



Yearbook 2019/2020

Department of Animal Breeding and Genetics. SLU Uppsala
July 2021

Yearbook 2019/2020

Year of publication: 2021, Uppsala

Publisher: SLU, Department of Animal Breeding and Genetics

Layout: Natalie von der Lehr, Department of Animal Breeding and Genetics

Illustration: Fredrik Saarkoppel, p10. Keni Ren, p11.

Cover photo: Katja Nilsson

Photo: Andrej Tarski, p3. Åsa Ohlsson, p4. Plos one, p5. Wikimedia Commons, p6. Pixabay, p6,7. Katja Nilsson, p7. Julio Gonzalez, p8. Hadrien Gourlé, p9. Jenny Svennås Gillner, p10, p17. Natalie von der Lehr, p11,19. Julie Clasen, p15. Lotta Rydhmer, p18.

Tryck: SLU Repro

Welcome to Hgen

— The Department of Animal Breeding and Genetics

Dear Hgen friends

I hope 2021 will be a good year for all of you. 2020 was such an extraordinary year that it is difficult to remember 2019. But at the university every year is a special year in some way – new research questions, new projects, new students, new colleagues, new PhD theses ...

Two years in review

Genetic variation is the base for our activities at the Department of Animal Breeding and Genetics. We work with farm, sport and companion animals and many other species. We strive for a sustainable use of animal genetic resources. To achieve this vision, we perform research and education within molecular genetics, bioinformatics, quantitative genetics and animal breeding.

We work in collaboration with the industry and other stakeholders, and with colleagues all over the world. Maybe you are one of them? With this Hgen 2019–2020 year book we want to show you some of the work we have done during the last years, and share some of the joyful moments.

You are always welcome to take contact with us. There are so many more research questions to raise and so many more results to find – and conclusions to implement.

Best regards from Lotta Rydhmer, Head of the Department of Animal Breeding and Genetics, SLU

Hgen

is the abbreviation for the name of the department in Swedish:

Institutionen för **husdjursgenetik**

We say "Hgen" when we talk about our department and the various activities such as hgen-seminars and hgen-fika (socialising over a cup of coffee).



Lotta Rydhmer, Head of the Department

PHOTO: ANDREJ TARSKI

Research news

— A selection of published research during 2019/2020

On the following pages you can read about a selection of the research, for more information about published and ongoing projects please visit our homepage.

Hip dysplasia in cats is hereditary and more common in bigger individuals

Millions of cats in the world likely suffer from hip dysplasia, but this cat health problem has rarely been studied. In a newly published study with a focus on the ‘gentle giant’ Maine Coon breed, SLU researchers conclude that the condition is heritable and is more common in large cats. The study also showed that the Swedish health program has been effective in reducing the incidence of hip dysplasia in the breed through selective breeding. The finding that larger cats are more likely to have hip dysplasia suggests breeding for the large body type carries with it the additional risk of hip dysplasia.

About 20 years ago, the health program for Maine Coon cats started in Sweden. One reason was early indications that the breed could have problems with hip dysplasia. And it turned out to be the case; hip dysplasia was relatively common, with roughly one third of cats affected. The initiative came from Sweden but today cats from all over the world are included. The program itself is unique because it focusses on cats – other health programs for hip dysplasia are primarily aimed at breeding in dogs.

”When we first analyzed the data we saw the connection between big cats and hip dysplasia. It was then that we decided to look at genetic correlations between genes for body size and those for hip dysplasia. We found that as the breed increases in size, its hips get worse. This clearly indicates that it is probably not a good idea to promote larger body sizes in its breeding,” says Matt Low, researcher at the Department of Ecology, SLU.

But there is good news, both for breeders and the cats themselves, in that the incidence of hip dysplasia can be reduced with health programs and selective breeding.

”No one wants their cats to feel pain. However, it can be difficult to notice. Cats are much better at hiding pain than dogs are. Important signs to watch out for are whether the cat moves less or is more careful in its movements than you might expect. They can also avoid jumping up on a table or kitchen counter, for example, because of the pain in their hips,” says Åsa Ohlsson.

[Demography, heritability and genetic correlation of feline hip dysplasia and response to selection in a health screening programme](#)



Maine Coon, also known as the “gentle giant”.

PHOTO: ÅSA OHLSSON

Slow muscles give Korean native pigs their tasty pork

In South Korea, the unique Korean Native Black Pig is known for its red, marbled and good tasting meat. Now, an international research team has shown that this pig breed has a gene variant that is not found in modern western pig breeds. The gene affects the fiber structure of the muscle tissue, giving the pig more slow muscle fibers.

Local native pig breeds have many characteristics influenced by genetic variants, which have been lost in modern meat-producing pig breeds. The South Korean pig breed from the island of Jeju, the Korean Native Black Pig, is an example of such a breed. It is known for its very tasty, red-coloured and marbled meat, which compared to meat from a modern domestic pig has a more red colour and more intramuscular fat storage, which results in so-called marbling.



The Korean Native Jeju-pig.

PHOTO: PLOS ONE

All chefs know that fat dissolves the good flavours that make cooked food tasty. It is also well known that meat from the "Jeju pig", besides its red colour and marbling, has a very good taste.

Göran Andersson, professor in Molecular Genetics at the Department of Animal Breeding and Genetics, has been part of an international research team that has identified a genetic variant that makes meat from the Jeju pig more red-coloured and marbled compared to meat from, for example, Swedish domestic pigs. By crossing the Korean Native Black

Pig with domestic pigs and then studying the meat quality of the crosses using modern genetic and molecular genetic methods, the researchers were able to show which gene in the genome causes the marbling and the red meat colour.

"It turned out to be a gene variant in the myosin gene MYH3 that causes more of this important protein to be produced in the Jeju pig. This gene variant is not found in the common pig breeds we use in Europe for meat production," says Göran Andersson.

"Myosin is an important protein for the muscle's ability to contract, and myosin of the type MYH3 affects the muscle tissue's fiber composition," explains Göran Andersson.

The researchers showed that the Jeju pig has a gene variant that makes more MYH3 protein, which changes the muscle tissue's fiber composition into so-called slow muscle fibers. Due to the high content of myoglobin, the colour of these fibers is red, and because the fat storage acts as a fuel for the muscle cells, the marbling occurs.

The study shows the power behind genetic analyzes, according to Göran Andersson.

"The local native breeds around the world have many gene variants that make them well adapted to the local environment in which they live. They are therefore very important resources for ensuring sustainable global food production in the future, especially to meet the challenges of a changing climate. Producing sustainable meat that also tastes good is a win-win situation," Göran Andersson concludes.

[A functional regulatory variant of MYH3 influences muscle fiber-type composition and intramuscular fat content in pigs.](#)

Signs of selection in genome of Swedish warmblood horses

A growing demand for improved physical skills and mental attitude in modern sport horses has led to strong selection for performance in many warmblood studbooks. The aim of the study from Michela Ablondi, Åsa Viklund, Gabriella Lindgren, Susanne Eriksson and Sofia Mikko was to detect genomic regions with low diversity, and therefore potentially under selection, in Swedish Warmblood horses (SWB) by analysing high-density SNP data.

To investigate if such signatures could be the result of selection for equestrian sport performance, we compared our SWB SNP data with those from Exmoor ponies, a horse breed not selected for sport performance traits.



Leslie Morse, American dressage rider with the Swedish warmblood stallion Tip Top in the World Cup Final 2007. PHOTO: WIKIMEDIA COMMONS

The genomic scan for homozygous regions identified long runs of homozygosity (ROH) shared by more than 85% of the genotyped SWB individuals. Genes related to behaviour, physical abilities and fertility, appear to be targets of selection in the SWB breed. This study provides a genome-wide map of selection signatures in SWB horses, and ground for further functional studies to unravel the biological mechanisms behind complex traits in horses.

[Signatures of selection in the genome of Swedish warmblood horses selected for sport performance](#)

Genetics of behaviour traits in German Shepherds

A favourable genetic structure and diversity of behavioural features highlights the potential of dogs for studying the genetic architecture of behaviour traits. However, behaviours are complex traits, which have been shown to be influenced by numerous genetic and non-genetic factors, complicating their analysis.



Human-directed playfulness had the highest heritability amongst the investigated behavioral traits. PHOTO: PIXABAY

In this study, the genetic contribution to behaviour variation in German Shepherd dogs (GSDs) was analysed using genomic approaches. GSDs were phenotyped for behaviour traits using the established Canine Behavioural Assessment and Research Questionnaire (C-BARQ). Genome-wide association study (GWAS) and regional heritability mapping (RHM) approaches were employed to identify associations between behaviour traits and genetic variants, while accounting for relevant non-genetic factors.

By combining these complementary methods the research team, with Erling Strandberg and PerArvelius, endeavoured to increase the power to detect loci with small effects. Several behavioural traits exhibited moderate heritabilities, with the highest identified for Human-directed playfulness, a trait characterised by positive interactions with humans. We identified several genomic regions associated with one or more of the analysed behaviour traits. Some candidate genes located in these regions were previously linked to behavioural disorders in humans, suggesting a new context for their influence

on behaviour characteristics.

Overall, the results support dogs as a valuable resource to dissect the genetic architecture of behaviour traits and also highlight the value of focusing on a single breed in order to control for background genetic effects and thus avoid limitations of between-breed analyses.

[Genetic dissection of complex behaviour traits in German Shepherd dogs](#)

Genes of the black sheep studied

By studying genes associated with coat colour, we can understand the role of these genes in pigmentation but also gain insight into selection history. North European short tailed sheep, including Swedish breeds, have variation in their coat colour, making them good models to expand current knowledge of mutations associated with coat colour in sheep.

A group of researchers, including Anna Maria Johansson, Sofia Mikko and Elisabeth Jonas from Hgen, have studied ASIP and MC1R, two genes with known roles in pigmentation, and their association with black coat colour. They did this by sequencing the coding regions of ASIP in 149 animals and MC1R in 129 animals from seven native Swedish sheep breeds in individuals with black, white or grey fleece.



Researchers have studied ASIP and MC1R, two genes with known roles in pigmentation, and their association with black coat colour.

PHOTO: PIXABAY

Previously known mutations in ASIP were associated with black coat colour in Klövsjö and Roslag sheep breeds and mutations in both ASIP and MC1R were associated with black coat colour in Swedish Finewool.

In Gotland, Gute, Värmland and Helsing sheep breeds, coat colour inheritance was more complex: only 11 of 16 individuals with black fleece had genotypes that could explain their black colour. These breeds have grey individuals in their populations, and grey is believed to be a result of mutations and allelic copy number variation within the ASIP duplication, which could be a possible explanation for the lack of a clear inheritance pattern in these breeds.

Finally, the researchers found a novel missense mutation in MC1R in Gotland, Gute and Värmland sheep and evidence of a duplication of MC1R in Gotland sheep.

[Mutations in ASIP and MC1R: dominant black and recessive black alleles segregate in native Swedish sheep populations](#)

On the cover

The sow on the front picture is part of a research study about activity and how general activity level of sows relate to lameness, and to piglet survival and growth. Activity is recorded with an accelerometer attached to a collar around the sow's neck, during a few days around farrowing and weaning.



PHOTO: KATJA NILSSON

Social sustainability of Swedish pork is better than European average, but not for pig farmers

A social assessment of pork production shows that pigs in Sweden are better off than pigs in the average European production. From a social perspective, the largest concerns for Swedish pork production are related to pig farmers and society. This is the conclusion of a study conducted by researchers at the Swedish University of Agricultural Sciences (SLU), who investigated social sustainability of Swedish pork production with a life cycle assessment. Stanley Ziera and Lotta Rydhmer from the Department of Animal Breeding and Genetics were involved in the study.



In this assessment, the pigs had the lowest Social Hotspot Index; showing that animal welfare is a strength of Swedish pork production.

PHOTO: JULIO GONZALEZ

Pork production has many stakeholders, such as pig farmers, workers, local community, consumers, society at large and the pigs themselves. We investigated how these stakeholders were affected by pork production and studied social conditions in conventional and organic pork production systems. We compared the production of Swedish pork, from the cultivation of soybeans to the consumer's plate, with average European social conditions.

Based on a literature review and a workshop with experts, the team of researchers identified many

issues related to pork production. In total 93 indicators were included in the assessment. They classified the issues based on who was affected and got a list of six stakeholders: pig farmers, workers, local community, consumers, society and pigs.

They constructed a Social Hotspot Index (SHI) describing the social risk on a scale between 0 and 1. A value of 0.5 represents conditions similar to European average social conditions. Below 0.5 means better social conditions and above 0.5 means worse

The researchers saw that pig farmers and society were close to the European reference, indicating that for pig farmers and society there was no difference between Swedish pork production and average social conditions in Europe. For the other stakeholders, the Swedish pork production seems to be better, from a social point of view.

In this assessment, the pigs had the lowest Social Hotspot Index; showing that animal welfare is a strength of Swedish pork production. The findings cast a critical eye on social issues affecting pig farmers, such as low income and musculoskeletal disorders. Society is also affected, for example by low contribution to employment and food security and low commitment to animal genetic diversity.

The difference in Social Hotspot Index between conventional and organic pork production for the local community is related to use of pesticides in feed production, access to farm stores and ability to see pigs on pasture.

There are many expectations on pork production; animal welfare should be high and the production should be economically viable and environmentally friendly and at the same time good for humans' well-being. The following step is to combine a social life cycle assessment (LCA) with an environmental LCA.

[Social life cycle assessment of Swedish organic and conventional pork production](#)

The microbiome of coral reefs reveals environmental perturbations

A cooperation between our department, Pwani University in Kenya and partners in UK, South Africa and Kenya has resulted in increased knowledge about the microbiome of coral reefs and two doctors.

Coral reefs are vulnerable to climate change and water pollution. Sammy Wambua and Hadrien Gourlé have together with their supervisors and co-workers shown that the microbiome of coral reefs can serve as an indicator of ecosystem changes.

With inexpensive molecular monitoring tools, the composition of species in water and sediments at the coral reef can be described. Over 19,000 bacteria, viruses and archaea species were found at coral reefs on the coast of Kenya. The composition of the microbiome varied between sites depending on human impact.

At coral reefs close to areas where many people live, the microbes had more genes governing how the microbe copes with environmental perturbations. Such genes are, for example, involved in the reduction of environmental contaminants and in the repair of DNA damage.

This metagenomics study shows that the diversity of coral reef microbiomes can be monitored and used as an indicator of environmental perturbations.

[Cross-Sectional Variations in Structure and Function of Coral Reef Microbiome With Local Anthropogenic Impacts on the Kenyan Coast of the Indian Ocean](#)



The diversity of coral reef microbiomes can be monitored and used as an indicator of environmental perturbations.

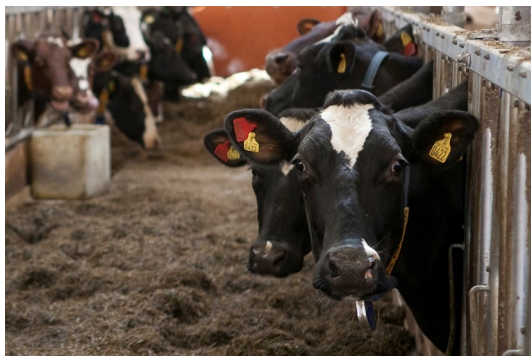
PHOTO: HADRIEN GOURLÉ

A case for CSI

— the multidisciplinary team behind investigation of cow social interaction and disease transmission

In November 2019 Lars Rönnegård received the happy news that his research project “Precision Livestock Breeding – improving both health and production in dairy cattle” had received funding from Formas. The project is highly multidisciplinary and Lars Rönnegård has assembled the team carefully to cover the different aspects.

The project will focus on how to improve animal welfare and health in dairy cattle production using sensor technology, with the potential to minimize antibiotic use by improving tools for disease control and management. A primary component of the project is to use a real time location system to study the indoor movement and social interactions of dairy cattle.



Cows are very social animals.

PHOTO: JENNY SVENNÅS GILLNER

“Imagine that you are a cow in a barn with many other cows. What makes you feel well and comfortable? Maybe the availability of food and water, and space for rest. Maybe feeling safe and comfortable – avoiding stress and fear – is just as important as for humans. That is where the social behavior comes into the picture,” Lars Rönnegård explains.

Team CSI:DT

The acronym CSI:DT stands for “Cow Social Interactions and Disease Transmission” and summarizes the project in a nutshell. In order to study social interactions and behavior of cows, as well as patterns of movement and disease transmission a lot of different competences are needed.

“A crucial component is also the analysis of all the data – the sensors collect position data from the cows each second, that is an awful lot of data for an entire barn,” Lars Rönnegård exemplifies.

When he was writing the grant application he was therefore considering ideal collaboration partners and their competences. Co-applicant Per Petz Nielsen (RISE), who is an expert in animal behavior, suggested collaboration with the research groups of Volker Kromker and Tariq Halasa to also include disease transmission. Breeding organization Växa is a perfect partner to study genetics and also for establishing contact with breeding advisors and farmers.

Recruitment of junior researchers

When the funding for the project was secured, Lars Rönnegård started recruitment of PhD students and postdoctoral researchers. The background and previous experience of the final candidates was a perfect match.

“Ida Hansson has a lot of practical experience from her work as a breeding advisor at Växa and is very competent in the field of genetics and large

data analysis. Svenja Woudstra has a background as a veterinarian and knows a lot about disease transmission. Anna Silvera is an expert in animal behavior and has experience from working with Swedish poultry,” Lars Rönnegård explains.

Further recruits are Keni Ren and Mikhail Churakov who work with sensors, data analysis and statistics.

“I appreciate all the different practical experiences. That makes the discussion of the implementation of the research a lot easier and more concrete.”

When writing the application Lars Rönnegård also got advised by SLU:s Grants Office to include a communication officer in the project.



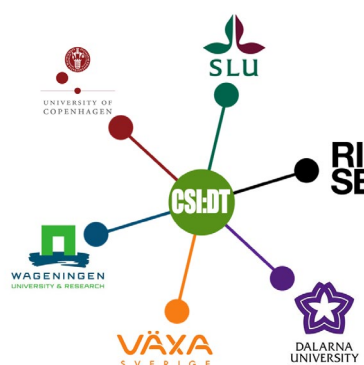
The team and invited speakers at a meeting in Uppsala in September 2020. PHOTO: NATALIE VON DER LEHR

“It is a bit of a luxury to have a budget that allows for this, outreach to the different stakeholders and the public is important for the implementation of this research.”

Building a research environment

The CSI:DT team initiated their work after a kick-off in Uppsala in January 2020, just a few weeks before the coronavirus pandemic hit the world. In September 2020 most of the participants gathered again, with invited speakers joining online.

“I am very happy that we could have these two meetings where everybody could get to know each other and where we could exchange ideas and plan projects. This is an enthusiastic group and everybody knows how they can contribute,” Lars Rönnegård emphasizes.



The participants in the project come from different universities and organizations.

ILLUSTRATION: KENI REN

Despite the ongoing pandemic the build-up of a research environment has progressed well; the junior researchers have started a journal club and regular meetings online keep everybody updated on the different parts of the project and progress on scientific publication.

Challenging but rewarding

Working across disciplines also has its challenges. Lars Rönnegård has quite some experience from multidisciplinary research from his appointment as the dean at Dalarna University. Being a statistician himself Lars Rönnegård also gets involved in a lot of different research projects.

“It is important to understand each other; scholars of different disciplines don’t always talk the same language. Priorities what should be included in a scientific article can also vary. But my experience is also that you can learn a lot from each other, especially when talking to researchers in completely different fields, such as the humanities.”

Broader questions such as how the different digital tools and the possibilities they bring along effect

the farmers can emerge from these kind of discussion.

“What happens with the knowledge we generate in the long run? It is important to think about this.”

More physical meetings

Lars Rönnegård is happy with the team and the work so far after the first year. Due to the pandemic some projects had to be rescheduled but overall the progress has been smooth. Looking ahead he hopes to be able to obtain more funding to sustain the project and multidisciplinary research environment in the future. At the moment he is hoping for a gathering of the team in fall of 2021.

“We are planning to meet in Copenhagen and I would be really happy if that is possible. Physical meetings are important for the exchange of ideas and the research community.”



ILLUSTRATION: FREDRIK SAARKOPPEL



Read more about the project on the website by scanning the QR-code with the camera on your smartphone.

Meet the team

- **Lars Rönnegård** is the principal investigator of the research programme. Lars is a professor in statistics at Dalarna University and also holds a position as a Beijer researcher at the Department of Animal Breeding and Genetics, SLU.
- **Per Peetz Nielsen** is a researcher at RISE Research Institutes of Sweden and holds a PhD in Ethology.
- **Carsten Kirkeby** is a senior researcher at the Institute for Veterinary and Animal Sciences, University of Copenhagen.
- **Volker Kromker** is a veterinarian and professor in cattle health at the University of Copenhagen.
- **Freddy Fikse** is employed by Växa Sverige and holds a PhD in Animal Science.
- **Anna Skarin** is associate professor at SLU with an expertise in animal movement.
- **Moudud Alam** is associate professor in micro-data analysis at Dalarna University.
- **Svenja Woudstra** is a PhD student at the University of Copenhagen with Volker Krömker as main supervisor.
- **Ida Hansson** is a PhD student at SLU with Lars Rönnegård as main supervisor.
- **Anna Silvera** is a postdoc at SLU with expertise in animal behaviour
- **Keni Ren** is a PhD student at Umeå University, employed at Hgen, with expertise in sensors and data analysis
- **Mikhail Churakov** is a postdoc at SLU with expertise in data analysis and modelling
- **Maya Gussman** is a postdoc at Copenhagen University with expertise in programming and data modelling
- **Natalie von der Lehr** is a communication officer at the Department of Animal Breeding and Genetics, SLU.

Footnote: Tariq Halasa left the project in the beginning of 2021 for a position in the industry. Carsten Kirkeby (University of Copenhagen) has joined instead.

Discovering the world

— New PhD student Renaud van Damme

In 2020 Renaud van Damme joined the department as a PhD student in the research group of Erik Bongcam Rudloff. Besides from using and expanding his skills in bioinformatics he will also learn techniques in the wet lab and collect samples and data himself.

What is your background?

I did a Bachelors degree in Biotechnology and Bioinformatics at Haute Ecole en Hainaut (HEH) in Belgium and a Masters at SLU in Uppsala. During my Bachelors I was interested in everything, during the Masters I was thrown into an environment where everybody works with Animal Genetics so I caught up by taking courses in Animal Genetics, Health, Welfare and Behaviour. But I still have a broad interest which is reflected in the subject of my PhD project.



Renaud van Damme

PHOTO: PRIVATE

What is your PhD project about?

I study metagenomics in the rumen of cows, more specifically host-microbiome interactions in Swedish cows and cows from Kenya and Ethiopia. Data analysis by bioinformatics is one part of the project, but I will also collect the data and learn new skills in the wet lab. We are going to compare the results from Swedish cows to cows in Kenya

and Ethiopia and I am really looking forward to travelling. I want to discover things around the world and doing a PhD with Erik gives me this opportunity.

So bioinformatics is about more than just handling large datasets?

A bioinformatician needs to understand wide and various topics. It's a great topic for people who are curious and want to have knowledge that is broad, but also detailed. I enjoy it, the more I learn the more I know.

What do you like most about the department?

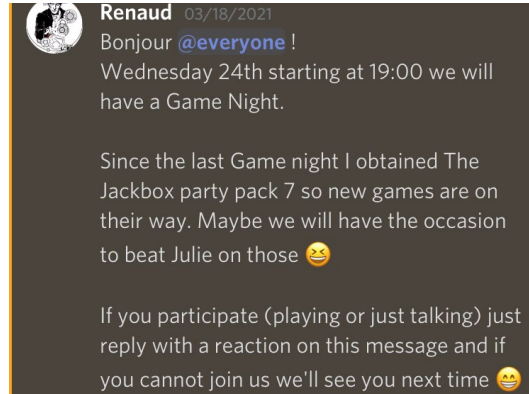
Everyone is really friendly and the department feels like a family. There is no feeling of distance between students and professors and it is easy to talk and discuss with everybody. I also like the events that have been organized and of course fikas. Having a cup of coffee gives you the opportunity to leave the office for a while and exchange a lot of information.

You have been elected chair of the VMF PhD Council. What is your task there?

We are the voice of the PhD students and represent them at the faculty. During 2020 we have taken parts in the discussion how the coronavirus pandemic is being handled. I have always been interested in helping students with their issues and to create better conditions for them.

You have set up a discord server for the department to make social interactions during the pandemic easier. What are your best tips for social interactions online?

- Know that not everyone is available at the same time as you to discuss, so be ready to have ellipsis in the conversation.
- Find something that everyone will enjoy and build social interaction on it (coffee breaks, game night, pub night).
- Be patient when you invite people not used to online social interaction. Once people have joined and are used to the mechanisms, the fun begins.



Screenshot from discord

Making a difference

— Julie Clasen and Stanley Zira represent PhD students in different boards at the VH-faculty

New insights into the university world, making a difference and building a larger scientific network. Those are some of the reasons to be a PhD student representative on different boards at SLU, according to PhD students Julie Clasen and Stanley Zira.

“We can contribute with the perspectives of the PhD students in different contexts, and make a difference for current and future PhD students. That is very rewarding,” says Julie Clasen. She has been the representative for the PhD students at the faculty board during 2020, the docent board during 2019 and also the chair of the VMF PhD Council during 2020.

Learn more about the scientific career

Stanley Zira, who since 2020 represents the PhD students in the docent board, points out that he has learned about the scientific career.

“The board asks the PhD students for their opinion when somebody applies for promotion to docent. That has given me the opportunity to

both follow and be part of the process of promotion. That is a good experience, I now know a lot more about what is important when applying.”

One such example is that it is not only important to publish scientific papers, but also in which journal the findings are published. Having obtained research funding for projects is also a merit.

Additionally, the board meetings also provide an opportunity to meet scientists from other departments.

“I have met a lot of interesting scientists, it is always interesting and fun to discuss research with others,” Stanley Zira comments.



In June 2019, Julie Clasen went for a study visit to the University of Minnesota. Their research farm in Morris, Minnesota, has had crossbreeding trials in dairy cows for almost 15 years now. PHOTO: JULIE CLASEN

Julie Clasen's publications on crossbreeding:

[Economic consequences of dairy crossbreeding in conventional and organic herds in Sweden](#)

[Genetic consequences of terminal crossbreeding, genomic test, sexed semen, and beef semen in dairy herds](#)



Julie Clasen has previously worked on Iceland, combining practical experience with dairy cows with her other passion: Icelandic horses. PHOTO: PRIVAT

Better picture of the faculty and university

Julie Clasen agrees that the extended network and insights into the university world makes representing PhD students on different boards worthwhile. “I have gotten a better insight and more knowledge about the faculty. You get a different picture and a better understanding how a university works.”

She got recruited by older PhD students at the department and then in turn encouraged Stanley Ziera to join as a PhD student representative at the docent board. For 2021 Renaud van Damme, new PhD student at the Department of Animal Breeding and Genetics, is chair of the VMF PhD Council.

“It is easy to get involved, just hang along and listen,” Julie Clasen advises.

Although there are personal benefits of being a PhD student representative both she and Stanley Ziera have the bigger picture in mind.

“We can make a difference for future generation of PhD students and that is very rewarding.”



Stanley Ziera on a visit in Paris. PHOTO: PRIVAT

”We are in this together”

— Teaching online and digital dissertations

In March 2020 everybody involved in teaching at SLU had to adapt to a new reality within a week. Due to the outbreak of the coronavirus pandemic all courses were moved online.

“We got the instructions to switch to online teaching one week ahead. We were mentally prepared, but it was still quite a big change,” Katja Nilsson recalls.

She is a researcher and lecturer at the Department of Animal Breeding and Genetics and was teaching a course in general animal breeding at the time.

Katja Nilsson has previous experience of teaching online.

“The real challenge was that we were in such a rush to make the change. Teaching online is not technically difficult, but different. It takes more time and effort and in the beginning we were also not sure what the different systems were capable of.”

SLU uses the digital teaching platform Canvas, very soon the now well known program Zoom entered the stage as a tool for lectures and group discussions. Katja Nilsson and many others involved in teaching think that it is impossible to transfer some of the aspects of a physical meeting to the digital world.

“It is much easier to interact when teaching in a lecture hall. Teaching online is more one-sided communication – teacher to student. Non-verbal communication is lost. When we have computer labs it is also easier to help when you can point at something at the screen and help hands-on.”

On the other hand the situation was new for everybody and amidst the chaos generosity and kindness stood out.

“There was a general feeling that we are in this together, we exchanged experiences and tips, and many people who had never met before started to

talk to each other. The crisis generated connections and a new community.”

Katja Nilsson awarded with educational award from VH faculty 2019

Katja Nilsson was awarded with the SLU Educational Award “for exemplary efforts within education and teaching” from the VH faculty in 2019.

The award recognizes her use of modern pedagogical methods such as making sure that the students play an active role in their learning process and giving constructive feedback. The motivation for the award also mentions that she has developed an online course that has been appreciated and that she is eager to discuss different kind of teaching and examination with other teachers.



Katja Nilsson receiving the educational award from SLU's vice chancellor Maria Knutsson Wedel.

PHOTO: JENNY SVENNÅS GILLNER

Even doctoral dissertations had to be moved online, connecting the respondent, opponent, examination committee, supervisors and everybody else involved digitally. Lotta Rydhmer, head of the department, shares some thoughts about digital dissertations.

Dissertations are always exiting; you can never fully predict the outcome. When chairing a dissertation, I want to create an environment where the PhD student gets a fair chance to show what he/she has learnt during the PhD project. With some examination committee members and or the 'opponent' on-line, the dissertation becomes more unpredictable.

Thanks to our brave PhD students, patient committee members and opponents and cool IT-technicians, we have managed to perform successful dissertations in spite of the restrictions caused by the pandemic.

The good thing with dissertations on-line is that we can invite committee members and opponents from any country in the world without thinking of the travels. We have an international group of

PhD students and when the dissertation is on-line all friends and family at home can join the event.

What we miss with these dissertations is the opportunity to invite colleagues from abroad to spend some days with us, and the exchange of ideas that usually comes with their visits. Of course, we also miss the parties. To become a doctor is a huge achievement that is indeed worth to celebrate, and I feel sorry for the new doctors who could not have a dissertation party. But a doctor is always doctor (with or without party) and I am happy and very proud of all new doctors from our department.

Lotta Rydhmer



On October 30 2020, Suvi Mäkeläinen defended her doctoral dissertation "Canine inherited retinal degenerations: a model for visual impairment in humans.". From left to right: Björn Ekesten, Göran Andersson, Suvi Mäkeläinen, Tomas Bergström PHOTO: LOTTA RYDHMER

Doctoral dissertations

— at the Department of Animal Breeding and Genetics 2019/2020

A total of ten Phd students defended their doctoral theses during 2019 and 2020. Congratulations!

2019

Naveed Jhamat,

[Comparative bioinformatics analyses of transcriptome and epigenome data using bovine model system](#)

Maulik Upadhyay

[Genomic variation across European cattle: contribution of gene flow](#)

Nancy Amuzu-Aweh

[Genomics of heterosis and egg production in White Leghorns](#)

Hadeer Aboshady

[Genomic variation and molecular mechanisms of the host response to gastrointestinal nematodes in small ruminants](#)

2020

Vinicius da Silva

[Structural variants in the great tit genome and their effect on seasonal timing](#)

Juan Cordero

[Genetics of colostrum, milk and serum antibodies in dairy cattle: implications for health and production](#)

Gabriela Bottani

[Bolivian creole cattle: population structure, genetic diversity and management practices](#)

Hadrien Gourelé

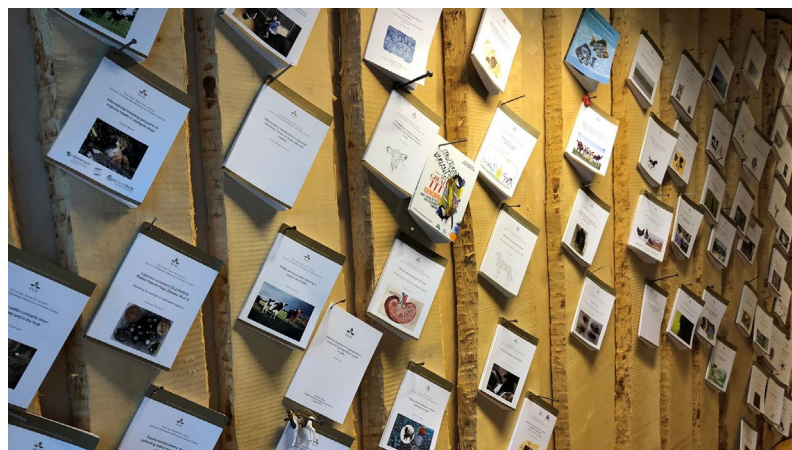
[A dive into the coral microbiome](#)

Suvi Mäkeläinen

[Canine inherited retinal degenerations: a model for visual impairment in humans](#)

Redempta Kajungiro

[Towards a sustainable tilapia breeding program in Tanzania](#)



It is an academic tradition to nail the doctoral thesis once it is published. PHOTO: NATALIE VON DER LEHR



SCIENCE AND
EDUCATION **FOR**
SUSTAINABLE
LIFE

The Swedish University of Agricultural Sciences, SLU, has its main locations in Alnarp, Umeå and Uppsala.
SLU is certified to the ISO 14001 environmental standard • Phone: +46 18-67 10 00 • VAT nr: SE202100281701