How to save an aging ship

OLD AND HEALTHY PAGE 4 • EXPERT ON INFANTS INNER LIFE PAGE 20
THEME: AGE

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WE ALL AGE, one year at a time. When population growth stops and at the same time we live longer, we say society is aging. This process is evident in all countries undergoing the so-called demographic transition. It is a positive development. If, on average, people have more healthy years, this is a plain welfare gain. A great deal also suggests that as individuals we are becoming more satisfied with life as we get older. When 30-year-olds and 70-year-olds are asked to assess their own quality of life, it turns out, contrary to popular belief, that 70-year-olds are happier and feel better. The conventional picture of our ladder of life, an ascent up to 50, followed by a descent towards the grave, should be turned on its head.

Nonetheless, aging causes a number of social challenges. The pension system is put under strain and new patterns of demand emerge for goods, services, housing, travel, healthcare and nursing, tailored to an increasing group of seniors. The road to a successful aging society runs via medical advances and social organisational innovations.

When Uppsala University was founded in 1477, it was the first university in Sweden. 536 years later, we are more vital than ever: an international oriented, fully fledged research university. Our aim is to conduct research and education of the highest academic quality and of the greatest benefit to society.

Age and aging are studied at the university from different perspectives: health, social, economic and linguistic. Some current research initiatives are presented in this magazine. And Uppsala Health Summit – a meeting place where decision-makers in the healthcare sector will discuss care issues from medical, financial and ethical standpoints – has the theme in 2014 of aging.
Healthy Aging

— both genes and lifestyle

To preserve your health into old age and enjoy many years of good health is an ideal for most people. The question is how do I do it. The answer is extremely individual; how one should live in order to stay healthy. It’s an interaction between genes and lifestyle.

The EpiHealth Venture, run by Uppsala University and Lund University, will study the interaction between lifestyle factors and genes with major endemic diseases. Here in Uppsala, Lars Lind, professor of medicine, leads the project. He confirms what we already know: there is no simple tie between lifestyle and health. “As a doctor I frequently hear: I had a grandfather who drank like a fish and smoked a hundred cigarettes a day, yet he still lived past a hundred.” The only answer is he must have had some type of genes that made him resistant to neglect while others get lung cancer and die early, even if they only smoke occasionally.

For each lifestyle factor, for example smoking, there are genes that control how susceptible we are and with that how harmful it is to us.

Naturally the same applies to “good” lifestyle factors, such as healthy eating and regular exercise. Today doctors give the same advice to everyone. However, there are now tools to bore deeper into genetics – detailed genetic analyses, large-scale protein analysis and so-called “metabolomics”, which measure various metabolic variables such as amino acids, lipids and hormones. Ultimately the aim is to be able to provide individualized health advice so that we can say to this grandfather, yes, you can smoke. Yet to the vast majority, we will say that smoking is harmful for you and we can also identify individuals for whom it is extremely dangerous to smoke,” says Lars Lind.

Samples and survey responses are collected within the EpiHealth project from different people at a clinic in Uppsala and one in Malmö. So far data from 10,000 people has been gathered here in Uppsala, but the goal is to collect data from 300,000 individuals, as large amounts of material are needed to work from.

“First of all, there are very many different lifestyle factors, and every human being has 20,000 genes and a number of different things that control genes, so it is complex.” Within EpiHealth the major endemic diseases are studied, which often come in middle age and beyond, with an emphasis on cancer, cardiovascular disease, dementia, osteoporosis and diabetes. These are diseases that usually cannot be cured and which cost society a great deal of money.

We are getting older, but the diseases remain. “However, the pattern has changed in recent years,” says Lars Lind.

“If you look at it from the perspective of what you die of, statistically, the trend has shifted from people usually dying of cardiovascular disease to one where most often or not people die of cancer. This has to do with the major advances in the cardiovascular field over the last 10-15 years, which means that fewer die from...
A BMI over 30 (which is the definition of about 20–25 per cent of all those who have “healthy obese” – can you be obese without diseases. The initial pilot project is about obesity as a risk factor for major endemic factors are more important for some di-

“The classic ones are smoking, alcohol habits, what you eat and exercise. However, we also look at other factors that are less studied, but of equal interest, such as mental stress, social networks and well-being. We also look at environmental factors, such as how you perceive your work place and whether you are exposed to environmental toxins. Do they have a link to endemic diseases? “Yes, but in different ways.” Some lifestyle factors may be more important for some diseases than they are for others, and there is more or less a degree of heritability. In principle for all diseases we study - such as heart attack, stroke, cancer and dementia - both lifestyle factors and genetic factors are significant, yet they can vary in significance.

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Research on Alzheimer’s disease quickly breaks new ground. At the present time researchers at Uppsala are testing a treatment that will slow the progression of the disease at an early stage. “Hopefully it will be launched on the market within five years,” says Professor Lars Lannfelt.

“Unfortunately, it’s easy to become optimistic, but researchers do not consider this an insurmountable problem. If the treatment is successful, this will create both an economic incentive to fund testing and possible treatment, and give affected relatives and other high-risk groups every reason to actively be screened. At the same time this demands the continued development of different diagnostic methods. This is why we collaborate with the Uppsala Berzelius Centre with the aim to improve PET technology with which we measure the concentration of beta-amyloid in the brain,” says Lars Lannfelt.

When does the team believe this new medicine can be launched on the market? In a newspaper article from 2011, Lars Lannfelt expressed a hope of an approved product in the autumn of 2016. Two years later, the process has taken a major step forward, but he still sees the finishing line about five years in the future, i.e. 2018.

“Unfortunately, it’s easy to become optimistic in terms of time. We have researched Alzheimer’s disease for more than 20 years, and once I thought we would be able to present a treatment in the early 2000’s. Today, everything points in the right direction and we are confident, but the fact is that the enormous logistical apparatus we are in will continue to house delays,” added Lars Lannfelt.

In parallel with the development of a treatment for Alzheimer’s disease, the research team reviews the possibilities of extending its work to include similar neurodegenerative diseases. Among other things, it has been discussed whether the antibodies developed can have an effect on Down syndrome and traumatic brain injuries. Early development is also underway to develop similar treatments for Parkinson’s disease and Lewy body dementia in which the protein alpha-synuclein is stored in the brain to name but a few.

“We have already started treatment for alpha-synuclein in cells and on mice we have seen positive results, but it will take probably up to five years before we can evaluate the treatment on patients,” says Martin Ingelsson.

Neurodegenerative diseases... are diseases that slowly wither the nerve system, for example, dementia, Parkinson’s disease and ALS (amyotrophic lateral sclerosis). Alzheimer’s disease is the most common form of dementia. In general the disease is diagnosed in people over 65, even if it can occur much earlier.

PET technology is a medical imaging technology to produce three-dimensional images of, for example, metabolism in the brain and how different substances, for example, signal substances move in the body.
Learning a new language in old age

What happens to people who move to another country? Do they learn the language of the new country, or do they seek out culturally and linguistically related groups? Both, as it turns out. Swedes immigrating to other countries do as many immigrants in Sweden – seek out their compatriots, but really try to learn the new language.

TEXT KIM BERGSTRÖM

IT IS INCREASINGLY COMMON for Swedish senior citizens to take up residence on the Spanish Mediterranean coast. They often settle in "colonies," but all contact with the public authorities must be in Spanish. Everyday life is also much easier to negotiate with Spanish skills. How do the immigrant Swedes manage?

"In general they do very well. They have a very pragmatic approach to language. Spanish becomes a viable addition to English and Swedish," says Ulla Börestam, who has studied Swedish senior citizens who have moved to a city in south-eastern Spain.

Her research is important from several aspects. It teaches us more about how the elderly’s language development works, something that becomes more important as the number of elderly increases. The research also describes multilingual environments, which have been unusual in Sweden. Last but not least, Ulla Börestam’s research highlights the situation of immigrants to Sweden.

THE PENSIONERS want to integrate into Spanish society and learn Spanish when they moved there. But usually the road is not so smooth as they had expected.

"Things get in the way. Initially there are a great deal of practical issues to take care of, the apartment, electricity and gas supplies, registration with the tax authorities and other public agencies. There’s no time to learn Spanish." It’s then easy to seek out Scandinavian networks.

However, many shop in Spanish stores, go to Spanish restaurants and meet Spaniards in other contexts. Where they pick up many everyday phrases. While hospitals and doctor’s offices typically offer interpreters, the tax authorities demand that foreigners have a Spanish representative, and to shop or go to the hairdresser does not require fluent Spanish.

"They also dress up their Spanish with body language and English. Invariably this means that they cope with the situations they face."

MANY LOOK to socialise among their countrymen.

"This is the way of Swedes who emigrate and it’s always been this way. This security is everything!” Those who have lived in the country longer are also a link and a bridge to the new country. They can help with the language and with practical details.

As with everything else, language is so-tial and body language and English. Inevitably this means that they cope with the situations they face."

A FINAL LESSON from Ulla Börestam’s research is important from several aspects. It teaches us more about how the elderly’s language development works, something that becomes more important as the number of elderly increases. The research also describes multilingual environments, which have been unusual in Sweden. Last but not least, Ulla Börestam’s research highlights the situation of immigrants to Sweden.

"In Sweden perhaps we need to drop the idea that a language is something you learn in a classroom and then master very well," she says. In addition, we must accept that even Sweden has become a multilingual environment. Numerous cities and countries have been this way for a long time and exactly like the Swedish pensioners abroad it usually works very well. It should then be possible to do it in Sweden too.

"In Sweden perhaps we need to drop the idea that a language is something you learn in a classroom," says Ulla Börestam.
An individual’s lifespan is to some extent determined by genetic factors. These can affect disease risk and are in general believed to have the same effect on males and females. A new study on fruit flies overthrows this view and demonstrates that genetic factors commonly have radically different effects on lifespan in the two sexes.

Lifespan of fruit flies

TO REACH THIS CONCLUSION, the scientists used sophisticated genetic techniques to clone genotypes and express them in both male and female flies. This allowed them to investigate the sex-specificity of genes on lifespan. On average females outlived males, but the relative effect of a genotype was surprisingly inconsistent between the sexes. The study has been conducted by researchers at Uppsala University, Sweden, and Bielefeld University, Germany.

While some genotypes gave females a relatively long lifespan they had the opposite effect on males – and vice versa. The sex-specificity of genetic effects substantially reduced the heritability of lifespan between parent and offspring of opposite sex, so that the mother-to-son and father-to-daughter heritabilities were less than half of those between parent and offspring of the same sex.

“A consequence of our findings is that if fruit flies were interested to predict their lifespan based on that of relatives, they should put more trust in ancestors of their own sex than those of the opposite sex. The results from this study also indicate that disease genetics differs vastly between the sexes”, says one of the coauthors, Urban Friberg.

… THEY SHOULD PUT MORE TRUST IN ANCESTORS OF THEIR OWN SEX THAN THOSE OF THE OPPOSITE SEX.
MILLIMETRE BY MILLIMETRE the Vasa ship is collapsing. If the support system is not improved it will finally collapse. To prevent this, a research team at Uppsala University has been commissioned to propose a new support structure for Sweden’s dearest museum object.

The Vasa ship has been through a lot. From being a showpiece, disaster area and then concealed below the surface for 333 years the ship has now been on dry land for over 50 years. Visitors from around the world have been impressed by how well-preserved a ship from 1627 can be.

Yet researchers who work with the ship also see something different.

“Stability is poorer than had been expected. The strength of the Vasa oak has been approximately halved. In some places, stability has been reduced by 80 per cent compared with present-day oak,” says Ingela Bjurhager, researcher in applied mechanics and coordinator of the research project ‘Support Vasa’. “Stability is poorer than had been expected. The strength of the Vasa oak has been approximately halved. In some places, stability has been reduced by 80 per cent compared with present-day oak,” says Ingela Bjurhager, researcher in applied mechanics and coordinator of the research project ‘Support Vasa’.

The WARSHIP VASA is under attack on several flanks simultaneously. Chemical processes weaken the timbers and we know that conservation using the substance PEG (polyethylene glycol) initiated directly after salvaging operations in the 60’s has impaired the mechanical strength of the timbers. Nevertheless researchers are agreed that it was the right decision to use PEG and today the ship contains 50 tonnes of preserved wooden blocks.

Like other structures, the ship has also been subjected to what scientists call ‘creep’. The timbers are affected and deform over time. Using different methods it has been seen that Vasa is slowly collapsing and becoming wider in the middle. The ship was also designed to float in water, not stand on dry land.

Vasa still stands on the support structure built when the ship was salvaged over 50 years ago. It is a basic structure where the ship rests on keel blocks with bracing along each side of the hull.

“It’s easy to improve on the current support structure but it’s difficult to make one that is optimal. And it must be aesthetic too,” says Ingela Bjurhager.

In TWO GLASS CONTAINERS in her office at the Ångström Laboratory lie stacks of wooden blocks. One contains oak wood from the Vasa and the other contains present-day oak to use as a reference. The doctoral student Alexey Vorobyev performs experiments to see how the timbers of the Vasa react over time when loaded.

A third member of the team, research assistant Nico van Dijk, makes calculations to predict material behaviour far into the future. They share the results amongst themselves. The results from the experiments are added to the calculations, which brings about new questions that need to be tested in the experiments. Everything starts at a micro level to be gradually scaled up to a larger size.

The team also has access to data from previous research and from geodesy measurements performed by the Vasa Museum.

From Nico van Dijk’s calculations, models of the Vasa ship emerge that show how the ship changes over time. From these models, researchers want to be able to conclude which areas of the ship are deforming rapidly and which areas need more support.

“Today’s support structure is not particularly specialised for Vasa. It could be for any ship,” adds Ingela Bjurhager.

The research now being conducted at Uppsala University will not only benefit the Vasa ship. Important results can be used to solve similar problems with other large timber structures, such as buildings and bridges.

The Vasa ship needs re-locating. This means that in the future the ship needs to be loaded in a different way. Points on the Vasa, which today bear much of the ship’s weight are poorly suited for this and are unable to do the job.

The VASA TEAM conducts research with a distinct practical objective and with a very popular object in the centre. Research quite different to that carried out only a few centuries ago, where most things take place in a world of theory.

Ingela Bjurhager believes it is an advantage that the research is so easy to understand, but circumstances also entail challenges.

“It’s not hard to explain to people what we are doing. However, for those of us working with material modelling it can sometimes be challenging to find the thought-provoking research and research results. Sometimes we see interesting scientific traces that are not really in the remit to follow up in the project. Our aim is to find new things that will generally benefit wood research.”

Support Vasa

is an interdisciplinary research project conducted by the Vasa Museum and Uppsala University. The project manager is Kristoffer Gamstedt, Professor of Applied Mechanics. Research funding bodies are: Formas, Vinnova and the Swedish Research Council. Uppsala University and the Swedish National Maritime Museums are also financially involved in the project.

BACKGROUND:
The focus shifts from chemistry to mechanics

In the rainy summer of 2000 the Vasa Museum was full of soaking wet visitors. When the summer drew to a close this sulphurous white salt deposits had formed large spots on the ship. The varying humidity had caused a transport of water-soluble chemicals in the timbers.

The deposits consisted of iron and sulphur-rich chemical compounds with an acidity that showed a hint of sulphuric acid, which in turn was assumed to degrade the timbers. A major chemistry study was then started in the research project ‘Preserve Vasa’. This was followed by the project ‘Support Vasa’.
“Impossible” material produced in the lab

For over one hundred years it has been deemed impossible to synthesize, but now scientists at the Ångström laboratory, Uppsala University, by chance have managed to produce a nanomaterial of non-crystalline magnesium carbonate.

**THE MATERIAL BINDS** more moisture than any other known material and has the largest surface area that up to now has been measured for any of the materials in the same family. The unique properties make it very interesting for technological applications where controlled humidity is of primary importance.

The material, consisting of magnesium carbonate (MgCO₃), has been called Upsalite and is expected to reduce the energy needed to control environments where humidity is crucial, for example, in the manufacture of pharmaceuticals or in warehouses and stores. It should also be possible to use it to clean-up oil spills, chemicals and environmental pollutants, such as when cleaning up after fires.

**THE FIRST ATTEMPTS** to produce magnesium carbonate were not so successful, but when the Uppsala researchers modified the synthesis process and accidentally left the synthesis vessel over the weekend, something had happened. Back at work on Monday morning and a gel had formed in the vessel and the analyses of the dried gel made the researchers slightly more enthusiastic.

“All in all this means that we believe this material can open up for a whole new range of sustainable and energy-saving products with many industrial applications,” says Maria Stromme, Professor of Nanotechnology and research leader.

Thanks to its porous nature Upsalite has the largest surface ever measured for a carbonate of an alkaline earth metal: 800 square metres per gram. This places it in an exclusive class of porous materials with a large surface area. These materials are known as superporous materials, a new class that is expected to revolutionize many fields, including energy storage, catalysis, and environmental remediation.

“This particularly applies to the young men, who seem to have stronger protective factors to cope with a traumatic experience,” said Tom Lundin.

**Reactions of the young to the tsunami**

Young people seem to have reacted differently and more practically than adults during the tsunami disaster in 2004. This is shown by a study carried out in a collaboration between Karolinska Institutet and Uppsala University.

**IT IS THE FIRST** qualitative study about young people affected by the tsunami, published in the Nordic Journal of Psychiatry. “The study gives additional knowledge about crisis management and protective factors among disaster-stricken youth, which gives the opportunity to improve care and tending in the future,” says Tom Lundin, consultant and professor emeritus of Disaster Psychiatry at Uppsala University.

In-depth interviews were held with 20 randomly selected young people, who spoke of their psychological reactions during the tsunami, crisis management afterwards, the altered self-image and perception of altruism in connection with the disaster. In addition, researchers used data from a questionnaire answered by 4,910 adults and adolescents.

The results showed that young people seem to have reacted differently and more practically than adults during the tsunami and handled the subsequent crisis situation better.

“This particularly applies to the young, who seem to have stronger protective factors to cope with a traumatic experience,” said Tom Lundin.

SEVERAL OF THE YOUNG PEOPLE told of how they were able to remain calm and act rationally during the actual disaster, something they were surprised over. In several cases, they took the lead role and took care of shocked family members.

After the disaster, the majority have changed their behaviour in terms of risk. The survey shows that either they are more cautious, or they have taken greater risks than before the disaster.
The power station was lowered using a crane and divers next to the road bridge in the centre of Söderfors.

Uppsala University’s marine current power station was launched in the river Dal, in central Söderfors. The turbine, generator and foundation were put into place using a crane and divers.

“This is like one large laboratory to us. We can now verify the technology,” says Mats Leijon, professor of Engineering Sciences, Division of Electricity.

PHOTO: MIKAEL WALLERSTEDT

TEXT ANNICA HULTH

Marine current power tested in the river Dal

THIS HAS BEEN a very busy period for the research team at the Division of Electricity at the Ångström laboratory. Within the space of a few months, four theses have been presented, and in March the test facility was launched in the flowing waters of the river Dal.

The research looks into how to take advantage of marine current power for energy production. There are ten or more comparable test installations around the world, but this specific technology is unique. It is similar to wind power technology, with the difference that the generator is adapted to the slow movement of the water. In truth the technology was designed for the great oceans, where tides can be utilised, but it is now being tested on the river Dal.

“This is like one large laboratory to us. There is a power station further up and one further down the river. We are collaborating with Vattenfall and Fortum and we have access to constant information about the flow of water,” says Mats Leijon.

The power station consists of a turbine and a generator, which via a subsea cable is connected to a measurement hut on land. Divers checked the riverbed before the turbine was lowered into the water.

“It went very well, despite having to dive in freezing cold waters. Everything fell into place perfectly,” says researcher Mårten Östh, ethnogeographer at the University of Östergotland.

THE RESEARCH into marine current power has been in progress since 2001 and now the work is beginning to pay dividends. Next year, the Ångström laboratory will complete a power station based on water flow measurements.

An illustration of the vertical axis turbine and the generator placed on the sea bed. The generator has been adapted to the slow movement of the water.

The station has now been lowered into the river Dal and could remain there for at least three years. If it works well, there are plans to apply for yet another power station at the same site, but this lies in the future.

First, we need to verify the technology. We have made various component experiments, but now we need to test the entire system. This is always very difficult. In the best of all worlds the experiments will also correspond in reality and then we have taken an engineering scientific step, says Mats Leijon.

How it works:
• The kinetic energy of flowing water is converted to electricity by connecting a vertical axis turbine directly to a generator.
• The turbine rotates slowly, 5–30 rpm, and the generator has been adapted to the slow movement of the water. This provides effective electromagnetic energy conversion at the same time as the number of moving parts that require maintenance is kept to a minimum.
• The first prototype generator was designed to produce 5 kW at 10 rpm and was completed at the Ångström laboratory in March 2007.

Psychological support via the Internet

IS IT POSSIBLE to provide psychological support via the Internet to the sick and their relatives? Yes says Louise von Essen and her team of researchers who already offer online support for parents of children with cancer and those suffering from cancer. In order to offer more people psychological help in connection with bodily disease, researchers at Uppsala University are currently developing a number of Internet-based self-help programmes in the U-CARE research programme.

Obesity and genetics

AN INTERNATIONAL research team led by Swedish researchers has employed a new method to investigate overweight and obesity as a cause of cardiovascular disease. The aim of the study was to determine whether obesity itself causes these diseases or whether the degree of obesity is only a marker for something else in life style that causes the disease. Researchers have studied whether a gene variant in the FTO gene, which regulates appetite and thereby increases an individual’s BMI, is also linked to a number of diseases of the cardiovascular system and metabolism. Nearly 200,000 people were included in the survey. The results show that an increase of one BMI unit increases the risk of heart failure by an average of 20 per cent.

Segregation a risk

THE RISK of riots occurring is greater in areas with high residential segregation. Researchers from Uppsala University and Stockholm University showed this in a new study. The study is based on statistics of car fires in Sweden in the 2000s. For example, researchers have found that municipalities and districts where the foreign-born have had more car fires than municipalities where the population lives more mixed.

“The distribution of age groups, poverty and districts where the foreign-born have little contact with the majority population are background factors,” says John Oth, ethnogeographer at the University of Uppsala.
As a young researcher Gustaf Gredebäck did not initially see the appeal of studying babies. However, the subject seized him as he realised that the research provides answers to basic questions about how humans are shaped and his interest was aroused. He now leads the work at the successful Uppsala child and infant laboratory.

TEXT: ANNETTE U WÄLLQVIST
PHOTO: MIKAEL WALLERSTEDT

CHILDREN LIVE A RICH LIFE already in infancy. They are wide open individuals who assess their surrounding environment, both physically and socially. They are receptive to facial expressions and other people’s feelings, and from an early age, children can recognize connections and learn to anticipate some situations.

Gustaf Gredebäck, researcher at the Department of Psychology, has researched children’s early understanding of their physical and social environment for a long time. He says that at four months of age, babies perceive much more than we previously knew. “The aim of our research is to ask, among others, where this early understanding leads,” he says.

PRINCIPALLY IT’S A QUESTION of basic research, where Gustaf Gredebäck and his colleagues essentially wish to find out how small babies perceive their surroundings. What the children notice and what they filter out as noise.

“So far we have only scratched the surface. Yet impressions shape how the children see themselves and their surroundings.” Accompanying this is also the ability to understand what other people are doing and why.

Gustaf Gredebäck has, for example, seen that young children can predict a sequence of events from an early stage. “They can predict the consequences of your actions. They understand that you reach for a cup to take the cup,” he says.

Exploring the rich inner life of children

The reactions and abilities of the children are observed in the laboratory environment, frequently using technologically advanced equipment. Now activities at the former Infant laboratory have been merged with researchers working with older children’s cognitive development. Under the name “Child and Infant lab” some thirty researchers and doctoral students will collaborate to better understand how a baby’s early experiences are bound up with later development. “We can now ask completely different questions than before. We have created an exciting environment that gives us a relatively unique position in the world,” says Gustaf Gredebäck.

THE RESEARCHERS are in the process of starting several projects where they will study what happens to children who do not have an optimal upbringing, as children of depressed parents or children of mothers exposed to high levels of stress during pregnancy.

Another project will look into how children are affected by the parental postponement of parental leave. “The point of departure is that it is possible for the infant to have a close relationship with several adults, but up to now there has been a lack of knowledge about how the postponement of parental leave affects the children,” he adds.

Last year Gustaf Gredebäck was on parental leave with his third child and he certainly believes that his own research has influenced his parenting style. “Of course it’s difficult to know. But I believe that the research has helped me to relax, as I have seen that there are so many ways to be a parent. The important thing,” he says, “is to take your children seriously, listen to them and talk to them.” Small children have a great deal to say, even before they can talk, so you need to be responsive to their signals.

“It may not always be those troublesome times that is the cause of an anxious period. Those who listen may find another answer.”
In Buttle there are traces from different eras

**NEW HORIZONS 2:2013**

**Buttå Änge** is situated forty kilometres south of Visby and interests archaeologists for several reasons: it is a boundary between two different districts and at a three-way intersection are two 8th century picture stones, one of which is the largest remaining in Sweden.

Earlier excavations at the site have shown that there have been even more stones, one of which is the largest remaining in Sweden.

"The placement of the picture stones indicates that this has been an important monument. We have been able to see that there was a burial site and that there have been even more picture stones here, which formed an enormous chain" of stones, burned bones and objects involved and dug during the month of July.

The focus of the excavation was a cairn, a human cemetery. Two students participated in the excavations and they found numerous finds that now need to be dated and analysed.

The archaeological bone finds can teach us more about the disease. At Uppsala University’s Campus Gotland a unique collaborative project is being run between osteologists and doctors of medicine.

**TEXT AND PHOTO: ANNIKA HULTH**

**Osteoporosis Then and Now**

Brittle bones (osteoporosis) also existed in the past and archaeological bone finds can teach us more about the disease. At Uppsala University’s Campus Gotland a unique collaborative project is being run between osteologists and doctors of medicine.

**ARCHAEOLOGICAL** bone finds from Gotland, Skara, Värmland and Sigtuna have been analysed within the project using modern medical technology to increase knowledge of osteoporosis and osteoarthritis or joint wear.

"A very productive collaboration," says Sabine Sten, who is a professor of osteology at Uppsala University.

"Doctors have patient contact and can give us the whole picture of the disease and how it is experienced by the patients. For doctors, it is interesting to see and feel bones, to ‘feel the diagnosis’ and see skeletal changes that perhaps are not visible on X-rays."

**AMONG ARCHAEOLOGISTS** osteology is an important skill, as bone is the most common finding during archaeological excavations. You have to be able to quickly determine which bones are of interest and be able to interpret them.

"Human bones from times gone by are slightly different from modern bone," says Sabine Sten.

"For the most part it’s a question of strong bone and fine medical measurement values. On the other hand, it was common with joint wear. It is noticeable that they used their bodies and moved more in the past."

A total of 450 skeletons from the late Viking Age to the Middle Ages have been examined in the project. They have been X-rayed at Visby hospital and doctors in Visby and Gothenburg have measured the bone density. The bones have also been analysed with computer tomography and genetic analysis.

What can people from the Viking and Medieval Ages teach us about osteoporosis, i.e. bone brittleness? One clear lesson is the importance of exercise.

"Today we sit too much and load the skeleton too little. Osteoporosis is affecting younger people as the children of today do not move as much as in the past," said Sabine Sten.

**THE RESEARCH MAY** provide clues about the importance of diet. It’s possible to see what the diet consisted of during the first years and the last 10 years of an individual’s life by digging into the bones and performing what is known as an isotope analysis. The question is how much did the diet differ between the different sites - between urban and rural, island and mainland.

"I thought that most Gotlanders ate sea- and fish with a lot of vitamins, but this is not exactly true. Certainly they ate food from the sea, but also from sheep, cattle and pigs." Sabine Sten is now planning a continuation of the project. One of her doctoral students has received a doctoral studentship at the Sahlgrenska University Hospital in Gothenburg and will continue to do research on osteoporosis from the Stone Age onwards.

**Bone diseases then and now**

The project was run in collaboration with the University of Stockholm, Västergötland Museum and the Sahlgrenska University Hospital. In total there were 12 partners. The project included about 450 skeletons of individuals in the age range 25–80 from the late Viking Age to the Middle Ages (950 to 15th century). The results were compared with data from living people at Sahlgrenska University Hospital in Gothenburg.

**Tweezers from Vendel era, named 7th century**

**With the help of so-called frottage technique, the pictures on the stones emerge.**

**Many finds have been made. From the left: Martin Serebrink, Viktor Melander, Alexander Andreeff and Helene Martinsson Wallin.**

**Kjell Gunnarsson, student from Gotthenburg, sieve out the finds from the soil.**

**An edge chain, a circle of stones, women’s jewellery and bones found under a Middle Age cairn. The finds still have to be dated.**
She makes mathematics trivial

Susanne Mirbt's goal is for her students to think that mathematics is self-evident. She can say with good reason that she has actually succeeded. In 2012, she received Uppsala University's educational prize for her outstanding ability to get fresh students to understand mathematics.

"Obviously everything" is difficult when you start. But when we are finished, I want my students to say, "That was trivial!"

The words are Susanne Mirbt's. She teaches mathematics during the students' first year. She does it so well that in 2012 students nominated her for the University's educational prize, a prize she later received. She has a number of classroom tricks, but above all she is extremely aware of what she is doing and why, and has really thought about how to get all her students past the stumbling blocks of mathematics.

Focus is always on the student. It is important to always give the student the puzzle bits he or she needs for the next important step. It is also important not to skip steps and for example to write out "1 x X" instead of just "X", to make it clearer.

"If one asks then usually a few others are thinking the same thing," says Susanne Mirbt. During the other half of the 90 minutes the students do their own calculations. Even here, Susanne Mirbt has a play to enhance the learning.

"I always encourage the students to help each other. The students learn much more through discussing amongst themselves than listening to a teacher." So the frustration of not understanding becomes an educational point.

She makes her headband with the text "Trivialt!" was a gift from her students.

"It's important not to approach those who already know it all and have read-up on it, but to those who are seeing it for the first time. It is also important not to show the right person the right content so the right person gets the right puzzle bit. And to break it down into a collection of trivial steps."

"Plan mentor sessions! If you just say my questions, and I usually add that the first five will get chocolate," she says, laughing. If we have had a test, then those who want to have an individual review of it. I answer e-mail questions and sometimes add video clips with answers, as you can get so much more in a film than in text.

Here you will also find her clearest advice to those in charge of teaching.

 sinon mirbt's headband with the text “trivialt!” was a gift from her students.

Name: Susanne Mirbt
Title: Docent
Age: 49
Present: Received the Uppsala University educational prize in 2012.
Leisure time activities: Family, nature, reading, painting.
Greatest passion: Leonardo Da Vinci
Remaining to do: Figures out the answers to all my thoughts.

Teachers I remember: It’s easier to list those I don’t remember.
Favourite subject at school: All, except girls' movement and geography.
Best moments as a teacher: Once my students screamed tried and instantaneous. I then "sung", I wasless of my theory review. Everyone woke up, we all laughed together, there was spontaneous applause, and we could then continue with much more enthusiasm.

Biggest mistake as a teacher: Once used an alphabetical abbreviation for a variable, which also had a political meaning I corrected it, but still!

Three pieces of advice for new teachers:

1. Be clear and motivate what you do.
2. Introduce puzzles, which allows students to be active and also the chance to catch up. It is also a barometer: If they are quiet and staring at each other you know you have failed.
3. The student must always feel that they can get help. If a student has failed a test, they should get a personal review.
Five creative steps to better education

TEXT HELENA EDSTROM, PHOTO MIKAEL WALLERSTEDT

It smoulders of creative desire at Uppsala University. This became apparent when the University summed up its three-year educational development project. At the same time a number of strategic development areas have been identified. How does Uppsala University work to increase the quality of education? This is what the project, Creative Education Development at Uppsala University, KrUU/CsED, has looked into over the last three years.

For example, a panel of international experts have reviewed the educational development work on several levels – from initiatives on an institutional level to support functions on a central level. The initiatives have now been collected in a bank of examples where teachers and students can draw inspiration. Here are a few examples…

MORE AND MORE students at the university are new students with no previous experience of academic studies. Many of the university’s courses in e.g. history, economics, languages and physics have therefore started a mentor program, where students who have already taken a course act as mentors to new students on the course. The aim is to foster the meeting with the university and strengthen the newcomers’ study and learning techniques.

An important point, according to the students themselves, is that mentoring sessions may be perceived as more prestigious than teacher led discussion seminars and more students thus have a voice. The basic idea of the project is that when students take responsibility for their own and others’ learning the quality of education increases. “I gain a broader perspective and better understanding,” says history student and mentor Ottilia Eriksson.

INTERDISCIPLINARY collaboration is becoming increasingly important in modern health care. However, it is often only out in the hospitals that doctors and nurses start to cooperate. Uppsala University has therefore implemented joint exercises in emergency care for all medical and nursing students on their final semester.

The location is the Clinical Training Centre at the University Hospital. The room is equipped as an emergency room, the patient is a human-sized doll, and students have fifteen minutes to jointly solve simulated yet serious patient scenarios. “Our ambition is for everything to be as close to reality as possible. Admittedly, this teaching is both memory and time consuming, but we know that both students and patients benefit from it,” says teacher Martin Wohlin.

HOW STUDENTS UNDERSTAND and feel involved in the academic environment at university is of great importance for the credits awarded in the future. Therefore, the faculty of Natural Sciences and Technology has started introduction activities, with the aim of making the first year a positive experience for all students. An important part of this is the introductory courses which introduce new students to everything from academic quarters, campuses and lecture halls to academic culture and traditions. In addition, practical training in study techniques and discussion seminars on intended learning outcomes are available. The project has been successful. Particularly successful is the introduction to the natural sciences and technology base year, which is now inspiring similar efforts at several other universities.

“A key success factor is that we do not just focus on the new students, but also on ourselves and our approach,” says the director of studies Staffan Andersson.

IN THE FACULTY OF ARTS, students on a master’s level may actively and from close quarters see how research is planned, organized and implemented. Seven interdisciplinary research nodes have been created where students are included together with researchers from several institutions. Students participate on the same terms as other researchers in the group and therefore participate not only in lectures and tutor meetings, but also at work meetings and conferences. They should also clearly contribute to the research with their degree project.

“Students receive a unique competency that they will not only benefit from if they choose to continue research after the higher education qualification. Experience of project management and collaboration with others are skills that are also needed in professional life in general,” says faculty programme director Oskar Pettersson.

IN THE EDUCATION programme’s preschool and primary school courses teaching has moved onto the web, in the form of a virtual classroom where each student has a separate digital presentation area. Students show, using texts, images and videos, how they have solved tasks that teachers have set. In the digital classroom, fellow students and teachers can follow each other’s work. The method does not replace reading lists, lectures and exams, but gives great added value to the learning experience itself.

“Open and unpretentious learning occurs, where students help to improve each other, by giving a boost, offering feedback and ideas,” says project manager Måns Hansson.

The idea is also that the students, future teachers, take the working method with them out to the schools.

“When you do not only look to the final result of a task, but also see how the student has arrived at his or her result, you can make fair assessments.”

... THIS TEACHING IS BOTH EXPENSIVE AND TIME CONSUMING, BUT WE KNOW THAT BOTH STUDENTS AND PATIENTS BENEFIT FROM IT …

STUDENTS PARTICIPATE ON THE SAME TERMS AS OTHER RESEARCHERS IN THE GROUP …
They capture cells’ signals on film

The time and cost to develop new pharmaceuticals are on the increase. It is a challenge that the entire pharmaceutical industry is facing. However for the newly started Uppsala company Gradientech it is a business opportunity. They have developed a product that can improve the quality and shorten the time for elements of the development.

**GRADIENTECH** is the result of a meeting between Sara Thorslund and Johan Kreuger. Sara is a PhD biotechnology engineer with a background at Ångström laboratory and an expert on how to check microscopic volumes of fluids. Johan is a senior lecturer in molecular biology at Uppsala University, and saw in his research a need to be able to make more efficient experiments on how cells respond to different substances.

“At a rough estimate there are one hundred thousand billion cells in the body,” says Johan Kreuger. All signal by sending out different substances. These substances are therefore in the whole body, but in varying concentrations. As a researcher, I want to know how the cells react to the varying concentrations of different substances.

Up to now, researchers have had to be content with trying to answer one question at a time. Nor has it been possible to measure how cells behave during the experiment. It has only been possible to measure the end result.

NOW YOU CAN. Gradientech’s CellDi-rector gives researchers the opportunity to see the entire process. Instead of many parallel experiments, where each one gives a measurement point, they can now film the entire event.

“This wins you a large body of information. You can observe how the cells appear, how they move, in which direction they move, how many cells move. They usually say that a picture is worth a thousand words. Here you might say that a film is worth a thousand pictures,” says Johan Kreuger, laughing.

Sara Thorslund and Johan Kreuger have received a great deal of help from the universities, STUNS and the municipality. Gradientech is situated at the Uppsala Science Park, and both agree it’s a very fitting environment to be in.

“Uppsala is a Mecca of expertise in microfluidics. Here you’ll find a cluster of small companies currently on or who have already made the same journey, as we are experiencing. Advice is widely available and easy to find,” says Sara Thorslund.

**IT IS ALSO A GREAT** advantage for Gradientech to be so close to the university.

“It means we get access to the resources on hand here, both in terms of cleanroom and other technologies, and through personal contact with researchers.”

They have also received a lot of help from UU Innovation, the University’s unit for interaction with industry. Among other things, they have received free patent counseling, which means assistance to examine new ideas for new patent applications.

“Many researchers are not aware of this service. But if all researchers were aware of them and what they can offer, we would get many more new and exciting companies in Uppsala. Through UIC and UU Innovation, we have also met many others who are in the same situation as us, who are passionate about their entrepreneurial dream. It has been very valuable.”

**SOME EVENTS** along the road have been extra special – something Sara Thorslund and Johan Kreuger both agree on. One of course was to start the company. This was followed by the product launch in the summer of 2012.

“It was a fantastic step to start selling our first product,” says Sara Thorslund.

“In the spring, we opened for the first time our first external private investors and it has been great,” she says.

“We have oversubscribed our issue. It’s a nice feeling to get confirmation that the business concept is attractive to investors.”

The most recent milestone was when they were able to take on additional staff.

“We have now taken on our first sales person. It’s a great feeling to be able to employ someone to take care of this type of task. We are now four, and I hope in a year we will have nearly doubled this figure.”

However, it has been a massive challenge to find capital in the form of sustained support during the initial phase.

“To get more seeds to grow further requires more public funding. At present, foreign players acquire many promising ideas. If Sweden wants to be a leading research nation, we should focus even more on supporting innovative companies in the start-up phase,” says Sara Thorslund.

A film is worth a thousand pictures of what is happening in the body’s cells. This is Sara Thorslund and Johan Kreuger’s business concept.
IN THE FREEZER OUTSIDE
Magnus Essand’s workroom are plastic tubes filled with a very special virus.

“It is a genetically modified virus, specially engineered to locate, attack and destroy neuroendocrine tumours,” says Magnus Essand, professor at the Department of Immunology, Genetics and Pathology.

Endocrine tumours are small tumours that are caused by genetic alterations in hormone-producing cells. This form of cancer is rare: 350 new cases are reported annually in Sweden, compared to 10,000 cases of prostate cancer and 7,000 cases of breast cancer. During a six year period Magnus Essand’s research team developed the experimental virus treatment with the oncolytic, “cancer-eating” virus.

“In the oil industry success is perhaps somewhat easier to achieve than in medicine,” he points out. “With oil it’s about hitting a target, whereas medical treatment requires you to hit the right target, and that is not easy.”

What’s planned is a clinical phase I study in which the viral treatment is tested on patients with neuroendocrine cancer.

The location will be the Uppsala University Hospital, which is an international centre of excellence for the diagnosis and treatment of neuroendocrine tumours. The study, if approved by the Swedish Medical Products Agency, can start at the end of 2014. If the results appear promising, then Phase II and Phase III studies remain. Thus a completed treatment may take many years.

FUNDING FOR THE STUDY is somewhat unique, as the money comes from private individuals. Thousands of people from some 40 countries have so far donated over 20 million to the oncolytic virus fund, which Uppsala University started in September 2012. One of the donors is a Geneva-based oil contractor Vincent Hamilton, who has endocrine cancer.

“In the oil industry success is perhaps one in ten drilling attempts,” he says. “The same logic applies here. The researchers cannot guarantee that the cancer treatment will work, but if it does, the reward is enormous,” he says.

To encourage individuals to donate to a specific research project is known as crowdfunding. This phenomenon has emerged in recent years, particularly in the USA. Uppsala University’s first attempt has been successful and has whetted an appetite.

“Crowdfunding is a very interesting form of financing,” says Uppsala University’s deputy vice-chancellor of the disciplinary area of human resources, Bengt Sköogström.

“With crowdfunding it’s easy for researchers to explain their work to the public. If the public is interested, they are also interested in donating. It is also a way of not only getting money, but also getting feedback from the public.”

The University can answer for the quality seal by backing the fundraising campaigns for high quality research. However, it is important not to give false hope to the donors, we can never guarantee that the research will succeed,” says Bett Skogström, deputy vice-chancellor of the Disciplinary Domain of Medicine and Pharmacy.

In August 2012, the British newspaper The Guardian, published an article on the potential cancer treatment. The author of the article started a fundraising campaign, aka crowdfunding, to raise money for a clinical study. The campaign spread through social media and news media worldwide. Uppsala University formed the oncolytic virus fund for public donations.

In May 2013, the fund had collected sufficient money for a clinical study to be started. In total, more than 2,000 people from 40 countries have donated money. The research team is now preparing an application to the Swedish Medical Products Agency to start the world’s first human trial with a virus that attacks neuroendocrine tumours.

What a difference a year makes
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New Head of UU Innovation
PIRKKO SULILA TAMSEN has been appointed the new head of UU Innovation (Uppsala University Innovation). She will take over the post in October 2013. UU Innovation is Uppsala University’s unit for commercialisation of research results and ideas. Piirko Sulila Tamsen comes from a position as CEO of the pharmaceutical company Olafsfoty, founded by researchers at Karolinska Institutet and Uppsala University.

INNOVATION

Innovative collaboration with China
IT WILL BE EASIER for researchers at Uppsala University to further develop and distribute their innovations in China. The University has just entered into a partnership agreement with Peking University whereby Uppsala researchers receive access to a new international centre of innovation and valuable knowledge about the Chinese market. Uppsala University is the first European university to be a partner with Peking University, Stanford University and The University of Hong Kong are already partners.

Biggest in further training
ON JULY 1 2013, Uppsala University took over web-based training courses for civil servants from the defunct authority Krua (Swedish Council for Strategic Human Resources Development). This means the department for contract education at Uppsala University is now the largest player in the further training of civil servants.

Neuroendocrine tumours ...
... are small tumours of hormone-producing cells and is a rare form of cancer. According to the Swedish Cancer Society 350 new cases are discovered annually compared to 10,000 cases of prostate cancer and 7,000 cases of breast cancer. This form of cancer became known to the public at large when Apple founder Steve Jobs died of neuroendocrine cancer of the pancreas.

Oncolytic virus fund
Would you like to know more or make a donation? Read more about the collection at: www.uu.se/stod-uu/onkolytiska

This has happened
2013 Magnus Essand’s research team presented a virus that was specially engineered to destroy neuroendocrine tumours. Lack of funding for a clinical study on patients meant that the research was put on hold.

IN THE FREEZER OUTSIDE
Magnus Essand financed the study. New Horizon outside Magnus Essand’s workroom are plastic tubes filled with a very special virus.

“A unique treatment for a rare form of cancer could be tested on patients in Uppsala. Under the spotlight is a virus, engineered to seek out and destroy neuroendocrine tumours. Private individuals have so far donated over 20 million to the oncolytic virus fund, which Uppsala University started in September 2012. One of the donors is a Geneva-based oil contractor Vincent Hamilton, who has endocrine cancer. The same logic applies here. The researchers cannot guarantee that the cancer treatment will work, but if it does, the reward is enormous,” he says.

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“We are looking forward to this new phase and are confident that the researchers will continue to develop and distribute their innovations in China.”

Innovation is Uppsala University’s unit for commercialisation of research results and ideas. Pirkko Sulila Tamsen comes from a position as CEO of the pharmaceutical company Olafsfoty, founded by researchers at Karolinska Institutet and Uppsala University.

INNOVATION
The jack-of-all-trades has found a home

Tove Lifvendahl has always been interested in politics. As a student in Uppsala, she was a jack-of-all-trades who mixed studies with work as a chef in the student club.

“Tove Lifvendahl has always been interested in politics and became involved in the Swedish Young Conservatives (MUF) during her youth in Arbik in Hälsingland. This was followed by the Presidency of MUF and work for the think tanks Timbro and Fores.”

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Name: Tove Lifvendahl
Title: Political editor of Svenska Dagbladet
Age: 39 years old
Family: Husband and two sons
Education: BA in History, General Literary Studies and Nordic languages
Leisure time: Spending time with the family, travelling, reading, cooking, baking, handcrafts, elderly in the forest, skiing.
Hidden talents: Making beautiful wedding cakes.
Favourite place in Uppsala: The city park, lovely with its playground and large areas, Hamberg’s fish restaurant, the public library with its areas for children and the cafe.
Favourite student club: GH club, where I worked as a lunch chef
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ANNELI BJÖRKMAN, PHOTO: PRIVAT

job at NASA, the Federal Authority for space travel in the USA.

thesis at the Department of Engineering Sciences in 2012, got a

Jonas Jonasson, who has conducted research at the Ångström

ALUMNI

NEW HORIZONS 2:2013

and tested a camera system he had helped to build.

Jonas Jonasson (to the right) visited Houston Space Center

How did you end up at NASA?

‘After I publicly defended my doctoral thesis in the spring of 2012 and worked for

the space station. I tested a camera system

n

“After I publicly defended my doctoral thesis in the spring of 2012 and worked for AAC Microtec, where they manufacture electronics for satellites, the head of NASA Ames came to the Ångström laboratory. During a lunch meeting, we spoke about my background and what I was working on. It then took about a week before I was contacted by SGT Inc., an American company under contract to NASA. I was offered a job and in November 2012 I started working at NASA Ames Mission Design Center in Silicon Valley.”

What do you work with?

‘Primarily I support various satellite projects with the miniaturisation of instruments and subsystems. It’s not just a question of making them smaller, but also to produce other effects such as higher performance and lower power consumption. I also work with researchers on specific environments on earth. In Canada, there is a lake with unique microorganisms that build sedimentary structures that are very similar to those which make up some of the oldest fossils of life on Earth. These sites are also used as analogue space environments: simulations are performed where you are in space and the divers are astronauts who must communicate with “earth” through a time delay.”

Have you experienced anything special?

“In July, we were at the Houston Space Center and in the pool where the real astronauts practice ahead of their spacewalks at the space station. I tested a camera system I had helped to build and which the divers will use. It was unbelievable to be there and work side by side with eminent space scientists!”

When the trade magazine Business Week listed the 125 most powerful women in Swedish business, she came in 35th place. Carola Lemne, Chief Executive Officer and President of Praktikterjänt, is the new Chairman of Uppsala University.

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Text: Helena Edström, Photo: Mikael Wallerstedt

SHE IS THE ANAESTHETIST who became a blood pressure researcher, research manager, CEO, president, and board professional. Now she is also Chairman of the Board of Uppsala University, the University Senate.

“It’s fun and challenging,” says Carola Lemne.

Since 2007 she has been Chief Executive Officer and President of Praktikterjänt, the largest group in private health and dental care in Sweden. Among the close to 9,000 employees, more than 2,000 are shareholders and also business managers at clinics nationwide. Carola Lemne believes the experience of leading this kind of organisation could benefit the university’s board.

“I understand the challenges posed by an expert-dominated organisation such as a university, with its strong and grant-funded professors and research teams.”

There are plenty of professional connections between Carola Lemne and Uppsala University: 14 years in the international pharmaceutical industry, for example, as clinical research director at Pharmacia & Upjohn, involved many contacts with the Uppsala scientists. She has also followed the university’s research teams and environment by playing a part in and evaluating grant applications on behalf of different research financiers. She herself is docent of hypertension research, the research looked into risk factors for blood pressure.

HER CAREER has been, and is centered on medicine and pharmacetics. To be Chairman of the board of an expansive university – with activities in humanities, social sciences, natural sciences, engineering and technology, medicine and pharmacetics – inspires.

“The extent of education and research is an important characteristic of Uppsala University. It is fun with the opportunity of interesting cross-fertilization over discipline boundaries.”

She says she is passionate about research in which academic areas of science, society and industry can come together across borders. And where basic research and applied or industrial research are not pitted against each other.

“I have seen many examples of how good it can be, how rewarding it can be for academia, industry and the community to work hand-in-hand. Historically such an approach has contributed to the strength of the Swedish pharmaceutical industry,” says Carola Lemne.

Carola Lemne

Present: New Chairman of the Board at Uppsala University
In: Chief Executive Officer and President of Praktikterjänt AB
Previous employment: Among others, doctor in emergency care, clinical research manager Pharmaca & Upjohn, CEO Danderyd Hospital
Academic background: Fully qualified doctor, doctor of medicine and doctor of clinical hypertension research
Board assignments: Among others, member of Getinge AB, Investor AB, Confederation of Swedish Enterprise
Likes: Playing the piano, singing, cooking, drinking good wine and meeting friends
During free time: I think it’s amazing when people and businesses evolve and become better
New campus in Visby up and running

**TEXT: HELENA EDSTRÖM, PHOTO: DAVID NAYLOR, TORBJÖRN GOZZI**

In September, activities at Uppsala University Campus Gotland started in earnest. In the centre of the World Heritage City of Visby, the campus offers a unique learning environment and access to the full-scale of the university’s range within education and research.

“When I see all the students flood into the campus it becomes tangible that we are in live mode. It’s fantastic,” says Olle Jansson, Vice-Chancellor of Campus Gotland.

Campus Gotland was formed when Uppsala University, in July 2013, formally merged with the University of Gotland. Nineteen institutions in the fields of Humanities, Social Sciences, Engineering and Technology and Natural Sciences, have activities in Visby. There is also the research centre, the Swedish International Centre of Education for Sustainable Development, SWEDISD. From the autumn 2014 the disciplinary research domain for medicine and pharmacuetics will be provided at Campus Gotland, which will then become a cross-section of Uppsala University.

Each year about 2,100 full-time students study on one of Campus Gotland’s over 100 courses and thirteen programmes on first and second cycle levels. The number of employees is 175.

High energy in the new experimental hall

**TEXT: ANNICA HULTH, PHOTO: TEDDY THÖRNLUND**

The university’s latest laboratory has been inaugurated, in a building next to the Ångström laboratory. The latest accelerator technology is to be developed in collaboration with scientists from all over Europe in the new Freia laboratory.

“I am proud that we have been able to realise our ambitious plans,” says Tord Ekelöf, Professor of Particle Physics.

IT WAS VICE-CHANCELLOR Eva Åkesson, who cut the ribbon during the opening ceremony in June. The 1,000-square metre experimental hall is now ready for use just over a year after the first sod was turned.

“First-class research infrastructure is essential in order to conduct internationally competitive top research. Which Freia is a true example of,” she said in her speech.

The Freia laboratory will be the test site for the planned ESS facility (European Spallation Source) outside of Lund, which will be the world’s most high-intensity proton accelerator. The assignment is to develop and test a technical system to produce and control the electromagnetic microwave power needed to accelerate the high-intensity proton beam.

In parallel with the ESS project several other development projects are planned in the coming years, including collaboration with CERN, the world’s largest particle physics laboratory in Switzerland.

“We will also install a neutron generator to be used in applied nuclear physics, both by scientists and by students,” says Tord Ekelöf.

Uppsala arranges health summit

**TEXT: PHOTO: MIA WALLERSTEDT**

Uppsala Health Summit will be a meeting place for policy makers and opinion makers in academia, healthcare and industry. The first summit opens its doors June 3–4, 2014 and the theme will be “Healthcare in an Aging World.”

The initiator is the World Class Uppsala network together with Uppsala University, the Swedish University of Agricultural Sciences, Uppsala County Council and Uppsala municipality.

“Researchers, businesses, governments and healthcare professionals contribute every day to the development of medical knowledge. We want to create better conditions to take advantage of research findings, ideas and products for better health through dialogue between researchers, businesses, politicians and opinion makers,” says Anders Malmberg, Deputy Vice-Chancellor of Uppsala University and chairman of the steering committee of the Uppsala Health Summit.

The theme of the meeting in 2014 is aging and health from a social perspective.

What happens now when the proportion of people over 65 is increasing in large parts of the world? In 2012, Sweden together with Japan, Italy and Germany had the highest dependency ratio in the world, with only three people of working age per person over 65.
Student life on horseback

TEXT ANNICA HULTH
PHOTO UPPSALA UNIVERSITY LIBRARY, ULRIKA HOGSTROM

The second oldest organised riding institution, after the Spanish Riding School in Vienna, can be found at Uppsala University. In the autumn it celebrates 350 years – and even today, many students ride at the Uppsala Akademistall.

IN 1663 RIDING was a sport for nobles and military officers and one of several skill subjects, also known as exercitia, for Uppsala students. Nowadays riding is a hobby for many, but the link to the University remains at Uppsala Akademistall in Kvarnbo outside of Uppsala. Scholarships are awarded to students who are good riders. In time for the 350th anniversary, four new riding scholarships have been started, so from the autumn 10 scholarships will be awarded each semester. This entitles the student to ride free of charge twice a week for 16 weeks, which corresponds to about SEK 7,000.

“We are very pleased to be able to award scholarships to students who are good riders here at the University,” says Karin Agenäs. “There was an iron discipline that was extremely severe,” she says with a smile. “The teaching then was purely military and was based on being on the battlefield. The link between riding and academic studies is perhaps even more obvious today when riding is the second most popular sport in Sweden after football.

“The teaching then was purely military and was based on being on the battlefield. There was an iron discipline that was extremely severe,” she says with a smile.

“The link between riding and academic studies is perhaps even more obvious today when riding is the second most popular sport in Sweden after football. For the students, riding is a way to meet and socialise while studying – an alternative to student clubs and parties,” says Marianne Andersson.

Even students from other countries have found their way here. Previously students from Canada, Austria and France have all been awarded scholarships.

“Usually they learn Swedish quickly in the stable environment,” says Karin Agenäs.

Riding for 350 years

Jubilee book “On horseback: Riding lessons at Uppsala University 1663-2013” can be ordered from info@uark.se or acta@ub.uu.se.

Academic riding school

Riding school activities have been run since 1978 by Uppsala Studentenföreläsnings Ridsällskap. The academic riding institution consists of Inspector Equestris, Academy Equerry as well as staff and students at Upsala University, who practice horse riding.

UN veterans drew a large crowd

THE UNIVERSITY HALL was packed – 1,800 people, including the guest of honour HRH Crown Princess Victoria – and 3,000 watched the live broadcast over the web. 27 journalists were on hand to report, when Kofi Annan and Jan Eliasson talked about the UN’s role as a peacemaker.

Former UN Secretary General Kofi Annan is still a leading luminary in Uppsala. In 2007 he was conferred an honorary doctor at Uppsala University, to the memory of Carl von Linné. This time the reason for the visit was Kofi Annan’s book “Interventions – A Life in War and Peace”.

An equally brilliant and faithful Uppsala visitor is Jan Eliasson, current UN deputy secretary general. In 2006 he became an honorary doctor at the University of Social Sciences faculty and is a regular guest at the Department of Peace and Conflict Research, among others, as a visiting professor. The discussion in the auditorium was about how the United Nations can, or should, get involved in different conflicts – but was also a look back at some failures. All under the leadership of Peter Wallensteen, Professor of Peace and Conflict Research at Uppsala University.

Over the years Jan Eliasson and Kofi Annan have worked a great deal together under the UN flag.

The comet will be visible to the naked eye.

It is now getting darker and darker – a good time to look into stars and other celestial phenomena. For example, during November and December the comet ISON will pass Earth. The comet is expected to be as bright as Venus, and with that it can be seen with the naked eye,” says Eric Stempels, researcher at the Department of Physics and Astronomy.

“Anyone curious about the night sky, who is in Uppsala, can go on a tour of the Observatory on clear Tuesday evenings. The tours are organised by Uppsala amateur astronomers in collaboration with Uppsala University. A number of objects that are visible in the night sky are worth watching, such as planets, the moon, a face double star, or a star cluster with the large double refracting telescope in the old main building from the year 1852.

Read more at: http://uaa.saau.se

Alumnus of the Year

The Alumnus of the Year award in 2013 at Uppsala University has been bestowed on Petra Einarsson, President of Sandvik Materials Technology. She receives the award for demonstrating a strong commitment to issues concerning diversity and an inclusive leadership and she is a good role model for current and future students.

Petra Einarsson has a business and economics degree from the University of Uppsala from 1990.
The last word

STEFAN SWARTLING PETERSON, PROFESSOR OF GLOBAL HEALTH:

Does the world need silver handles?

AT HOME in the Västergötland’s farming community a cane with a silver handle was the classic 60th birthday present for hardworking farmers. Hard work and poor living conditions meant it was needed. The development of working life, education, health and welfare programmes in the 20th century have made public health so much better that today’s 60th birthday present if anything would be walking poles and an adventure holiday.

Instead, it is those over 80 we refer to as old, and in general we expect we will not need a walking stick, or its modern variant the walking frame, until we have passed 80. We live longer and healthier lives, and hope to add more life to the years through medical advances and individualised advice based on genetic analysis.

But where do the world’s 80 year olds live? Is it in the aged populations of Japan and Sweden? A look at the UN Population projections shows that already today there are as many 80 year olds and older living in middle and low-income countries as in high-income countries. And that development is moving fast – in 2050, there will be twice as many there as here. But how will they feel? And those 60 or older, have become four times more there than here?

Higher age often leads to a chronic disease. Linked to improved economy and changes in dietary and lifestyle habits, the world’s poorer parts are facing an “epidemic” of chronic diseases, like heart disease and diabetes. Already, East Africa has as much vascular disease as Eastern Europe in the corresponding age groups.

Weak health systems get a “double” burden of disease, as women and children continue to die. What can we transfer from our healthcare service to those who have less than one per cent of our healthcare budget? “Personalised medicine” based on genetic analysis? Maybe, but more likely things that built the good public health standard in Sweden; general efforts towards the entire population. We always prevent more cases of disease by influencing the entire population’s living patterns than by identifying high-risk individuals.

I wonder if this also applies to us, in our ever increasing individualised society. Will we tax sugar and potato crisps before we get genetic analysis to see how sensitive we are to obesity?