



UPCOMING EVENTS



New bioinformatics courses

- The next "[R as a programming language](#)" and "[Statistics with R](#)" courses are aimed at researchers who would like to learn how to use the statistical programming language "R".
- Lecturer: András Aszódi (VBCF BioComp)
- Date and venue: February 6th -7th 2018 (R as a programming language), February 14th -15th 2018 (Statistics with R) VBCF seminar room
- Registration is open [HERE](#).

Modern Plant Microscopy

- The latest microscopy and spectroscopy assisted insights into the inner workings of plants.
- The meeting gives center stage to six leading researchers in the field of optical microscopy and spectroscopy to present their latest findings and how they have helped us gain a deeper insight into the complex processes underlying the biology of plants.
- The REGISTRATION (no registration fee) is open [HERE](#)
- Date and venue: February 16th 2018, GMI/IMBA Lecture hall.
- Organized jointly by VBCF CF Advanced Microscopy and CEITEC RG leader Jan Hejatko in the scope of the project RIAT-CZ (Programme Interreg AT-CZ).

Modern Plant Microscopy
The latest microscopy and spectroscopy assisted insights on the inner workings of plants

February 16th 2018
GMI/IMBA Lecture Hall
Dr.-Bohr-Gasse 3
1030 Vienna

Free registration
www.appn.at/registration
Deadline: 4.2.2017
First 45 applicants get free lunch

From Robert Hooke's faithful first experiments on cork cells over 300 years ago, optical microscopy of plants is almost an eternity from where it all began. Celebrating the milestones reached ever since, the "Modern Plant Microscopy" meeting gives center stage to six leading researchers in the field of optical microscopy and spectroscopy to present their latest findings and how they have helped us gain a deeper insight into the complex processes underlying the biology of plants.

Speakers
Jozef Samaj
Palacky University Olomouc, CZ
Miroslav Oveska
Palacky University Olomouc, CZ
Magdalena Narenska
Jagiellonian University, PL
Jiri Filipek
ISTIA, AT
Andreas Gorzast
Umeå University, SE
Alexis Pinaudelle
INRA, Versailles, FR

Scope
Raman Spectroscopy, Atomic Force Microscopy, Light Sheet Microscopy, Superresolution Microscopy

Organizers and Contact
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Programme
9:30 am. Coffee & Registration
10 am. Start
1 pm. Lunch break
4:30 pm. Closing Session

VBCF **CEITEC**
Interreg
Austria-Czech Republic

APPN
Austrian Plant Phenotyping Network

EPPN 2020
European Plant Phenotyping Network

Interreg
Austria-Czech Republic

2nd APPN meeting and EPPN2020 workshop on root phenotyping technologies

- Date and venue: 17th and 18th April 2018, BOKU
- Registration will open soon.

17th - 18th of April, BOKU Vienna and Tulln

2nd APPN & EPPN Meeting featuring
root phenotyping technologies
&
Hands-on Workshop on
hyperspectral root phenotyping

APPN
Austrian Plant Phenotyping Network

EPPN 2020
European Plant Phenotyping Network

Interreg
Austria-Czech Republic



Lunch and Learn Session

Together with **Data Sciences International** (DSI), the core facility **Preclinical Phenotyping** will host a “Lunch and Learn Session” where new developments and applications in the field of **telemetry recordings of physiological parameters** (cardiovascular, core body temperature, ..) will be presented; lunch will be sponsored by DSI.

- Date: event planned for March 2018.
- Registration will open soon.



The 8th Annual Workshop of the Austrian Society of Electron Microscopy

• Will be hosted by the core facility Electron Microscopy on April 26-27th 2018. SAVE THE DATE!

Correlated Multimodal Imaging
Austrian Bioimaging Node Initiative

The 11th Imaging in the Life Sciences Meeting

• Will be organized on September 20th - 21st, venue: IMP Lecture hall. SAVE THE DATE!



VBCF PULSE

NEW SERVICES AND INSTRUMENTATION AVAILABLE!



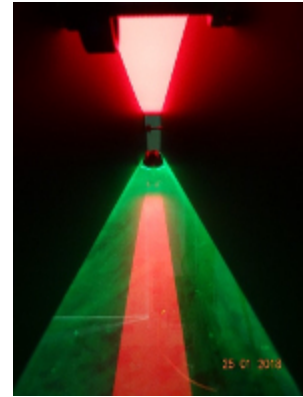
Protein Technologies

A new instrument for **Isothermal Titration Calorimetry (ITC)** measurements was installed in the ProTech facility in January. The PEAQ-ITC instrument from Malvern enables measurement of any biomolecular interaction to determine dissociation constants, binding stoichiometries, and thermodynamic

parameters. For more information or to schedule a training, please contact Arthur Sedivy or write to protech@vbcf.ac.at.

Preclinical Phenotyping

Noldus CatWalk system is a highly sensitive tool to assess gait and locomotion and allows for high-throughput analysis of mouse footprints. The mouse traverses a glass plate voluntarily (towards a goal box), and its footprints are captured. CatWalk XT visualizes the prints and calculates statistics related to print dimensions and the time and distance relationships between footfalls.



ECG and blood pressure measurements via implantable telemetry

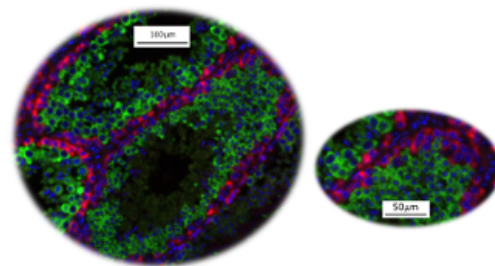
pcPHENO can now take continuous ECG-recordings and blood pressure measurements from within the aortic arch using implantable telemetry transmitters from DataSciences International. The recordings can be done in the TSE PhenoMaster system, allowing for simultaneous measurement of metabolic parameters.

HistoPathology

New services offered by the CF HistoPathology:

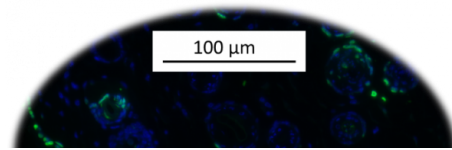
Double immunostaining – two **primary** antibodies from the same species:

- Blue – DAPI
- Red – antibody A raised in rabbit
- Green – antibody B raised in rabbit



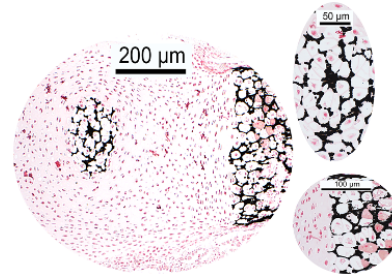
TUNEL staining- Terminal deoxynucleotidyl transferase dUTP nick end labeling, a method for detecting DNA fragmentation by

labeling the 3'- hydroxyl termini in the double-strand DNA breaks



Three special **histochemical stains**:

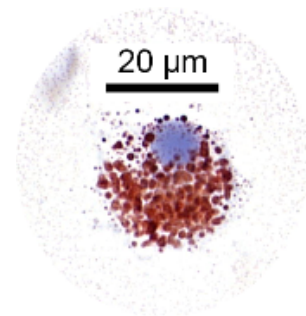
1. **von Kossa** - calcium deposits



2. **Alcian blue** – acidic polysaccharides, proteoglycans, acidic mucins.



3. **Oil red O** – adipocytes, neutral triglycerides, certain lipoproteins.



WHAT HAPPENED - brief info on past events

Events organized within the project [RIAT-CZ](#)



Within the project RIAT-CZ we have organized several workshops focused on mutual knowledge exchange among experts in the AT - CZ cross-border region in respective fields of expertise. The events were supported by the programme Interreg AT-CZ V-A, project RIAT-CZ, No. ATCZ40.



- October 12-13th 2017 at VBCF
- For the workshop, PHENOSPEX visited the VBCF with their new PlantEye F500 device and performed multispectral 3D scans of the participants' samples.

- The plants were grown at the VBCF PlantS Facility and scanned one day before the workshop (seeds were provided by the participants in advance). Hands-on data analysis as well as a follow-up discussion of derived results was performed during the workshop and on the second day at individual meetings
- Organizer: CF Plant Sciences



Applied Biostatistics and Data Analysis in Clinical Research

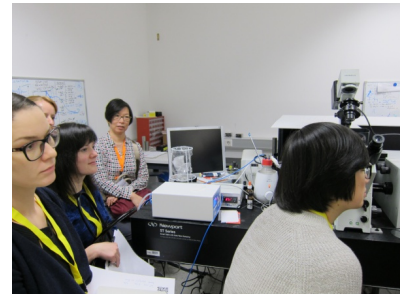
- November 13th 2018 at VBCF
- Two external experts Ana Drozdowskyj (Director of Biostatistics at Pivotal, a software producer located in the USA) and Witold Bauer (Bioinformatician at the University in Bialystok, Poland) were invited to give

talks on the ways and possibilities of exploiting data in clinical research.

- Organizer: CF Biostatistics & Scientific Computing

Stayin' Alive

- January 12th 2018 at VBCF
- Hands-on workshop focused on working with state-of-the-art microscopes FLIM, LLS, BLSM, L-SPIM. The demand was so high that we had to schedule an extra session on a subsequent day.
- Organizers: CF Advanced Microscopy, VBCF & Cellular Imaging, CEITEC



Vienna Region cryo-EM Seminars

The EM Facility together with David Haselbach (IMP) founded the **Vienna Region cryo-EM Seminars** - a monthly get-together of everyone working in EM in the greater Vienna region to discuss technical cryo-EM topics. A first kick-off Meeting was hosted on December 20th 2017 and regular meetings start on January 1st 2018.



Industry Board (ABIB) Kick-off Meeting

- December 7th 2017 at VBCF

The Industry Board was established to bring together all relevant Austrian stakeholders involved or interested in imaging and image processing in Austria, and to foster their exchange.

- 14 representatives of Austrian companies focused on imaging technologies signed the Membership Agreement
 - Bodo Falke from Leica and Alain Pitiot from Ilixa got elected President and Vice-President
 - Organized by CMI
-

1st BioBrillouin Meeting

In September 2017 the first BioBrillouin Meeting was held at the Natural History Museum & IMP, Vienna. It was organized by Kareem Elsayad, Advanced Microscopy CF and funded by the BioBrillouin COST Action CA16124.



70 scientists from all over Europe came together to discuss the use and potential applications of Brillouin microspectroscopy. For more information on the BioBrillouin COST Action please visit: www.biobrillouin.eu



Nanopore sequencing seminar

• Representatives of [Oxford Nanopore Technologies Ltd.](http://OxfordNanoporeTechnologiesLtd.com) presented the company sequencing technology and new solutions they currently offer. A user presentation was provided Dominik Handler (Brennecke group, IMBA)

- December 12th 2017
 - Attended by more than 60 participants
 - Organized by the CF Next Generation Sequencing
-



FEATURED NEWS

Our director leaves

One of the most surprising, unexpected, and sad announcements of the past autumn was the **resignation of Andreas Tiran from the position of VBCF's managing director**. The search for a new VBCF director has already started. In the meantime, Andreas Sommer and Peggy Stolt-Bergner will serve as co-interim managing directors.

Andreas was appointed as the first VBCF director after its foundation 7 years ago and since then, he has managed to build up the whole institution into a respected provider of research infrastructures in the area of Central Europe. His visionary ideas together with experiences brought from the Center for Medical Research in Graz, have enabled VBCF to develop into a real center operating and developing research infrastructures at the European level. We appreciate not only Andreas' professional approach but also his personal devotion to the company and all employees. **Andreas, we will miss you!**



New FWF project for Protein Technologies

VBCF-ProTech has been awarded an FWF grant for a collaborative project with Fred Berger's lab (GMI) on **“The role of chromatin in alternating generations”**. By combining ProTech expertise in plant genome engineering and technology platforms with knowledge on the moss species *Marchantia* and chromatin biology from the Berger lab, we hope to not only generate new resources for the *Marchantia* community, but also address long-standing questions in the field of chromatin biology.

The VBC Child Care



Center starts its own project

This January, [Svenja Brek](#) (head of CCC) started a new research project at the VBC child-care center in collaboration with Lisa Horn-Péter from the University of Vienna. Together with a team of students they **investigate the factors influencing early social competence and socio-positive behaviour in the child-care setting**. First results will be presented to the child-care staff and the participating parents this summer.

We want to thank all the enthusiastic parents and children for their participation in the study!

[Read more about the study >>](#)

VBCF in the press



Electron Microscopy in Ö1: Dimensionen

The 2017 Nobel Prize for Chemistry was awarded to three cryo-EM pioneers. Austrian public radio Ö1 "Dimensionen" wanted to know more about this technology and visited the EM Facility and Thomas Marlovits (IMBA/IMP). The radio broadcast aired on December 6th 2017 explaining how cryo-EM works, what it is used for and which contributions were honoured specifically.



ANNOUNCEMENTS

WE HAVE NEW COLLEAGUES! AND WE SAY GOODBYE TO SOME OTHERS.....



Open position for Grant Assistant

The VBCF Admin looks for suitable candidates for the 25-hours/week position of Grant Assistant as a replacement of **Anita Kazda** who leaves end of March. The candidates may apply till February 20th [HERE](#), section Career.



• **Juraj Gregan** joined the Advanced Microscopy facility in January 2018. Juraj will be working as leader of the FWF project "***The role of novel posttranslational modifications of the cohesin***"

• **Hamid Keshmiri** started in November 2017 as R&D Researcher. He will be working on the project "***Nanostructured substrates for surface/plasmon enhanced fluorescence***" which will lead to development of a new service of the facility.



TU Vienna student **Katharina Keuenhof** finished her Master Thesis in the EM Facility and successfully defended on October 12th 2017. Congratulations!



Anna Jelem has left for maternity leave. She will be replaced from the 1st March by **Jernej Hren**, who will take over her duties as Behavioral Specialist.



Klara Wuketich joined the PlantS facility on a part-time basis after her five months FFG FemTech internship as Phenotyping Specialist Junior.



• **Ivana Bilusic-Vilagos** (Laboratory Scientist) left for maternity leave until September. She will be replaced by **Philipp Czermak**.

• **Karolina Hilse-Koller** has started in January as Laboratory Scientist. Her task will be CRISPR/Cas9 development in collaboration with the University of Vienna/MFPL.

• **Monika Borowska** and **Katharina Radakovics** (laboratory Scientists) left.



The VDRC Technicians announce the following changes:

• **Barbara Ruplitsch** went on maternity leave.

• **Hanna Mayrhofer** left, **Lucian Chesnay** will leave in mid February.

- **Carina Ripken** joined.
 - **Sabine Weissmayer** began her 6 month FemTech internship where she will genotype RNAi lines.
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Correlated Multimodal Imaging
Austrian Bioimaging Node Initiative

Two FemTech students **Alina Psenicny** and **Tamina Laimer** started their 6 month internship

at CMI where they will write their master theses on advanced correlative light and electron microscopy in collaboration with Yasin Dagdas (GMI), Thomas Heuser (Electron Microscopy), and Kareem Elsayad (Advanced Microscopy).



RECENT PUBLICATIONS



Insights into Land Plant Evolution Garnered from the *Marchantia polymorpha* Genome. Bowman JL, Kohchi T, Yamato KT, **Galik B**, Schmutz J et al.

Cell. 2017 Oct 5;171(2):287-304.e15. doi: 10.1016/j.cell.2017.09.030.

[Abstract >>](#)



A reversible haploid mouse embryonic stem cell biobank resource for functional genomics. Elling U, Wimmer RA,

Leibbrandt A, Burkard T, Michlits G, Leopoldi A, **Micheler T**,

Abdeen D, Zhuk S, Aspalter IM, Handl C, Liebergesell J, Hubmann M, Husa AM, Kinzer M, Schuller N, Wetzel E, van de Loo N, Zepeda Martinez JA, Estoppey D, Riedl R, Yang F, Fu B, Dechat T, Ivics Z, Agu CA, Bell O, Blaas D, Gerhardt H, Hoepfner D, Stark A & Penninger JM

Nature **550**, 114–118 (05 October 2017)

[Abstract >>](#)



DRC2/CCDC65 is a central hub for assembly of the nexin-dynein regulatory complex and other regulators of ciliary and

flagellar motility. Bower R, Tritschler D, Mills KV, **Heuser T**, Nicastro D, Porter ME.

Mol Biol Cell. 2018 Jan 15;29(2):137-153. doi: 10.1091/mbc.E17-08-0510.
Epub 2017 Nov 22.

[Abstract >>](#)

Subcellular analysis of pigeon hair cells implicates vesicular trafficking in cuticulosome formation and maintenance. Nimpf S, Malkemper EP, Lauwers M, Ushakova L, Nordmann G, Wenninger-Weinzierl A, Burkard TR, Jacob S, **Heuser T**, Resch G., Keays DA (2017)
eLife doi:10.7554/eLife.29959

[Full article >>](#)



An extracellular network of Arabidopsis leucine-rich repeat receptor kinases. Smakowska-Luzan E, Mott GA, Parys K,

Stegmann M, Howton TC, Layeghifard M, **Neuhold J, Lehner A**, Kong J, Grünwald K, Weinberger N, Satbhai SB, Mayer D, Busch W, Madalinski M, **Stolt-Bergner P**, Provart NJ, Mukhtar MS, Zipfel C, Desveaux D, Guttman DS & Belkhadir Y.

VBCF CF BioCOMP was acknowledged in this publication.

Nature **553**, 342–346 (18 January 2018)

[Abstract >>](#)



Axicon-based Bessel beams for flat-field illumination in total internal reflection fluorescence microscopy. Schreiber B, **Elsayad K**, Heinze KG.

Opt Lett. 2017 Oct 1;42(19):3880-3883. doi: 10.1364/OL.42.003880.

[Abstract >>](#)

ACKNOWLEDGEMENTS



Use of the NGS facility has been regularly acknowledged in various publications including the following three examples:

The *Candida albicans* HIR histone chaperone regulates the yeast-to-hyphae transition by controlling the sensitivity to morphogenesis signals.

Jenull S, Tscherner M, Gulati M, Nobile CJ, Chauhan N, Kuchler K

Sci Rep 2017 Aug 16; 7 (1)

[Abstract >>](#)

CRISPR-UMI: single-cell lineage tracing of pooled CRISPR-Cas9 screens.

Michlits G, Hubmann M, Wu SH, Vainorius G, Budusan E, Zhuk S, Burkard TR, Novatchkova M, Aichinger M, Lu Y, Reece-Hoyes J, Nitsch R, Schramek D, Hoepfner D, Elling U

Nat. Methods 2017 Oct 16

[Abstract >>](#)

Resolving systematic errors in widely used enhancer activity assays in human cells. Muerdter F, Boryń ŁM, Woodfin AR, Neumayr C, Rath M, Zabidi MA, Pagani M, Haberle V, Kazmar T, Catarino RR, Schernhuber K, Arnold CD, Stark A

Nat. Methods 2017 Dec 11

[Abstract >>](#)



RANK rewires energy homeostasis in lung cancer cells and drives primary lung cancer. Rao S, Sigl V, Wimmer RA,

Novatchkova M, Jais A, Wagner G, Handschuh S, Uribesalgo I, Hagelkruys A, Kozieradzki I, Tortola L, Nitsch R, Cronin SJ, Orthofer M, Branstetter D, Canon J, Rossi J, D'Arcangelo M, Botling J, Micke P, Fleur L, Edlund K, Bergqvist M, Ekman S, Lendl T, Popper H, Takayanagi H, Kenner L, Hirsch FR, Dougall W, Penninger JM

Genes Dev. 2017 Oct 15;31(20): 2099-2112

[Abstract >>](#)



Virtual reality for freely moving animals. Stowers JR, Hofbauer M, Bastien R, Griessner J, Higgins P, Farooqui S, Fischer RM, Nowikovsky K, Haubensak W, Couzin ID, Tessmar-Raible

K, Straw AD.

[Abstract >>](#)



Molecular basis for inner kinetochore configuration through RWD domain–peptide interactions. Schmitzberger F, Richter MM, Gordiyenko Y, Robinson CV, Dadlez M, and Westermann S.

EMBO J. 2017 Dec 1; 36(23): 3458–3482.

[Abstract >>](#)



Use of VDRC resources has been acknowledged in 376 publications in 2017 and in 26 publications in 2018 so far, including the following:

Restraint of presynaptic protein levels by Wnd/DLK signaling mediates synaptic defects associated with the kinesin-3 motor Unc-104. Li J, Zhang YV, Asghari Adib E, Stanchev DT, Xiong X, Klinedinst S, Soppina P, Jahn TR, Hume RI, Rasse TM, Collins CA.

Elife. 2017 Sep 19;6. pii: e24271. doi: 10.7554/eLife.24271.

[Abstract >>](#)

A heterochromatin-dependent transcription machinery drives piRNA expression. Andersen PR, Tirian L, Vunjak M, Brennecke J.

Nature. 2017 Sep 7;549(7670):54-59. doi: 10.1038/nature23482. Epub 2017 Aug 23.

[Abstract >>](#)

Enclosure of Dendrites by Epidermal Cells Restricts Branching and Permits Coordinated Development of Spatially Overlapping Sensory Neurons. Tenenbaum CM, Misra M, Alizzi RA, Gavis ER.

Cell Rep. 2017 Sep 26;20(13):3043-3056. doi: 10.1016/j.celrep.2017.09.001.

[Abstract >>](#)



VBCF runs!

The Team VBCF (as always) did an excellent job at the “**Mödlinger Altstadtlauf**” and brought fame and glory to the company! Our particular congratulations belong to **Kathi Radakovics**, who won the race in her age category!!



On the 26th September, the VBCF running team achieved the **excellent 31st** place in the **Vienna Night Run** where more than 20.200 people participated and money for “Licht für die Welt” was collected.

New babies at VBCF!

The VBCF is happy to announce that three sweet baby girls were born during the past three months:

Lotte Mari, daughter of the head of the CF Plant Sciences Jakub Jez, born on the 12th November 2017.



Pia, daughter of the CF Protein Technologies laboratory scientist Ivana Bilusic-Vilagos, born on the 17th January 2018.

Anna, daughter of the NGS sequencing specialist Volodymyr Shubchynskyy, born on the 25th January 2018.



Welcome on the world!

Party party party!

As every year, VBCF celebrated the upcoming Christmas. As we were good girls and boys, we got plenty of presents from **Santa Claus** and an **angel**. In the **Lusthaus**, the party went on till the early morning hours.

