that way in my case," she says. "I need certain on-the-job accommodations on account of my blindness, but none for being a woman. As a result, the fact that I am a woman tends to fall to the background."

Imke got her first taste of research when she was a high school student in Fort Collins, Colorado. When a reporter from a local paper asked a climatologist at Colorado State University when the earliest 100-degree day in the year had occurred, he did not have the information at hand. But Imke, who was volunteering for a local meteorologist, quickly found and submitted the answer to the paper, where it was published the next day. "I had never done something so forward," she recalls. The bold move resulted in a summer job at the Colorado Climate Center.

Imke advises students with disabilities to make sure they get all the same opportunities and experiences as other students, even if that requires doing things a little differently. "The fact that I have faced challenges isn't all that much different from anyone else's experience," she explains. "Regardless of whether we have a disability, we all encounter challenges that we need to figure out how to handle."



Imke Durre, second from left



Jennifer McElwain

STAYING POWER!

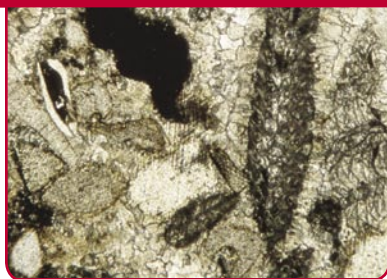
HAVE YOU GOT WHAT IT TAKES?

If you are fascinated by science, then a career in research is a great choice for you. Women scientists from around the world share six key steps they have taken in order to achieve their goals and dreams.

Step 1. Get the money

Jennifer McElwain has been fascinated by science since her childhood in Ireland. Her father was a chemical engineer, her mother a keen gardener. “I knew the Latin names of all the plants at the age of three. It was seeded early.” After her Ph.D. Jennifer went to the United States where she worked at the Field Museum in Chicago, studying the fossils of plants that had lived on Earth millions of years ago. She also had fun with organizing special events such as visits for school children.

After 14 years, however, she was ready to go for a higher position, and also longed to return home, together with her scientist husband and young daughter. She had to face two challenges: find not only a position back in Ireland, but also the funds to pay for her research. The first she tackled by getting



a lectureship at University College Dublin (UCD), bringing with her the skills and techniques she had developed while in the United States. The second hurdle she overcame by winning a Marie Curie Excellence award for €1.75 million. “It’s been amazing to come back to Ireland to a fast-track at UCD. I’m setting up a really exciting lab on campus—all custom designed.” Jennifer’s lab will mimic changes that happened in the Earth’s atmosphere 200 million years ago, to test how similar changes linked to global warming could affect today’s plants and animals. Her award supports a team of two postdocs and two Ph.D. students, as well as securing a promise from the university to take over the cost of her salary.



Aderaju Osowole

Step 2. Get the training—even if it means having to travel far

Training abroad was a critical early step for **Aderaju Osowole**, currently at the University of Ibadan in Nigeria. In 1998, while a Ph.D. student, she won an award from the Third World Academy of Sciences to travel to the Indian Institute of Science's Department of Inorganic and Physical Chemistry in Bangalore.

“The Indian laboratories were well equipped and maintained, with constant electricity and water supplies, even at week-ends and public holidays. In contrast, in Nigeria the dearth of research facilities and constant power failures have impaired our activities as researchers. Consequently we have spent more time on teaching than on research.”

After returning to Nigeria, Aderaju was able to set up an inorganic chemistry research unit at the University of Ibadan. More recently, she traveled to Germany for further training in physics on a George Forster Fellowship from the Alexander von Humboldt Foundation. She believes that women scientists have the ability to succeed. “Nowadays, women scientists [in Nigeria] are held in high esteem, unlike before, because experience has shown that women are diligent, hardworking, and go-getters.”

“Women are
diligent, hard
working, and
go-getters!”

Step 3. Get networking

“Women need to learn the importance of building national and international networks, which they can begin by participating at international conferences from an early stage and by seeking out a mentor,” says **Dolores J. Cahill**, professor at University College Dublin Conway Institute of Biomolecular and Biomedical Research, Ireland.

Dolores left Ireland directly after her Ph.D. and spent 10 years in Germany, mainly at the Max-Planck Institute of Molecular Genetics in Berlin, and was awarded a BioFuture grant to develop protein array technology and to support the co-founding of a proteomics company, Protagen AG.

Having returned to Ireland, Dolores is on the government’s Advisory Science Council where she feels privileged to assist in advancing science in Ireland. As a female she is often in the minority, but does not feel the need to make an issue of it. “Women should be noted for their scientific contribution rather than the fact that they may be the only woman at a meeting.”

Step 4. Start promoting yourself

Dame Julia Higgins, professor of polymer science at Imperial College of Science and Technology in London, remembers having to battle with her own modesty in order to declare herself a candidate for a professorship. The departmental professorial panel had nominated other candidates who seemed to them to have better or more urgent cases, but the Head of Department didn’t hesitate to support Julia’s case once she had put herself forward. “Women tend to be less definite about whether they ought to be pushing forward for promotion—they don’t push themselves in appropriate ways and they’re not as well networked as men, and therefore less well informed.” Ironically, Julia notes that at Imperial, those women who go for promotion are more successful than the men.

Determined to help other women scientists, Julia has helped to initiate new recruitment policies at Imperial to make the process of applying for senior positions less intimidating, particularly to women, and she has worked with the Athena Project to encourage universities across the United Kingdom to attract more women scientists to top university posts. When she first became a professor there were few other women faculty around her. “I felt rather obvious and possibly a bit isolated, but it didn’t make me want to stop, because it was all so interesting.”

“Women should be noted for their scientific contribution rather than the fact that they may be the only woman at a meeting.”



Dolores J. Cahill



Kate Nobes with her children

Step 5. Find role models

Getting to know other senior women scientists is a good way to overcome self-doubt, according to **Aoife Moloney**, a lecturer at the School of Electronic and Communications Engineering, Dublin Institute of Technology in Ireland. “A lot of women I know working in engineering think they’re not great at engineering. The men are more confident.” The answer, she says, is to find role models. “I’ve met a lot of women engineers who are two or three years ahead of me and they say they think they could be better, too. It’s good if you hear that.” Keen to encourage other women to take up engineering, she organizes parties and educational events, as well as visiting days for secondary schools.

Step 6. Plan your career

Many women scientists find that the very time at which they are ready to go for promotion is also when they wish to start a family. Careful career planning—about both where to work, and when to have a baby—is essential. For **Lucia Reining**, taking up a permanent position as a researcher, and later director of research, at the French National Research Centre in a laboratory of the Ecole Polytechnique in Paris was a key move in enabling her to combine having a family with a career in physics. Lucia was only two weeks away from giving birth to her first child when she interviewed for the position. She later had twin girls, and is now the head of a team of 20 researchers, as well as the president of an international group, the European Theoretical Spectroscopy Facility. The work requires a lot of time spent on administration and finance as well as science, which can be stressful. “If I had not had the permanent position, the probability that I would have given up at some point would have been extremely high.”

For **Kate Nobes**, a reader at the University of Bristol, UK, the question of whether or not she could allow herself to have a second child had to be carefully balanced with the demands of publishing academic papers. “It is a competitive job and if you want to compete you have to work all hours.” Securing the lectureship in Bristol, and the job security that came with it, enabled Kate to follow through with her long-term family plans.

Getting to know other senior women scientists is a good way to overcome self-doubt.

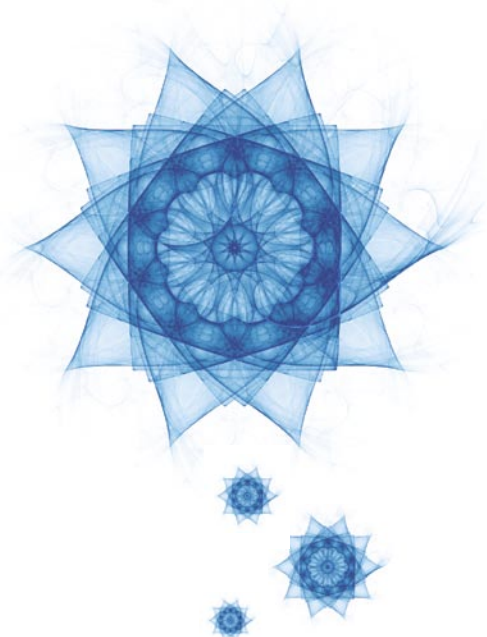
ASIA

SHAKING UP TRADITION

Asia, with its kaleidoscope of different cultures, is seeing significant changes in the prospects for women scientists.

Shazia Anjum is an inspiring example for young women in Pakistan. She was only three years old, living in Bahawarpur, when her father died. Her mother—who had little education and who worked as a clothes maker—struggled to bring up two young girls and was sad that she had no son to bring success to the family. But Shazia's grandmother would not accept the situation, insisting that Shazia's mom break with tradition—and risk her family's opposition—by going to school and then working as a school teacher to allow her to bring up her two girls with dignity. Shazia then followed the wave of change and became the first girl in her family to live away from home, in a hostel, in order to attend high school. "My family is very religious—they never allowed girls to study much. So I had to prove myself better than a son. After me, it changed. Now I'm an example to them all and my mother is proud of me."

Now an assistant professor at the International Centre for Chemical Sciences in Karachi, Shazia has a higher qualification, a Ph.D., than any of the boys in her family, and



more publications than any other assistant professor at her research center.

"There has been great social change in the past 10 to 15 years. Girls are coming forward and are doing very well, getting into university on merit." Currently Shazia is doing two years further training in Canada, and plans to help her home country of Pakistan to become self-sufficient in the manufacture of affordable medicines.

Shazia's story reveals how attitudes have changed in Pakistan, as they have in other Asian societies. "I hope there will be a day when we will be known as scientists who also happen to be women, rather than

women scientists," laughs **Vijayalakshmi Ravindranath**, the only female director of a national research laboratory under the science ministry in India—the National Brain Research Centre (NBRC) in Gurgaon, near Delhi. But it may take many more years before her hopes become a reality across Asia.



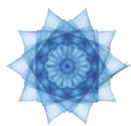
Shazia Anjum



Nancy Ip, left, and her mother

“This was
a major
achievement
in science for
China and it
received a
lot of media
coverage.”

—Nancy Ip on
becoming a L’Oréal-
UNESCO Award
laureate in 2004.



“Generally speaking, the obstacles faced by women scientists are not due to unequal opportunities or skills. Rather, they stem from insufficient role models, and the lack of support for women who strive for a career and a family,” according to **Nancy Ip**, Director of the Biotechnology Centre of Hong Kong’s University of Science and Technology.

She has been a national celebrity since becoming the first Chinese scientist in the life sciences to receive a L’Oréal-UNESCO For Women in Science Award in 2004. “This was a major achievement in science for China and it received a lot of media coverage—I was on television and in the newspapers.” She often gives talks to encourage female students to pursue a career in science and her lab has become a magnet for young Chinese women aspiring to be scientists.

“They see that so long as they are persistent they can pursue their dream,” Nancy enthuses.

Nancy’s children, a son and a daughter, were born only one year apart. “I was dedicated to my work but I also strived to spend time with my children whenever possible. Although I often missed seeing them perform at school, they cherished my effort to spend time with them. I’m sure all women scientists go through this. I believe that we can excel both in our scientific careers and in our roles as mothers.”

Nancy’s own role model was Rita Levi-Montalcini, the Italian neuroscientist who is now the oldest living Nobel Prize winner. “She became a giant in her field and showed such dedication as she overcame obstacles throughout her career.”

Despite being obvious high-achievers in their scientific work, few women in India are in top posts or on appointment committees, and no woman has ever become head of a science academy.



"In India, it is not difficult to attract girls toward learning and teaching science. The real difficulty lies in attracting them to *do* science," observes **Rohini Godbole**, professor at the Centre for High Energy Physics at the Indian Institute of Science, Bangalore.

Rohini originally taught herself mathematics outside school hours. She's well known in her field and has her name attached to two scientific phenomena—the high-energy particle Rees-Godbole effect, and the Rees-Godbole model.

The social and cultural character of South Asia means that parents tend to discourage girls from pursuing a Ph.D. out of fear that they may not find "better academically and professionally qualified" grooms for their daughters, says Rohini. Vijayalakshmi and Rohini are among the few who swam against that tide. "We have to make tough choices because of our multiple roles and responsibilities at home and office, and we have to face the consequences of our choices," says Vijayalakshmi.



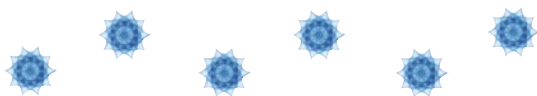
With a supportive husband and parents, Vijayalakshmi left her infant son in India to do her postdoctoral training at the National Institutes of Health in the United States. Her husband and son encouraged her to accept the offer of the NBRC's director's post in 2000, even if it meant separation again from them.

"Science careers for women often involve a commuting marriage," says Rohini, who spent 12 years of her marriage traveling between India and Germany.



India is changing, including through the launch of a new government fellowship program for women scientists whose careers have been interrupted by their husbands' job transfers, or by having babies. Women are jumping at the chance to resume their science careers.

The real breakthrough for Asia, according to Vijayalakshmi, will come only when women scientists have a say in selections for senior positions. "We need to develop a critical mass of women scientists in the decision-making process to make a dent," she says.



From the top: Vijayalakshmi Ravindranath; Rohini Godbole; and Rohini as a graduate student in America.

“ We need to develop a critical mass of women scientists in the decision-making process to make a dent.”

The Asian country that is seeing perhaps the biggest change in attitude is Japan, which tellingly has had few women physicists.

Masako Bando, for example, was the first woman physicist to join the faculty at Kyoto University in the 1960s, before moving to Aichi University 20 years ago. She was determined to prove wrong the professor who told her, “You shouldn’t do physics if you want to be a mother.”

Masako was still in graduate school when she had her first child. But with no nursery available, she was forced to set one up at home, with a group of other working moms. “Before then, women would ask their mothers or grandmothers for help. But most gave up work.”

Masako now sees huge differences in Japan. Many universities now provide maternity pay and child care facilities, and equal opportunities are enshrined in law. The University of Tokyo, for example, offers fellowships to women scientists to return to work after career breaks. The number of women physicists in Japan is now increasing—but slowly.

In the Philippines and other parts of Southeast Asia, women scientists have enjoyed more liberty and are less likely to be held back by male chauvinism, according to **Jurgenne Primavera**, scientist emeritus at

the Southeast Asian Fisheries Development Center in Tigbauan, central Philippines. And there is still relatively affordable household help and child care compared to say Europe or North America.

Jurgenne recalls when she was a schoolgirl, traveling with her father for six hours to reach the nearest school examination center. On the way, “We had to cross bamboo and coconut trunks to get over swollen rivers.” Jurgenne realized that she wanted one day to tackle the environmental problems responsible, such as the destruction of forests and soil erosion.

Jurgenne is now known as much for her battles against those who would harm forests as for her scientific work, as she has fought to protect mangrove swamps and promote the farming of milkfish and other edible fishes popular among Filipinos. Even when her four children were young, Jurgenne often had to go on field trips and travel to conferences, but she worked hard to be able to afford the “luxury” of three home-helpers. Still, she had the same “split personality” as other moms: “At home you think of work and at work you think of your babies at home.”

Jurgenne’s marriage advice? “Look for a partner who is secure in himself and prepared to accept household duties.”



“At home you think of work and at work you think of your babies at home.”

— Jurgenne Primavera with her grandchildren



TURNING OTHERS ON TO SCIENCE



For some women scientists, keeping their work at work is not enough—they wish to share their love of science with the world outside. Whatever their talents, it seems there's a way to take science to the broader community.

At the Energy Research Centre at the National Autonomous University of Mexico, in Mexico City, Julia Tagüña is a professor of physics with a passion for communication that equals her fascination with science. The seeds were sown when she took a sabbatical in 1991 to create the Energy Hall of Universum—the university's Museum of Science—of which she is now director. She has since become a respected science communicator, reaching out to both school children and the general public via talks, television, and radio.

"I have been asked many times by teenagers, after giving a talk, if doing science will allow them to have a family as well. I tell them that to have a career is very compatible with having a family: you can be a very interesting mother for your children."

To encourage girls, she is currently involved in preparing a series of children's books which include stories of Mexican women scientists.

"Young women in my country are more aware of what they can do and are not as concerned as my generation about what society expects."

Although she has witnessed discrimination against women scientists, Julia believes that things are looking up for them.

"My country's biggest problems are poverty and the lack of opportunities for many Mexicans. In this context, educated women have more opportunities in Latin America than they have in very developed countries. It is similar to what happened during the Second World War in Europe and USA: as the men went to war, women took their places."



Farida Faouzia Charfi
with her grandchildren

In Tunisia, too, women are perhaps enjoying more support than elsewhere, according to **Farida Faouzia Charfi**. “I haven’t had a problem as a woman. In the developed countries scientific research is an old tradition, and science is seen as a male activity. But in Tunisia that is not the case because the development of the scientific sector is relatively recent and we don’t have the same masculine image of science.”

As if to illustrate the point, Farida’s three daughters all pursued science-related careers: one is a physicist, a second a medical doctor, and the third an engineer in telecommunications. Nonetheless, Tunisia does have the same “leaky pipeline” as other countries, which sees most young women abandon their scientific careers in favor of home and children, so that only a few women reach top positions.

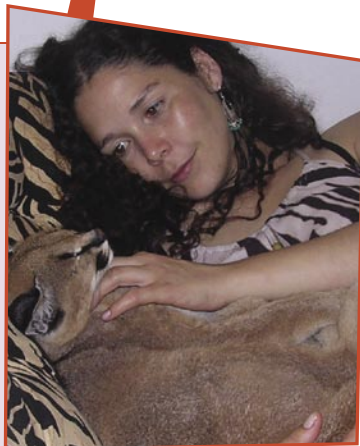
Farida helped to create the country’s first physics laboratory at the University of Tunis in 1975, followed by the first laboratory for semiconductor physics. She has also made astronomy and physics popular with the planetarium at the City of Science museum in Tunis. Her activities now extend beyond borders—she acts as a prominent spokesperson to encourage Israeli and Palestinian scientists to work together on behalf of the Israeli-Palestinian Scientific Organization.

“This cooperation is very important for peace. The situation now is very difficult in these countries, but there are Palestinians and Israelis who are convinced that they can achieve it.”

“I wanted people to take more pride in the country and take some ownership of science.”

Challenging perceptions about science and culture is also a major preoccupation for **Janice Limson**, a senior lecturer in biotechnology at Rhodes University, South Africa, where her research focuses on the development of biosensors for early disease detection and the monitoring of environmental pollution. Janice had a “real wake-up call” when she first left South Africa to do research in the United States and the United Kingdom. “From other people’s point of view, there was no good science [in South Africa]. It was a dark continent. And even inside South Africa people did not realize there was science going on.”

So Janice decided, seven years ago, to create Africa’s “first online science magazine,” *Science in Africa* (www.scienceinafrica.com), now showcasing African science to 1.5 million readers in 95 countries, including students and school children. Many scientists write for her—often having their first stab at writing for the public. “I wanted people to be able to take more pride in the country and take some ownership of science in Africa. Now I have high school kids writing to me saying, ‘I want to study this,’ and ‘I had no idea this work was going on in South Africa.’”



Janice Limson with her wild caracal, Gaphoof.

Meanwhile, **Hester Bijl** at Delft University for Science and Technology in the Netherlands, dispels stereotypical images of scientists for the Dutch public by weekly appearances on a Dutch television quiz show, “How Things Work” (www.hoezo.tv). The show, watched by almost one million viewers, features wacky science projects and poses questions to scientific experts. “I like to change the perspective on science: it’s not boring, just old guys, or far-fetched – it’s fun and exciting!”

Hester goes against the assumptions of millions of viewers that only men can be physicists or engineers by being the expert on these subjects rather than on biology or humanities. “I don’t put the focus on my being a female but just on the content.”

In Egypt, too, television has brought science to the masses, thanks to **Farkhonda Hassan**, who is secretary general for the National Council For Women in Egypt and teaches at the American University in Cairo. Until recently, Farkhonda devoted 41 years to presenting a weekly science magazine show on national television. A highlight was being recognized on the street by an elderly woman in a slum district, who asked Farkhonda about the fuel of a ship that was on the show. “I was so happy that an old, illiterate, poor woman was asking me this question.”

She remembers being 12, on a family picnic, when she was fascinated by some rock formations. A family friend explained that the hill they were sitting on was below the sea millions of years ago. “I told him I wanted to be a geologist when I grew up, and all the men laughed. I didn’t know what they were laughing about. So I did it because it was a challenge.”

Now a leading light in politics, she gives speeches about water resources and oil exploration, basing her arguments on science. She is also pioneering the use of information technology for women living in rural communities, to improve the quality of traditional handicrafts. By enlarging their stitches on computer screens, they can see mistakes more easily. The women create their own marketing materials and sell their goods via the Internet, generating more income than before. “We help them on the condition that they send their children to school.”

Once at school, girls in Egypt have no problem, it seems, in passing exams. The cultural traditions dictate that girls stay in at night to study, while boys “can stay out later.” As their grades reveal—in school and in university—girls are outperforming boys.

On a totally different track, **Ahna Skop** at the University of Wisconsin at Madison is both an artist and a geneticist who won one of the US government’s Presidential Early Career Awards for Scientists and Engineers in 2007. She has deliberately chosen a field that depends on a visual medium—cell biology. When in graduate school she began what “a lot of people thought was crazy”: an art show at the International *C.elegans* Meeting. It proved popular, with entries from scientists all over the world of art inspired by their research—such as electron microscope images, charcoal drawings, and even laboratory glassware sculpted into different shapes and filled with colored liquids. The show is now a regular event at the annual conference, and is an attraction for high school students, too. “They get to see what the scientific community is working on and how beautiful it is. I think scientific art is a great way of introducing people of all ages to science.” She adds: “My dream is to curate a scientific art show that would travel the world.”



JUGGLING WORK AND FAMILY



Tomasina Oh with Oliver and Hugo Oh Graham

GONE ARE THE DAYS WHEN WOMEN thought they had to choose between a career and having a family. In science, as in other professions, women nowadays can do both. But how do they juggle the two?

The key is flexibility, according to **Tomasina Marisa Oh Suan Sim**, who does research in linguistics at the National University of Singapore. “As long as you do your work you can choose your hours and boundaries and move them around. Whenever possible I leave work at four o’clock each day to spend two hours with my children before they go to bed, and then my husband and I work again in the evenings.”

A supportive environment also helps. “I belong to an extremely family-friendly department. When they knew I had a baby, they

tried to shift courses to the following term so that I came back just to do research.”

Women scientists often worry about how they can take time out to have babies and nurture young children while at the same time prove themselves as scientists—especially when they wish to compete for permanent posts.

“As long as you do your work you can choose your hours and boundaries and move them around.”



Ijeoma Uchegbu

ONE SOLUTION IS to have children as early as possible. “It’s better to establish your family first, and then establish your career. After all, you’re born with your ovaries, so put them before papers,” advocates **Ijeoma Uchegbu**, professor of pharmaceutical nanoscience at London University’s School of Pharmacy.

Ijeoma already had three children when she began her Ph.D.

at the age of 30, drawn by the intellectual freedom. “You could stumble on something unusual, get a publication in a good journal. I thought this was a great profession to be in—I had found my niche!”

She was also, at the time, a single parent. Determined to develop better career prospects, she kept her family a secret for the first six months into her appointment. “I didn’t even tell my lab mates because I feared that they would not take me seriously.”

When she finally plucked up the courage to tell her boss “he was fantastic.” Ijeoma looks back on the episode now as a sign of how much attitudes have changed, even over the past 17 or so years. “Now, women would not hide from supervisors that they have children. They wouldn’t feel that pressure.”

“We’re now
recruiting men and
women equally.”

—Shirley Tilghman



AN ALTERNATIVE OPTION FOR WOMEN TRYING TO establish a career and a family at the same time is to take more time to establish a research portfolio before competing with others for permanent jobs. Princeton University in the United States has blazed a trail with its “tenure clock” which gives staff with a new baby—both men and women—an extra year of “catch-up” time in which to boost their number of published papers before they apply for tenure. When it first took effect, however, a problem soon arose, according to **Shirley Tilghman**, named the first woman president of Princeton in 2001, and a 2002 L’Oréal-UNESCO For Women in Science laureate.

"When we analyzed it we discovered to our horror that more men were asking for that extra year than women." The trouble was that staff had to request the extra year, and women who feared being discriminated against by appearing "weak" did not ask for it. The solution was to ensure that the tenure clock stopped automatically for new parents. The strategy has proved so successful that other universities are following suit. At Princeton, it's proved a major draw. "We're seeing a big difference in our recruitment—we're now recruiting men and women equally," says Shirley.

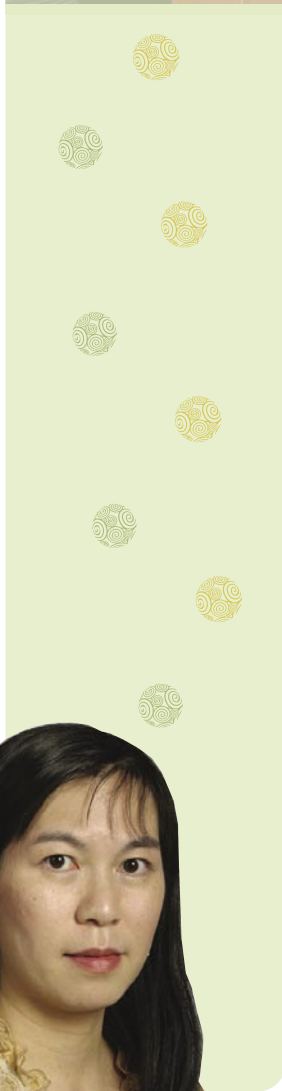
It was Shirley's own life experience that led her to champion a more family-friendly policy. "I was a parent who for years was juggling raising children and having a serious academic career. If you've lived through that experience, it's almost impossible not to feel an urgency to want to help the next generation through."

LIZ GAVIS, A PRINCETON PROFESSOR WITH TWO children aged 10 and 14, has witnessed the change to a more family-friendly environment at Princeton. She was pregnant with her second child before the tenure clock became automatic, and had to request her one-year extension. It was invaluable, as with each new child every task seemed to take longer. "It slows you down, no matter what. I did need it because I couldn't be as efficient as I had been." At the time, there was no official break from teaching duties, either, following the birth of a child. Now, new mothers and fathers can request to have their teaching and administrative committee work waived for a semester and there is no obligation to make it up later.

NOT ALL SCIENTIST-MOMS FEEL THE NEED FOR THE extra year before tenure. **Keiko Torii** at the University of Washington, Seattle, had a strong enough portfolio that when her first child was just two years old she won promotion to associate professor in the Department of Biology one year earlier than planned. She then gave birth to a second child in February 2007 on the same day as one of her papers was published in the journal *Nature*. To keep up the pace, even while she was on maternity leave, she took advantage of the university's ADVANCE program—part of a nationwide initiative at the National Science Foundation—which supported a postdoctoral researcher to supervise the lab in her absence. Luckily for Keiko, the postdoc was "an excellent scientist" who has stayed with the lab and has now had her own first child.



Liz Gavis with her children



Keiko Torii

Elizabeth Grayson,
then and now



THE IDEA OF CARRYING ON working soon after having a baby does not appeal to every woman scientist. Many stop altogether to stay at home with their families. After several years, even if they wish to resume their careers, they are likely to feel out of touch with the latest ideas and techniques, and they would find it hard to compete for research grants.

This was the case with chemist **Elizabeth Grayson**. She wanted to raise her children full-time rather than hire a nanny or place her children in day care. Nevertheless, she felt unfulfilled, even though she had kept up her interest in chemistry by doing editing and translations of scientific texts (she is fluent in German and French). After a gap of 19 years, at the age of 47, Elizabeth applied for and was awarded a Daphne Jackson fellowship in 2001. With the fellowship she took a half-time teaching position at Durham University, UK. Now she combines teaching with research—though not as an independent investigator, and her research is unpaid. “I’m really just happy to be able to use my skills. I really love teaching and I’m able to do that and carry on with the research that I’m interested in.”

As a more mature—and maternal—person, Elizabeth finds herself a popular figure. “Being one of not many women in chemistry I get approached by a lot of students because they know I’ll give them my time.”

TRAVELING TO MEETINGS IS ANOTHER challenge that especially affects scientist-moms, according to **Yoky Matsuoka** in the Department of Computer Science and Engineering at the University of Washington, Seattle. With two-year-old twins plus a third child, she says it’s only recently that there has been much acceptance about how difficult it is for women with children to go to conferences without extra assistance. Yoky has obtained special permission from her department to spend unrestricted grant funds to enable travel to meetings.

Yoky’s original ambition was to be a world-class professional tennis player, but injuries meant that she had to choose an alternative career, which was science. She is now creating a robotic hand for people who have lost a hand through accident or amputation. It is intended to have the same kind of fine-muscle control of a normal hand. In 2007 she became one of a small group of investigators to win a MacArthur award for “exceptional creativity in their work and the prospect for still more in the future.”



OPTING **FOR** INDUSTRY

“When I was a small child I had noble ideas,” says **Una Ryan**. “I wanted to save lives.” She remembers at age six being inspired by her grandfather, a colonel in the British army, who had carried smallpox vaccine to the far reaches of the Himalayas and by watching a movie about children ravaged by polio.

Many years later—after having fled Singapore with her mother to escape the chaos of World War II, earned her undergraduate degree from Bristol University and her Ph.D. from Cambridge University in the UK, and established a successful career in academic research in the United States—her childhood vision is taking shape. Today, Una is chief executive officer of AVANT Immunotherapeutics, a company focused on developing and delivering vaccines.

Improving people's lives

Like Una, many women scientists are drawn to industry by the desire to more directly develop products that can help people. “I once saw in a store a T-shirt that said ‘if you are so smart why aren’t you rich?’” recalls Una. “I started thinking, ‘If I am so smart why haven’t I saved any lives?’” That is when Una decided to leave academia for industry, first at the chemical company Monsanto and then AVANT.

Her company develops vaccines for sale to travelers and the military. Similar vaccines are

made available to families in developing countries at a much lower cost. “There are all sorts of woes in industry but the opportunities to do good are enormous,” she says.

Juggling a demanding career and the raising of two daughters as a single mother was not easy, but Una says she always focused on the end goal. “The person who mentors me is that six-year-old child,” she says. Her advice to young students is to stay true to their passions. “If you want to be a scientist, be a scientist,” she says.



Tona Gilmer was also motivated from an early age to understand and treat disease. “My mother had a debilitating disease,” she says. “As a child I could not understand why no one would help her.” Following postdoctoral training, Tona was hired in 1989—when her son was three years old—by GlaxoSmithKline at its US headquarters in North Carolina to start working on developing breast cancer drugs. On March 13 of last year she achieved success when the breast cancer drug Tykerb was approved by the US Food and Drug Administration—the same day her son turned 21. “He came home from college for spring break and we had a double celebration,” she recalls.

The key to finding the right path is for young students to “look inside themselves and understand what is important to them, what inspires them, where the excitement comes from,” advises Tona. “Science takes a lot of commitment. To stick with it you have to have very clear ideas and goals.”

Taking a different path

Angela Flannery found her way to industry without following a conventional education path. After leaving school at age 18 in the UK she did not enter university, but rather worked several years as a nurse and then a secretary in a health service laboratory in Liverpool. “When I saw the work doctors and scientists did I thought ‘This is something I would love to do,’” she recalls. As a single mother of two, she enrolled in university as a mature student.

Eager to get as far as she could in her studies, Angela completed a Ph.D. and then two postdocs in different areas of genetics. As she started looking for her next job she saw an advertisement from a pharmaceutical company that was just setting up a program to use genetics to identify targets for drugs. “I jumped at the chance,” says Angela. She has now been with the company, AstraZeneca, UK, for 12 years.

For students who are contemplating a career in science, her advice is “go for it!” “Research is taxing so you have to have a real passion for it. But science training is less difficult than the common perception. It is all doable, you just have to apply yourself and if you enjoy the subject then that will carry you a long way.”

And the rewards can be great. "Research training gives you a huge range of choices in the marketplace. Employers recognize the value of scientific thinking," she says. "You will never be short of a job." Angela feels that industry offers a broad scientific perspective and excellent career prospects. "Basically you can go as far as your determination takes you."

A world of opportunities

Vicki Sato was always interested in medicine and disease. She chose graduate school over medical school the last year in college. "It was a late-breaking decision," she says laughing. But once her mind was made up, she followed the typical academic route from graduate student to postdoctoral fellow to associate professor at Harvard Medical School. After running a lab for seven years, not having yet obtained tenure, she started to look around for new opportunities.

After some searching she landed a position with the biotech company Biogen. She then moved to Vertex Pharmaceuticals, eventually becoming president of the company, where she helped develop drugs for HIV and hepatitis C. "My interest in science is very broad. Academic research requires a very clear focus, especially if you don't have tenure," says Vicki. "In industry I was able to learn about lots of different kinds of science, to think about the process of science and how it translates to medicines, to figure out where the money comes, and to learn about patents," she explains. "For me it placed science more squarely in the real world."

A mother of two daughters, now in their 20s, Vicki says managing career and family is never easy but the biotech industry has some pluses. "They have flex time and can be accommodating with family responsibilities," she says. "Because salaries are usually higher in industry than they are in academia, you can have more options for child care."

Vicki retired from Vertex Pharmaceuticals in 2000 and went back to Harvard, but in a different role. She is a professor of management practice at Harvard Business School, where she teaches courses on the process of drug discovery. Through her lectures, Vicki is now mentoring the next generation of industry scientists.

"You can have a very diverse and exciting life in science," she says. "If you have curiosity and passion, do everything you can to experience scientific research. Science is remarkable. It is a lever with which you can move the world."

"For me [industry] placed science more squarely in the real world."





“What we do every day has the possibility of turning into a drug that could ultimately be important to cancer patients.”

Joining the team

Barbara Weber had two interests in college: medicine and research. So, after completing her medical training and getting research experience, she joined the faculty at the University of Pennsylvania, shuttling between lab bench and her clinic patients. In her lab she would identify genetic mutations that predispose women to breast cancer. But after many successes and rewards, she decided it was time to try something new.

“I had been studying genetic susceptibility to breast cancer for many years. With the completion of the human genome project, many tools and technologies became available that provided a path for finding medicines,” she says. That would have been a difficult path to follow within academia. So, in 2005 Barbara joined GlaxoSmithKline as vice president of discovery and translational medicine for the oncology division.

Although many of the same traits are needed to succeed in industry and academia—such as curiosity, creativity, and passion—industry has some unique requirements. “To do well here you have to want research to be applied, enjoy being part of a large team, be willing to work around consensus, and trust other people’s judgments and views,” explains Barbara.

But ultimately, what drives her and her colleagues is that “what we do every day has the possibility of turning into a drug that could ultimately be important to cancer patients.”

L'ORÉAL AND UNESCO

TEN YEARS OF COMMITMENT TO WOMEN IN SCIENCE

Launched in 1998 by L'Oréal and UNESCO, the "For Women in Science" Award was the first international award devoted to women in science. Today it is one element of a broad program with an international focus on scientific vocations and dedicated to recognizing the accomplishments of female researchers from every continent.

Whether they are gifted Ph.D. students at universities in Africa, promising postdocs in Asia, or eminent researchers in the most prestigious laboratories in Europe, women all over the world are revolutionizing science. Sometimes ignored and even discriminated against, women who may have only the image of Marie Curie as a role model are today participating at the forefront of advances in genetics, physics, biology, and new technologies. Now in its 10th year, the "L'Oréal-UNESCO For Women in Science" program awards and supports these women who are contributing more and more to the scientific advancements that are transforming our world. In 1998, L'Oréal and UNESCO presented the first international awards. Ten years and 52 laureates later, the award offers unprecedented recognition for these exceptional researchers from the five continents.

It has above all become a significant program of action that encourages and supports women in the pursuit of their careers, and which makes L'Oréal and UNESCO indisputable partners of today's generation of scientists, determined to change the face of science.



L'Oréal-UNESCO For Women in Science 2008: over 500 women in science will have been honored with awards or fellowships to support their careers since the creation of the L'Oréal-UNESCO partnership:

L'Oréal-UNESCO Awards

- 52 Laureates from 26 countries

UNESCO-L'Oréal International Fellowships

- 120 Fellows from 67 countries

L'Oréal National Fellowships

- 335 Fellows in 35 countries

FOR WOMEN IN SCIENCE



L'ORÉAL
FOUNDATION
FOR WOMEN IN SCIENCE



This willingness to support future talents has always been the passion and the aim of the program. From the beginning, L'Oréal and UNESCO were determined to go beyond the creation of a prize and ensure that women scientists get the recognition they deserve. For example, less than 2.5 percent of Nobel Prizes in science have gone to women. "Despite great careers and wonderful discoveries, there is a feeling of solitude and immense modesty among these women researchers in our midst," says Béatrice Dautresme, managing director of the L'Oréal Corporate Foundation and one of the founders of the program. "The award aims to stop this feeling of isolation and also create real role models for future generations." The laureates identified by the distinguished scientists who make up the international juries have made this award one of the most prestigious in science.

More than 2,000 scientists from all over the world are invited to nominate award candidates, whose files are submitted to two juries—one for life sciences and the other for physical sciences—in alternating years. The juries have been presided over by Nobel Prize laureates, biologist Gunter Blobel and physicist Pierre-Gilles de Gennes, who was passionately involved in the program until his death in May 2007. "The program was not easy to set up at the beginning, as there had been nothing like it before," confirms Renée Clair, responsible for the program "Women, Science and Technology" at UNESCO. "We were lucky to be surrounded by people with strong opinions, such as Nobel Prize laureate Christian de Duve, who served as the first president of the jury and is still our Founding President today."

From its very first year, the "For Women in Science" program chose to reward not one laureate, but five, one from each continent. "By honoring five laureates from five continents, we are reflecting the diversity of the researchers and focusing on the dynamic nature of the internationalization of knowledge," Dautresme explains. "It is essential, because we want to support the idea that the vocations of tomorrow may just as likely be found in Africa as on the campuses of American universities or in Asia.

These remarkable laureates have had an extraordinary impact because their success has been achieved at universities and in laboratories in 26 countries, including many where research conditions are often difficult, and where the value of highlighting these outstanding researchers is therefore greater. Each laureate receives \$100,000.

This commitment on a global scale has been reinforced by the creation in 2000 of fellowship programs that make the "For Women in Science" initiative an important source of support

for younger researchers. The stakes are high, because behind the successful laureates is an increasingly large generation of young women pursuing research. Their problem is not so much lack of recognition, but rather a lack of necessary means to complete their studies and training.

The “For Women in Science” program has taken steps to meet this challenge. Since 2000, 120 UNESCO-L'Oréal International Fellowships, worth up to \$40,000 over two years, have been awarded to doctorate or postdoctorate women from all over the world to support them in their research abroad in some of the most prestigious laboratories in the world.

In addition, National Fellowships programs have been introduced to help students pursue their scientific careers. By the end of 2008, these local fellowship programs for women doing research in their home countries will exist in over 50 countries. “Each year, I receive more and more candidatures, and the quality is increasingly higher,” confirms biologist Mayana Zatz, a 2001 laureate of the award and currently the president of the L'Oréal National Fellowships jury for Brazil. “The success of this program has been huge in Brazil.”

It is also proof that the L'Oréal-UNESCO “For Women in Science” program is not only a benchmark, but has become a catalyst for the promotion of women and science around the world.

**The L'Oréal Corporate Foundation:
committed to education, science,
solidarity**

With the creation of its Corporate Foundation in 2007, L'Oréal is ensuring the long-term durability and success of its programs, including “For Women in Science.”

L'ORÉAL
F O N D A T I O N
D ' E N T R E P R I S E

Through education, science, and social solidarity, L'Oréal is emphasizing its commitment to women and to future generations. Beyond the “For Women in Science” program, the Foundation encompasses a broad range of actions, such as participation in “Look Good, Feel Better,” which helps women with cancer cope with the effects of their illness, and “Hairdressers of the World against AIDS,” a worldwide project supported by L'Oréal's network of 2.5 million partner hairdressers engaged in a program of education and prevention.

“This new Foundation allows us to contribute to the community in the broadest sense of the term by sharing our experience, our professions, and our expertise,” Sir Lindsay Owen-Jones, president of L'Oréal and president of the Foundation, emphasizes.

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Additional Online Resources

www.girlsgotech.org

Introducing young girls to the world of technology

www.engineergirl.org

Information on engineering for middle school girls

www.engineeryourlife.org

A guide to engineering for girls in high school

www.kineticcity.com

Games and experiments that make science fun for all ages

www.girlstart.org

Empowering girls in math, science, engineering and technology

www.nasa.gov/audience/forstudents/index.html

Section of the NASA website especially for young scientists

www.scienceclubforgirls.org

Increasing the self-confidence and science literacy of K–12th grade girls

www.expandingyourhorizons.org

Expand Your Horizons Program – conferences for young women

www.engineeringwomen.org

Resources to inspire young women to enter engineering

www.forwomeninscience.com

L'Oréal-UNESCO For Women in Science homepage

www.agora.forwomeninscience.com/agora

AGORA forum for women in science – part of the L'Oréal-UNESCO partnership

www.awis.org

Association of Women in Science website

www.aaas.org/programs/international/wist/

AAAS Women's International Science homepage

twows.ictp.it

The Third World Organization for Women in Science

www.inwes.org

International network focused on supporting women in science, technology, engineering and mathematics (STEM)

www.witec-eu.net

The European Association for Women in Science, Engineering and Technology

www.athenaproject.org.uk

The Athena Project—advancing and promoting the careers of women in science, engineering and technology

www.uic.edu/orgs/gem-set/welcome.htm

Online group mentoring for girls in science, engineering and technology

www.webgrrls.com

Webgrrls International—networking organization for career development

www.femmesetsciences.fr

French association for women in science

leo.aichi-u.ac.jp/~kunugi/sjws/e1.htm

The Society of Japanese Women Scientists

aauw.org

American Association of University Women—advancing equity for women and girls

1998
2008

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1998 Laureate for Asia-Pacific
Myeong-Hee Yu, Republic of Korea



2001 Laureate for Africa & Arab States
Adeyinka Gladys Falusi, Nigeria



2005 Laureate for North America
Myriam Sarachik, USA



2006 Laureate for Latin America
Esther Orozco, Mexico



2008 Laureate for Europe
Ada Yonath, Israel

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