The very first program of its kind, L’Oréal-UNESCO For Women in Science was founded in 1998 in the firm belief that the world needs science and science needs women. For this reason, every year the program identifies, rewards, encourages and spotlights women from every continent whose discoveries have contributed to the advancement of scientific knowledge.

Even more than in other fields, women are still largely underrepresented in scientific professions, and this remains true in most countries. Naturally, the situation has improved over the years. Yet, a high school girl is three times less likely than a high school boy to go on to earn a doctorate in science. This statistic was revealed in a report commissioned by the L’Oréal Foundation, a report which underscores the fact that society’s pervasive stereotypes keep many young women away from scientific careers.

The 2014 Awards Laureates and Fellows are living proof that - despite the obstacles - talent, passion, determination and daring can help change the world.
THE PERSISTENT GENDER IMBALANCE in science
According to the UNESCO Institute for Statistics, less than one in three researchers is a woman today worldwide¹. As educational opportunities and women’s rights vary greatly from country to country, the L’Oréal Foundation commissioned a status report² based on data from comparable countries designed to attempt to understand why the gender imbalance persists and to determine at which points in their educational and career paths women turn away from the sciences. It reveals that the share of female researchers only increased by 12% in the past decade.

¹ 129 countries (not including Brazil, China and India)
² Data from 14 countries compiled by the Boston Consulting Group in 2013: France, Germany, Spain, UK, US, Japan, China, Brazil, Argentina, South Africa, Morocco, Egypt, Iraq and Indonesia. The figures cited on the following pages are based on averages calculated from statistics in 7 countries: France, Germany, Spain, UK, US, Japan, China (urban). Main sources: UNESCO, OECD and national statistics institutions.
At every university level, women are underrepresented in the sciences. While gender balance is the norm in high school, only 32% of undergraduate degrees in the sciences are earned by women. This proportion drops to 30% for master’s degrees and 25% for doctorates. And women account for a mere 29% of researchers.

The further we move up the academic ladder in the sciences, the fewer women we find. In the European Union, where 19% of all top academic positions are held by women, they account for just 11% of top academic positions in the sciences. The proportion of women heading scientific institutions varies greatly from country to country: 6% in Japan, 27% in the US, 29% in France and 34% in Spain. With regard to Nobel Prizes in the sciences, less than 3% have been given to women since the award was founded.
HarMFul sTereoTYPes

Not only girls, but their parents, teachers and society as a whole, hold misconception notions that discourage young women from the study of science. “Boys aren’t interested in girls who like science.” “There are no jobs for science majors”. “I want to make a difference and change the world, but working in a lab or studying physics is not the way to do it.” “I don’t want to be seen as a ‘mad scientist’ with no social skills, isolated and alone.” The worst stereotype is, however, the notion that men are better at science… despite much evidence to the contrary.

THE PERSISTENT GENDER IMBALANCE in science

THE ROOT OF THE GENDER GAP

The report underscores a basic fact that sharply contrasts with a widespread prejudice regarding women and science: In secondary school, with little or no choice about the subjects they study, girls perform as well as boys in science courses, according to the OECD’s PISA\(^1\) survey. Why, after having done well in science in secondary school, do so many young women turn away from the field? Much of the blame lies with stereotypes.

HARMFUL STEREOTYPES

Not only girls, but their parents, teachers and society as a whole, hold misconception notions that discourage young women from the study of science. “Boys aren’t interested in girls who like science.” “There are no jobs for science majors”. “I want to make a difference and change the world, but working in a lab or studying physics is not the way to do it.” “I don’t want to be seen as a ‘mad scientist’ with no social skills, isolated and alone.” The worst stereotype is, however, the notion that men are better at science… despite much evidence to the contrary.

\(^1\)Program for International Student Assessment - 2012 - 65 countries
Prof. Adeyinka Gladys Falusi (genetics), 2001 L'Oréal-UNESCO Award Laureate for Africa and the Arab States
A LONG-TERM commitment
The For Women in Science program is the result of a partnership between a multinational corporation, L’Oréal, via its corporate Foundation, and an international organization, UNESCO, both of which share a common goal: Publicizing the accomplishments of women scientists.

Creators of beauty products based on scientific research and founded by a researcher, L’Oréal has helped women develop self-esteem and has always sought to give back to the global community. Since its creation in 1945, UNESCO, the United Nations Educational, Scientific and Cultural Organization, has centered its core values and actions on gender equality and the dissemination of knowledge, particularly scientific knowledge.

For the past 16 years the L’Oréal-UNESCO For Women in Science program has recognized and honored exceptional women scientists whose outstanding achievements have contributed to the advancement of scientific knowledge and helped change the world for the better. Every year the program also provides fellowships to promising young women researchers at crucial junctures in their careers when difficulties can get the better of their dedication to science.
2014
AWARDS LAUREATES,
the embodiment of scientific excellence
The 2014 L’Oréal-UNESCO For Women in Science Awards Laureates embody the highest form of excellence in the life sciences. These five women researchers have made major discoveries that led to concrete applications in neurobiology, immunology and ecology. Exhibiting determination, creativity and brilliance in the most competitive research arenas of our era, each is a testament to the superlative achievements that can be made by women in science.

The L’Oréal-UNESCO For Women in Science Awards have been presented every year to five women, one from each world region (Africa and the Arab States, Asia-Pacific, Europe, Latin America and North America), in recognition of their contribution to the advancement of science. Scientists around the world are invited to submit candidates, and an independent international jury of eminent scientists makes the final selection. Professor Günter Blobel, Nobel Prize in Medicine 1999 served as president of the 2014 jury.
The main food source for much of the world’s livestock, forage grasses are vitally important to meeting the increasing demand for meat and milk. Dr. Segenet Kelemu has been recognized for her research on how microbes living in symbiosis with these grasses influence their health, their capacity to adapt to environmental stress and their ability to resist disease. By enabling small-scale farmers in tropical and sub-tropical regions to choose the most productive, most pathogen-resistant forage grasses, her work has both helped them improve their lives and increase supplies of much-needed animal proteins.

In particular, Dr. Kelemu’s research on Brachiaria grasses has shown that their capacity to thrive in diverse environments is related to an endophyte fungus which lives within these plants, protects them and exists in symbiosis with them. Her work has led to solutions for disruptions in food supplies caused by pathogenic organisms and extreme climatic conditions and may help to determine which microbes allow crops to survive environmental alterations.

FROM VILLAGE TO GLOBAL VILLAGE

Dr. Kelemu grew up in a remote village in Ethiopia. Although she bore the unequal burden carried by rural African women, she had an uncommon determination to overcome any obstacle to achievement and to help her continent’s farmers. Defying strong cultural norms, she became the first woman from her region to attend what was then Ethiopia’s only university. She excelled in her chosen field, plant sciences, and after obtaining her PhD in the United States, she went to Cornell University as a post-doctoral fellow. In 1992 she joined the International Center for Tropical Agriculture in Cali, Colombia as Senior Scientist and was eventually appointed Leader of Crop and Agroecosystem Management of the Center.

LEADING SCIENCE IN AFRICA

Dr. Kelemu returned to Africa in 2007 to help establish the BioSciences eastern and central Africa (BecA) Hub laboratories, hosted and managed by the International Livestock Research Institute in Kenya, and is currently Director General of the International Center for Insect Physiology and Ecology. “Africa is in desperate need of world-class institutions and I returned with joy when the opportunity arose to help create one.” She came back to her home continent with far more than expertise. She returned with a passion that she is transmitting to a new generation of scientists working for a better Africa: “Set your goals and pursue them relentlessly. Don’t let anyone tell you that you cannot do it. Science is not reserved for the privileged few or the super smart or the especially crazy! If I can do it, so can you!”

Honored for improving the resistance and productivity of tropical and sub-tropical forage grasses via the use of microorganisms.
Professor Laurie Glimcher is being honored for her discovery of key factors involved in lymphocyte activation and differentiation balance. This discovery had an enormous impact on our understanding of mechanisms that govern the quality of an immune response and, more specifically, autoimmune diseases, conditions that arise when the body’s immune system “turns on itself” and attacks its own tissues. Her research is paving the way to new treatments for a wide array of disorders such as lupus, childhood diabetes, rheumatoid arthritis, inflammatory bowel disease and multiple sclerosis as well as new treatments for allergies. An international leader in her field, she is a recognized pioneer who has served as President of the American Association of Immunologists and she is one of the founding editors of the highly-respected scientific journal Immunity.

LEADING THE WAY FOR THE NEXT GENERATION

After having taught at Harvard for over 30 years, Professor Glimcher was recently named Dean of Weill Cornell Medical College - the first woman dean of a medical school in New York. She is as dedicated to education and mentoring as she is to research. “I’ve been committed to mentorship my entire career. To me, the senior scientist has the responsibility of training the next generation.” Indeed, much of her work is motivated by what she sees as one of the Western world’s most urgent problems: training the doctors and scientists necessary to cope with a rapidly aging population.

DRIVE, DETERMINATION AND FEARLESSNESS

Professor Glimcher attributes a great deal of her success to the support and encouragement she received from her parents, especially her physician-scientist father, who took her along to his laboratory when she was a child. “I learned several important lessons from my father. A successful scientist must take risks. Breakthroughs only come with daring and innovation. Be fearless, self-confident and as stubborn as a bull!”

Lessons she took to heart, as everyone who knows her invariably praises her as a dynamo of energy, ideas and can-do spirit, a woman “who has it all.” Her children are her biggest admirers, a great credit to an achiever who says that balancing motherhood with a research career is among the most difficult issues facing women scientists. Despite the many obstacles, she believes that women can successfully combine both. “When the going gets tough, women often find they have a unique talent for multitasking in the midst of chaos!”
The study of the human brain, one of nature’s most complex structures and the organ we know least about, is often called the new frontier of science. Professor Cecilia Bouzat is at the very forefront of this field and she is being honored for her seminal research on how, at the molecular level, brain cells communicate among themselves and how they communicate with muscles to make them contract. Her work has greatly increased our understanding of how alterations in these molecular pathways lead to muscle diseases. She invented a new method of recording neuronal communications by combining techniques used in electrophysiology with techniques used in molecular biology, a procedure now utilized in numerous hospitals around the world. The questions her work is answering have implications for an extremely wide array of applications, including treatments for neuromuscular and neurological disorders such as Alzheimer’s disease, depression and addictive behaviors.

**FROM NATIONAL FELLOW TO INTERNATIONAL LAUREATE**

Named a National Fellow by Argentina’s L’Oréal-UNESCO For Women in Science jury in 2007, Professor Bouzat received a fellowship which helped her continue her research. Now a Laureate for Latin America, her career path illustrates one of the program’s cornerstones: Providing support and recognition to women scientists throughout their entire careers. She is admired and respected by her peers around the planet, and not only for the world-class quality of her work. They also express great esteem for her immense tenacity and determination, a refusal to accept the word “impossible” that has enabled her to accomplish so much in her scientific endeavors. Like many scientists from nations experiencing economic difficulties, she is forthright about the challenges. Although she would be warmly welcomed at any number of the world’s richly-financed research facilities, she believes she has a duty to her country: “High-level research is possible in Argentina thanks to the quality of our public universities, to CONICET which offers support to researchers throughout their education and career, and to the commitment of scientists to work in the country using their creativity and ingenuity to compensate for the relatively limited resources.”

**“LONG HOURS AND LOTS OF COMPETITION”**

Without hesitation, Professor Bouzat states that her greatest challenge was “having been able to successfully balance family - including an 18-month-old baby - with her highly demanding post-doctoral training at the Mayo Clinic in the USA.” She also speaks of the “long hours and lots of competition” that are part and parcel of a research career and add to the demands of motherhood. This daughter and granddaughter of hard-working doctors nevertheless believes the rewards of having children are well worth the extra effort. “Women can be good scientists and women scientists can be good mothers.”
Professor Kayo Inaba is being honored for her discoveries regarding the immune system, particularly the role of dendritic cells. These cells are the human body’s first line of defense when responding to a threat, such as bacteria or virus, or to the presence of abnormal cells such as cancer cells. She was among the first to demonstrate the crucial importance of these “sentinel” cells. Her pioneering work on extracting and culturing dendritic cells is recognized worldwide and constitutes a key advance in fundamental and applied research. She proved that these cells could be treated outside the body and then reintroduced into the organism to stimulate immune system response, thereby opening a new path for cellular therapy. She also demonstrated that dendritic cells treated in this manner could eliminate tumors, a discovery that resulted in a new type of anti-cancer treatment.

A LOVE OF NATURE

Professor Inaba believes that her success as a scientist is due to a capacity for observation which took root in her childhood. Having spent her time exploring fields, ponds and streams, she speaks of those days with poetic reverence. “I grew up in the country and I observed tadpoles become frogs and watched the metamorphosis of caterpillars into butterflies, beautiful creatures that took flight before my eyes. It was these early adventures that led me to biology and still inspire my love of experimentation.”

EQUALITY EQUALS DIVERSITY

Professor Inaba’s pioneering discoveries appear all the more impressive when she states quite matter-of-factly that as a young student she never had high hopes for obtaining even as much as a university post, not to mention the vice-presidency of one of her country’s most prestigious institutions. “Women professors were rare and all I knew was that I simply enjoyed doing experiments.” Feeling isolated in the male-dominated atmosphere of her first job, she decided that one way for a woman not to be ignored, and perhaps to advance, was to “take on the tasks no one else wanted and work hard to accomplish them.”

Her perseverance indeed paid off and ultimately brought her to the pinnacle of her profession, but one of her main goals is now to ensure that today’s aspiring women researchers do not undergo the same sort of negative experiences. She was the first female Associate Professor in Kyoto University’s Faculty of Science and in her current position as Vice-President for Gender Equality and Director of the Center for Women Researchers at Kyoto University, Japan, she is busily creating a far more hospitable environment for her gender. Not simply to encourage them, but for the sake of science itself. “We need to move forward as quickly as possible on so many issues and a diversity of approach is essential to advancing research. More women mean more diversity.”
Why do we feel pain and how do certain substances alleviate or induce those feelings? The opioid receptors in our brains are central to these processes. Professor Kieffer is the first to have isolated the gene for one of these key receptors. Her discovery enabled us to comprehend how substances like morphine or heroin (the active ingredients in opium) can kill pain and, in some cases, create addiction. Her findings have led to the development of new analgesic medicines and new treatments for addiction. As disorders of the opioid system are involved in emotional problems such as anxiety and severe depression (which afflicts one in ten people), her work has also had implications for psychiatry. In the words of Professor Kieffer, “Mental illnesses are biological illnesses. The brain is an organ, certainly a highly complex and fascinating one, but like every other organ in the human body, it can be treated.”

SCiENCE WithouT BoRDeRS
She believes science is facing a two-fold challenge. The first is the scarcity of funds for fundamental research. The second concerns the interface between the life sciences. Her own research is at the crossroads between genetics, chemistry, behavioural sciences and medicine and she is firmly convinced that scientists must work across disciplines in order to find answers. “Now, as never before, we have to think out of the box. Researchers should have more opportunities to look outside their own fields, more worldwide networks between scientists in different areas of study should be established and resources must be allocated to finance these forms of collaboration.”

THE THRiLL OF DISCoVery, THE REWARDS OF PErSEVERANCE
Professor Kieffer says that on arriving at university she had no clear idea of what it would actually mean to be a researcher, but she has always felt the need to understand and to learn. “I chose science because that’s where the excitement seemed to be.” She hasn’t lost an iota of her contagious enthusiasm and describes one eureka moment — when she discovered the answer to a key question that had baffled neuroscientists around the world for fifteen years — as “the biggest thrill of my life!”

All in all, though, she warns that “being creative, brainstorming and playing with ideas,” is the “fun” part of science. Progress at the experimental level is always extremely slow, which requires self-confidence, perseverance and ambition. True for all researchers, but perhaps more so for women, since Professor Kieffer believes that a lack of confidence may be what keeps some members of her gender away from science. Which, however, is not their fault.

“Women can do at least as well as men in science, if not better. The only problem is that, until recently, no one’s ever told them so!”

Honored for her work on the brain mechanisms involved in pain, mental illness and drug addiction.

2014 LAUREATE
Europe

Professor
Brigitte Kieffer

Neurobiology
Professor, University of Strasbourg
Research Director, Institut de Génétique et de Biologie Moléculaire et Cellulaire (IGBMC), Illkirch, France
Scientific Director, Douglas Institute Research Center, McGill University, Montreal, Canada

Honored for her work on the brain mechanisms involved in pain, mental illness and drug addiction.
Doctor Segene Kelemu (biology & plant pathology), 2014 L’Oréal-UNESCO Award Laureate for Africa and the Arab States.
INTERNATIONAL FELLOWS,
the future of science

2014

L’ORÉAL-UNESCO
FOR WOMEN IN SCIENCE
2014
In addition to the 225 Fellowships awarded locally by L’Oréal subsidiaries around the world, the UNESCO-L’Oréal International Fellowship program was created in 2000 to encourage young women researchers at the doctoral or postdoctoral level and support their work for two years. Fifteen International Fellows are chosen to continue their work in prestigious institutions outside their home countries where they gain unique experience and build important networks. This year’s Fellows have shown outstanding potential in the areas of neurobiology, human diseases, genetics, ecology, and biotechnology and many have already contributed to the creation of innovative solutions in their fields. These young women are the very future of science.
Carbohydrates, or carbs, and what types of them we should or should not eat, along with two other words formerly used only by researchers, probiotics and prebiotics, are subjects that the media and advertising have adopted as their own. Yet much of what is said on these topics has not actually been proven by science. Tania Pozzo’s work is focused on providing sound scientific evidence to support the claim that a combination of probiotic bacteria and prebiotic foods can confer benefits for human health. Despite the enormous interest from all quarters, little is actually known about how probiotic bacteria in the human gut recognize and interact with certain types of carbohydrates known as prebiotics. This is the process thought to be key to their beneficial effects and comprehending it has implications for numerous diseases, such as gastrointestinal disorders, cancer, allergies and even neurological disorders. Tania Pozzo will study how probiotics and prebiotics regulate their interaction with the goal of increasing our understanding of which foods and food supplements can improve health and even treat disease.
Initially trained as a doctor, Francisca Barake came to the conclusion that she could make a more significant contribution to medicine by understanding the mechanisms underlying disease. Consequently, she changed track to begin a PhD focusing on a neurological manifestation of an autoimmune disease, neuropsychiatric lupus or NPSLE. Mainly affecting women, lupus is a debilitating condition that occurs when the immune system dysfunctions, producing antibodies which target the body’s own proteins and results in damage to tissues and organs. In NPSLE, the particular form of lupus that Francisca Barake is studying, the disease attacks the central and peripheral nervous system, resulting in many manifestations such as depression, cognitive impairment and psychosis. Her research is aimed at the specific antibodies involved in NPSLE and precisely how they work together to harm the nervous system. Her goal is to identify a way to block their action in the hope that such new knowledge could lead to an effective treatment for the disease.

In the absence of any pharmacological treatment for the disease, Mio Ozawa aims to shed light on the molecular mechanisms underlying brain function. Her work will help advance our fundamental understanding of how the highly complex neural networks are formed. In the simplest terms, she is interested in how and why brain cells “fire up” – or how and why they do not. Brain cells form and maintain networks by passing on messages via molecules known as neurotransmitters. The communication between these cells is facilitated through structures called synapses, where the neurotransmitters must jump the gap between the connected cells. Katalin Czöndör is specifically focused on certain molecular interactions which dictate whether a synapse is excitatory or inhibitory, whether it transmits the information to the brain cell next in line, or not. As conditions such as autism and schizophrenia are thought to be linked to the malfunctioning of this type of synaptic connection, her work may one day lead to better treatments for these disorders.

Plant pathologist Selena Gimenez Ibañez studies food crop disease and she is specifically interested in understanding the molecular mechanisms underlying plant immunity. Unlike animals, plants lack specialized immune cells which can be rallied to the point of infection. Instead, they have evolved a sophisticated system to overcome this first line of defence. Plants activate a second line of defence that directly attacks the chromatin in their cells, thereby preventing the plant from defending itself. She hopes that her research will lead to the development of more resistant and higher-yielding crop varieties crucial to feeding the world’s growing population. While the cause of Alzheimer’s disease, the most common form of dementia, is still poorly understood, recent studies indicate that it may be associated with diet. In the absence of any pharmaceutical cure for the disease, Mio Ozawa aims to demonstrate that modifying diet in mid-life, before symptoms of mild cognitive impairment – the precursor of dementia – become apparent, is the best way to prevent or delay onset of this debilitating disorder and reduce its social and economic costs. During her fellowship in London, she will explore the results of an ongoing cohort study whose participants also undergo nutritional survey and regularly scheduled MRI scans, which will enable her to identify possible underlying mechanisms leading to brain degeneration. By correlating data from the study with information provided by the MRIs, Mio Ozawa hopes to prove her hypothesis that mineral intake and other vascular protective diets in adult life can reduce the risk of Alzheimer’s disease.

**CHILE**

**Francisca Barake**  
Medical doctor and PhD student

“This opportunity to continue my research abroad will not only give me access to technology not available in my country, it will also allow me to see science from a different angle.”

**SPAIN**

**Selena Gimenez Ibañez**  
Postdoctoral researcher

“In science are the hidden solutions to most of the world’s problems. To uncover those secrets, we must have the resources to do as much research as possible.”

**JAPAN**

**Mio Ozawa**  
Postdoctoral researcher

“Many young people have a hard time imagining exactly what science is all about. More of them would enter the profession if they were given opportunities to speak to actual scientists.”

**HUNGARY**

**Katalin Czöndör**  
Postdoctoral researcher

“Unfortunately the way the world of science is structured today, many women simply have no choice but to decide between having a family or having a research career.”
A major risk factor for both cardiovascular disease and diabetes, which cause at least 2.8 million deaths annually, obesity was once a problem only in high-income countries but is now dramatically on the rise in medium- and low-income countries around the world. Bhma Ramkhelawon’s research aims to solve the mystery of precisely how dysfunctional immune reactions in obese patients trigger these widespread and often fatal illnesses. Her recent work has demonstrated that a molecule present in the body called Netrin-1 plays a pivotal role in maintaining the chronic inflammation - a dysfunctional immune response - of adipose (fatty) tissues linked to cardiovascular disease and diabetes. During her fellowship, she will use gene deletion experiments to test her hypothesis that Netrin-1 does in fact hold the key to this mystery. If her theory proves correct, the work done by Bhma Ramkhelawon will contribute to a far better understanding of obesity-induced inflammation and ultimately lead to the development of new and more effective treatments.

Diabetes affects a staggering 347 million people worldwide and deaths from the disease, mainly caused by cardiovascular complications, are projected to rise by more than 50% in the next 10 years. Faced with this race against time, Alia Shatanawi is working to unravel the molecular mechanisms underlying the development of cardiovascular complications in diabetes in the hope of finding new methods for the early prediction of these complications. The starting point for her research is the observation that an enzyme, Arginase, is increased in the blood of diabetic patients as well as in obese young adults with prediabetes showing early signs of vascular disease. She believes that measuring levels of this enzyme could be used as an indicator of the development and progression of diabetic complications. She plans to test her hypothesis by measuring Arginase levels in patient blood samples from the repositories of two related medical studies. Upon return to the University of Jordan, Alia Shatanawi will train other researchers in these new techniques and work on a parallel project using samples from Jordanian diabetic patients.

Gul Shahnaz’s research focuses on inventing a new drug delivery system for Leishmaniasis, a tropical disease transmitted by sand flies that affects 12 million people in over 88 countries. Currently, the only existing treatment is both expensive and highly toxic, often resulting in severe adverse reactions. As well, in many parts of the world the parasite causing the disease has become drug-resistant and there is now a pressing need to find new treatments that are both effective and affordable. Gul Shahnaz believes that the key lies in nanotechnology. She aims to harness the potential of this “technology of the infinitesimally small” to create a system of administering the drug, either orally or via application on the skin, that improves its stability, releases it into the body in a time-controlled manner and increases the amount that actually reaches the bloodstream. In a particularly innovative extension of her research, she will also attempt to overcome the problem of drug resistance associated with conventional therapies. If she achieves her goal, her work will enhance quality of life for countless Leishmaniasis patients around the globe.

Aramide Oshingboye is focusing her PhD research on a particular plant family, the Fabaceae family, whose biodiversity - the existence of a healthy array of species and subspecies with a large and varied gene pool- is vital to the ecosystem of the arid zones of northern Nigeria. The ability of these leguminous plants to fix nitrogen in the soil helps maintain in fertility and prevent erosion. As well, cultivated varieties such as chickpeas, soybeans and lentils are essential to food supplies. The combined threat of global warming and unsustainable farming practices are however, threatening the genetic diversity of the Fabaceae family. Much of Aramide Oshingboye’s research will involve the use of new DNA barcoding technique for identifying plants in order to create a genetic map of the relationships between the different species. In contributing to a greater understanding of the biodiversity of the Fabaceae family and of the region itself, her work will enable more effective conservation efforts in the face of global climate change and eco-friendly farming methods both in her home country and throughout the world.

“Having a mentor is essential for women in science. My desire to become a researcher was nurtured by the careful guidance of a woman professor during my undergraduate years.”

“Science is the perfect career for people who like to solve mysteries, for curious people who wonder how things work and why they work.”

“Without the superb mentors I had during my doctoral studies, I would never have gathered the courage to go to a foreign country to continue my research.”

“With the number of women in science is increasing, but science is still a world dominated by men. For the most part, leadership positions in research and academia are held by male scientists.”

“The major risk factor for both cardiovascular disease and diabetes, which cause at least 2.8 million deaths annually, obesity was once a problem only in high-income countries but is now dramatically on the rise in medium- and low-income countries around the world. Bhma Ramkhelawon’s research aims to solve the mystery of precisely how dysfunctional immune reactions in obese patients trigger these widespread and often fatal illnesses. Her recent work has demonstrated that a molecule present in the body called Netrin-1 plays a pivotal role in maintaining the chronic inflammation - a dysfunctional immune response - of adipose (fatty) tissues linked to cardiovascular disease and diabetes. During her fellowship, she will use gene deletion experiments to test her hypothesis that Netrin-1 does in fact hold the key to this mystery. If her theory proves correct, the work done by Bhma Ramkhelawon will contribute to a far better understanding of obesity-induced inflammation and ultimately lead to the development of new and more effective treatments.”
**PANAMA**  
Sandra Lopez-Verges  
Postdoctoral researcher  

"As a woman in science, sometimes it is difficult and challenging, and it might require more efforts to be accepted in the scientific society."

Jingmei Li specializes in the study of breast cancer, a complex disease that develops from accumulated genetic mutations. Although several strong inherited mutations conferring a 60-85% lifetime risk of breast cancer have been identified, they account for only 5-10% of actual cancers. Researchers now believe that the majority of inherited breast cancers stem from combinations of weaker genetic factors, each conferring a small amount of risk individually but when present together greatly increasing the odds of developing the disease. Jingmei Li’s research aims to ascertain which of these weaker genetic factors are associated with particularly aggressive tumors and poorer prognosis. Her results should help shed light on some of the important drivers of the disease and improve the identification of women at risk of developing the severest forms of breast cancer who might otherwise be diagnosed at a stage too late for effective treatment. She will also attempt to uncover combinations of survival factors that can help doctors with decision-making and enable new personalized treatments for cancer patients.

**SINGAPORE**  
Jingmei Li  
Postdoctoral researcher  

“An attraction to science is a lot like falling in love. It’s hard to pinpoint a specific reason— you just fall right smack into it!”

**SUDAN**  
Adila Elobeid  
PhD student  

“I think most women in science would agree that it is ever a challenge to be the best scientist one can be, and at the same time, the best daughter, sister and mother one can be. It is, however, a challenge I feel fortunate to be faced with.”

Adila Elobeid’s fellowship will serve a two-fold purpose. A trained doctor and now a researcher in neuropathology, she has set herself the difficult challenge of raising awareness of brain donation in Sudan, a country where traditional beliefs make it difficult for families to accept post-mortem organ donations. Encouraging brain donations will enable Sudanese researchers to progress more rapidly in understanding neurodegenerative disorders like Alzheimer’s disease. Along with the opportunity to observe first-hand how brain banks are established and managed, her time in Sweden will be spent furthering her PhD project. Her research is centered on the process of neurodegeneration, in particular the transport of vital substances between the center of the brain cell to its outlying extensions or axons. She will specifically focus on axonal transport defects and attempt to assess whether changes in the level of these proteins may be involved in the onset of Alzheimer’s disease. Upon completion of her doctorate Adila Elobeid plans to return to Sudan to continue teaching and researching and her goal is to set up the country’s first brain bank.

**TUNISIA**  
Farah Ouechtati  
PhD student  

“Inspiring science teachers are key to bringing more students into the profession, teachers that help you learn to think critically and ask the right questions.”

Farah Ouechtati’s early research focused on the genetic basis for eye diseases and more specifically inherited retinal disorders. Some causative genes when under-expressed lead to progressive photoreceptor degenerations. Scientists discovered a gene encoding for a protein in which this gene is naturally expressed. To achieve this, she will attempt to identify the molecular processes that regulate the Nono2 gene and, secondly, attempt to identify the specific brain cells in which this gene is naturally expressed. Her results should open the door to innovative, non-invasive treatments for neurodegenerative diseases and help to shed light on the complex molecular interactions underlying them.
Working at the frontiers of material science and biochemistry, Ahu Arslan Yildiz' current work focuses on developing innovative diagnostic tools. She recently harnessed advances in technology to develop highly innovative experimental membrane platforms that mimic cell membranes and the proteins they contain. As cell membrane proteins are implicated in a wide range of diseases, including Alzheimer’s, diabetes and cancer, they provide critical information for early diagnosis and preliminary screening of many of these illnesses. During her fellowship Ahu Arslan Yildiz aims to develop a stable, reproducible method for using her biomimetic approach of these artificial cell membrane to create “lab-on-a-chip” systems that can be used at any point-of-care, eliminating the need for expensive laboratory equipment and certain types of medical personnel and infrastructure that are scarce or inexistent in many economically disadvantaged regions. Ultimately, the portability, affordability and high sensitivity of these systems will make top-quality diagnostic techniques available to patients in non-hospital settings in remote parts of the developing world.

“We can interest more young people in science - especially girls - if, along with equations, calculations and chemical reactions, we also show them how science helps people and how important it is to solving the world’s problems.”

Postdoctoral researcher

Ahu Arslan Yildiz

Biotechnology

Previous Institution:
Middle East Technical University, Ankara, Turkey

Host University:
Division of Biomedical Engineering, Harvard Medical School, Boston, USA

Experience the first online media dedicated to women in science created by the L’Oreal Foundation:

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