

MBW nyhetsbrev - vecka 25, 2018

· IVMSU invigt i samband med symposium om avancerad avbildning av cellulära processer

Under helgen 25-27 maj invigdes faciliteten för intravitalmikroskopi vid Stockholms universitet (IVMSU), som är en nod inom National Microscopy Infrastructure. Mer än 100 deltagare tog del av posters och excellenta föreläsningar av högt ansedda internationella forskare. Symposiet "Advanced Imaging of Cellular Processes *in vitro* and *in vivo*" öppnades av rektor vid SU. Besök rektors blogg för att läsa mer om hennes tankar kring IVMSU.



· Ann-Christin Lindås ny studierektor

Från och med den 1a augusti kommer Ann-Christin Lindås att starta sitt uppdrag som studierektor för MBW.

- Jag ser fram emot min nya arbetsuppgift. Jag tycker om att undervisa och kommer att jobba för att göra kurserna så bra och nyttiga som möjligt för våra studenter, säger hon.

Ann-Christin Lindås tar över studierektorskapet som tidigare delats mellan Ann-Kristin Östlund Farrants och Ulrich Theopold. Ann-Kristin Östlund Farrants kommer fortfarande att vara knuten till undervisningen på kandidat- och masternivå i sin nya roll som prefekt för BIG från 1a augusti. Ulrich Theopold kommer att vara kvar som MBWs andra representant i BIGs styrelse.



Ann-Christin Lindås

Information från den tekniska gruppen

Glöm ej...

Att i dessa varma tider skrapa bort is från dörrar och kanter på era -80 gradersfrysar. Detta ska alltid göras varje gång dörren eller locket öppnas. Om du behöver mer information eller en isskrapa, kontakta Heinrich von Fircks, *heinrich.vonfircks@su.se*.

Om larmet går av misstag...

Om du råkar utlösa larmet av misstag utanför arbetstid (18-07), ring säkerhetsvakten (08-16 42 00, dygnet runt), förklara situationen och att det rör sig om ett falsklarm. Om du får instruktioner att göra så, **stanna och vänta in säkerhetsvakten**. Detta är viktigt, annars måste MBW betala 500 kr varje gång en säkerhetsvakt rycker ut för att undersöka vad som utlöste larmet. Under 2017 betalade MBW 30 000 kr för larm som utlöstes av misstag. Om du behöver mer information, kontakta Heinrich von Fircks, *heinrich.vonfircks@su.se*.

· Många MBW-tjejer sprang Vårruset

25 tjejer från hela MBW representerade institutionen på Vårruset som gick av stapeln vid Frescati den 24 maj. Alla sprang eller joggade 5 km och efteråt blev det picknick i gröngräset.



• Nya personer vid MBW

MBW är en dynamisk institution och denna vecka välkomnar vi:

Forskare: Michaela Keuper (grupp Jastroch) Examensarbetare: Amulya Appaswamy (grupp Jonsson) Sommarstudenter: Tim Åström (grupp Bengtsson), Nargiza Sadyrova (grupp Bengtsson) Praktikant: Sehrish Abid (tekniska gruppen)

/Niklas, Per & Lina





MBW Newsletter - week 25, 2018

• IVMSU inaugurated during Symposium on Advanced Imaging of Cellular Processes

During the weekend May 25-27, MBW celebrated the opening of the National Microscopy Infrastructure node for intravital microscopy at Stockholm University (IVMSU). More than 100 participants enjoyed posters and excellent talks on advanced imaging by internationally renowned scientists. The symposium "Advanced Imaging of Cellular Processes *in vitro* and *in vivo*" was opened by the Vice-Chancellor of SU. Visit the Vice-Chancellors blog to read her thoughts on the symposium.



· Ann-Christin Lindås new Director of Studies

As of August 1, Ann-Christin Lindås will start her appointment as new Director of Undergraduate Studies (DUG) for MBW.

"I am looking forward to my new task. I enjoy teaching and I intend to work to ensure that our courses are as good and beneficial as possible for our students", she says.

Ann-Christin Lindås takes over from the current DUG that has been a role shared by Ann-Kristin Östlund Farrants and Ulrich Theopold. Ann-Kristin Östlund Farrants will remain closely tied to undergraduate education in her new role as Department Chair of BIG, a position she will have from August 1. Ulrich Theopold will remain as one of MBW representatives on the BIG board.



Ann-Christin Lindås

\cdot Info from the technical group

Do not forget ...

In these hot days, do not forget to scrape away ice from the doors and edges of your ultra-low-temperature freezers (-80 C). This should always be done when opening the door or lifting the lid. Do you need more information or an ice scraper - contact Heinrich von Fircks, *heinrich.vonfircks@su.se*.

When you accidently set off an alarm...

If you set off an alarm during out-of-office hours (18-07), please phone security at 08-16 42 00 (24-hours) and describe the situation and specify that the alarm is a false alarm. If directed to, **remain by the alarm and wait for a security guard**. This is important, otherwise MBW has to pay 500 SEK each time a security guard comes to investigate the cause of an active alarm. During 2017 MBW payed 30 000 SEK for alarms that were accidently triggered. Do you need more information - contact Heinrich von Fircks, *heinrich.vonfircks@su.se*.

• Many women from MBW participated in Vårruset

Twenty-five women represented MBW in Vårruset held at Frescati on May 24. All participants ran or jogged 5 km and afterwards enjoyed a picnic together.



New persons at MBW

MBW is a dynamic institute. This week we welcome: **Researcher:** Michaela Keuper (Group Jastroch) **Degree project student:** Amulya Appaswamy (Group Jonsson)

Summer students: Tim Åström (Group Bengtsson), Nargiza Sadyrova (Group Bengtsson) Trainee: Sehrish Abid (technical group)

/Niklas, Per & Lina



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Martin Jastroch - New Group Leader at MBW

As of May 1st, Martin Jastroch is a new group leader at MBW. With a passion for animal physiology in general and energy metabolism in particular, he wants to understand how thermogenesis evolved and how an increased understanding regarding this fundamental process can be applied to develop novel medical intervention strategies directed towards curing metabolic diseases.

"I am curious for new discoveries and not afraid of dealing with questions that contradict mainstream and textbook knowledge", he says.

Martin has always been interested in nature and animals. He specialized in animal physiology and received his Master's degree in Biology from the Philipps-Universität, Marburg, Germany in 2003. Early on Martin was intrigued by energy metabolism, and already as a bachelor student he worked as a volunteer in a lab where he later performed his Ph.D. studies. In 2007 he defended his thesis "Evolution and functional characterization of uncoupling proteins in vertebrates" at the Philipps-Universität, Marburg.

"It was an entirely new topic in the field that nobody had approached. So, as you can see, I started evolutionary analysis of thermogenesis as an undergraduate student", Martin says.

After his Ph.D., Martin had the opportunity to stand in as the head of the molecular laboratory of the Animal Physiology in Marburg for one year prior to moving on to a postdoctoral position at the Buck Institute for Research of Aging in California in 2008. As a postdoc he learned new techniques to study mitochondrial function and applied them to figure out how mitochondria contribute to controlling insulin secretion by pancreatic beta cells. In 2011 he was one of the founding group leaders in the new Institute for Diabetes and Obesity at the Helmholtz center in Munich, which within seven years of existence has become one of the top biomedical institutes in the world.

"During the last six and a half years in Munich I carried out research on mitochondrial function in metabolic disease, with a focus on questions related to beta cells and brown fat."

A way to treat obesity and diabetes

At MBW Martin will continue along this line of research, in a general and medically applied way. More specifically he will study a mitochondrial protein, the so-called uncoupling protein 1 (UCP 1), which is exclusively found in brown adipose tissue (brown fat).



Martin Jastroch, Associate Professor

"Basically, UCP 1 short-circuits the respiratory chain and thereby releases the energy as heat, instead of storing it as ATP. This accelerates the whole energy turnover in brown adipose tissue. We follow how brown fat and UCP1 have evolved during evolution. We see what molecular changes have occurred and which molecular systems have been implemented to make it dissipating heat."

This knowledge could be used to cure metabolic diseases like obesity and diabetes. The main type of fat in humans is white adipose tissue (white fat), used for energy storage. The sedentary lifestyle in the Western world of today implies that we are storing way too much energy in our bodies.

"One of my research goals is to activate white fat to release that extra energy as heat. We know that the molecular mechanism generating heat in brown fat involves UCP1 and supporting networks. If we could restore this molecular machinery in our white fat then we will be able to re-balance our metabolism to cure metabolic diseases such as obesity and diabetes in the future."

Diverse spectrum of lab techniques and non-model organisms Jastroch's research group is studying energy metabolism at all systemic levels: in whole animals, in cells and in isolated mitochondria. The Jastroch lab uses several techniques to measure energy metabolism, including the precise measurement of oxygen consumption.

"We have cages where we can measure metabolic rate of living mice by measuring their oxygen consumption. The sensors can also register how much carbon dioxide is exhaled and how much food is eaten. For cells we have a special machine called a "seahorse". It is an oxygraph with fluorescence sensors that can measure oxygen consumption at the cellular level.



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We can do the same for isolated mitochondria, too. So, when we have a gene-knockout with a phenotype, we can see how that changes the metabolism in the animal, in a particular cell, and even in the isolated mitochondrion of that cell".

To be able to follow how thermoregulation evolved in terms of brown fat and UCP1, Martin is using comparative principles that have almost been lost in modern science. This implies using non-model organisms.

"The Krogh's principle states that there is so many differences in innovations in nature that for any phenomenon you could find the right animal model to figure out how this phenomenon works. If you for example want to know how much cold a rodent could tolerate you would look into a polar but not into a desert species."

The expertise in integrative physiology of mammalian energy metabolism means that Martin's research group have had many fruitful collaborations over the years.

"We enjoy collaborations and contribute with our knowledge to research projects of other groups. We learn more in shorter time and we are now confident that our help can make any other study touching energy metabolism better with our expertise, which is highly requested. I sense that we have accumulated a lot of credibility over time."

What part of your research are you most interested in?

"I have to come back to the animals. I am fascinated by how animals adapt to changing environments to survive, how they change the underlying mitochondrial and molecular mechanisms."

What motivates you to continue your research, for days, months and years on end?

"To find new things! It will happen if you have perseverance, are open-minded and observe the data critically. I also like working with students, teaching the new generation of scientists. The unbiased view of a student occasionally opens up a window towards new thinking, and the learning process between teacher and student should always be mutual."

Which of the discoveries you have made over the years are you most proud of?

"All of them. During my Ph.D., it was the discovery of the uncoupling protein in fish. At that time, it was common textbook knowledge that UCP1 was exclusively a mammalian protein. Despite all odds I found it in fish. Later, milestones involved the discovery of brownish fat in marsupials and when we demonstrated that brown fat evolved before mammals migrated to the cold. We showed that mammals living in warm climates already had brown fat. We suggested that its purpose was not only for maintaining body temperature but also for offspring incubation to increase fitness."

What was the reason you took this position when you got the opportunity?

"The challenge. To prove that I could succeed here, even coming from a well-funded scientific paradise such as Munich and the Helmholtz. But of course, the Wenner-Gren Institute at Stockholm University has the longest tradition in brown adipose tissue research, the highest reputation and credibility over the past 70 years. My passion, mitochondria and brown adipose tissue, made it impossible to resist the call. If Harvard would have asked me to come over there I would stayed in my Munich paradise."

Facts:

Name: Martin Jastroch Age: 41

Comes from: Germany. "I have lived all over the country, from Hamburg in the north to Munich in the south." **Family:** Girlfriend, now "sambo"

Lives: "We used Airbnb moving from place to place. We just found a rental apartment but are looking to find more permanent housing."

Interests: "Fishing, which I have done in five continents. Here in Sweden I prefer to do jerk-fishing for pike, flyfishing for seatrout and I hope to find new fishing buddies".

Talent: "I have a good feeling for scientific questions and to analyze things logically. Therefore, I made being an experimental researcher as my profession".

Martin sits in room F360 and can be reached by phone 08-16 3108 or mail:*martin.jastroch@su.se*

We welcome Martin to MBW!