



## VBCF PULSE



### We offer new services!

Since the last VBCF Newsletter issued in February 2019, we have set up several new services - take advantage of them!



### PlantS

In the light of the upcoming high-throughput plant phenotyping infrastructure ([PHENOPlant](#)) and also the closure of the BioComp facility, we have extended and strengthened our service portfolio by providing expertise in:

- Machine Learning (e.g. image segmentation & classification)
- Data analysis and basic statistics (not strictly phenotyping data related)
- Data Visualization
- Tools/scripting (e.g. script-based workflow automation: experiment design, sample randomization, sample identification (QR codes), etc.)
- Small, in-house hardware programming and electronics projects (see [PHENOBox](#)).

Supported languages: Python, C, R, Java, JavaScript and TypeScript.

[Read more>>](#)

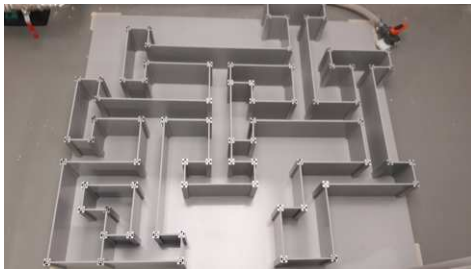


### New Drosophila CRISPR/Cas9 lines

- The [VDRC](#) obtained a new library of 1600 transgenic fly lines for CRISPR-mediated genome engineering in Drosophila from the DKFZ and University of Heidelberg
- Can be used to generate loss-of-function mutations in a germline restricted, ubiquitous or tissue specific fashion
- Provides a method for investigating gene function which is complementary to RNAi

[Read more >>](#)

VDRC now provides **Fly Extract**, an additive required to culture many Drosophila cell lines, using a scaled-up protocol initially developed by the Brennecke group (IMBA).



## Multiple T-maze for behavioral research

The core facility [Preclinical Phenotyping](#) offers a new service: **The multiple T-maze** (photo) allows for the assessment of spatial navigation, learning and memory in food restricted mice.

Over a 4-day training period, mice learn to find a food pellet reward in the goal box with varying latencies and path choices, depending on the mouse model.



## Advanced Microcopy

- High Speed Fluorescence lifetime imaging with long-range scanning stage
- Angle-resolved Brillouin Microspectroscopy

## New stainer and tissue processor for histopathology samples

The [HistoPathology Facility](#) has finished the testing phase of the new



automatic [IHC stainer Biogenex i6000](#)

which is now available for automatic IHC service. It offers more flexibility with regards to staining protocol and detection system choice than the previously used solution (Leica Bond III stainer).

Also, more slides can be stained at the same time (60 vs 30).

**New tissue processing unit** has replaced previously used Logos machine. [Donatello](#) (Diapath) allows dehydration and paraffin infiltration of up to 400 samples at the same time and guarantees reliability, safety and high-quality results.



## UPCOMING EVENTS



APPN workshop “Machine Learning in Plant Sciences” and 4<sup>th</sup> APPN Meeting

The [Austrian Plant Phenotyping Network](#) announces that the next workshop and meeting will be organized in on **25th June 2020** in the IMP Lecture hall.

Save the date!



## Trainings

The VBCF offers a series of courses on various **computational biology** topics which can make your research more effective.

**Lecturer:** Dr András Aszódi.

As the trainings are very popular, don't miss your chance and register as soon as possible!

[Check out our trainings portfolio >>](#)



## 2nd VBC cryo-EM Symposium & cryo-EM Winter School

The [2nd VBC cryo-EM symposium](#) is a 1-day event that brings together young scientists and experts in the field, to present and share the exciting developments in cryo-EM and its application to biological questions.

The event is jointly organized by the IMP, MPL and VBCF and pays tribute to cryo-EM's ability to visualize biological structures at near-atomic resolution close to their native state. This year's symposium will also act as the kick-off day for [the first Vienna cryo-EM winter school](#), which aims to bring cryo-EM to the next generation of scientists.

### When & where:

- 2nd VBCF cryo-EM Symposium 14th February 2020, IMP Lecture hall
- Cryo-EM Winter School 15 - 20th February 2020, Vienna BioCenter (various locations)



The core facility [Advanced Microscopy](#) will organize a **demonstration of Holographic Phase Microscope** by [Nanolive](#)

**When:** 5 - 7th May 2020

**Where:** the Advanced Microscopy facility



## FEATURED NEWS



### Core Facility Preclinical Imaging closes down

Unfortunately, based on the economical state of the facility **Preclinical Imaging**, we had to decide to close this facility. The reason was that usage was too low and running costs too high which made the facility untenable. No further experiments will be possible in 2020.

The former head of the facility, Jelena Zinnanti, will start her new engagement on the 1st February as the Head of of the core facility [Medical Systems](#) at Max-Planck Institute for Intelligent Systems in Stuttgart.

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## Changes in the ProTech facility



We regret to announce that the head of the core facility [Protein Technologies](#), **Peggy Stolt-Bergner**, has decided to leave VBCF with the effect on 1st January.

Before a new head will be appointed, the facility will be temporarily led by three ProTech members, with a responsibility for a certain area of the work:

- **Arthur Sedivy**: Biophysics services
- **Jana Neuhold**: Molecular Cloning and Protein Production services
- **Anita Lehner**: Purification services

**Chris Chylinski** remains responsible for the CRISPR genome engineering.

Furthermore, the facility has introduced a ticketing system which can be accessed from the [MyVBCF page](#).

In the future, instead of writing an email, please enter your request as a ticket.

**We wish Peggy all the best in her new job!**

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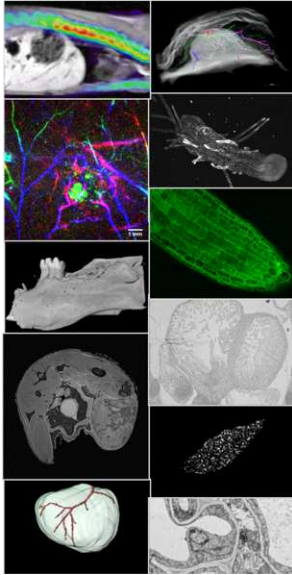
## The 1st innovation voucher for VBCF

The shared research facility [Metabolomics](#) is the first VBCF unit which successfully completed a project partially funded by the [Innovation voucher](#). The company

[Haplogen GmbH](#) obtained the voucher, worth 10.000 EUR, which is a tool provided by the [Austrian Research Promotion Agency \(FFG\)](#) to initiate and support collaboration of private companies and research institutions.



The successful project has been spearheaded on the analytical side by Dr. Gerlinde Grabmann (picture). The completed pharmacokinetics study has laid the cornerstone of a mutual beneficial research cooperation between Haplogen and the Metabolomics unit of the VBCF.



## Austria has become a part of EuroBioImaging

The European Commission has officially established [Euro-BioImaging](#) – which provides life scientists with open access to a broad range of technologies and resources in biological and biomedical imaging – as a European Research Infrastructure Consortium (ERIC).

We are happy to announce that Austria, represented by the [BioImaging Austria/CMI node](#), has been accepted as one of the 15 founding members. [Andreas Walter](#), Director of BioImaging Austria/CMI, is one of the official delegates for Austria in the ERIC Board.

Euro-BioImaging offers state-of-the-art imaging services through its internationally renowned facilities, called Nodes. BioImaging Austria/CMI is the official Euro-BioImaging Node for Austria with its head office at Vienna BioCenter.

[Read more >>](#)

**Correlated Multimodal Imaging**  
BioImaging Austria - CMI



## ANNOUNCEMENTS

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



- Ekaterina Papusheva joined the facility as R & D Scientist.
- Hamid Keshmiri left.





**András Aszódi's** job description is now Scientific Trainer. His main responsibility is to organise and teach [computational biology trainings](#).

**Pedro Serrano** and **Manuel Pasioka** left.

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**Zuzana Hovadkova**, a former FemTech fellow at the [Electron Microscopy facility](#), has been appointed since the 1st January 2020 as **Electron Microscopy Specialist**.

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The [Histopathology facility](#) has hired two new members:

- **Nicole Teufel** (Technician)
  - **Adrian Mancebo Gimenez** (Research Histotechnician)
  - **Nadja Crvenjak**, another successful FemTech fellow, has been appointed since the 1st December 2019 as **Laboratory technician**.
  - **Tamara Engelmeier** (Research Histotechnician) has left for maternity leave.
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The [NGS facility](#) has appointed three new employees:

- Bioinformaticians **Philipp Peters** and **Nadine Tatto**
  - **Anja Koller**: FemTech student
  - **Alexander Vogt** (NGS Sequencing Specialist) has left for a two-months paternity leave.
  - **Andreas Sommer**, the Head of the facility, has been additionally appointed as the VBCF's **Deputy Director**.
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• **Ethan Stewart** joined the [Plant Sciences facility](#) as Staff Scientist responsible for plant phenotyping, particularly of the newly established walk-in phenotyping chamber.

- **Sebastian Seitner** joined the team in 2019 as Software Engineer.
  - **Gülay Dagdas** was appointed as Plant Biologist.
  - **Anna Smolka** and **Vanessa Pal** (technicians) left.
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**Anna Jelem**, Behavioral specialist at the facility [Preclinical Phenotyping](#), has come back from maternity leave from January the 1st. Her replacement, **Jernej Hren**, left.

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- **Peggy Stolt-Bergner**, the Head of the facility [Protein Technologies](#), has left.
  - **Christian Gruber** and **Orla Dunne** have been appointed as **Staff scientists**.
  - **Martin Puchinger** left.
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- **Victoria Weissenböck**, technician in the fly food kitchen, left for educational leave and has been replaced by **Anna Wulgarakis**.
  - **Sofia Gally** left for maternity leave.
  - **Sabine Weissmayer** left for educational leave.
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The **Strategic Information Management (SIM)** takes over new tasks and broadens its team. Therefore, 3 new Software engineers were hired:

- **Thomas Fellner**, **Jakob Jungreithmeir**, **Markus Klein**
  - **Barbara Ullmann-Wohlmuth** has come back from maternity leave.
  - **Nikolaus Karall** has joined the iMOBS team as product owner and the Datacube team as software developer.
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**Raoul Lavaulx-Vrecourt** has been appointed as the Head of Finances and Administration of VBCF.

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## RECENT PUBLICATIONS



**Extracellular vesicles in human skin: cross-talk from senescent fibroblasts to keratinocytes by miRNAs.** Terlecki-Zaniewicz L, Pils V, Bobbili MR, Lämmermann I, Perrotta I, Grillenberger T, Schwestka J, Weiß K, Pum D, Arcalis E,



Schwingenschuh S, Birngruber T, **Brandstetter M**, **Heuser T**, Schosserer M, Morizot F, Mildner M, Stöger E, Tschachler E, Weinmüllner R, Gruber F, Grillari J, *J Invest Dermatol.* 2019 Jun 17.

[Full article >>](#)



**Apelin inhibition prevents resistance and metastasis associated with anti-angiogenic therapy.** Uribesalgo I, Hoffmann D, Zhang Y, **Kavirayani A**, Lazovic J, Berta J, Novatchkova M, Pai TP, Wimmer RA, László V, Schramek D, Karim R, Tortola L, Deswal S, Haas L, Zuber J, Szűcs M, Kuba M., Dome B, Cao Y, Haubner BJ, Penninger JM. *EMBO Mol Med.* 2019 Aug; 11(8)

[Full article >>](#)



**AIF-regulated oxidative phosphorylation supports lung cancer development.** Rao S, Mondragón L, Pranjic B, Hanada T, Stoll G, **Köcher T**, Zhang P, Jais A, Lercher A, Bergthaler A, Schramek D, Haigh K, Sica V, Leduc M, Modjtahedi N, Pai TP, Onji M, Uribesalgo I, Hanada R, Kozieradzki I, Koglgruber R, Cronin SJ, She Z, Quehenberger F, Popper H, Kenner L, Haigh JJ, Kepp O, Rak M, Cai K, Kroemer G, Penninger JM. *Cell Res.* 2019 Jul

[Full article >>](#)



**Autophagy mediates temporary reprogramming and dedifferentiation in plant somatic cells.** Rodriguez E, Chevalier J, Olsen J, Ansbøl J, Kapousidou V, Zuo Z, Svenning S, Loeffke C, **Koemeda S**, Serrano Drozdowskyj P, **Jez J**, Durnberger G, Kuenzl F, Schutzbier M, Mechtler K, Nagel Ebstrup E, Lolle S, Dagdas Y, Petersen M. *EMBO J* (2020).

[Full article >>](#)



**Map of physical interactions between extracellular domains of Arabidopsis leucine-rich repeat receptor kinases.** Mott GA, Smakowska-Luzan E, Pasha A, Parys K, Howton TC, **Neuhold J**, **Lehner A**, Grünwald K, **Stolt-Bergner P**, Provart NJ, Mukhtar MS, Desveaux D, Guttman DS, Belkhadir Y, *Scientific Data* 2019, 6:190025

[Full article >>](#)

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## SELECTED ACKNOWLEDGEMENTS

VBCF is a company providing scientific service. Therefore, acknowledgements of our services in scientific publications are the basic tool for measuring our performance.



**The Ly6/uPAR protein Bouncer is necessary and sufficient for species-specific fertilization.** Herberg S, Gert KS, Schleiffer A, Pauli A: *Science* Mar 7, 2019.

[Full article >>](#)

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**Ikaros prevents autoimmunity by controlling anergy and Toll-like receptor signaling in B cells.** Schwickert TA *et al.*: *Nature*. 2019 Oct

[Full article>>](#)

**Bhlhe40 and Bhlhe41 transcription factors regulate alveolar macrophage self-renewal and identity.** Rauschmeier R *et al.*: *EMBO J* (2019)38:e101233

[Full article>>](#)

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**HACE1 deficiency leads to structural and functional neurodevelopmental defects.** Nagy V *et al.* *Neurol Genet* Jun 2019, 5(3) e330.

[Full article >>](#)

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**Prdm12 Directs Nociceptive Sensory Neuron Development by Regulating the Expression of the NGF Receptor TrkA.** Desiderio S *et al.*, *Cell Rep*. 2019 Mar 26;26(13): 3522-3536.

[Full article >>](#)

**The nascent RNA binding complex SFINX licenses piRNA-guided heterochromatin formation.** Batki J, et al. *Nat Struct Mol Biol.* 2019 Aug;26(8):720-731.

[Full article >>](#)

**Bacterial medium-chain 3-hydroxy fatty acid metabolites trigger immunity in Arabidopsis plants.**

Kutschera A, et al., *Science.* 2019 Apr 12;364(6436):178-181

[Full article >>](#)



Use of [VDRC](#) resources has been acknowledged in more than 300 publications in 2019, including the following:

**Sensory neuron lineage mapping and manipulation in the Drosophila olfactory system.** Chai PC, Cruchet S, Wigger L, Benton R. *Nat Commun.* 2019 Feb 7;10(1):643.

[Full article >>](#)

**A fat-tissue sensor couples growth to oxygen availability by remotely controlling insulin secretion.** Texada MJ, Jørgensen AF, Christensen CF, Koyama T, Malita A, Smith DK, Marple DFM, Danielsen ET, Petersen SK, Hansen JL, Halberg KA, Rewitz KF. *Nat Commun.* 2019 Apr 26;10(1):1955.

[Full article >>](#)

**The Integrator Complex Prevents Dedifferentiation of Intermediate Neural Progenitors back into Neural Stem Cells.** Zhang Y, Koe CT, Tan YS, Ho J, Tan P, Yu F, Sung WK, Wang H. *Cell Rep.* 2019 Apr 23;27(4):987-996.e3.

[Full article >>](#)



**VBCF LIFE**



## VBCF runs!

For several years VBCF has been participating in various runs organized in the broader Viennese area. In April 2019, we opened this activity to the whole campus and we are happy that the interest is really big. Many thanks to all runners for representing VBCF and the VBC at the following runs:

- [Vienna City Marathon](#) 07.04.2019: relay 2 teams of 4 VBCF runners each
- [X-cross run](#) 18.05.2019: 8 VBCF runners
- [Erste Vienna Night Run](#) 24.09. 2019: 30 runners from 4 different institutes
- [Cancer Research Run](#) 05.10.2019: 12 runners from 4 different institutes
- [Mödlinger Adventlauf](#) 03.12.2019 – 22 runners from 4 different institutes

Running events organizer: [Reini Klug](#). If you had any questions concerning running, please, contact him.

**See you at the next run in 2020!**

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## Christmas charity project 2019

Every year in the Advent time, the VBCF organizes a charity event with the goal to support a chosen charity project. In 2019, it was a Charity Punch which took place in the IMP punch hut. 6 VBCF facilities and administration prepared 8 different punches for the whole campus. The falling snow transformed the surroundings into a charming Christmas atmosphere which doubtlessly contributed to the good mood and consumption of all 96 liters of punch by the

many visitors who altogether raised 1.110 EUR for [Jugend am Werk](#) to support their Galeriecafé. The Café acts as a meeting point for people with and without disabilities and is run by people with learning disabilities. We raised money to purchase a tablet with a specialised software that helps them to autonomously run the Café.

**We thank all volunteers and donors for their generous contributions!**



## Visit of the Wiener Oper

Sweet summer memories on the visit of Wiener Oper by the VBCF German course attendees, followed by a culinary experience on the Rathausplatz. VBCF likes culture!

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## New babies at VBCF

The VBCF is happy to announce that a bunch of babies were born during the past few months:

**Felix Leon**, son of our Managing Director Daniele Soroldoni, born on May 19th 2019.



**Viktoria**, daughter of our controller Anastasia Manina, born on May 31st 2019.



**Luna Marlen**, daughter of the Sequencing Specialist Alexander Vogt, born on December the 5th 2019.

**Lilja**, daughter of the Head of the NGS facility Andi Sommer, born on October 29th 2019.



**Samuel**, son of the VDRC Laboratory Scientist Sofia Gally, born on October 27th 2019.

**Sophia**, daughter of the Grants Manager Junior Michaela Thoß, born on July 28th 2019.

**Welcome to the world!**



## PAST EVENTS

COMULIS & BiImaging Austria CMI





## Conference 2019

[Biolmaging Austria/CMI](#) was pleased to welcome over 250 participants and many renowned scientists in the field of bioimaging and correlative microscopy at our [COMULIS & Biolmaging Austria/CMI conference](#) on Multimodality Imaging in the Life Sciences in the Natural History Museum in Vienna. Keynote speakers - among others - were [Jan Ellenberg](#) and [Lucy Collinson](#).

[Read more >>](#)



## Vienna Technology Day

On Sep the 3rd, 2019: [pcPHENO](#), [Pathology](#) and [CMI](#) co-organized the **Vienna Technology Day** with lectures, demonstration booths and facility tours with the aim of presenting the technical possibilities to interested core facility users and to inter-connect staff from different core facilities and share their experiences in offering scientific services. The event was kicked-off by a keynote lecture by [Prof. Enrico Guarini](#) from the SDA Bocconi School of Management.



## Closing conference of the project RIAT-CZ

It is to announce that after 3.5 years of work, the project [RIAT-CZ](#) has officially ended. At the projects' Closing Conference, the project results ([new services and devices offered by the participating core facilities](#)) were discussed, as well as the proof of concept in the form of open-access projects, where interested users had the possibility to try out the new services.

Furthermore, the ways of future collaboration of the five partners were discussed. Altogether, the final note is that the project was a success which brought a lot of new real results, publications, and long-term collaborations.

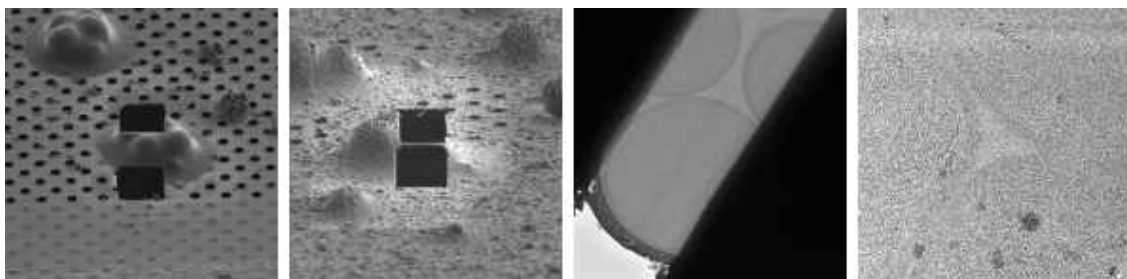
Many thanks to all colleagues involved in this very complex project for their work and personal commitment!



## Mini-Symposium on cryo-FIB-SEM-TEM

The VBCF [EM-Facility](#) together with [Leica Microsystems](#) and [Tescan](#) co-organized a mini-symposium on cryo-FIB-SEM-TEM at the Vienna BioCenter on September 10, 2019. This new technology cuts small "windows" in cells or tissues that were previously too large for direct observation by cryo-EM and enables unprecedented insights into the native state of biological samples.

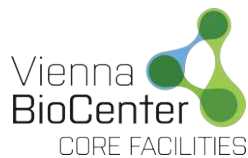
The event was partially supported by the project RIAT-CZ, funded by the programme Interreg AT-CZ.





In the framework of Interreg SK-AT project [CAPSID](#), the core facility [ProTech](#) organized a workshop with over 80 participants from various research institutes from Austria and Slovakia. It was a huge success and another workshop is planned at our partner institute [Biomedical Research Center SAS](#) in Bratislava.

With Peggy leaving, Arthur Sedivy will be the new project leader!



VBCF Flash News is a newsletter that informs you about the latest happenings at the VBCF. Do you have any news, comments or ideas? [Get in touch with us!](#)