

THE UiB MAGAZINE.

2016/2017
Research and education at
the University of Bergen



THE ORIGINS OF LIFE

REWRITING EVOLUTION [page 4](#)

THE MICROWORM: OUR ANCESTOR [page 6](#)

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KNOWLEDGE THAT SHAPES SOCIETY

The proximity to the ocean is an essential part of life in Bergen, a city with long-standing traditions in looking outwards – and facing the world. At the same time the stubborn weather makes it essential for the people of Norway's west coast to live their lives in harmony with Mother Nature. All this is at the core of the new strategy for the University of Bergen (UiB).

When I was elected Rector in 2013, UiB had two focus areas: marine research and global research. I ran on a platform to add climate research as our third focus area. With the approval of our strategy for 2016–2022, this is now a reality. I am proud to present this magazine, which not only highlights some of our achievements in our focus areas, but also shows the broad expertise in Bergen's research environment.

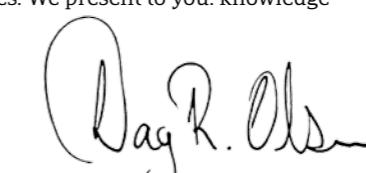
We may as well start with the origins of life. I am delighted to see researchers such as geobiologist Steffen Leth Jørgensen and microbiologist Andreas Hejnol getting their work published in recognised peer-reviewed journals. Especially as both of them are seeking answers to that eternal question: what are the origins of life?

They both feature in this magazine's Research in Front section, which also includes an article about two of our Horizon 2020 successes. Firstly, the exciting marine biology project SponGES, headed by Hans Tore Rapp and Joana R. Xavier, and secondly, Cecilie Svanes and her lung research, which is making international headlines. To see our scientists make important breakthrough and receive funding from the EU's largest research and innovation programme is inspiring for all of us.

Our global engagement runs back to the founding of the University and we are proud to announce that for the 2016 Bergen Summer Research School, PhD candidates from all over the world will get together in Bergen to discuss water-related issues. In autumn 2016, there is a major international water conference in Bergen. So it is only natural for us to present our excellent water researcher and explorer Terje Tvedt in this issue's Photo Essay.

But without new talent, our work would grind to a halt. In our section Researchers to Watch, we present the next generation in science: economist Katrine Løken, historian Stian Suppersberger Hamre, law researcher Christian Franklin and cancer specialist Nils Halberg.

Excellent research, outstanding education and a broad and global perspective are the hallmarks of UiB. This magazine will give you a small taste of our academic activities. We present to you: knowledge that shapes society. Enjoy! ☺


Dag Rune Olsen
Rector, University of Bergen
Follow me on Twitter @UiBrector_Olsen



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ABOUT UiB
The University of Bergen (UiB) has
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Rector: Dag Rune Olsen
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GROUND-BREAKING DISCOVERY: Mystery has surrounded the origin of the evolutionary division which led to complex cell organisms such as humans. An international research group has now found the answer thanks to discoveries made around the site of an underwater volcano. PHOTO: CENTRE FOR GEOBIOLOGY

Researchers rewrite evolutionary history

The discovery of a new microorganism in the Norwegian Sea has demanded the rewriting of evolutionary history.

The sensational discovery was outlined in a scientific article published in the recognised journal *Nature*. One of the co-authors of the article is Postdoctoral Fellow Steffen Leth Jørgensen from the Centre for Geobiology at the University of Bergen (UiB).

From mystery to solution

Together with the majority of animals and plants, humans belong to a large family of organisms called *Eukaryota*. The origin of this group has long been a scientific mystery; one which has preoccupied everyone from philosophers to biologists for many years.

The microorganism, which researchers have named *Lokiarchaeota* (after the Norse deity Loki), was located 2,352 metres below sea level, buried in the seabed close to an underwater volcano.

"*Lokiarchaeota* represents a piece in the evolution of life that researchers have long searched for. Our discovery demands the rewriting of evolutionary history," says Leth Jørgensen.

The rise of complex cell structures

Humans, animals and plants, which make up the *Eukaryota* family, consist of large complex cell structures. This group arose about two billion

years ago, and recent research has suggested that it could have evolved from a group of microorganisms we call *Archaea*.

These microorganisms have, up to now, been characterised by their extremely small and very simple cells, a fact which has given rise to many sleepless nights amongst researchers: how is it possible that something so simple could be the ancestor of something so complex? The leap was, quite simply, too large.

The missing piece

There was a piece missing: one that could bridge the large gap between the two groups, and it is this piece



Postdoctoral Fellow Steffen Leth Jørgensen, Centre for Geobiology, University of Bergen. PHOTO: EIVIND SENNESET

that an international research group has found.

"We knew as early as 2008 that this exciting organism we now call *Lokiarchaeota* was present in large numbers in our samples," explains Leth Jørgensen.

"However, it was not until our research partners at Uppsala University, a group led by Thijs Ettema, analysed 375 million DNA sequences

Our research shows that there are two, not three, branches on the tree of life.

of genes which is otherwise found only amongst higher organisms.

Pruning the tree of life

"If you had to describe in advance the ancestor for that part of the tree of life on which humans are placed, you would end up with an exact description of the organism we have discovered," says Leth Jørgensen.

Up to now the tree of life has consisted of three main branches:

Bacteria, Archaea and Eukaryota. On the first two branches we find the small, simple cell organisms. On the last one are all of the organisms consisting of large complex cell structures; organisms such as fish, plants and humans.

"The discovery of this new microorganism does not just mean we have found the origin of complex cells, it also means that the tree of life needs some serious pruning. Our research shows that there are two, not three, branches on the tree of life. A whole evolutionary branch from the old tree has been lopped off and moved over to another branch, and both now share a common ancestor," says Steffen Leth Jørgensen.

"The hypothesis on two main branches of the tree of life has been intensely discussed within the scientific community for many years, but this debate should now fall silent. Up to now we have lacked 'the smoking gun', but these discoveries put the nail in the coffin lid." ◉

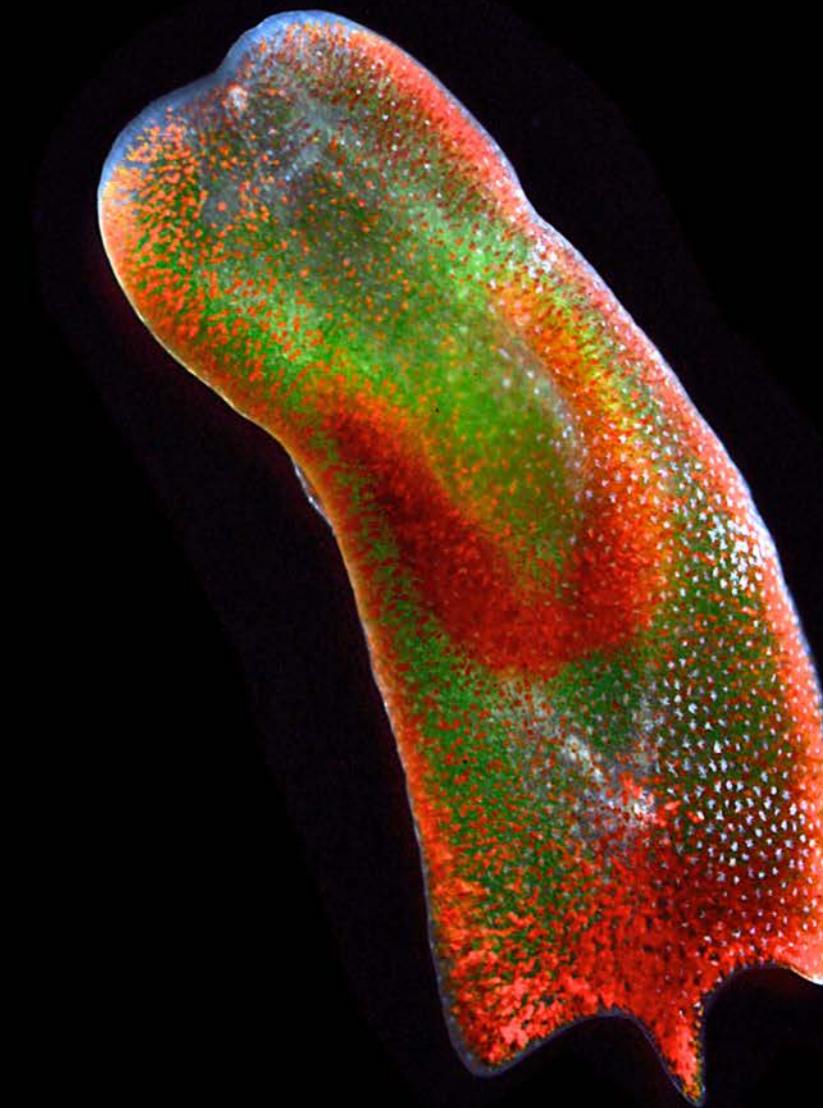
FACTS

Centre for Geobiology (CGB)

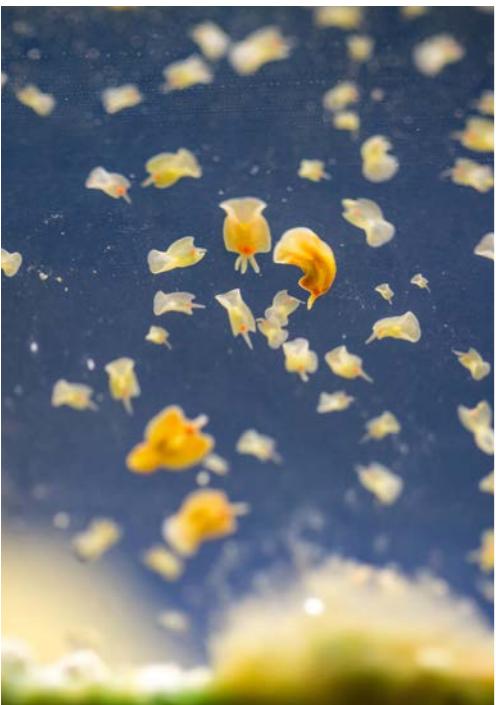
- Research centre at the University of Bergen (UiB) that opened in December 2007.
- The centre was awarded the status of Centre of Excellence (SFF), a scheme that is administered by the Research Council of Norway.
- SFF status is awarded to research groups that conduct long-term research at a high international level.
- The CGB's objective is to gather researchers from within different academic disciplines into an international and multidisciplinary group to generate fundamental new knowledge in the intersecting field between geology and biology.
- Professor Ingunn Hindenes Thorseth is the director of the centre. Professor Rolf Birger Pedersen was centre director until summer 2014.
- Centre for Geobiology website: uib.no/en/geobio

Micro-worms are the ancestors of humans

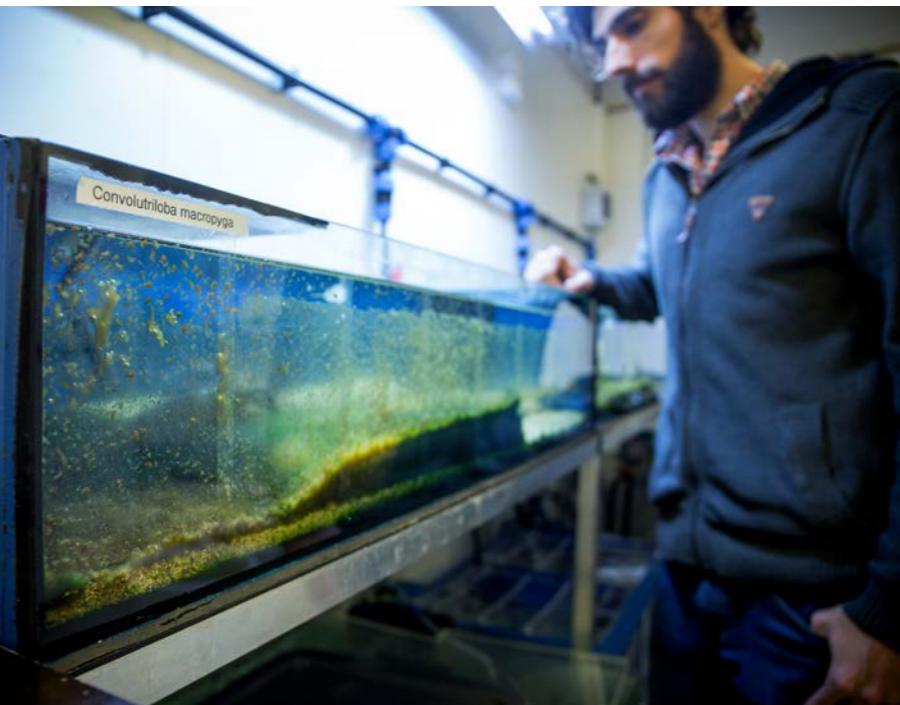
*The flatworm is the link between jellyfish and humans.
This is the assertion made by evolutionary biologists in an
article in the recognised journal Nature. ▶*



KEYSTONE SPECIES: Flatworms represent a middle stage in evolutionary history between jellyfish and man. PHOTO: THE SARS CENTRE



EXPERIMENT IN WATER TANKS: Researcher Bruno Vellutini overlooking a project at the Sars Centre in Bergen. He is a member of Andreas Hejnol's research group. PHOTO: EIVIND SENNESET



 Read more about Andreas Hejnol and the Sars International Centre for Marine Molecular Biology at: sars.no

Flatworms (acoel) which live among the sand and mud at the bottom of the sea, can at first glance appear to be small and insignificant. But these colourful micro-worms show themselves to be very important in our understanding of the evolutionary step between jellyfish and humans.

A key species

"The acoel is a key species in our understanding of when bilateral symmetry arose – in other words, when animals developed symmetrical right and left sides. These are properties which we find among more complex creatures such as flies, cats and humans," says Andreas Hejnol, an evolutionary biologist attached to the Sars International Centre for Marine Molecular Biology at the University of Bergen (UiB).

Hejnol and his colleagues at the Sars Centre have recently established, once and for all, the flatworm's keystone position after a series of

surveys, the latest one using DNA analysis. The discovery was published in the scientific journal *Nature* in February 2016.

These characteristics mean that we crawled around in the sand on the ocean floor 560 million years ago.

Hejnol is also the recipient of a Consolidator Grant from the European Research Council (ERC). A grant he was awarded in early 2015.

We crawled around in the sea

Flatworms have three body layers and symmetrical right and left sides, such as we find in complex creatures living today. On the other hand, they only have one orifice for eating and excreting, similar to prehistoric crea-

tures such as anemones and jellyfish.

This combination of older and younger evolutionary characteristics implies that flatworms occupy a middle stage between jellyfish and more complex vertebrates such as flies, cats and humans. According to Hejnol, this is a sign that they share the same ancestor as humans.

"These characteristics mean that we also crawled around in the sand on the ocean floor 560 million years ago," Hejnol says, smiling.

At some point in the past our common ancestor gradually evolved along two separate branches: one consisting of today's flatworms and the other of animals such as humans.

Our evolutionary roots

That was the accepted theory at any rate from the 1990s up to 2011, when an international research team, with the help of RNA analysis and other experimental methods, concluded that flatworms and humans do not share the same ancestor.



EXCELLENT RESEARCH: Researcher Andreas Hejnol from the Sars International Centre for Marine Molecular Biology at the University of Bergen (UiB) holds a Consolidator Grant from the European Research Council (ERC). PHOTO: EIVIND SENNESET

ERC grants at UiB

Grants from the European Research Council (ERC) are awarded to researchers working on projects that are highly ambitious, pioneering, and unconventional. In addition to Andreas Hejnol, we present the other current ERC grant holders at the University of Bergen (UiB) in short.

Revolutions in psychology

In March 2016, Professor Kenneth Hugdahl was granted his second ERC Advanced Grant. The neuroscientist, who leads the renowned Bergen fMRI Group, is only the second researcher in Norway to achieve this amazing feat. He plans to use new technology to understand and help patients who are hearing voices. This research could represent a paradigm shift in the treatment of patients with auditory hallucinations. >>> Also read our portrait interview of Hugdahl on [pages 16–19](#)

Solving Diabetes

What roles do diets and genetics play in the development of obesity and diabetes? This is one of the questions Professor Pål Rasmus Njølstad and his colleagues at the Department of Paediatrics at Haukeland University Hospital are working on. It is for his studies of diet and genetics among mothers and children in Norway that Njølstad has been awarded an ERC Advanced Grant.

Space is the place

One of the main tasks for Professor Nikolai Østgaard and his colleagues at the Birkeland Centre for Space Science is to look at how earth connects electrically to space. They also study so-called gamma-ray bursts (GRBs) that occur during thunderstorms, and are believed to affect the climate. Østgaard holds an Advanced Grant from the ERC.

Equality in crisis

Professor Bruce Kapferer at the Department of Social Anthropology was awarded ERC Advanced Grant status in August 2013. How does greater inequality create divisions in society? This is one of the central issues of his research project *Egalitarianism: Forms, Processes, Comparisons*.

Future super model

Professor Noel Keenlyside from the Geophysical Institute is creating a super model to better predict future climate change. He holds an ERC Consolidator Grant. He aims to investigate the potential of an innovative technique to reduce systematic error in current climate models.

A focus on climates past

Geologist Nele Meckler at the Department of Earth Science works on reconstruction of past climate conditions. She reconstructs past temperatures in the ocean and on land on a variety of timescales, from a few thousand years back to millions of years, to better understand the processes and their connections within our complex climate system. For this work she has been awarded an ERC Starting Grant.

Algorithms and graph theory

Professor Saket Saurabh at the Department of Informatics was awarded an ERC Starting Grant in June 2012. His research interests lie mainly in algorithms and graph theory. He is also a member of the Bergen Algorithms Research Group, which is part of the strong mathematics and informatics environment in Bergen.

Climate change in the Arctic

Professors Kerim H. Nisancioglu and Eystein Jansen from the Department of Earth Science work on understanding the impact of climate change in the Arctic on the stability of the Greenland ice sheet. They are two of four principal investigators in the ERC Synergy Grant project Ice2Ice, and work alongside colleagues in Denmark on this ambitious project.



RESEARCH BREAKTHROUGH: Cecilie Svanes has found that the ageing of the lungs is influenced by factors early in life, such as the time of year you were born. PHOTO: COLOURBOX

Children born in winter have more vulnerable lungs

Smoking mothers, respiratory infections and the date you were born all contribute to determine how fast your lungs are ageing.

Professor Cecilie Svanes of the Department of Global Public Health and Primary Care at the University of Bergen (UiB) has discovered three developmental factors that influence ageing of the lungs.

"Having a mother who smoked when she was pregnant with you will affect your lungs in a negative way. The same is the case if you were born during the winter months, or if you had a severe respiratory infection

at a very young age," Cecilie Svanes explains.

Early life factors influence the lungs
Svanes' previous research has shown that early life factors affect the growth

and development of the lungs. In her latest research, she has been studying people aged between 40 and 70 years, to find out if conditions in early life also affect the lungs' ageing.

"It is logical that early life development also affects the systems that maintain our body and repair damage. If so, this could explain why some people do not tolerate exposure to certain toxics in later life. And that is actually what we found," she says.

The discovery has been published in the scientific journal PlosONE, and is one of the findings of the preparatory stages of the project Aging Lungs in European Cohorts (ALEC), which is in part funded by the EU's Horizon 2020 programme.

Smoking affects people differently

People who have been exposed to the factors mentioned above have a faster decline in lung function, which in practice means a faster ageing process. Still, this only becomes apparent if they themselves start smoking or if other risk factors have been a part of their early life.

"We can put it this way: smoking is dangerous for everyone, but these people are far more vulnerable to its effects. We can also imagine that they would be particularly vulnerable to other factors, such as air pollution," says Svanes.

The new results fit in well with Svanes' previous research showing that people with unfavourable early life development are less tolerant towards, for instance, detergents when working as cleaners.

Helping the most vulnerable

Svanes believes that the discovery of some people being more vulnerable than others can be used in a positive way in preventative health care.

"This way we can concentrate the efforts on those who are the most vulnerable. We have limited resources for prevention, so it is important that the money is spent on those with the highest perceived risk," says Svanes.

She believes that such measures could help to even out differences among the population. Especially in the most poverty-stricken parts of the world, it might be particularly useful to find out where it would be most efficient to take steps to improve public health.

"If you get a 50 year old to quit smoking, it is beneficial. If you get the person to stop as a teenager, it is even better. But if the mother re-

frains from smoking before a child is conceived, it might play an even bigger role for future overall health," Cecilie Svanes says.

She now wishes to find out why this is the case, as part of the next stage of the ALEC project.

"We want to look into the background of these mechanisms, and examine them in a larger population sample." ◻

FACTS

ALEC

- Professor Cecilie Svanes is a partner in the research project *Aging Lungs in European Cohorts (ALEC)*.
- This is a collaboration between the University of Bergen (UiB), nine other European universities and one Australian university.
- Awarded funding from the EU's Horizon 2020 (H2020) programme. H2020 is the EU's eighth framework programme for research and development.
- As part of this, Svanes, UiB and Haukeland University Hospital will receive more than one million Euros of funding.
- The project deals with early life and multi-generational risks for chronic respiratory diseases.
- Life-cycle fields have been central to Svanes' research ever since she wrote her PhD thesis on stomach ulcers. After this she moved into lung diseases, which is now her special field of expertise.



Professor Cecilie Svanes, Department of Global Public Health and Primary Care, University of Bergen (UiB).
PHOTO: EIVIND SENNESET

Marine project secures millions in EU funding

Hans Tore Rapp heads the EU project SponGES. The aim is to map the North Atlantic sponge grounds, which could yield environmental as well as medicinal gains.

Professor Hans Tore Rapp at the University of Bergen's (UiB) Department of Biology is the co-ordinator of the EU project *Deep-sea Sponge Grounds EcosystemS of the North Atlantic* (*SponGES*). An international team of researchers is to map and survey the sponge ground ecosystems in the North Atlantic.

"The objective is to build up a solid knowledge base that will allow us to preserve and at the same time enable the sustainable use and exploitation of the resources in sponge grounds areas. Sponge grounds are amongst the most diverse, ecologi-

cally and biologically significant and also vulnerable ecosystems of the deep sea," explains Rapp.

The research project is to receive EUR 10 million across a four-year period from the EU's largest research programme ever, Horizon 2020 (H2020).

Preserving the sponge

SponGES will develop an ecosystem-based approach towards the preservation and sustainable use of the deep-sea sponge field. This will be achieved through increased knowledge, innovation and the ability to foresee changes within the system.

"The only way to develop good conservation strategies for sponges is to have a good understanding of which species make up the ecosystem, where they are located and how

they connect with each other," says postdoctoral fellow Joana R. Xavier from UiB's Department of Biology.

Xavier has administrative responsibility for the project and will make sure that the different research teams involved in the project deliver their results within the planned timeframe. She will also be conducting research herself on the diversity and genetic variations among sponges.

An overlooked ecosystem

The sponge-dominated deep-sea environments are increasingly regarded as important ecosystems contributing to marine sustainability, which ultimately is a benefit to humans.

"Sponge grounds are among the most overlooked marine ecosystems. This is the first time that such a large interdisciplinary research project

has been set up to investigate them," says Xavier.

The researchers will map the whole of the North Atlantic, from Portugal and Florida in the south and further north into the Arctic regions. The UiB-led project involves 18 partners in total, including the renowned Bedford Institute of Oceanography and Uppsala University.

Moving the research frontier

The EU's evaluation of the project states that "the project will advance the research frontier and increase knowledge of sponge grounds and

of their potential for technological development, and inform us of how they should be assessed with relation to the management of vulnerable natural areas and marine resources."

"I believe that *SponGES* has the potential to force a paradigm shift in our understanding of biodiversity and of how it will be affected by future human activities in the marine environment," says Xavier.

"The project is, first and foremost, a pure research project," says Rapp, "but the research could also yield big environmental and medicinal gains." ▶

“The only way to develop good conservation strategies for sponges is to understand which species make up the ecosystem.”



INTERNATIONAL AMBITIONS: Hans Tore Rapp and Joana R. Xavier anticipate that *SponGES* will contribute to the setting up of international agreements and strategic tools for preserving the sponge ecosystems of the North Atlantic. PHOTO: EIVIND SENNESET

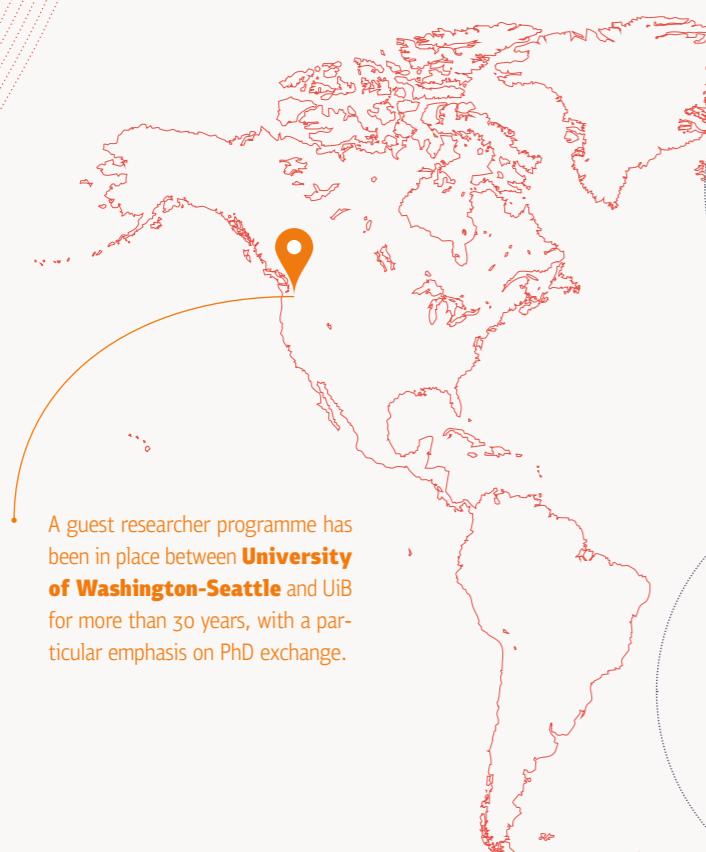
FACTS

SponGES

- *SponGES* is a research and innovation project funded by 10 million Euros over a four-year period through the EU's Horizon 2020 programme.
- The project's overarching goal is to develop an integrated ecosystem-based approach to preserve and sustainably use deep-sea sponge ecosystems of the North Atlantic.
- Professor Hans Tore Rapp at the Department of Biology at the University of Bergen is the coordinator of *SponGES*. Joana R. Xavier is administrative responsible for the project.
- *SponGES* had its kickoff meeting 19–21 April 2016.
- Project website: deepseaspanges.org

World Wide UiB

The University of Bergen (UiB) is a member of several international networks and organisations.



A guest researcher programme has been in place between **University of Washington-Seattle** and UiB for more than 30 years, with a particular emphasis on PhD exchange.

The **University of the Arctic** is a network of universities, colleges and other organisations committed to higher education and research in the north.

UiB is a member of the **World-wide Universities Network (WUN)**, which is made up of 18 research-intensive universities spanning 11 countries on 5 continents. UiB Rector Dag Rune Olsen is a member of WUN's partnership board.

In September 2015, **UiB opened a Brussels office**, which we share with the Norwegian University of Science and Technology (NTNU) and SINTEF.

UiB is a member of the **Coimbra Group and the Utrecht Network**. These two European-wide networks are important for our research and education collaborations in Europe and beyond.

In 2015, UiB and NTNU signed an agreement with Innovation Norway to establish a presence at the Norwegian Embassy in Tokyo, in order to **strengthen research and education collaborations between Norway and Japan**.

The Nordic Centre at Fudan University in Shanghai is a key part of UiB's outreach in East Asia. In 2013, UiB introduced a new bachelor programme in Chinese. Since 2014, UiB holds the leadership of the Centre.

The Nordic Centre in India is a consortium of leading universities and research institutions from the Nordic countries and is important for UiB's work in India.

UiB is a founding member of **Cape Town-based SANORD**, which currently has 42 member universities from countries in Southern Africa and the Nordic region.

In 2013, UiB celebrated **25 years of collaboration with Makerere University** in Kampala, Uganda, one of our main international institutional partnerships.

JOIN UiB ALUMNI!

Are you a former student from the University of Bergen? If so, then you are one of our alumni and part of the UiB community.

If you become a member of UiB Alumni, you can stay in touch with your alma mater and join in discussions with other members of our alumni community. As we build our global alumni network there may be an alumni meeting where you live. Also, there is the annual **Alumni Day** at UiB, which takes place in Bergen in September every year.

Interested in joining? Register at uib.no/alumni!



Q: What do you think is the key to succeed as a researcher?

A: You have to give up ideas when it is proven that they are in fact not good enough.

The Master Mind

The UiB Magazine interview: Kenneth Hugdahl

Statistically speaking, Professor of Psychology Kenneth Hugdahl should have been a drug addict. Instead, he became addicted to long jogs and research into auditory hallucinations.

In March 2016, Kenneth Hugdahl became the second researcher in Norway to receive the prestigious Advanced Grant from the European Research Council for a second time.

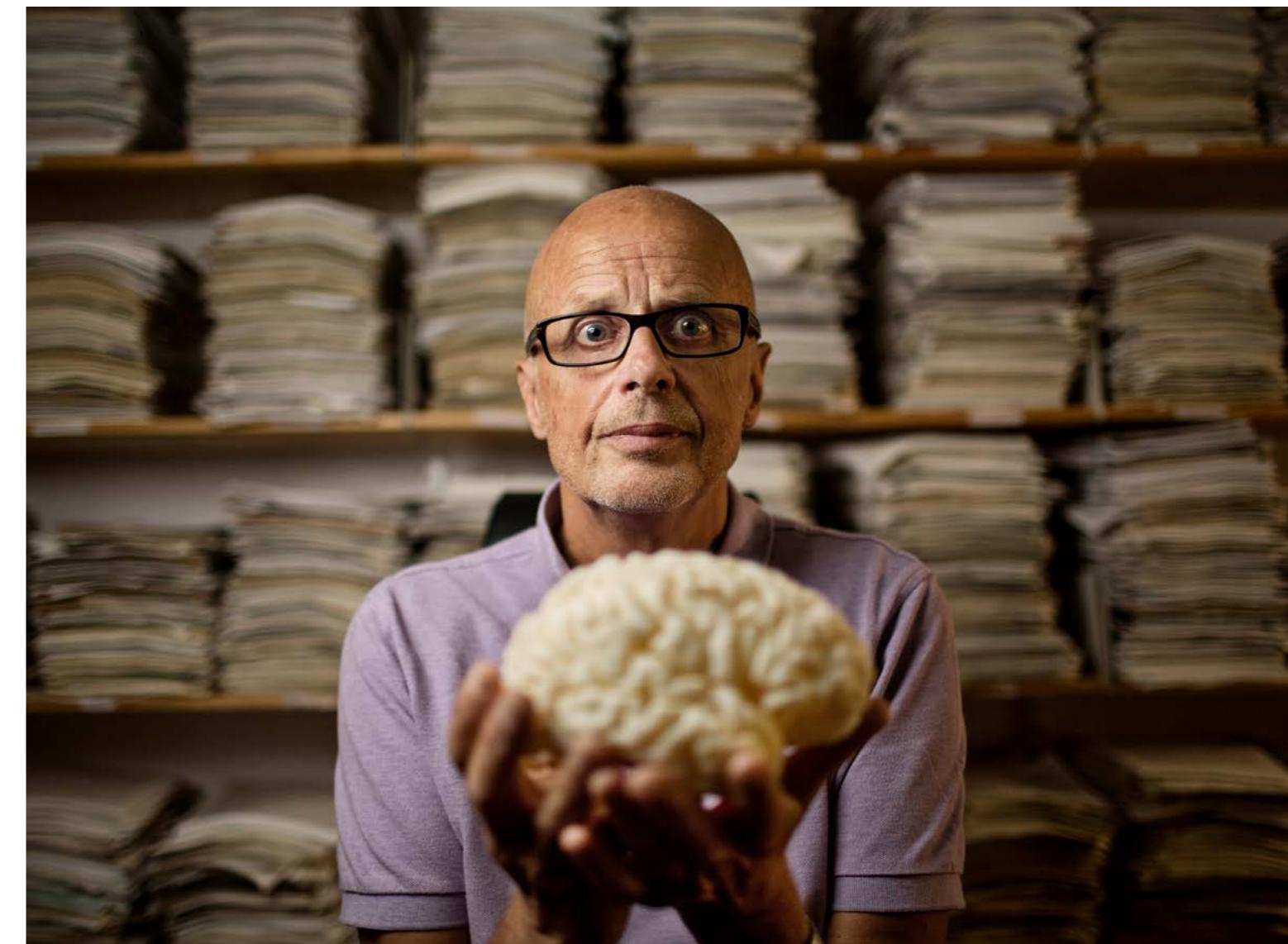
We reprint this interview with Hugdahl by journalist Silje Kathrine Svingum, known for her sharp showbiz celebrity portraits. She asked the excellent neurologist about what keeps him excited about his work after all these years in the research world elite.

During my entire career I have never been able to simply accept information when it comes to science. I have always searched deeper and deeper," says Professor Kenneth Hugdahl of the Department of Biological and Medical Psychology at the University of Bergen (UiB).

He is known for his extensive collaborations with researchers within psychology, neurology and neurosurgery. In spring 2014 Professor Hugdahl received an honorary

Meltzer Research Fund Award, which is only presented every fifth year to outstanding researchers at UiB.

However, the ultimate career highlights were in 2009 and in 2016., when the Swedish-born researcher was awarded the European Research Council's (ERC) Advanced Grant for a first and a second time. This is for his research into brain asymmetry relating to auditory hallucinations and schizophrenia. Hugdahl is only the second scientist in Norway to be awarded two Advanced Grants. Only



^

A MAN OF IDEAS: "Research is like sport. You want to be the first and best. That is a driving force that you have to be honest enough to admit. I have an ego and have always believed in myself," says neuroscientist Kenneth Hugdahl. PHOTO: EIVIND SENNESET

■ The best thing was to receive recognition that my thoughts about auditory hallucinations were new ideas. ■

Nobel Prize winner Edvard Moser has achieved this amazing feat before Hugdahl.

"For me personally, the monetary grant in itself was not the most important thing. The best thing was to

receive recognition that my thoughts about auditory hallucinations were new ideas. Receiving that recognition when I knew how tough the competition was – passing through the eye of the needle – was a huge thing," Professor Hugdahl reflects.

Voluntary guinea pig

As head of the Bergen fMRI Group, Professor Hugdahl and his team have developed a method in which test subjects have their brains imaged while at the same time being subject-

ed to dichotic (or double) listening. The latter takes place by both the right and left ears being subjected every third second to different, incomprehensible syllables at the same time. The test subject must then identify these sounds. If you are healthy, you report the majority of correct answers from the right ear. If you have schizophrenia, you are unable to report any correct answers. The MRI scan has shown different blood flows through the brain for those who are healthy and those who are sick. The ▶

► hypothesis is that schizophrenia, and particularly auditory hallucinations, are a form of brain damage.

"I was myself the first person in Norway to have my brain examined with a functional MRI. I volunteered," Professor Hugdahl says.

The jogging-mad figure dressed in black gesticulates whilst sitting in his impeccably tidy office at the Department of Biological and Medical Psychology. It is here, on the ninth floor of a building at Haukeland University Hospital, that Professor Hugdahl has his den, with a casting of his own brain, a ton of scientific articles in straight rows and a desk that puts the myth of researchers having chaotic offices to shame.

There is an enthusiasm surrounding Professor Hugdahl that is hard to resist. Reports from previous students and colleagues both at UiB and internationally indicate that it is not always smooth sailing. In previous times he was notorious for his brutal use of red correction pen. He now works digitally, however, he still demands maximum effort. This gives results.

"I am most proud of the work we have done in the past five-six years. We have discovered that auditory hallucinations are clearly associated with damage to the left temporal lobe where the nerve cells trigger something by themselves which makes the patients hear sounds that cannot be heard with the ears. For a schizophrenia patient, something is triggered at nerve cell level. However, that is where our knowledge currently stops. We do not know what makes the patients hear sounds or whether it is, for example, a genetic programming error."

"What questions would you like to see answered?"

"Now there is too much of a focus on the research aspect. We are in the process of forgetting the ideas."

Demanding, loyal, impatient. Professor Hugdahl agrees with these characteristics given to him by research partners and former students.

"The impatience is because I want to get things done," he emphasises.

"So you don't have a Friday beer to relax and unwind?"

"No. I have never been out on Fridays drinking beer with friends, or refurbished sailboats. I have never had a hobby."

However, Professor Hugdahl confesses to having a past as a golfer. He took both a course and private lessons when he moved to Bergen for a professorship in 1984. Six months later he threw away his clubs for good. His swing was hopeless. Professor Hugdahl chuckles a bit.

"Talk about impatience! But, if you cannot master the basic movement you can never play golf. It just becomes a joke. When it comes to things I am not able to master, I do not continue when it just becomes absurd," says the neuroscientist

Professor Hugdahl does not discount that this is why he has had success. He is not the type of researcher who is so in love with his own ideas that he becomes bogged down.

"You have to give up ideas when it is proven that they are in fact not good enough. I probably have a lower threshold than many colleagues for giving up my ideas when they do not produce results."

Fearing the death of ideas

The brain expert believes that science is simple. It is all about having an idea. He himself gets his ideas when he is out jogging. He believes that anyone can have ideas. They are free. You do not need either financial grants, a laboratory or anything at all. However, research requires funds.

The Meltzer Research Fund Award winner fears that researcher talents are lost in this development.

"Now there is too much of a focus on the research aspect. We are in the process of forgetting the ideas. To receive a research grant it will soon be more important that I can set up a list with a number of researchers I will collaborate with and that is the size of a small Norwegian town, rather than there being any good ideas in the project I am seeking a grant for," scoffs Professor Hugdahl.

"We have become so focussed on the importance of networks and large researcher groups. It blinds us. How big were the networks and collaborative groups that Einstein and Darwin had? Or Newton? The most important discoveries in history come from the *thought process*. It is true that the world is different now, but there is a political bias. We overestimate the belief in research and underestimate the belief in science."

Harsh discipline

That Professor Hugdahl would become a neuroscientist was not something that was on the cards.

"I was adopted. Statistically speaking, I should have been a drug addict rather than a professor," the researcher analyses half-ironically

As the child of a single mother he was placed in a foster home when he was five months old, but was, however, not adopted by foster parents until he was almost a teenager. His foster family had no education and Hugdahl believes that he would not have had any either if it had not been for the militant gym teacher who insisted on calling him by his birth name of Karlsson even though he had used the name Hugdahl even before he had been formally adopted. The

FACTS

Kenneth Hugdahl

- Born 15 January 1948 in Östersund, Sweden.

- Married to Märít Hugdahl, with whom he has the daughters Anna and Emilia. Four grandchildren.

- Professor of biological psychology at the University of Bergen (UiB) and head of the Bergen fMRI Group.

- Neuroscientist with special focus on brain asymmetry and how this can be applied in the understanding of dyslexia and speech-related problems, including understanding auditory hallucinations due to schizophrenia.

- In 1993 he commenced research with functional magnetic resonance imaging (fMRI) of the brain together with colleagues at UiB and Haukeland University Hospital.

- He has produced more than 300 scientific articles and six books.

- Among his publications are the book *Psychophysiology: The Mind Body Perspective* (Harvard University Press, 1995).

- In 2009 he was awarded the prestigious European Research Council (ERC) Advanced Grant. In 2016 he was awarded the Advanced Grant for a second time. This accolade is one of the most prestigious awards from among the EU's research programmes.

- Co-founder of NordicNeuroLab in Bergen, which produces equipment for conducting neuroimaging. The company is now a world leader in its field.

- Read about the Bergen fMRI Group: fmri.uib.no

self. Nobody can do that for you. In the sixth grade I had a fantastic teacher and made a decision. I was going to be the best at school. And I was."

Professor Hugdahl used the same method when he decided to stop smoking 30 cigarettes a day. Sudden stop. That very day. The ex-hippy quotes Nike:

"Just do it."

"Do you mean that you have to pull yourself together?"

Professor Hugdahl vigorously shakes his head.

"Absolutely not!!! I am actually quite soft. I have none of that "pull yourself together and do something with your life" attitude. Quite the opposite: I give to beggars on the street."

This generosity is perhaps a type of repayment. He still cannot understand that UiB awarded a professorship to a 36 year old, which was unusual at that time, and that even those with the highest titles treated him like an equal. The elitism he experienced in his home country was absent.

His wife Märít is credited for the couple seizing the chance and moving to Bergen. She had read in the magazine *Alt om Mat* (literally "Everything about Food") that Bergen had such good, fresh fish.

"The rain then?"

"It has never worried me. I operate just as well in the rain as in the sun. Bergen and UiB were love at first sight. It is a fantastic place."

"Is it possible for a researcher to surrender himself to love?"

"A researcher is a completely normal person. A researcher has love, anger, jealousy, gluttony..." answers Professor Hugdahl before he bursts into laughter and gleefully adds:

"All of the seven deadly sins." ▶

Terje Tvedt's World of Water

The Summit of the World Economic Forum in Davos, which concluded in January 2016, placed water at the top of its list of the ten greatest challenges facing the global community in the future. In 2015, NATO's largest exercise since the end of the Cold War, SOROTAN, used as its scenario a conflict over water. No one doubts that water is important, but some people realised this fact long before others.

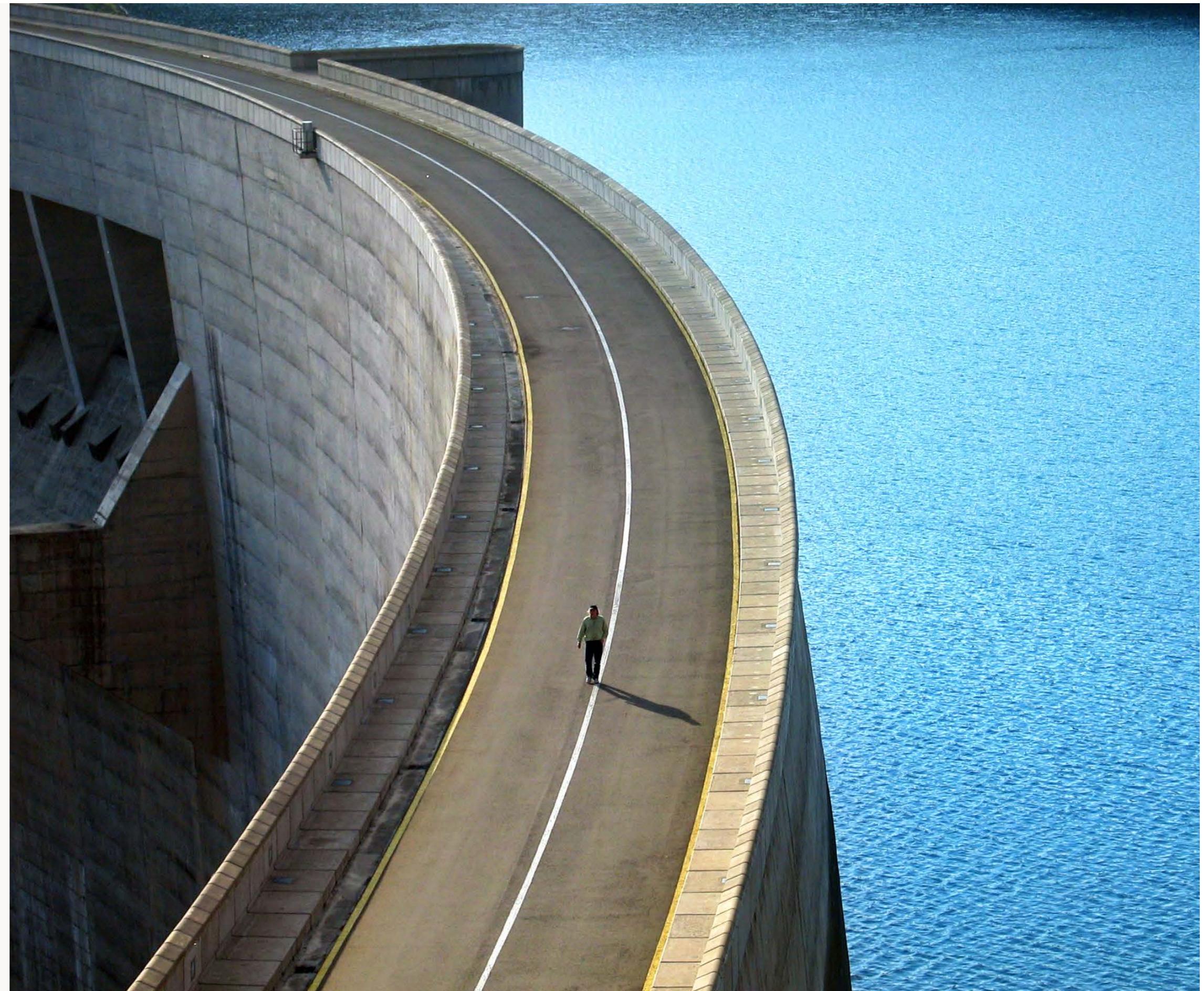
Professor Terje Tvedt at the University of Bergen's Department of Geography has been researching water for several decades. His interest in water began when he was a student in Bergen during the 1970s. As a student, he used to drive around in an old VW camper van. Every time it rained, water would come through the floor of the van, forcing him to wear wellies. One day as he looked down, he realised he had been wearing wellies for the whole semester.

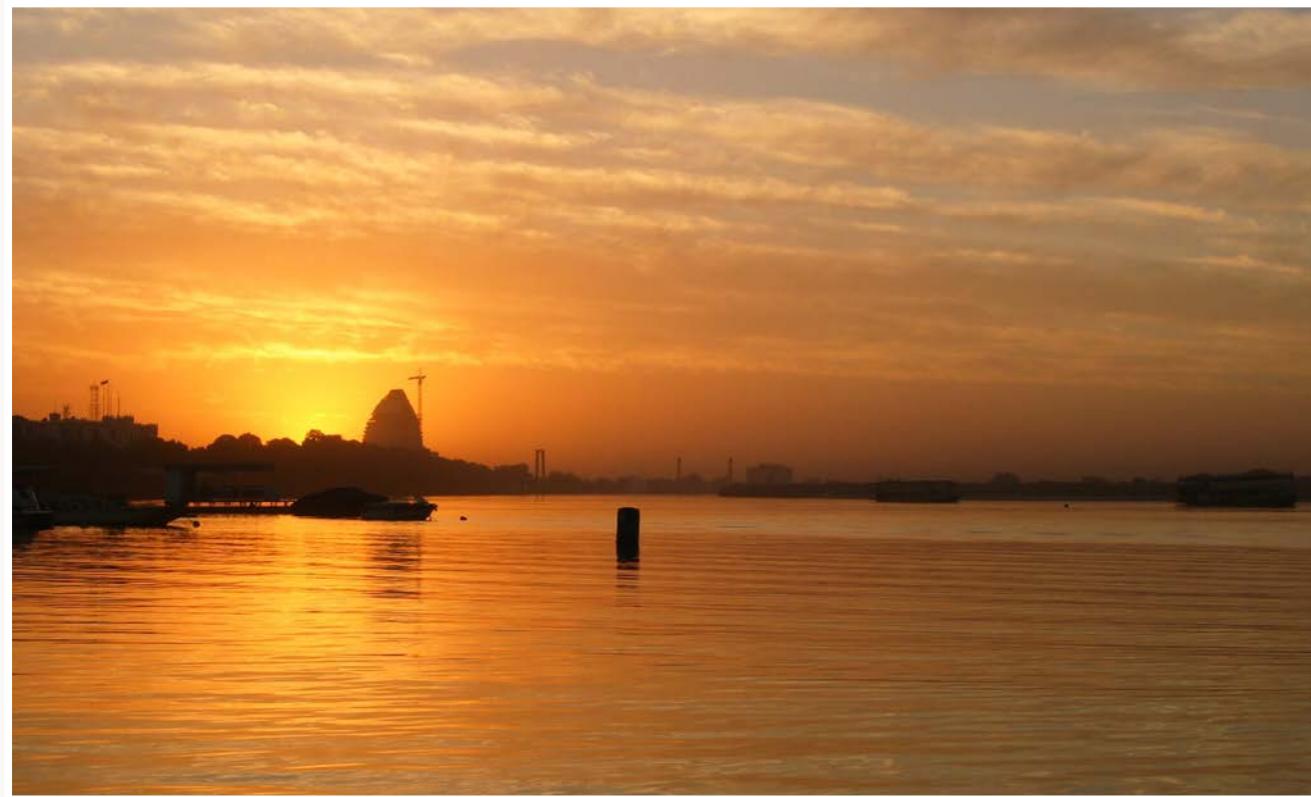
"I got a water shock. But the shock led to an 'aha' moment as I realised how water controls such a large part of people's lives. I began to appreciate more and more that water plays an extremely important role in how people organise their lives and where they choose to settle. Which is also how water comes to be so important in the field of geography," explains Tvedt.

Since his student days, Tvedt has travelled back and forth across the globe researching water, and has become, amongst other things, a world-leading expert on the Nile. His focus on water has resulted in several critically acclaimed books, a nine-volume work on the history of the Nile and award winning TV documentaries. In summer 2016, Tvedt will act as scientific leader for the Bergen Summer Research School (BSRS), for which water will be the theme.

UiB Magazine takes pleasure in presenting some of Tvedt's own photographs from his travels around the globe chasing water.

WATER WAR: Professor Terje Tvedt at Lesotho's Katse Dam. South Africa attacked the dam in 1989, unwilling to give up its right to the water from the Lesotho Highlands, the very lifeline of the Johannesburg region.





^ THE NILE'S MEETING POINT: In Sudan's capital city, Khartoum, the White Nile, which originates in the large lakes in central Africa, meets the Blue Nile, originating in the Ethiopian Highlands. Sudan holds a key position in the struggle for control of the Nile.



^ THREAT TO WATER STOCKS: Here we see Terje Tvedt together with glacier researchers working at the Sermilik Fjord on Greenland's eastern coast. The area has assumed a central role in global politics owing to the fear that 10 per cent of the world's water mass could melt and flood parts of New York, New Orleans, Bangladesh, and the Netherlands.



^ BIG WATER: The Iguazú Falls on the border between Brazil and Argentina. Iguazú means "big water" in the native language of the Guarani people, who dominated the area before the arrival of the Europeans. The Iguazú Falls consist of 275 drops in the same location, ranging from 60 to 82 metres in height.



^ PRAYING FOR RAIN: The Water Festival at Vilagarcía de Arousa on the northwest coast of Spain. The festival starts every year on 16 August. The tradition began about 20 years ago following a long drought. The faithful prayed for rain, and it rained.



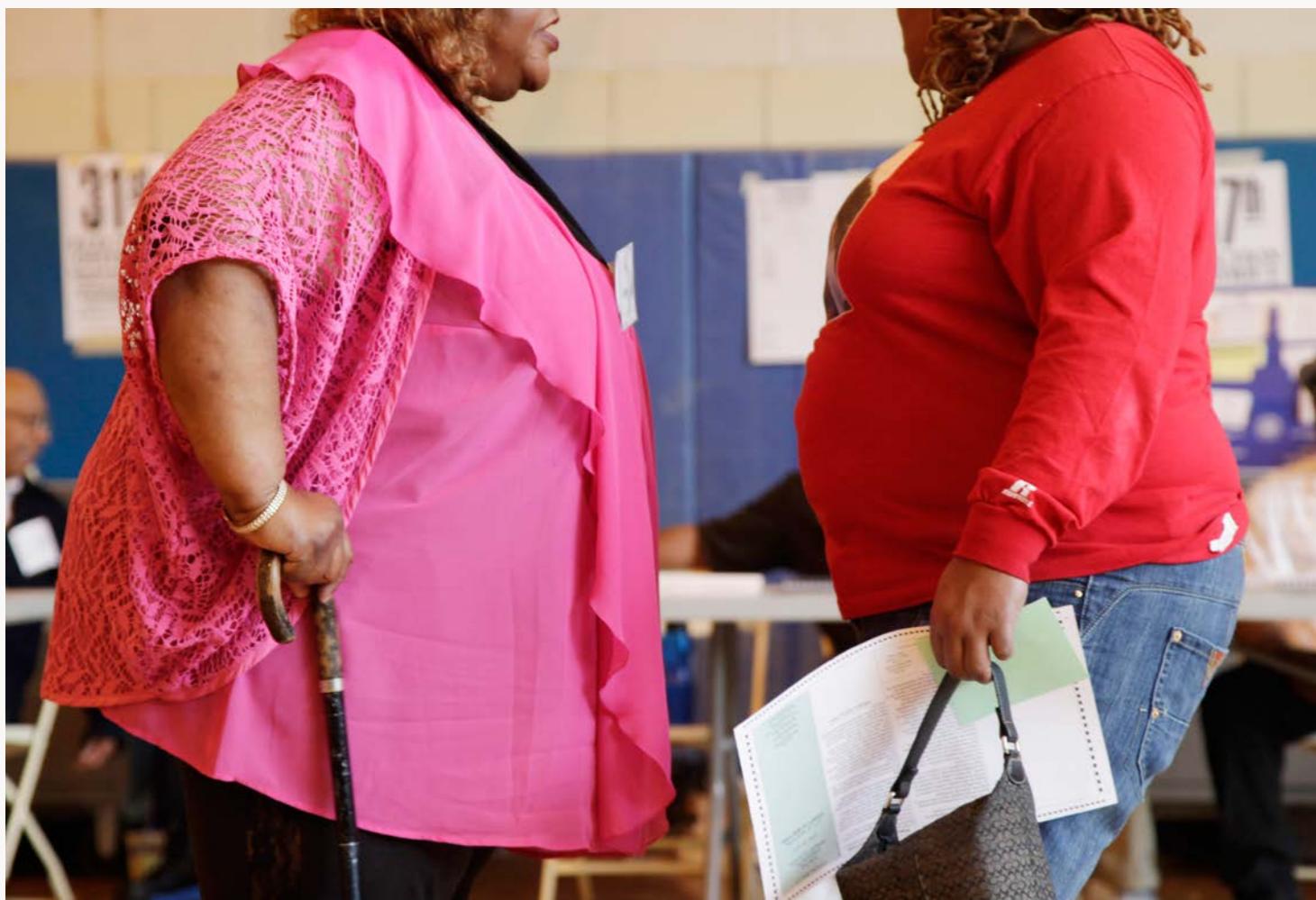
▲ GIANT CANAL: Here they are building the first of three giant canals which will carry five per cent of the Yangtze River's water to China's northern provinces. As the largest engineering project in world history, it will cover half of China, is due for completion in 2050.



▲ SPRING OF YOUTH: Yamdrok Tso lies at a height of roughly 5,000 metres. Pilgrims flock here every summer to pray and receive blessings. They believe that the waters of the lake make the old young and the young wise, and that the lake is home to the very life force of the Tibetan nation.



▲ LIFE AND DEATH: View from a hot air balloon near the Valley of the Kings and the temple at Karnak in Luxor. Here you can clearly see how the Nile makes the difference between life and death in the desert landscape.



HUNTING CANCER CELLS: Statistical data shows that obese people tend to be more cancerous than people of average weight. Researchers at the University of Bergen study how cancer cells affect obese people. ILLUSTRATION PHOTO: MARK LENNIHAN/AP/NTB SCANPIX

Linking obesity and cancer

Nils Halberg leads a research group to find out how obesity is connected to cancer.

Nils Halberg moved to Bergen as a result of Professor James Lorens' search for candidates suitable for the Bergen Research Foundation (BFS) Recruitment Programme.

Intimate research relations

"Bergen represents a unique place in the sense that the distance between basic and clinical science is fairly short, as we work close to each other

and to the patients," says Halberg about the intimate work environment at the Department of Biomedicine at the University of Bergen (UiB) which he has now joined.

"As a researcher you are allowed to do a lot of research directly related to patients that is not allowed or is difficult anywhere else in the world."

Halberg has performed leading edge research at institutions like the Rockefeller University, where he fin-

ished his postdoctoral fellowship, and the University of Texas Southwestern Medical Center. He has also published several articles in high impact scientific journals such as *Nature*, mainly on the cellular machinery that drives metastatic colonization.

Studying cancer risk in obese people

Thanks to the BFS grant, Halberg has built his own research group with the ambition of finding the link between

obesity and cancer. According to statistical and epidemiological data, there is a clear link between obesity and some types of cancer, for instance uterine cancer. But currently we know very little as to how these two disease states interact.

"To date, nobody knows why there is a connection between obesity and cancer. The ambition of my research group is to find answers to this, without any foregone conclusions or biased hypotheses," says Halberg.

Suspicious genes

The focus of the research in the lab is how the cellular mechanisms of the cancer cell are affected by obesity. This is the hard and risky part, but is also where the researchers can get such detailed knowledge to enable them to target it therapeutically.

Halberg and his team have started out by analysing RNA from tumours in real patients. Computers help the researchers to single out 10 to 20 suspicious genes from 42,000. These genes are currently being tested in obese mice, to see if they are relevant to the cellular mechanisms like signalling and hormone receptors that can lead to cancer.

Diversified treatment

Halberg says he did not only become interested in obesity and cancer because the connection represents a new field of research and is an unresolved puzzle. One of his motivations is also to offer better cancer treatment.

“To date, nobody knows why there is a connection between obesity and cancer.”

"Right now, cancer patients are treated the same regardless of their state of obesity. I think it is not far-fetched to suggest that since the cellular environment in obese patients is different from that found in non-obese patients, the cancer is also different. This means that you cannot use the same treatment for both," says Halberg.

"Because of the large numbers of obese people in the western world, there is a direct link to how our research can benefit a large group of patients."

Extending the level of his research

Halberg has two PhD candidates and a researcher connected to his research group. His group is part of the larger Cellular Networks Group (CELLNET), headed by James Lorens.

Now, Halberg wants to expand his own group. He aims to build his own Halberg Lab, to involve more personnel in the research, and to place the issue of obesity and cancer on a more detailed level. He also wants to expand his research from uterine cancer to include kidney and breast cancer, which are also connected to obesity.

"I hope that future grants will allow us to hire more personnel and take the original questions from the BFS funded research further. That will really allow us to focus on these mechanistic issues," says Nils Halberg.

"I would like to establish a group in Bergen of five to six people. With this,

I want to plant a flag. So when people ask about the connection between obesity and cancer, the answer is: look at this group's papers." ◊

FACTS



Nils Halberg

- Nils Halberg is part of the CELLNET group, led by James Lorens of the Department of Biomedicine.
- Halberg graduated with a PhD from the University of Copenhagen and UT Southwestern in Dallas. His thesis was on the link between obesity and diabetes 2. After this, he was a postdoctoral fellow at Rockefeller University in New York.
- He received a grant from the Bergen Research Foundation (BFS) Recruitment Programme in 2015. The grant allows him to build on his postdoctoral work.
- CELLNET website: uib.no/en/rg/cellnet

Applying new thinking to the field of family economics

She was the girl who always finished her maths book in August, before the first month of the school year was even over. Today, Katrine Vellesen Løken is the youngest ever female professor of economics in Norway.

In 2015, at the age of 31, Katrine Vellesen Løken at the University of Bergen's (UiB) Department of Economics became Norway's youngest woman professor of economics.

She tells how she was always good at school, having a good routine and working hard. However, the driving force behind her research has been a desire to make a difference.

"I hope that my research can have some influence on the shaping of

policy, both inside and outside of Norway," says Vellesen Løken.

A researcher with political impact

Indeed, her research has already had an influence on significant political decisions. In Nepal, the government

are now bringing in new treatment measures for premature babies weighing under 1,500 grams, thanks to one of her articles published in the world's most prestigious economics journal, the American Economic Review.

"The conclusion is that there are positive and significant long-term consequences for the child when the mother spends the first six months of the child's life at home," she says.

"Beyond those six months, maternity leave has no effect upon the child, except from a socio-economic perspective. After this time, the child could just as well be with its father or grandparents as with its mother."

Using large data sets

Vellesen Løken studied large data sets relating to family economics, working life and child development. A lot of her work concerns parental leave taken in Norway. One particular aspect of her research focused on the effects of the paternity leave reform which was introduced in 2003. Her study was based on register data from Statistics Norway (SSB) and led to another article which was published in the American Economic Review.

"Paternity leave is contagious. Colleagues were far more likely to take paternity leave in those workplaces

FACTS



Katrine Vellesen Løken

- Professor at the University of Bergen's (UiB) Department of Economics.
- Norway's youngest woman professor of economics ever.
- She has made her mark with pioneering studies in the field of family economics.
- Was awarded the university's Meltzer Prize for young researchers for 2014.

"I hope that my research can have some influence on the shaping of policy."

social consequences for those who remain in prison and those who get released, and how things go for the family, friends and colleagues of the inmate.

New discipline within economic research

Family economics is a relatively new field within the discipline of economics. It originated in the 1970s and gained enormous popularity at the beginning of the 2000s after the field was brought to prominence by Nobel Prize winner Gary Becker. The field of study is influenced by other disciplines such as sociology and medicine, and has acquired a multidisciplinary character. Vellesen Løken encourages others to study, research and work with social economics, not least of all with family economics.

When Dad is in jail

In 2015 the newly fledged economics professor was also allocated NOK 7 million from the FRIPRO programme run by the Research Council of Norway to study the consequences for families and children when the father is locked up in jail.

"When someone is sitting in a courtroom, the punishment meted out can be a matter of chance. Because some judges are less lenient than others, the same crime can, in practice, receive different sentences," says Vellesen Løken, who continues:

"I intend to study how variations in prison sentences affect the children of inmates."

The economics professor is working from a hypothesis based on previous research on two opposing tendencies found amongst children with incarcerated fathers.

"Things can either go badly for the child because the father is an important role model, or it can be a good thing that the father is absent, simply because he is a criminal. But it is not obvious what the result of the study will be," explains Vellesen Løken.

She will match data from the courts with prison registers to see how different court judgements for the same sort of crime can have different consequences. Aside from the children, she will also research the

"At university, you see a much closer relationship with other disciplines, especially sociology."

Think results, not perfection

In the course of her career, Vellesen Løken has published articles in the five most prestigious economics journals in the world. She believes that the recipe for her success has been to write quickly without being too worried about everything being perfect.

"I know of many people who have stagnated because they felt their writing would never be good enough," says Vellesen Løken. "Learn to say 'stop' and move on, even if, now and then, not everything is quite spot on."



Skeletons reveal history

Using skeletons, biological anthropologist Stian Suppersberger Hamre studies the food and travels of Scandinavians who lived 1000 years ago.

Migration is not a modern phenomenon in Norway or in Scandinavia. Norwegian cities were inhabited by people from different parts of the country and by immigrants from Europe and probably even further away than that," says Postdoctoral Fellow Stian Suppersberger Hamre at the Department of Archaeology, History, Cultural Studies and Religion at the University of Bergen (UiB).

Using DNA and isotope analysis, Suppersberger Hamre has studied the composition of populations in Norwegian towns in the research project 'Immigration and mobility in mediaeval and post-mediaeval Norway', funded by the Research Council of Norway's SAMKUL programme.

A brief history of food

In his new project, 'Immigration, mobility and population composition in pre-modern Scandinavia', for which he has once again applied for SAMKUL funding, Suppersberger Hamre wants to look at the composition of the populations in Bergen, Århus and Gothenburg in mediaeval and early modern times. By doing analyses of skeletons, he can find out, among other things, what food people consumed.

"Diet not only shows us what people ate and what types of animals were available, but it also reveals a lot about the culture and social circumstances at a certain time in history," says Suppersberger Hamre.

He explains that an individual person's diet can reveal what social status they had or what religion they belonged to. The diet can also reveal where people were born and

where they moved to during their lifetime. In addition, it can reveal if the migrant integrated new customs and food traditions when travelling to new places.

"Bergen used to be a large trading town and people migrated from many places and brought with them a lot of customs and

It is possible to recreate individual life stories from the Middle Ages.

"By analysing skeletons it is possible to recreate individual life stories from the Middle Ages."

Showing personal history

In spring 2016, Suppersberger Hamre was one of the invited speakers at the Christie Conference in Bergen, where he presented an individual's migration story in thirteenth century Bergen.

In September 2016, the Bergen City Museum hosts an exhibition about the pre-modern population of Norway. Model makers from England have made reconstructions of three pre-modern individuals based on their skulls. Knowledge of human musculature and skeletons, computer skills, gene information and the use of 3D printers have combined to make it possible to replicate the persons in question.

"In addition to the displaying models of these persons, we will tell their individual histories," the researcher explains.

Completing the picture

Suppersberger Hamre has access to the skeletons from museums and archaeological excavations. He also uses archaeological and written historical sources.

"By combining data from skeletons and other historic materials, the historical picture of the Middle Ages and the way ordinary people lived becomes more complete," Stian Suppersberger Hamre says. ▶

ANALYSING SKELETONS: Stian Suppersberger Hamre can tell what people of the Middle Ages ate by studying their skeletons. PHOTO: EIVIND SENNESET



Is the EU lost in translations?

Do sour cherries escape customs duty? Or is that sweet cherries? Knowing what is or isn't the correct letter of the law can be a nightmare in the EU. Especially when legislation is translated into all 24 official EU languages.

In 1993, the German preserves and condiments manufacturer Lubella imported three lorry loads of sour cherries from Poland. When the lorries were stopped by customs officials between the two EU countries, the German importer was ordered to pay customs duty for the produce.

However, the German preserves manufacturer refused to accept the customs duty, because the German version of the corresponding EU law clearly stated that only sweet cherries were subject to payment. The problem for the German importer was that the law in all the 23 other official EU languages stated the opposite – that sour cherries are subject to customs clearance.

From linguistic to legal challenges

Thus the matter ended in the European Court of Justice (ECJ), which found that this was a case of a translation error in the German version of this particular EU regulation. Still, this underlines how a small matter went from three small lorry loads all the way to the top of the EU legal system. And that was not the only time it has happened.

"In some cases, the European Court of Justice faces much more

complex linguistic challenges and more serious consequences than those faced in the Lubella case," says Associate Professor Christian Franklin at the University of Bergen's (UiB) Faculty of Law.

One year there was a joke going the rounds about Latin being introduced as the official EU language.

Franklin is an expert on how the ECJ resolves linguistic divergences that arise between EU law texts in different languages.

"Linguistic diversity does not only lead to translation problems. In the worst case it can lead to diverging interpretations and applications of EU law at the national level," he explains.

Eurobabble

The root cause of the linguistic challenges faced by the EU is the principle whereby the union is obliged to respect the culture, history and language of each member state. When

the EU was founded as the European Economic Community (EEC) in the 1950s, it was only a matter of six member states and four different languages.

At present the EU consists of 28 member states, with 24 different languages. All EU citizens have a right to address EU institutions in their native language, including the right to access documents and legal texts. Thus all laws and regulations are translated into all 24 languages. This also affects the European Economic Agreement (EEA). For instance, 20 per cent of Norway's legal framework is now derived from EU law.

To address these cross-cultural challenges, the EU currently employs 600 full-time translators and 3,000 freelance translators. In addition, the EU has 2,000 linguists at its disposal and also uses simultaneous translations extensively at the ECJ.

All EU laws, treaties, secondary legislation, regulations and directives are translated into 24 languages, and are all equally valid, or legally binding. In addition to the two EU treaties, every year 2,500 legally binding texts are published in all 24 languages. If a legal text is written in one language, it needs to be translated into the 23 other official languages.



Associate Professor Christian Franklin, Faculty of Law, UiB.
PHOTO: VERONICA LIOSHEIM



"These translations are time consuming and cost several hundred million Euros a year," says Franklin, "despite the fact that all member states are committed to reducing the EU budget, particularly following the financial crisis."

One language, one Union

According to Franklin, some progress has been made in trying to do something about the linguistic challenges faced by the EU.

"In practice, the European Commission communicates in English, German and French. In the day-to-day work at all of the EU institutions, mainly English is spoken, except at the European Court of Justice, where French is the working language," says the law researcher.

Franklin is in no doubt about what needs to be done to get out of the linguistic limbo Brussels currently finds itself in.

"The best solution would probably be to introduce one official language, and English is the language known and used by most people," he points out.

Proposals to limit the number of EU languages have surfaced repeatedly. For instance, the United Nations has 193 member states, but only six official languages. However, a number of political and legal problems arise every time the idea of one EU language is suggested. In addition, the EU member states find it hard to agree on a lingua franca.

"One year there was a joke going the rounds about Latin being introduced as the official EU language," chuckles Christian Franklin. ▶

FROM THE TOWER OF BABEL TO THE MODERN DAY EU: When the European Court of Justice rules on a translation issue, there is no right of appeal. However, due to different interpretation practices, the final outcome of the court's ruling can be hard to predict. PHOTO: JAMES BURGER/NTB SCANPIX



INNOVATIVE EDUCATION IN MEDIA: Experimenting with drones to improve everyday life for journalists is part of a New Media course at the University of Bergen.
PHOTO: ØYSTEIN SØBYE/NTB SCANPIX

Media students become drone experts

The University of Bergen uses drone experiments to help educate tomorrow's media workers.

Drones are set to become a billion dollar industry in Norway. Through its course on drone programming for journalism, the University of Bergen (UiB) is one of the very first educational establishments in Europe to offer drone courses for media students.

"Drone films often suffer from an amateurish quality. We will assist in the process of turning drones into a serious and safe journalistic tool,"

says Professor Lars Nyre from the Department of Information Science and Media Studies.

The course is part of the Bachelor Programme in New Media.

The programme contains an experimental and creative course which already looks at everything from apps to smart watches and virtual reality, and is now taking on drones.

"Filming with a drone is unbelievably physical. A lone journalist can

find themselves using a camera rig which up to now has been unthinkable without a Hollywood budget," says Nyre.

Innovative journalism

Students experiment with drones as part of the course. They develop new programmes for sound and images, which are then tested in practice; the idea being to research drones as a journalistic tool.

Filming with a drone is unbelievably physical.

"This course is very exciting precisely because it is so experimental. It's great to be working so closely with researchers in our workshops," says undergraduate student Audun Klyve Gulbransen, who continues:

"The practical aspects of the course help us to quickly identify new areas of use and applications for the projects we are involved with."

In addition to programming, the course also teaches students how to think from the perspective of journalism.

"The projects that these students are undertaking can make important contributions to the future development of documentary and innovative journalism," says Professor Astrid Gynnild at the Department of Information Science and Media Studies.

She manages the international research project ViSmedia involving drones and other visual surveillance technologies used in the news media.

Attractive candidates

Gynnild believes that these students will become attractive candidates for the news media and other business industries.

"Since innovation will play an increasingly important role in the journalism of the future, it is important that research into new technologies is included as part of a professionally orientated media education. These students will apply their skills in a variety of technological arenas, not just in the field of media," she says.

At the end of their programmes the students will gain experience in a company, where they will get a feel for innovation in real life. Nyre is not concerned that the students will be unemployed after they graduate.

"We have figured out that technological skills are becoming increasingly valued. The combination of being able to program and of having experience of innovation will be attractive to editorial staff," says Nyre, who adds:

"The industry has a need for employees who can turn around and think outside the box, and come up with new things after a few years."

FACTS

Drone Course in New Media

- The Bachelor Programme in New Media at the Department of Information Science and Media Studies now has a technical course in drone programming for journalism and the use of smart drones.
- The drone course is experimental and will stimulate students and teachers alike in the innovative use of camera work with smart drones with its visually technical challenges.
- Drone filming in the media is, in part, characterised by its amateurish quality and stories of things going wrong. The drone course at the University of Bergen (UiB) will assist in turning drones into a serious journalistic tool.
- The course is group-based, but at the end of the bachelor programme, every student will gain experience in a company where they will practise innovation in a real work situation.
- New Media fits into the future educational pathway at UiB and will be part of Media City Bergen from 2017.



Professor Lars Nyre, Department of Information Science and Media Studies.



Professor Astrid Gynnild, Journalism and Media Studies, Head of the Journalism Programme, Department of Information Science and Media Studies.



Student Audun Klyve Gulbransen, Department of Information Science and Media Studies.

ALL THREE PHOTOS: KIM E. ANDREASSEN



PHOTO: BRUNO SENNET

Pioneering steroids research

The use of anabolic steroids has been linked to both violent aggression and suicide. In Dominic Sagoe's PhD the use of steroids has been mapped worldwide for the first time.



Dominic Sagoe

- **From:** Amisano near Elmina, Ghana.
- **Title of dissertation:** "Nonmedical anabolic-androgenic steroid use: Prevalence, attitudes, and social perception".
- **May 2015:** PhD graduate at the Department of Psychosocial Science, University of Bergen (UiB).
- **What is he doing now?** "I was lucky to finish my PhD in two years and four months instead of four years. I am currently working on a postdoctoral project at the Faculty of Psychology at UiB."

What are anabolic steroids?

"Anabolic steroids are synthetic forms of testosterone, the male hormone produced in the testicles. They are prescribed legitimately to treat some disorders, including HIV/AIDS patients and cancer sufferers who have lost muscle mass. Anabolic steroids lead to increased production of protein and muscle growth. Healthy people use steroids mainly to develop bigger and stronger muscles."

How would you describe the typical user?

"Previously the typical users were athletes, especially bodybuilders. But while there has been a clampdown on the use of anabolic steroids in sports, steroid use has become more widespread. The typical users today are found in recreational sports: not professional athletes but people who

go to the gym to exercise. In social media being muscular is increasingly portrayed as the very definition of masculinity."

What is the situation like in Norway?

"In our analysis of the Nordic countries, Norway came second after Sweden in terms of steroid use, followed by Finland, Iceland, and Denmark. Steroids seem to be popular among athletes, but also among drug users and criminals."

What is the status of anabolic steroid use worldwide?

"While other drugs have been studied, we had no idea of the steroid use situation around the world before I started my PhD. Interestingly, it turns out that the Middle East countries are the world's foremost users of steroids: Iran, Jordan, United Arab Emirates, and Iraq. In the Middle East steroids are easily available

for purchase without a prescription. If we look at the relationship between steroids and violence together with

users of anabolic steroids, maybe because the drugs accelerate male features such as facial hair."

What makes your research important?

"Both social and print media are influencing the standards for what is perceived as the ideal body. My work is about informing the public about the harms of steroids, and to come up with ideas to prevent use and to deal with harmful side effects."

It seems like this will be an important topic in the future?

"Yes, this is an emerging area. My addiction research group has received international attention for our scientific work on the use of steroids. I have been offered a visiting position at the Centre for Public Health, Liverpool John Moores University in the UK. I am really happy that our research here in Bergen is generating international interest."

3.3 per cent of the world's population have used steroids at least once.

How did you get interested in addiction?

"This was shaped by my environment. Growing up in Ghana many of my friends and peers slipped into drug use: alcohol, marijuana, cocaine and so on. It was striking to see the effect the drugs had on them. I decided to study drug addiction to be able to help people back home. So I went back to Ghana and did interviews with them, and we established a football club where we brought addicts together to talk about the harms of drug use and help them recover."

Where do you see yourself in ten years' time?

"I look forward to teaching, researching, giving lectures all over the world, and also doing some consulting. I still want to be in academia and I want to share my knowledge with people who need it." ●

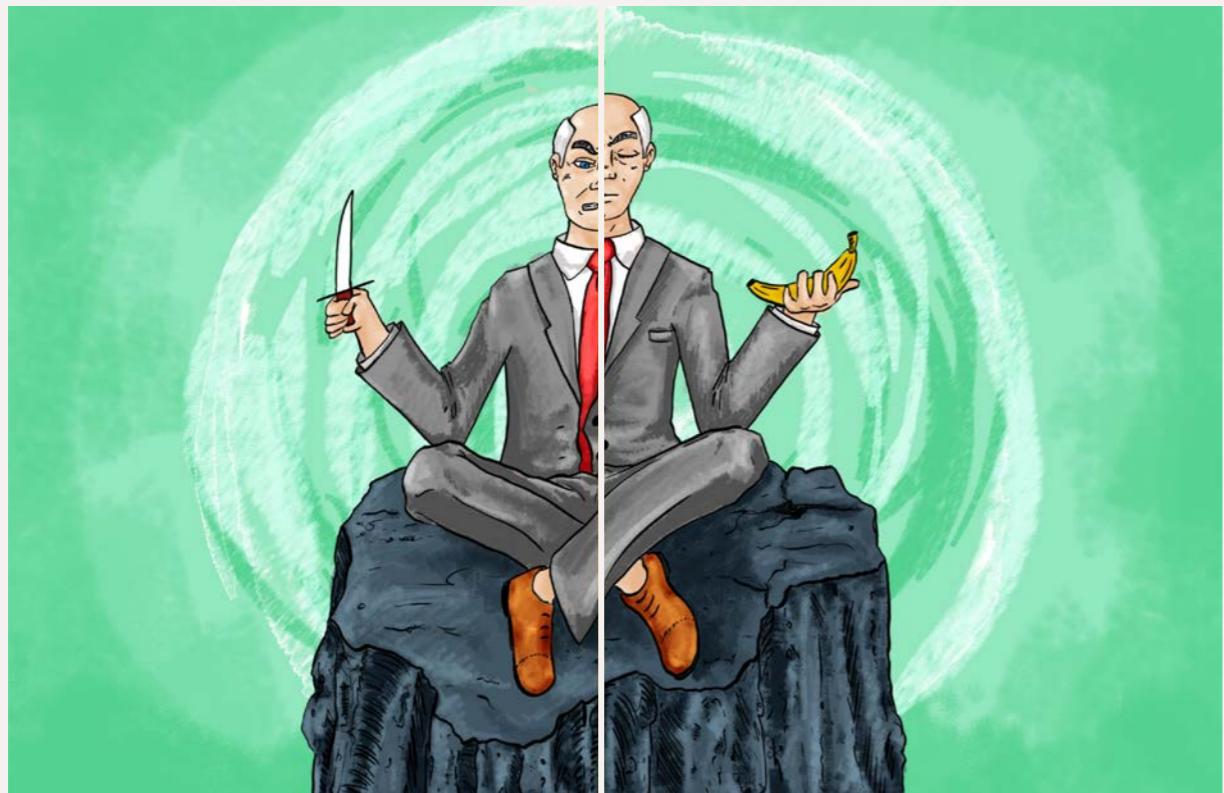


ILLUSTRATION: ARJUN AHLUWALIA

WHY DO WE GET SO ANGRY?

Some see red, some curse, some resort to violence and others pretend to be unperturbed. The question is: why do we get so angry?

What is anger?
"Anger is an emotion or a feeling. We psychologists count this emotion as one of the basic traits of humans. There is an important distinction between *state* and *trait*. The term '*state*' in this context means feeling angry, boiling inside, so to speak. As a personal trait, it is far more stable, and some people are more easily angered than others are. Anger is a distinct and social emotion," says Leo Kant, PhD Candidate at the Department of Psychosocial Science, University of Bergen.

Why do we get angry?

"A provocation is a necessary factor when one gets angry. Very often, a

feeling that something is unfair is what triggers anger. In many cases, this is a social matter. We may feel that someone has done something unfair to us, or that someone looks at us the wrong way. It does not even have to be real. Other times you get angry if you stub your toe on a chair. A result of that can be channelling your anger towards someone doing something that is perceived as provocative. There is not much use in badmouthing a chair."

What happens to us when we get angry?

"The body is activated, adrenaline and noradrenaline pumps through your body. The blood withdraws from the

ingestion system and flows out to your limbs; you are physically prepared to fight or to flee. Your thinking process changes as well – your mind is sharpened, with increased blood flow to the frontal lobes. At the same time, your emotional centre goes into a spin. In a snap you are ready to act."

Is there a purpose in feeling angry?

"Yes, one could argue that the purpose of being angry is putting right what feels unjust. If one is facing tough odds, this can be a great asset. The Arab Spring is one example, where large groups were angry and demanded justice. A further asset is creating energy where none exists. Ask a great athlete what he or she

does to muster up energy for one final, intense sprint – I would think that anger would be the answer in many cases. Being angry is about communication, and expressing a need. It can be both positive and negative."

When does anger turn into something negative?

"Showing one's anger is not necessarily a problem; it may be completely justified. If you should go completely mental and yell curse words at someone however, or in the worst case, if you turn to violence, you are doing something improper. This sort of behaviour is intolerable and creates a bad environment. If a manager displays this kind of behaviour in a work environment, it causes less content and less productivity. Being chronically angry can lead to health problems. The norm of what is considered crossing the line differs depending on who you are and where you are. This is a field of cultural differences. You do not chastise and insult your secretary at work. If a sergeant shouts at a recruit in the army, it is a completely different matter."

Is everyone angry?

"Anger is something everyone displays; anger has an evolutionary value. It can express status and dominance, for instance. In today's society, however, we are faced with entirely different challenges than those of 150,000 years ago. It is true that everyone feels anger, although some feel it less often than others do. Temperament is one of the most constant emotions and personal traits. Even a new-born baby can be angry."

Can suppressing one's anger be a positive thing?

"It can be terribly frustrating, especially when it concerns something perceived as unfair. At the same time, it is very common to conceal our emotions. We are capable of manipulating our feelings. We laugh at our boss's joke, even though it was not very good. We do this to adapt and survive." ◊



Anne Christine Johannessen
Vice-rector for international affairs
University of Bergen



PHOTO: TORBJØRN WILHELMSEN

A walk up Stoltzekleiven

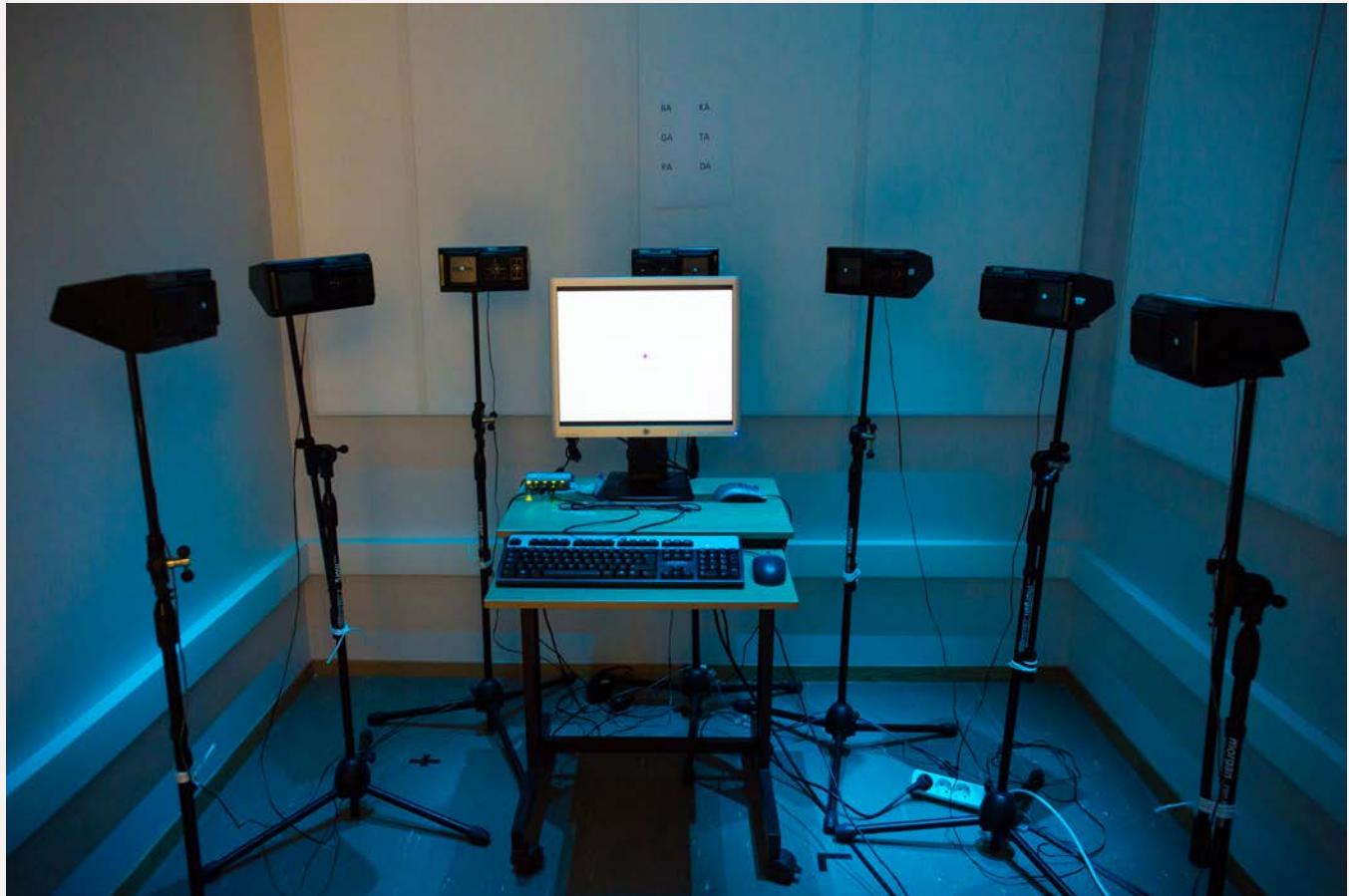
One of the good things about Bergen is the proximity to nature. Bergen is surrounded by mountains and sea, which gives you excellent opportunities for outdoor activities. One of the most popular trails is Stoltzekleiven, or Stoltzen as it is affectionately called by us locals, approximately 30 minutes walk from the city centre. This is a steep trail and stair system with about 900 steps made mainly of natural stone. It takes you between 20 and 35 minutes to climb up to the top, depending on your training experience, but the reward on the top is a breath-taking view of Bergen's city centre and harbour.

Stoltzekleiven was originally a path up to a mountain farm. The stairs were built by unemployed youngsters and was started in 1937. Although the trail has been used continuously since that time, wear and tear had made some parts of the trail quite rough. By help of Nepalese Sherpas, the stairs have been renovated in a most respectful way, making Stoltzekleiven one of the most popular places for outdoor exercise in Bergen. Thus, more than 1,000 persons on average climb the steps every day. Either you take the trip during day time or in the evening, you will always meet people. Some are struggling towards the top, competing to beat their personal record, while others are more relaxed with the only goal to reach the top.

Every year in September *Stoltzekleiven Up* takes place. This is billed as the steepest mountain race in the world. The record in racing up Stoltzen is 7 minutes and 58 seconds. The race was arranged for the first time in 1979 with 50 participants. Today more than 5,000 persons participate in the popular race. ◊

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THE LAST PICTURE

BERGEN FMRI GROUP: THE AUDIO ROOM

ELECTRIC AVENUE: The inside of the Audio Room at the world-leading Bergen fMRI Group, headed by Professor Kenneth Hugdahl, who is interviewed in this magazine. The room is used to test for how the brain processes auditory information,

while participants hear the difference between similar sounds (ba, ga, ka, ta, fa, da) blaring from the speakers. The electrodes register how the participant's brain reacts.
PHOTO: EIVIND SENNESET

