# NO MORE EXCUSES!

## Leading women in science

AcademiaNet

An initiative of the Robert Bosch Stiftung in cooperation with Spektrum der Wissenschaft and nature

# SIMPLY THE BEST …

On November 2nd 2010 Germany's most famous physicist, Chancellor Angela Merkel, pressed the red button and launched the internet portal AcademiaNet. The philanthropic organisation Robert Bosch Stiftung created it with the aim of raising the visibility of outstanding female scientists and increasing the number of them in leadership positions – after all, in Europe not even one in five of the most highly endowed professorships are held by women!

AcademiaNet makes it easy for decision makers from academia and industry to search for suitable candidates when appointing leadership positions and committees. Today, the site features the profiles of more than 1600 women scientists from all over Europe, and the trend is upward. In addition, journalists and organisers of conferences and panel discussions can use the portal to quickly locate recognised experts.

The task of ensuring only the best of Europe's female researchers are on AcademiaNet is undertaken by the "partners" – reputable organisations from the worlds of science and business (p 11). Only they can propose new candidates on the basis of common guidelines – scientists are not allowed to apply themselves.

The selection criteria is outstanding academic qualifications, reflected in publications, awards, scholarships or memberships of prestigious scientific organisations, as well as third-party funding, leadership experience and more. After their nomination, the scientists participating in AcademiaNet must explicitly agree to the publication of their data.

www.academia-net.org

"Science will fall short of its full potential if it is only male. That would promote only half of the talent."

Angela Merkel,
Federal Chancellor of Germany

# FOUR WOMEN – FOUR QUESTIONS

**When you started school as a child, what did you want to be when you grew up?**

Alexiadou: I wanted to be an archaeologist, because I wanted to discover things.

Booth: A surgeon. I changed my mind as a teenager and decided to study chemistry instead.

Kaldor: I couldn't decide whether I wanted to be a cabaret singer or a writer.

Lochte: I liked the idea of being a vet, because one of my aunties had done that.

**Do you ever doubt whether research is right for you?**

Alexiadou: No, I don't. I joke sometimes that I could be a football coach, TV presenter or detective in a cop show, but I am very happy with my choice of career.

Booth: Yes, but probably not seriously. Innovative research has always been my ambition. I do regret not being able to do as much teaching and outreach as I would like.

Kaldor: I never imagined I would have an academic career. I always wanted to make a difference – as a full-time activist, a politician or a journalist. But, in the end, being an academic gave me more space for doing what I wanted to do.

Lochte: Sometimes I imagined I would design gardens or parks. The idea that only later generations would see the final version fascinated me. I particularly admire English parks and Carl Linnaeus' designs.

**Who would you have liked to have met in person?**

Alexiadou: I am impressed by people who manage to do something wonderful from very difficult situations and who challenge themselves over and over again – no matter whether it's in science or sports, such as Marie Curie or Ayrton Senna.

Booth: Doris Lessing. An outstanding, insightful and thought-provoking novelist, who spoke her mind, never behaved as expected and did not mark her achievements by – nor care about – prestigious accolades that are so sought after by others.

Kaldor: I would have loved to have met my Hungarian and Czech Jewish relatives who died before the war and in the Holocaust. And my uncle, the writer and translator Antony Goldsmith, who translated Madame Bovary into English.

Lochte: Queen Elizabeth I – even if, from today's point of view, not everything she did back then was acceptable. But it fascinates me how, with courage, skill and knowledge of human nature, she managed to lead England out of a crisis and turn it into a prosperous country.

**Do you check your emails when you're on holiday?**

Alexiadou: Yes, unfortunately, but I do sometimes take a break from it for two days.

Booth: Normally, yes. If the emails have piled up, it's fun to delete them *en masse* on my mobile phone.

Kaldor: Yes. I generally work during holidays. This is when I find the time for reading and thinking.

Lochte: No, I try not to.

Artemis Alexiadou

Professor of Theoretical and English Linguistics at the University of Stuttgart. Her research group is made up of 70 percent women.

Paula Booth

Professor and Head of the Department of Chemistry at King's College London. Her research group is made up of 70 percent women.

Mary Kaldor

Professor of Global Governance and Director of the Research Department for Civil Society and Human Security at the London School of Economics and Political Science. Her research group is made up of 50 percent women.

Karin Lochte

Up to 2007, Professor of Biological Oceanography at the University of Kiel and, since then, director of the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven. Her research group is made up of 60 percent women.

# "I want the best female researchers from all over Europe to join AcademiaNet"

Ingrid Wünning Tschol

Senior Vice President "Health and Science" at Robert Bosch Foundation and founder of AcademiaNet.

Women remain severely under-represented in positions of scientific leadership. In order to change this, the Robert Bosch Stiftung initiated the Internet portal AcademiaNet.

AcademiaNet **was launched in 2010. How did it all begin?**

There was a specific reason, namely the EuroScience Open Forum (ESOF) 2008 in Barcelona. I was one of the organisers – so I was partly responsible for the fact that we had only one female keynote speaker. I received some criticism, which, of course, was completely justified. We had invited women, too, but they had all cancelled. It was then that I realised that we needed a database where the many outstanding women scientists could be found with one mouse click. AcademiaNet is intended to be exactly that – an instrument that enables this kind of search for excellent female scientists.

AcademiaNet **accepts only researchers who have been proposed by major science organisations. Why is that?**

Our users have to be entirely assured that the database features only scientists who have already proven their scientific excellence. Since these organisations, with their proven quality filters, already check these criteria, we have chosen the model of nomination by renowned partner organisations.

**What started as a German database has become a European one. Are there differences between countries in the proportion of female leaders?**

Yes, there are. Here, in Germany, women have a 15 percent share of the leadership positions in science. Compared with the whole of Europe, we are pretty much at the bottom of the list. However, the academic career structures in these countries are very different, so leadership positions can be defined quite differently from country to country. That's why it is sometimes difficult to compare these figures across different countries. Nevertheless, Germany is not doing so well.

**What is your most important goal in the coming years?**

I hope that we can expand AcademiaNet to cover the whole of Europe. I'm sure that we can find more excellent female researchers, but in some places we still lack the relevant partners, for example, in England or in some Eastern European countries. With our new Polish partners, we have made a good step in this direction.

**Women are still under-represented at the top of science. Can** AcademiaNet **change anything?**

Of course, we are convinced of that. In fact, we often hear about successes. For example, nomination lists for academic awards have been rejected because they contained only male names. Thanks to AcademiaNet eminently suitable female prize winners have been found. But it's difficult to determine a direct effect of AcademiaNet on women's career prospects. Of course, we are very pleased about our prominent supporters, at high decision-making levels, who refer their employees to AcademiaNet, for example, in the context of the appointment of professors.

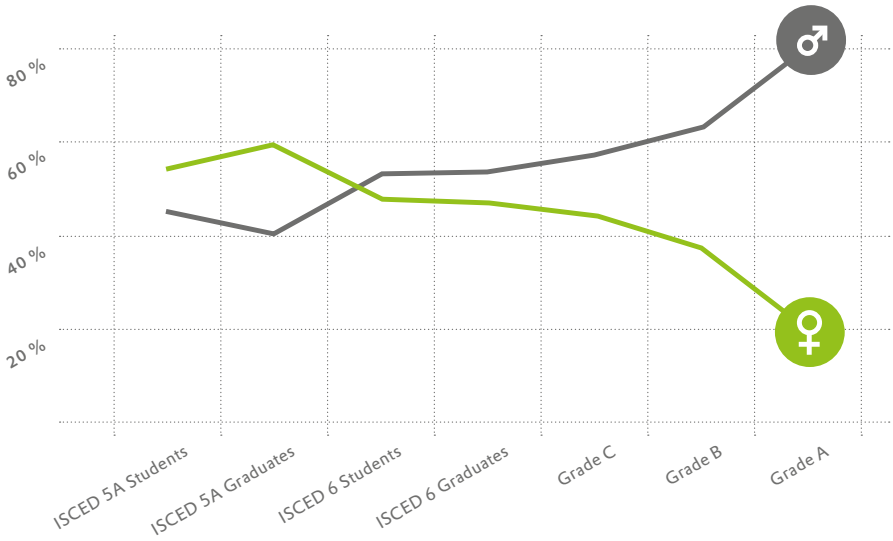
"The launch of AcademiaNet was a magic moment. I am proud that we also recommend our excellent female researchers."

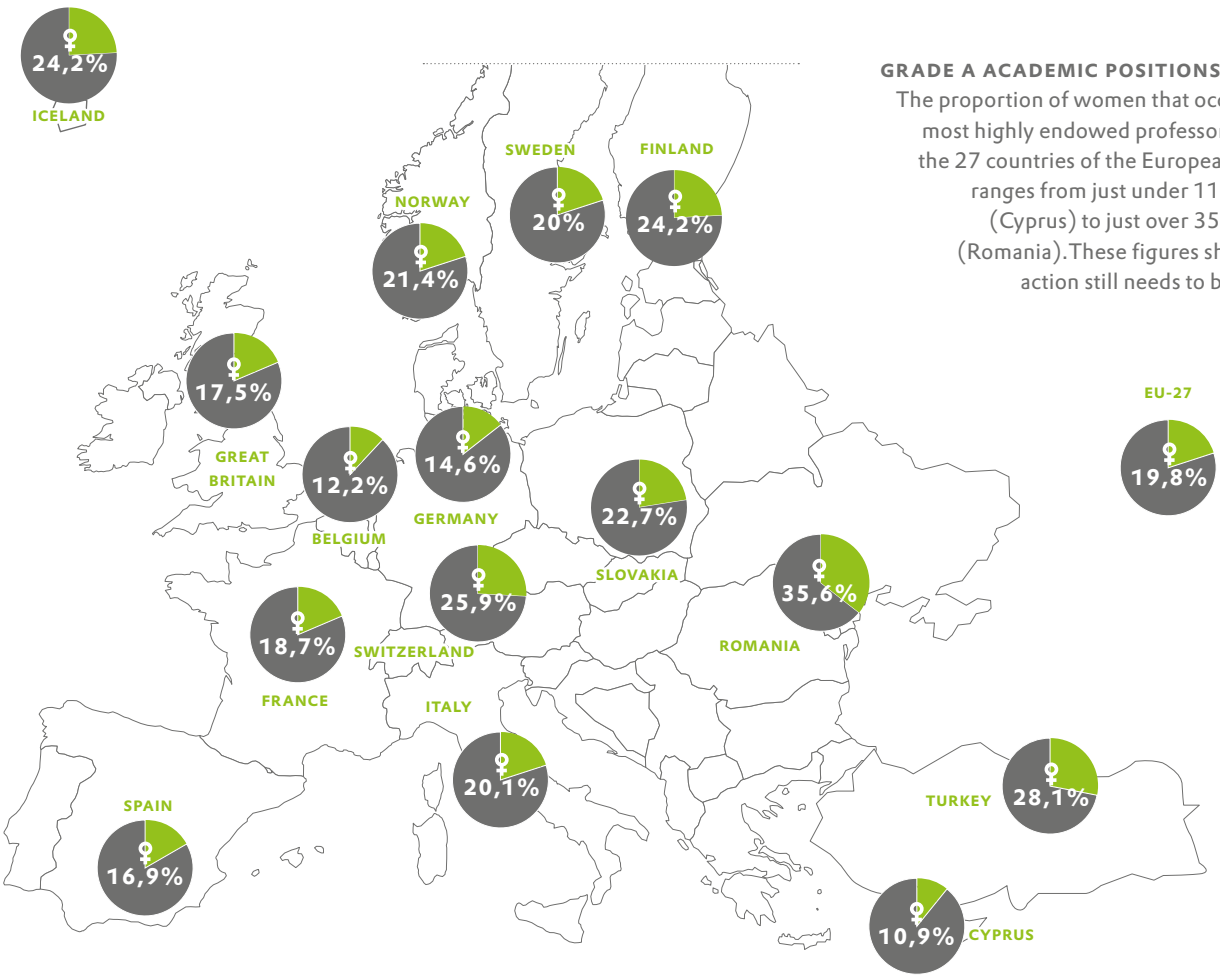
Prof. Dr. Liselotte Højgaard
Chair of the Danish National Research Foundation

# THE GREAT DIVIDE

Women and Men in European Science

**THE "LEAKY PIPELINE"**
Now, as ever, women are disappearing from every stage of the academic career ladder. While they still constitute the majority among students and graduates, over time they fall further and further into the background.




**GRADE A ACADEMIC POSITIONS (2010)**
The proportion of women that occupy the most highly endowed professorships in the 27 countries of the European Union ranges from just under 11 percent (Cyprus) to just over 35 percent (Romania). These figures show that action still needs to be taken.

Sources: She Figures 2012 - Gender in Research and Innovation. European Commission (2013)

# "For years I attributed any lack of success to my own failings"

The history of women in science is paradoxical: Society encouraged women to be scientists, but women had to fight every step of the way to be accepted and treated equitably. Today we understand the institutional barriers and unconscious bias that have held women back, and we can work to ensure a level playing field for the future.

Von Nancy H. Hopkins

Like most young women today, 50 years ago I too assumed that gender discrimination in science was a thing of the past. Girls who grew up in America in the Sputnik era, as I did, were encouraged to become scientists. By 1964, when I graduated from college with a degree in biology, I thought it entirely possible I'd win a Nobel Prize. Why not? Dorothy Hodgkin won one that year. When I finished my postdoctoral degree in 1973, I was actively recruited to the faculty at the Massachusetts Institute of Technology (MIT). What were those feminists complaining about?

It took quite a long time until I slowly comprehended that gender bias did (and still does) exist in science. In 1994, I started to work with other female faculty members and with the MIT administration to understand and mitigate its effects, with outcomes none of us could have imagined.

I fell in love with science in the spring of 1963, my junior year at Radcliffe College (the girl's division of Harvard then), when I signed up for an introductory biology class taught by James D Watson. I emerged from the first lecture in shock. These molecular biologists were figuring out the secret of life! Forget medicine, philosophy, psychology or religion, DNA was going to explain the origin of life, the molecular basis of human disease, maybe even human behaviour. Watson agreed to let me work in his lab and became my advisor, guru, mentor, advocate and friend.

The science drew me to Jim's lab every available moment. Jim told me repeatedly I should be a scientist, but how could I be like these men? Even postdocs had wives who stayed home to care for their children while the men put in 70-hour weeks at the lab. Who would care for my children? I knew I would have to give up science before I had children – before amniocentesis that meant before the age of 30. So I made a plan: do the most exciting science possible as fast as I could, hope I did a Nobel Prize winning experiment before the age of 30, then retire and be a wife and mother.

Jim, unaware of my life plan, insisted I pursue a PhD. After a short stay at Yale I went back to Harvard, where Mark Ptashne was trying to isolate the lambda phage repressor, and I worked as his technician. Less than a year and a half later, the experiment worked. Triumphant, we ran through the halls waving a graph showing the famous protein-DNA binding peak. Dream accomplished! (Although the experiment didn't win a Nobel Prize, and I would not have expected to be included if it had.)

I was 24 and might have quit science within a few years had Jim not come to Mark's lab one day and said, "OK, Nancy, you've had your



"I sincerely hope that committees will use this database to find excellent female researchers."

Prof. Dr. Jörg Hacker
President of the German National Academy of Sciences Leopoldina

fun, now you have to get a PhD". The next day I enrolled in graduate school at Harvard. As luck would have it, I needed the PhD after all, because when I was 30, instead of having children, I got divorced and took a job on the MIT faculty.

Given such an auspicious start, it's no wonder I didn't see any gender discrimination in science. But looking back, it's hard to understand how I could have been quite so slow to recognise that a profession in which half the population can't participate equally and also have children is by definition discriminatory. I saw the family-work problem as a biological one, a woman's choice, unfixable. It was not until 1994 that my colleague Lotte Bailyn, Professor of Management at MIT, helped me to see that the way science careers and institutions are structured is an artificial, and hence changeable, system designed by men, for men, in an era when men had full-time wives to care for their families. Though MIT had a family leave policy for faculty members at the time, women were afraid to use it because of the stigma attached. Men took leave without a qualm, often using the extra time to do more research or start a company.

Nancy H. Hopkins

is a professor of biology at the Massachusetts Institute of Technology and is currently working in cancer research. Nancy's been fighting for equality for women in science for 30 years.

In sharp contrast to the above problem, 50 years ago we didn't know enough about gender discrimination to be able to mitigate its effects. We thought that the Title VII civil rights laws and regulations in the mid-1960s and 70s that made it illegal to deny women jobs in America were all that was needed to level the playing field. We were wrong. Today, we know that unconscious (implicit) gender bias, probably more than family-work conflict, explains why progress for women in science, technology, engineering and mathematics (STEM) fields has been so slow.

Psychologists discovered unconscious bias, but many professional women scientists came to understand unconscious gender bias on their own. For decades, most suffered it in silence for fear of being labelled a "whiner", or judged "not good enough". I began to understand it as a newly independent junior faculty member, but for years I attributed any lack of success to my own failings, particularly not being sufficiently aggressive or self-promoting in a highly competitive profession. My response was always to work harder and to try to do a better experiment, on the theory that if you did a Nobel Prize winning experiment you wouldn't have to be self-promoting – everyone would have to acknowledge your discovery.

So taboo was this subject for women striving to be top scientists that more than three decades passed before I sat down with other women faculty members and the MIT administration to discuss it. In 1994, the tenured women faculty members in the six departments of science at MIT began to discuss these issues. They asked the Dean of Science to establish a committee to study the manifestations and impact of this invisible bias. He agreed, but when their report was in his hands, he only addressed and corrected inequities of resources and rewards that could be fixed easily.

In 1999, a summary of the committee's findings and the Dean's response was published in the MIT faculty newsletter and reported on the front pages of the "Boston Globe" and the "New York Times". The response from women all over the country, and soon the world, was overwhelming. Overnight, we learned that the undervaluation of women in academic science and other fields was widespread in universities, labs and companies. One of the factors that helped to finally end women scientists' silence was the fact that the MIT women who had spoken out were such successful scientists. Anyone who would suggest that these women weren't good enough would simply look like a fool, as well as a bigot.

With the detailed knowledge of the barriers that so many women faculty members in science and engineering encounter, then President of MIT, Charles Vest, set out to make institutional changes to fix the problems. Progress was remarkable and changed the lives of many women faculty members.

We learned some important lessons:

- Only deliberate action by powerful administrators changes institutions.
- Superb data is essential to track hiring and the equitable distribution of resources, rewards and compensation over time.
- If you stop tracking data and preventing inequities in hiring or distribution of resources and compensations, progress stops and may even regress.
- It is essential to bring women into powerful leadership positions.

A 2011 survey of all female STEM faculty members at MIT* revealed that women today feel enormously privileged to be there, while recognising that problems remain. As for numbers, the percentage of women faculty members in science and engineering departments at MIT today equals the percentage of women in the applicant pools: thus, there is no bias in hiring. However, only 19 percent of the science faculty members and 17 percent of the engineering faculty members are women. There are two reasons: the small number of women getting PhDs in some fields, and leaks in the pipeline between PhD and faculty applicant pools in others (see p 5).

The most recalcitrant problem impacting the professional lives of women faculty members in STEM remains unconscious gender bias. Measurable inequities that result from it are easily fixed by data tracking in the university, but what about informal exclusion from important professional interactions? Young women even two generations behind me, including superstars, still report being marginalised by male colleagues as they reach their late 40s or early 50s. An astonishing example can be seen in biotech start-up companies. An informal study showed that only about 5 to 8 percent of the professors who are co-founders or members of the scientific advisory boards of companies founded in Boston by male professors at Harvard, Harvard Medical School and MIT are women, and women faculty colleagues report they are not invited to participate. These data remind me of what universities were like 20 years ago – or even 50 years ago before Title VII and later Title IX laws made such behaviour illegal. Presumably this is what universities could look like again if the schools did not continuously address unconscious but powerful discrimination against women.

* A Report on the Status of Women Faculty in the Schools of Science and Engineering at MIT, 2011: http://web.mit.edu/faculty/reports/pdf/women_faculty.pdf

"AcademiaNet will become even more important as work to address gender imbalance accelerates."

Dr. Philip Campbell, Editor-in-Chief of "Nature"

# EQUALITY BY LAW?

Women are still getting stuck along their journey to the top of the career ladder. Most of the highest positions are still occupied by men. There are calls for a legal quota for women. What are the arguments in favour of it – and the arguments against?

## FOR

Prof. Dr. Ernst Theodor Rietschel

is a chemist and research manager. From 2005 to 2010 he headed the Leibniz Association. Since 2013 he has been the Chairman of the Berlin Institute of Health (BIH).

The numerous incentives and equality measures are too slow. Although the proportion of women at all levels of academic qualifications has increased overall in the past ten years, women scientists' careers are still suffering. The fact is that the more highly endowed and influential the position, the lower the percentage of women that are in it – although there are plenty of outstanding female scientists.

I favour a temporary quota, in order to accelerate the modernisation process of the science system through the talents of excellent women. In the foreseeable future, women will – depending on the discipline and the proportion of potential candidates – be able to rise to leadership positions through quality-led selection processes. I think it is essential that women are role models and that they build their own networks in order to compete with traditional male dominance.

It's not about the politics of subsidising women and "token females", but gender parity! We need targets for the gender-equitable allocation of leadership positions and committee roles. Non-achievement of targets must be sanctioned – only then can we achieve gender parity in the near future.

## AGAINST

Prof. Dr. Christiane Nüsslein-Volhard

is a biologist and, since 1985, Director of the Max Planck Institute for Developmental Biology in Tübingen. In 1995, along with two American researchers, she received the Nobel Prize for Physiology or Medicine.

Women who want to be in a leadership position in science and are qualified to do so should be able to attain these positions. A quota could only help if the main reason why there are so few female researchers at the top is the presence of ideological discrimination.

But, in truth, there are often not enough qualified women for whom such a career is attractive, because they do not want the associated restrictions of their personal freedoms. Management positions require a great deal of strength and time commitment, as well as the courage to exercise power. Male competitors often benefit from their wives, who free them up by "carrying the load"!

Being female is certainly not a criterion for qualification. A quota would violate the dignity of women, because they degrade *any* woman in a top position to being a "token female", merely a number in the statistics. This is a stigma that cannot be overcome by excellence. With a quota, a kind of pressure is exerted on women that can cause them to be unhappy in their positions or even fail. This then has a negative effect on female colleagues' reputations and leads to a justified protest by male competitors. Why is nobody demanding a male quota for secretaries and nursery nurses?


# DID YOU KNOW …?

When, during an interview in the late 1970s, Herbert von Karajan said "Women belong in the kitchen and not in the orchestra!" he represented a view that was fairly widespread among musicians at the time. After all, he must have thought, women *are* less technically gifted than men and inappropriate for the role of orchestra musician, because of their overly exuberant characters. At that time many orchestras, particularly in Europe, were exclusively male.

But that was all set to change, thanks to "blind auditions", where the musician would perform out of sight, behind a screen. As Claudia Goldin of Harvard and Cecilia Rouse from Princeton University found in their experiments, knowing whether a musician was male or female made a huge difference to their chances of being successful at an audition.

Without a screen in place 23 percent of men, but only 19 percent of women managed to get to the final round. However, when the panel had to rely on their hearing alone, because the musicians were playing behind a screen, only 20 percent of men were successful, compared to 29 percent of women!

Today, these blind auditions are standard for many orchestras. In order for them to be really effective the stage has to be covered with carpet – because, alas, people in the auditorium can hear the clacking of women's shoes …

Goldin, C. & Rouse, C.: Orchestrating Impartiality: The Impact of "Blind" Auditions on Female Musicians. The American Economic Review 90, 4 (2000)

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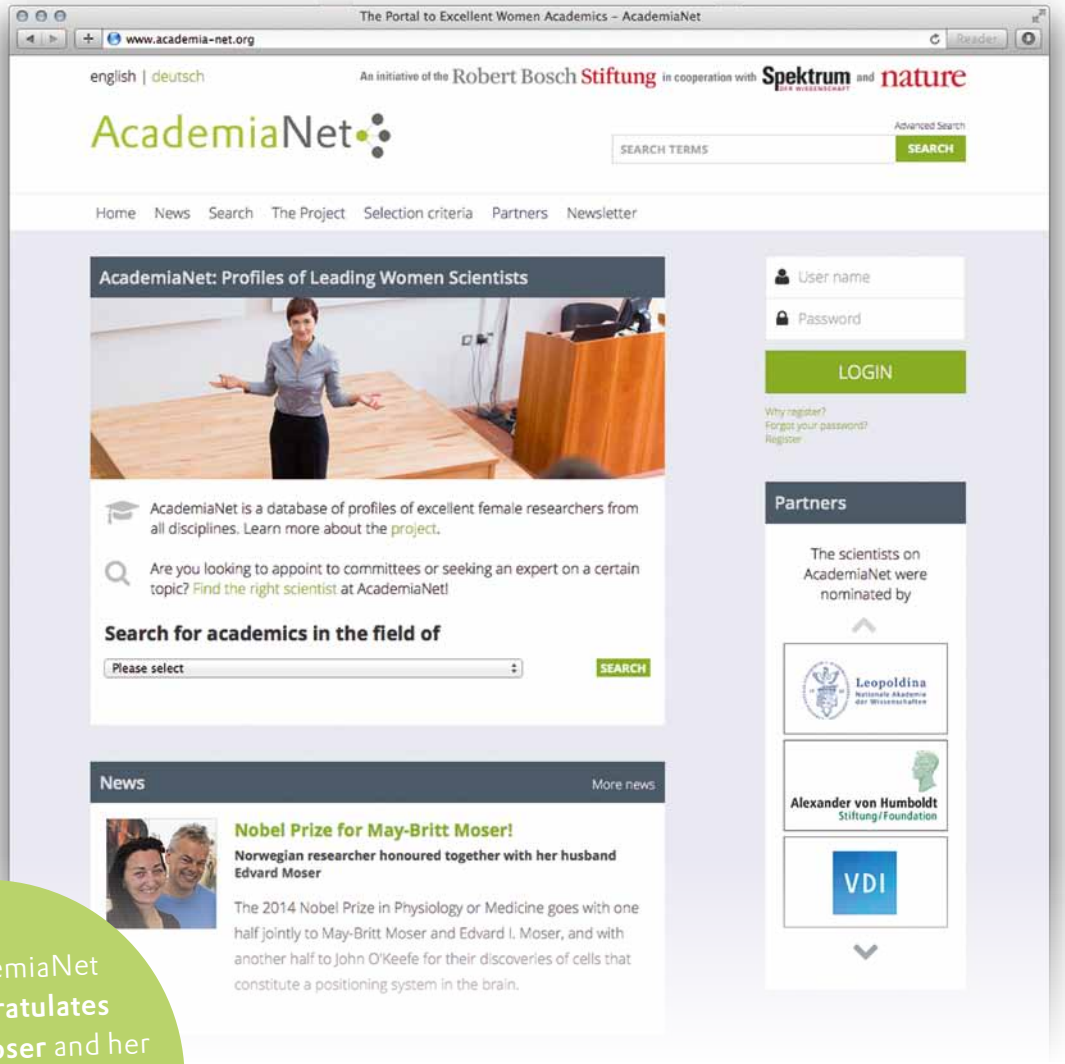


The AcademiaNet team **congratulates May-Britt Moser** and her husband **Edvard** for winning the **Nobel Prize** in Physiology or Medicine**!**


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