

30 November 2012

The first Wallenberg Academy Fellows

The Wallenberg Academy Fellows are awarded a five-year grant amounting to between SEK 5 million and 7.5 million per researcher.

ENGINEERING SCIENCES



Natasha Devroye, PhD, KTH Royal Institute of Technology

A dynamic wireless dialogue

Natasha Devroye will develop new methods in the area of communication technology inspired by how we have conversations. Currently, information in wireless networks is streamed in one direction at a time; she wants the information to flow in two directions concurrently.



Michael Malkoch, Associate prof., KTH Royal Institute of Technology

A glue for bone fractures

Mending a fracture with today's technology often requires that a person be put under general anaesthesia while a surgeon affixes the bone. Michael Malkoch's goal is to develop a bone adhesive that can be applied under local anaesthesia.



Rafael Pass, Associate prof., KTH Royal Institute of Technology

A more secure Internet

The number of transactions we do on the Internet is only increasing; we pay bills, report in sick to work, and buy insurance. Rafael Pass aims to turn the Internet into a more secure place for all of us.



Charlotte Platzer Björkman, Associate prof., Uppsala University

A new generation of solar cells

Thin-film solar cells that capture sunlight efficiently tend to be made from materials that contain rare metals. Charlotte Platzer Björkman wants to make them of new materials, to decrease the cost and make them readily available.



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HUMANITIES

Photo: Mattias Pettersson



Per Axelsson, PhD, Umeå University

Improving the health of indigenous people

Why do some indigenous peoples fare better under colonizers than others? Per Axelsson proposes to find out, by looking at the forces that have shaped indigenous people's health and well-being over the past 150 years in three different countries.

Helen Frowe, PhD, Stockholm University

Individuals, nations, and the concept of "just war"

War has always given rise to moral questions. Helen Frowe wants to examine how people conceive of the rights of nations to fight wars, like in Afghanistan and Iraq, and to what extent individuals can be considered responsible for wartime acts.



MEDICINE

Photo: Ragnar Söderbergs stiftelse



Marie Carlén, PhD, Karolinska Institutet

Searching for neural signs of schizophrenia

If researchers could detect the brain patterns that indicate the onset of a mental disorder, they might be able to find ways to prevent or treat such diseases in advance. Marie Carlén uses state-of-the-art methods in the early search for neural signs of schizophrenia.

Felipe Cava, PhD, Umeå University

Mapping bacteria's battlements

For protection from the environment, bacteria have tough walls. Felipe Cava will map how different strains construct their walls. The knowledge can be used for future development of antibiotics.



David Engblom, Associate prof., Linköping University

Why do chronically ill people become depressed?

Many chronic diseases are connected to inflammation, for example, rheumatism, tuberculosis and AIDS. David Engblom will explore how molecules of the immune system can also affect the brain and contribute to negative thoughts and distress.

Photo: Peter Modin





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Photo: Lars Owesson



Johan Malmström, PhD, Lund University

Finding bacteria's Achilles heel

Problems with antibiotic resistance are increasing throughout the world, and a growing number of people are now dying from diseases that antibiotics could cure before. Johan Malmström aims to find the weak spots in bacteria that can be attacked with future drugs.



Björn Nilsson, PhD, Lund University

Better treatments for blood cancer

Björn Nilsson's goal is to improve treatments for two different forms of blood cancer: acute myeloid leukaemia and multiple myeloma. Genetic studies, combined with mathematical modelling, will shed light on the best attack against these cancer cells.

Photo: Ragnar Söderbergs stiftelse



Mia Phillipson, Associate prof., Uppsala University

Immune cells – for good and for bad

Many widespread diseases like arteriosclerosis are linked to inflammation. Mia Phillipson will study how immune cells that circulate in our bloodstream, called leukocytes, are triggered during disease. She will also find out how they can contribute to the formation of new blood vessels.



Gilad Silberberg, Associate prof., Karolinska Institutet

Brain circuits scrutinized

Before you move a part of your body, the brain has already compiled all the information it needs in a split second, in order to correctly direct the movement. Gilad Silberberg will study in detail how this integration is governed in a part of the brain called the striatum.

Photo: Daniel Jigenstedt/Ragnar Söderbergs stiftelse



Camilla Svensson, PhD, Karolinska Institutet

New insights on chronic pain

In Europe and the United States, about one out of five adults suffer from chronic pain. In order to be able to develop more effective treatments, Camilla Svensson will investigate how pain starts and intensifies during arthritis.



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NATURAL SCIENCES

Photo: Rakel Berman



Robert Berman, PhD, Chalmers University of Technology

A logical world beyond our imagination

Using mathematics, we can describe worlds with a geometry we never can imagine ourselves. The aim of Robert Berman is to raise geometry to even more complex dimensions.

Photo: Marcus Marcetic



Jan Conrad, Professor, Stockholm University

Shedding light on dark matter

What we think of as normal matter only accounts for less than 5% of the Universe: the rest is unseen dark matter and dark energy. Jan Conrad wants to detect dark matter, which would be a breakthrough in physics and open up a whole new view of the Universe.



Kimberly Dick Thelander, Associate prof., Lund University

Wires for a more wireless society

Many scientists forecast that future computers will include so-called nanowires, 10,000 times thinner than a piece of hair. Kimberly Dick Thelander will develop technology enabling real-time visualization of how those minute wires grow, atom by atom.



Ellen Dorrepaal, PhD, Umeå University

Thawing Arctic permafrost adds to climate change

As Earth's climate changes, the frozen soils at the planet's poles have started to thaw – threatening to release the massive amount of carbon stored inside this melting permafrost. Ellen Dorrepaal wants to pinpoint exactly how thawing permafrost ecosystems work, in order to forecast how they might affect the planet's changing climate.

Photo: Menash University



Damian Dowling, PhD, Uppsala University

An evolutionary advantage for females

We have long been taught that evolution is driven by the survival of the fittest individuals. Damian Dowling's research shakes the foundations of this paradigm: females might have an evolutionary advantage simply because of their gender.



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David Drew, PhD, Stockholm University

A sweet transporter for sugar

In order to retrieve sugar from blood, the body's cells have special receivers on their surfaces for glucose that transports the sugar into the cell. David Drew wants to understand this essential process at a very detailed level.



Johan Elf, Associate prof., Uppsala University

Working in the factory of life

Within a cell, thousands of proteins are crowded together; they are like tiny workers that all have specific jobs in the factory of life. Traditionally, scientists have studied those proteins under artificial conditions in test tubes. Johan Elf instead follows their actions in living cells.



Martin Högbom, Associate prof., Stockholm University

Metals in the service of life

Metals are involved in many of the basic chemical processes that occur in living organisms. Martin Högbom will conduct detailed studies of how metals can impact life.

Photo: Markus Marcellic



Anders Johansen, PhD, Lund University

Kuiper Belt can reveal how planets were formed

Our planet started out as dust and pebbles spread across the disk of the young Solar System, billions of years ago. But how those tiny bits of rock finally came together to form a planet remains an unknown story that the astronomer Anders Johansen would like to tell.



Kirsten Kraiberg Knudsen, PhD, Chalmers University of Technology

Studying Galaxy Formation with Quasars

How do galaxies form? That is one of the four fundamental questions that astronomers need to answer, according to the European ASTRONET science vision. Kirsten Kraiberg Knudsen will tackle that question.

Photo: Peter Widling



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Photo: Vibeke Mathiesen



Johanna Rosén, Associate prof., Linköping University

More functional materials with nanotools

In the minute nano-scale world, materials behave very differently compared to what we are used to. Johanna Rosén will develop new tools for nano-construction, with which she will design materials for future electronics.



Tobias Uller, PhD, Lund University

Fine-tuned evolution increases flexibility

First described by Darwin in 1859, the theory of evolution has since become more and more nuanced. Tobias Uller will investigate how adaptation of a species is affected by epigenetics, a process in which genes are turned off or on by chemical modifications.

SOCIAL SCIENCE



Gustaf Gredebäck, Professor, Uppsala University

Social interactions of infants could guide brain development

By the time they are a month old, infants can already read and interpret their environment. Gustaf Gredebäck wants to investigate the impact of those early skills on the development of human intelligence.

Photo: Paola Nogueras



Johan Lundström, PhD, Karolinska Institutet

The senses – greater together than apart

The brain aggregates impressions from all the senses in the body and converts those into a full picture. Johan Lundström's ambition is to get a detailed understanding of this previously unexplored process.



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Mikko Myrskylä, PhD, Stockholm University
Wealthy countries, happy parents, more children

Mikko Myrskylä wants to tease out the consequences of economic and social changes on people's decisions to have children, and how those decisions might shift populations in developed countries.



Johan Walden, Associate prof., Stockholm School of Economics
Why does the stock market crash?

Market crashes are more common than predicted by traditional theory. Johan Walden will develop economic models that can explain large fluctuations on the stock market.

**More information about the researchers and
the Wallenberg Academy Fellows career programme:**
www.wallenbergacademyfellows.org