

PROJECT IDEAS AND COLLABORATION OFFER FOR HORIZON 2020 CALLS 2016 – 2017

Areas:

- Health, demographic change and well-being
- Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy
- Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

Organisation:	Vienna Biocenter Core Facilities, GmbH
Location:	Vienna Biocenter, Vienna, Austria
Website:	www.vbcf.ac.at
Institutional status:	Medium-sized enterprise (SME)
Area of activities:	Provider of scientific services in the field of life sciences for both academia and industry



VBCF – a brief introduction

Vienna Biocenter Core Facilities, GmbH (VBCF) was founded in 2010 under the name Campus Science Support Facilities, as a publicly funded non-profit research-performing medium-sized company, situated at the Vienna Biocenter (<http://www.viennabiocenter.org/>), one of the most outstanding and prominent life sciences hubs not only in Austria but in the whole region of Central Europe.

VBCF is designated as an **SME** in European project applications.

We offer access to state-of-the-art research infrastructures and scientific services for both academic research institutions as well as private customers in the field of Life Sciences. We are fully international company and our services are being used by inland customers, European, and overseas ones.

The company encompasses ten core facilities having focus on various aspects of R&D in life sciences, either as routine investigations or finding new, original solutions. In 2016, new Metabolomics facility will start its operation.

- **Advanced Microscopy:** <http://www.vbcf.ac.at/facilities/advanced-microscopy/>
- **Bioinformatics and Scientific Computing:** <http://www.vbcf.ac.at/facilities/bioinformatics-and-scientific-computing/>
- **Electron Microscopy:** <http://www.vbcf.ac.at/facilities/electron-microscopy/>
- **HistoPathology:** <http://www.vbcf.ac.at/facilities/histopathology/>
- **Next Generation Sequencing:** <http://www.vbcf.ac.at/facilities/next-generation-sequencing/>
- **Plant Sciences:** <http://www.vbcf.ac.at/facilities/plant-sciences/>
- **Preclinical Imaging:** <http://www.vbcf.ac.at/facilities/preclinical-imaging/>
- **Preclinical Phenotyping:** <http://www.vbcf.ac.at/facilities/preclinical-phenotyping/>
- **Protein Technologies:** <http://www.vbcf.ac.at/facilities/protein-technologies/>
- **Vienna Drosophila Resource Center:** <http://www.vbcf.ac.at/facilities/vienna-drosophila-resource-center/>

We participate in various national and international research & innovation projects. Our project ideas and/or collaboration offer for the upcoming Horizon2020 calls 2016 – 2017 are presented on the following pages.

Core facility	Horizon 2020 call area	Call	Page
Advanced Microscopy	Suitable for all topics requiring Advanced Optical Microscopy/Spectroscopy		5
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	Personalised Medicine	SC1-PM-02-2017: New paradigms in patient stratification	12
	Personalised Medicine	SC1-PM-03-2017: Diagnostic characterisation of rare diseases	14
	Sustainable Food Security – Resilient and resource-efficient value chains	SFS-14-2016: Understanding host-pathogen-environment interactions	16
	Sustainable Food Security – Resilient and resource-efficient value chains	SFS-36-2017: Co-fund on "One Health" (zoonoses – emerging threats)	18
Plant Sciences	Suitable for any topic which requires environmental simulation/abiotic plant stress and/or high-throughput plant phenotyping		20
	Call for nanotechnologies, advanced materials, biotechnology and production	BIOTEC-07-2017: New Plant Breeding Techniques (NPBT) in molecular farming: Multipurpose crops for industrial bioproducts	22
Preclinical Imaging	Personalised Medicine	SC1-PM-08-2017: New therapies for rare diseases	24
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	Personalised Medicine	SC1-PM-01-2016: Multi omics for personalised therapies addressing diseases of the immune system	27
	Sustainable Food Security – Resilient and resource-efficient value chains	SFS-14-2016: Understanding Host-Pathogen Interactions	28
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	Sustainable Food Security – Resilient and resource-efficient value chains	SFS-38-2016: Impulsivity and compulsivity and the link to nutrition, lifestyle and the socio-economic environment	30
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	Sustainable Food Security – Resilient and resource-efficient value chains	SFS-46-2017: Alternative production system to address anti-microbial usage, animal welfare and the impact on health	33
	Nanotechnologies, Advanced Materials, Biotechnology, and Advanced Manufacturing and Processing	NMBP-09-2016: Biomaterials for diagnosis and treatment of demyelination disorders of the Central Nervous System	34
	Nanotechnologies, Advanced Materials, Biotechnology, and Advanced Manufacturing and Processing	NMBP-10-2016: Nanoformulation of biologicals	36
Protein Technologies	Suitable for any topic which requires generation and/or analysis of recombinant proteins		38
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HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Kareem Elsayad , Head of core facility Advanced Microscopy : www.vbcf.ac.at/am Vienna Biocenter Core Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: elsayad@vbcf.ac.at , +43-1-664 808 47 7110
Basic idea	The VBCF - Advanced Microscopy Facility offers a range of custom built and commercial high-end advanced optical microscopy solutions, suitable for many research directions in the field of life sciences.
Call	Suitable for topics requiring Advanced Optical Microscopy/Spectroscopy
Institutional status	Medium-sized enterprise (SME)

Background and motivation

The VBCF Advanced Microscopy Facility focuses on developing, optimizing and offering access to cutting edge optical microscopy for all life science applications.

Focus points at the moment are **Microspectroscopy** (temporally and/or spectrally resolved) and **Light Sheet Microscopy**:

For the former we offer time resolved measurement techniques including (time domain) fluorescence lifetime mapping, time resolved and steady state fluorescence anisotropy imaging, FCS, FCCS, FLCS, FLCCS and variations involving spatial-temporal fluorescence correlation analysis. We can also perform more specialized measurements such as photon anti-bunching measurements, and soon (by November) all of these in combination with controlled UV irradiation for e.g. DNA damage studies. For spectral mapping we offer confocal sample scanning Raman/fluorescence and Brillouin scattering microscopy, which can be used for all-optical mapping of chemical constituency and elasticity respectively. Our unique setup allows for simultaneous mapping of these spectral signatures with pixel wise correlations, and is thus optimal for correlative studies of a samples rheological properties and underlying biochemistry.

For the latter we currently have a unique **light sheet microscopy** optimized for studying **plant root growth** over extended time periods with high spatial resolution over large volumes. Our setup can and has also been used for other samples such as **C. elegans and whole brain imaging**. We are also in the process of developing an Optical Lattice Light sheet microscope for high spatial and temporal 3D imaging of intracellular processes.

In addition to our focus points we also offer **superresolution microscopy** – 3d structured illumination microscopy, and are generally interested in developing **custom modifications/add-ons** for existing instruments involving e.g. adaptive optics or fluorescence polarization sensitivity, as well as combining these or the above techniques to allow for novel simultaneous multi-functional imaging modalities.

We are open to **developing new setups or adoptions** that coincide with our strengths and that we can identify as becoming an important tool for life science researchers.

Our expertise lies in optical design, optical physics, fluorescence and biophysics. While our core strengths are to do with the implementation of the above techniques and optimization of the associated sample preparation and imaging conditions, over the last years we have become particularly familiar in working with plant samples also in terms of the underlying biology.

Main objectives

- New application of microscopy/spectroscopy techniques
- Adaptions/modifications of microscopes for additional functionalities
- Development of novel optical/microscopy setups/solutions
- Correlative studies, involving available techniques with other functional imaging modalities

Selected publications co-authored by facility staff

- Breuss et al. (2015) **The expression of *tubb2b* undergoes a developmental transition in murine cortical neurons** *J. Comp. Neurology* 523:2161
- Heinze & Elsayad (2014) **Membrane Protein Localization by SpecON** *Imag & Mic* 16:23
- Polakova et al. (2014) **Mal3, the Schizosaccharomyces pombe homolog of EB1, is required for karyogamy and for promoting oscillatory nuclear movement during meiosis.** *Cell Cycle* 13:72
- Elsayad et al. (2013) **Spectrally coded optical nanosectioning (SpecON) with biocompatible metal-dielectric-coated substrates.** *Proc Nat Acad Sci USA* 110:20069

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Basic idea	The VBCF - Advanced Microscopy Facility offers a range of custom built and commercial high-end advanced optical microscopy solutions, including <i>Brillouin Scattering Microspectroscopy</i> , <i>Raman Microspectroscopy</i> , <i>Fluorescence Lifetime Imaging (time-domain)</i> , <i>Fluorescence Anisotropy Imaging</i> , <i>FCS</i> , <i>FCCS</i> , <i>FLCS</i> , <i>FLCCS</i> , <i>Fluorescence Super-resolution microscopy (3d Structured Illumination)</i> and <i>Light Sheet Microscopy / SPIM</i> . The basic idea is to offer our well established expertise and state-of-the art equipment for research and innovation projects in the field of biomedicine.
Institutional status	Medium-sized enterprise (SME)
Call ID / Call title	SC1-PM-03-2017 / Diagnostic characterisation of rare diseases SC1-PM-02-2017 / New concepts in patient stratification
Call deadline	11 th April 2017: SC1-PM-03-2017 4 th October 2016 (1 st stage), 11 th April 2017 (2 nd stage): SC1-PM-02-2017
Type of action	RIA
Background and motivation	
<p>Many diseases are known to be precluded or accompanied by rheological changes at the cellular and tissue level (including cancers, neurodegenerative and cardiovascular diseases). We offer a technology – <i>Brillouin scattering Microspectroscopy</i> – which can map the high frequency elastic properties in an all-optical and non-perturbative fashion. This may find applications as an additional tool for diagnostics or characterization of diseases and conditions. It can also possibly serve as part of a new paradigm for stratification of patients with conditions that exhibit characteristic hallmarks in the high-frequency rheological properties of e.g. afflicted tissue.</p>	
Expected outputs and impact	
<p>We intend to translate this technology from the lab into clinical applications. At its current technological standing, we envision that it may already serve as a novel complimentary addition or play a key part for defining new paradigms in medical diagnostics of conditions associated with characteristic rheological changes or trademarks.</p>	
Selected publications co-authored by facility staff	
<ul style="list-style-type: none"> Breuss et al. (2015) The expression of <i>tubb2b</i> undergoes a developmental transition in murine cortical neurons <i>J. Comp. Neurology</i> 523:2161 Heinze, & Elsayad (2014) Membrane Protein Localization by SpecON <i>Imag & Mic</i> 16:23 Polakova et al. (2014) Mal3, the Schizosaccharomyces pombe homolog of EB1, is required for karyogamy and for promoting oscillatory nuclear movement during meiosis. <i>Cell Cycle</i> 13:72 Elsayad et al. (2013) Spectrally coded optical nanosectioning (SpecON) with biocompatible metal-dielectric-coated substrates. <i>Proc Nat Acad Sci USA</i> 110:20069 	

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Contact person	Attila Gyenesei , Head of core facility Bioinformatics & Scientific Computing : http://www.vbcf.ac.at/facilities/plant-sciences/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: attila.gyenesei@vbcf.ac.at , +43-1-7962324-7090
Basic idea	We offer data analysis services for next-generation sequencing data and develop innovative and intuitive software solutions for biological experiments requiring image and video processing as well as hardware-related programming . Our specific data management and processing tools help researchers to translate biological results into new insights. We also offer trainings and consultations in the areas of bioinformatics, statistics and programming. We are actively participating in national and international (EU, NIH) collaboration projects and are always looking for new opportunities where bioinformatics data analysis or software engineering is needed.
Call	Suitable for any topic which requires bioinformatics analyses or software development for big biological and medical data
<p>Background and motivation</p> <p>Bioinformatics is one of the most critical interdisciplinary fields in modern biomedical research. It combines computer science, mathematics and statistics to develop methods and software tools for analysing, understanding and interpreting biological data. Novel, large-scale measurement techniques are used routinely in bio- and medical sciences. To fully harness the power of these techniques and translate these large data sets to information, the data need to be managed and analysed. Accordingly, the cutting-edge bioscience has become data and computing intensive. Our mission is to develop advanced analysis tools and implement novel approaches for the analysis of high-throughput data sets with special focus on next-generation sequencing and image processing.</p>	
<p>Selected publications from the last 5 years</p> <ul style="list-style-type: none"> • Babu, Mohan et al. In: Circ. Res. 117.3 (2015), pp. 289-299. • Fischer, Daniel et al. In: G3 (Bethesda) 5.7 (2015), pp. 1351-1360. • Pavicic, Walter et al. In: Genes Chromosomes Cancer 53.10 (2014), pp. 857-864. • Sironen, A et al. In: Anim. Genet. 45.4 (2014), pp. 500-507. • Junttila, Sini et al. In: BMC Genomics 14 (2013), p. 870. • Laiho, Asta et al. In: PLoS ONE 8.4 (2013), e61558. • Teittinen, Kaisa J et al. In: Cell Oncol (Dordr) 36.1 (2013), pp. 55-63. • Gyenesei, Attila et al. In: Bioinformatics 28.15 (2012), pp. 1957-1964. • Gyenesei, Attila et al. In: Nucleic Acids Res. 40.Web Server issue (2012), W628-W632. • Wei, Wen-Hua et al. In: Eur. J. Hum. Genet. 20.8 (2012), pp. 857-862. 	

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Contact person	<p>Andreas Sommer, Head of core facility Next Generation Sequencing: http://www.vbcf.ac.at/facilities/next-generation-sequencing/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: andreas.sommer@vbcf.ac.at , +43-664-80847-7030</p>
Basic idea	<p>The NGS facility offers next generation sequencing (NGS) analysis for any topic/call requiring high throughput sequencing approach. We have been using NGS systems (Illumina) since 2008. Over the years, the facility has gathered extensive expertise in library preparation, sequencing and data pre-processing. Together with the VBCF BioComp unit we are also able to deliver sophisticated bioinformatics analysis. The basic idea is to offer our well established expertise and state-of-the art equipment for research and innovation projects in the field of life sciences requiring sequencing approach.</p>
Call	<p>Suitable for any topic which requires next generation sequencing analyses</p>
<p>Background and motivation</p> <p>Next Generation Sequencing has become a key analysis method for biological research. The capacity to expand analysis from more or less defined genomic regions to genome wide studies has boosted the pace of research discovery and enabled researchers to obtain a global view on biological processes. With more than one hundred published protocols at disposition, nearly every cellular nucleic acid molecule can be targeted. The broad range of applications makes NGS a key 'omics' technology applicable in a variety of biological contexts.</p>	
<p>Main objectives</p> <ul style="list-style-type: none"> • Sequencing library preparation from various starting materials • Development of novel library preparation and sequencing protocols • Development of data processing pipelines 	
<p>Equipment</p> <ul style="list-style-type: none"> • HiSeq 2500, MiSeq, access to all other commercial platforms through our Core4Life (http://www.coreforlife.eu/) partners. 	
<p>Selected publications</p> <ul style="list-style-type: none"> • Sawicka et al (2014) H3S28 phosphorylation is a hallmark of the transcriptional response to cellular stress. <i>Genome Res.</i> 2014 Nov; 24 (11) • Derboven et al (2014) Role of STN1 and DNA Polymerase α in Telomere Stability and Genome-Wide Replication in Arabidopsis. <i>PLoS Genet.</i> 2014 Oct. 9. • Hanada et al (2013) CLP1 links tRNA metabolism to progressive motor-neuron loss. <i>Nature</i> 2013 Mar 28; 495 (7442) • Medvedovic et al (2013) Flexible long-range loops in the VH gene region of the Igh locus facilitate the generation of a diverse antibody repertoire. <i>Immunity</i> 2013 Aug 22; 39 (2) 	

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Basic idea	The VBCF NGS facility offers state-of-the-art next generation sequencing (NGS) analysis. We have been using NGS systems (Illumina) since 2008 as service provider and project partner for the Vienna Biocenter Campus. Over the years, the facility has gathered extensive expertise in library preparation, sequencing and data pre-processing . Together with the VBCF BioComp unit we are able to deliver sophisticated bioinformatics analysis. The basic idea is to offer our well established expertise and state-of-the art equipment for research in the field of systems biology requiring sequencing approach.
Institutional status	Medium-sized company (SME)
Call	Call for nanotechnologies, advanced materials, biotechnology and production: BIOTEC-03-2016
Call title	Microbial chassis platforms with optimized metabolic pathways for industrial innovations through systems biology
Call deadline	8 th December 2016 (1 st stage), 24 th May 2016 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Despite being a recent technology, next generation sequencing (NGS) has already helped researchers discover a plethora of information in the field of systems biology.</p> <p>With more than one hundred published protocols at disposition, NGS can be applied to examine complex biologic networks returning e.g. genomic, transcriptomic and epigenomic data. Such analyses can be used to describe different states of a cell and eventually to drive a system into a desired condition (e.g. high protein production levels).</p>	
Main objectives	
<ul style="list-style-type: none"> • Sequencing library preparation from various starting materials • Development of novel library preparation and sequencing protocols • Development of data processing pipelines 	
Equipment	
<ul style="list-style-type: none"> • HiSeq 2500, MiSeq, access to all other commercial platforms through our Core4Life (http://www.coreforlife.eu/) partners. 	
Selected publications	
<ul style="list-style-type: none"> • Sawicka et al (2014) H3S28 phosphorylation is a hallmark of the transcriptional response to cellular stress. <i>Genome Res.</i> 2014 Nov; 24 (11) • Derboven et al (2014) Role of STN1 and DNA Polymerase α in Telomere Stability and Genome-Wide Replication in Arabidopsis. <i>PLoS Genet.</i> 2014 Oct. 9. 	

- Hanada et al (2013) **CLP1 links tRNA metabolism to progressive motor-neuron loss.** *Nature* 2013 Mar 28; 495 (7442)
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Basic idea	The VBCF NGS facility offers state-of-the-art next generation sequencing (NGS) analysis. We have been using NGS systems (Illumina) since 2008 as service provider and project partner for the Vienna Biocenter Campus. Over the years, the facility has gathered extensive expertise in library preparation, sequencing and data pre-processing . Together with the VBCF BioComp unit we are able to deliver sophisticated bioinformatics analysis. The basic idea is to offer our well established expertise and state-of-the art equipment for research in the field of biomedicine requiring sequencing approach.
Institutional status	Medium-sized company (SME)
Call	Personalised Medicine: SC1-PM-02-2017
Call title	New paradigms in patient stratification
Call deadline	4 th October 2016 (1 st stage), 11 th April 2017 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Next Generation Sequencing (NGS) has become a key analysis method for biological research. The capacity to expand analysis from more or less defined genomic regions to genome wide studies has boosted the pace of research discovery and enabled researchers to obtain a global view on biological processes, leading to a better understanding of numerous diseases. With more than one hundred published protocols at disposition, NGS plays a crucial role in understanding patterns, causes and effects of diseases. The analytical power of NGS can be also well exploited in context of diagnosis and patient stratification, and has therefore ever been a prominent tool in personalized medicine approaches.</p>	
Main objectives	
<ul style="list-style-type: none"> • Sequencing library preparation from various starting materials • Development of novel library preparation and sequencing protocols • Development of data processing pipelines 	
Equipment	
<ul style="list-style-type: none"> • HiSeq 2500, MiSeq, access to all other commercial platforms through our Core4Life (http://www.coreforlife.eu/) partners 	
Selected publications	
<ul style="list-style-type: none"> • Sawicka et al (2014) H3S28 phosphorylation is a hallmark of the transcriptional response to cellular stress. <i>Genome Res.</i> 2014 Nov; 24 (11) • Derboven et al (2014) Role of STN1 and DNA Polymerase α in Telomere Stability and Genome-Wide Replication in Arabidopsis. <i>PLoS Genet.</i> 2014 Oct. 9. 	

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Call	Personalised Medicine: SC1-PM-03-2017
Call title	Diagnostic characterisation of rare diseases
Call deadline	11 th April 2017
Type of action	RIA
Background and motivation	
<p>Next Generation Sequencing (NGS) has become a key analysis method for biological research. The capacity to expand analysis from more or less defined genomic regions to genome wide studies has boosted the pace of research discovery and enabled researchers to obtain a global view on biological processes, leading to a better understanding of numerous diseases. With more than one hundred published protocols at disposition, NGS plays a crucial role in understanding patterns, causes and effects of diseases. The analytical power of NGS explains its prominent role in personalized medicine.</p>	
Main objectives	
<ul style="list-style-type: none"> • Sequencing library preparation from various starting materials • Development of novel library preparation and sequencing protocols • Development of data processing pipelines 	
Equipment	
<ul style="list-style-type: none"> • HiSeq 2500, MiSeq, access to all other HiCommercial platforms through our Core4Life (http://www.coreforlife.eu/) partners 	
Selected publications	
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Call	Sustainable Food Security – Resilient and resource-efficient value chains: SFS-14-2016
Call title	Understanding host-pathogen-environment interactions
Call deadline	17 th February 2016 (1 st stage), 13 th September 2016 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Next Generation Sequencing has become a key analysis method in the fields of microbiology and epidemiology and has already helped researchers discover a plethora of information in these research areas.</p> <p>With more than one hundred published protocols at disposition, NGS plays a key role in understanding patterns, causes and effects of diseases as well as interactions between host and pathogens. The VBCF NGS facility is actually involved in a series of research projects aiming at understanding such interactions (projects led by Medical University Vienna, Gregor Mendel Institute, Veterinary University Vienna) including bacterial and viral whole genome sequencing, dual RNA-seq and other sequencing approaches and would be highly interested in expanding its activities in an European context.</p>	
Main objectives	
<ul style="list-style-type: none"> • Sequencing library preparation from various starting materials • Development of novel library preparation and sequencing protocols • Development of data processing pipelines 	
Equipment	
<ul style="list-style-type: none"> • HiSeq 2500, MiSeq, access to all other commercial platforms through our Core4Life (http://www.coreforlife.eu/) partners 	
Selected publications	

- Sawicka et al (2014) **H3S28 phosphorylation is a hallmark of the transcriptional response to cellular stress.** *Genome Res.* 2014 Nov; 24 (11)
- Derboven et al (2014) **Role of STN1 and DNA Polymerase α in Telomere Stability and Genome-Wide Replication in Arabidopsis.** *PLoS Genet.* 2014 Oct. 9.
- Hanada et al (2013) **CLP1 links tRNA metabolism to progressive motor-neuron loss.** *Nature* 2013 Mar 28; 495 (7442)
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Call	Sustainable Food Security – Resilient and resource-efficient value chains: SFS-36-2017
Call title	Co-fund on "One Health" (zoonoses – emerging threats)
Call deadline	14 th February 2017
Type of action	European Joint Programme Cofund
Background and motivation	
Next Generation Sequencing (NGS) has become a key analysis method in the fields of microbiology and epidemiology and has already helped researchers discover a plethora of information in these research areas. With more than one hundred published protocols at disposition, NGS is an invaluable tool for understanding patterns, causes and effects of diseases. NGS has well proven its value, playing a crucial role in understanding, monitoring and tracing all recent epidemic outbreaks.	
Main objectives	
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Equipment	
<ul style="list-style-type: none"> • HiSeq 2500, MiSeq, access to all other commercial platforms through our Core4Life (http://www.coreforlife.eu/) partners 	
Selected publications	
<ul style="list-style-type: none"> • Sawicka et al (2014) H3S28 phosphorylation is a hallmark of the transcriptional response to cellular stress. <i>Genome Res.</i> 2014 Nov; 24 (11) • Derboven et al (2014) Role of STN1 and DNA Polymerase α in Telomere Stability and Genome-Wide Replication in Arabidopsis. <i>PLoS Genet.</i> 2014 Oct. 9. • Hanada et al (2013) CLP1 links tRNA metabolism to progressive motor-neuron loss. <i>Nature</i> 2013 Mar 28; 495 (7442) 	

- Medvedovic et al (2013) **Flexible long-range loops in the VH gene region of the Igh locus facilitate the generation of a diverse antibody repertoire.** *Immunity* 2013 Aug 22; 39 (2)

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	<p>Jakub Jez, Head of core facility Plant Sciences: http://www.vbcf.ac.at/facilities/plant-sciences/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: jakub.jez@vbcf.ac.at , +43-1-7962324-7090</p>
Basic idea	<p>The VBCF Plant Sciences Facility (PlantS) has been established in 2013. PlantS operates 22 high-quality state-of-the-art and highly specialized plant growth chambers and provides professional support to research groups at Vienna Biocenter and external customers.</p> <p>Several chambers are capable of providing exceptional environmental conditions i.e. low temperature (frost), high temperature, different light intensities, different light spectra and different gas conditions allowing precise environmental simulation across different climate zones and the simulation of various environmental stress conditions. Additionally, one chamber is equipped with a robotic high-throughput plant phenotyping system linked to LemnaTec image analysis software.</p> <p>The basic idea is to offer our well established expertise and state-of-the art equipment for research and innovation projects in the field of plant sciences requiring a broad range of various environmental simulation.</p>
Call	Suitable for any topic which requires environmental simulation/abiotic plant stress and/or high-throughput plant phenotyping
<p>Background and motivation</p> <p>We are open minded to joint projects in the field of plant research, environmental simulation and high-throughput plant phenotyping. We believe that our unique, state-of-the art equipment and our expertise can strongly contribute to answering complex questions in plant research.</p>	
<p>Main objectives</p> <ul style="list-style-type: none"> • High-throughput plant phenotyping • Abiotic plant stress: frost-, drought-, heat- and water stress • Environmental simulation (e.g. variable spectral composition of light, CO₂ atmosphere) • High-throughput image analysis • Molecular farming (together with VBCF ProTech facility) • CRISPR/Cas9 genome engineering (VBCF ProTech facility) 	
<p>Equipment</p> <ul style="list-style-type: none"> • 22 state-of-the-art plant growth chambers • Temperature range from -15°C to +50°C • Adjustable light spectrum & intensity (LED-Chamber) • Chamber-integrated high-throughput plant phenotyping system • Chamber with adjustable gas composition of atmosphere (CO₂) • Air-Lock System equipped chamber for professional pathogen research • Large capacity chamber 	

- Fully automated watering system (all chambers)

Selected publications

- Jez et al (2013) **Expression of functionally active sialylated human erythropoietin in plants.** *Biotechnol J.* 8(3):371-82.
- Jez et al (2012) **Significant impact of single N-glycan residues on the biological activity of Fc-based antibody-like fragments.** *J Biol Chem.* 287(29):24313-9.

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Jakub Jez , Head of core facility Plant Sciences : http://www.vbcf.ac.at/facilities/plant-sciences/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: jakub.jez@vbcf.ac.at , +43-1-7962324-7090
Basic idea	We offer a multitude of services surrounding recombinant protein preparation and analysis, plant growth/environmental simulation, high-throughput plant phenotyping, molecular farming and the CRISPR/Cas9 genome engineering technology . We have established a platform for CRISPR/Cas9 genome engineering of the model organism <i>A. thaliana</i> and are performing research and development on improving the efficiency of genome engineering in plants .
Call ID	Call for nanotechnologies, advanced materials, biotechnology and production: BIOTEC-07-2017
Call title	New Plant Breeding Techniques (NPBT) in molecular farming: Multipurpose crops for industrial bioproducts
Call deadline	27 th October 2016 (1 st stage), 4 th May 2017 (2 nd stage)
Type of action	RIA
Background and motivation	
Recent advances in genome engineering show great promise for faster and more efficient modification of plant species. However, current rates of genome editing in plants are low in comparison to other organisms. We are performing research and development on improving the CRISPR/Cas9 genome engineering technology in the plant species <i>A. thaliana</i> , and intend to apply this to crop plants in order to establish methods for efficient genome modifications in other plant species. CRISPR/Cas9 genome engineering technology is an innovative and fast-developing technique which simplifies and significantly speeds-up any procedure requiring genome engineering while corresponding with the NPBT methods specified by EU. We offer our complex expertise in CRISPR/Cas9 genome engineering technology in plants for collaboration within the call New Plant Breeding Techniques (NPBT) in molecular farming: Multipurpose crops for industrial bioproducts.	
Expected outputs and impact	
We intend to contribute to the elimination of bottlenecks in molecular farming through establishment of an efficient platform for plant genome editing. We will optimize techniques in the model organism <i>A. thaliana</i> and apply this to <i>N. benthamiana</i> and crop plants.	
Selected publications	
<ul style="list-style-type: none"> • Uanschou et al (2013) Sufficient amounts of functional HOP2/MND1 complex promote interhomolog DNA repair but are dispensable for intersister DNA repair during meiosis in Arabidopsis. <i>Plant Cell</i> 25(12):4924-40 • Deltcheva E, Chylinski K et al (2011) CRISPR RNA maturation by trans-encoded small RNA and host factor RNase III. <i>Nature</i> 471(17340):602-7 • Jinek M, Chylinski K et al (2012) A programmable dual-RNA-guided DNA endonuclease in adaptive bacterial immunity. <i>Science</i> 337(6096):816-21 • Chylinski et al (2013) The tracrRNA and Cas9 families of type II CRISPR-Cas immunity Systems. <i>RNA Biology</i>10(5):726-73 	

- Chylinski et al (2014) **Classification and evolution of type II CRISPR-Cas systems.** *Nuc Acids Res* 42(10):6091-105
- Jez et al (2013) **Expression of functionally active sialylated human erythropoietin in plants.** *Biotechnol J.* 8(3):371-82.
- Jez et al (2012) **Significant impact of single N-glycan residues on the biological activity of Fc-based antibody-like fragments.** *J Biol Chem.* 287(29):24313-9.

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Jelena Lazovic Zinnanti , Head of core facility Preclinical Imaging : http://www.vbcf.ac.at/facilities/preclinical-imaging/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: jelena.zinnanti@vbcf.ac.at , +43-1-7962324-7090
Basic idea	We offer state-of-the-art preclinical magnetic resonance imaging and more than 10 years' experience with animal models of rare metabolic disorders. We were the first to establish animal model of glutaric acidemia type I and to develop a treatment strategy. We have long-standing partnership with clinicians from USA specialized in management of rare metabolic disorders. In addition, as many metabolic disorders have a common theme, we have developed potential treatment for maple syrup urine disease . We are looking for translational research partners that will bring treatment strategies from bench to bedside.
Call ID	Personalised Medicine: SC1-PM-08-2017
Call title	New therapies for rare diseases
Call deadline	4 th October 2016 (1 st stage), 11 th April 2017 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Many rare metabolic disorders affect children and therefore have a long term burden on the individual and society due to very expensive care. For many of these disorders there is no treatment or the treatment is not satisfactory. Therefore, novel and more efficient therapeutic strategies are desperately needed. Working with genetically engineered mice has established preclinical models for glutaric acidemia type 1 and maple syrup urine disease. In parallel due to better understanding of pathological processes we were able to design effective treatment. Our additional expertise include non-invasive magnetic resonance imaging of brain injury associated with metabolic disorders. We are working on developing advanced imaging strategies for detection of subtle brain injury.</p>	
Expected outputs and impact	
<p>Novel therapeutic strategies for many metabolic disorders are desperately needed. We can contribute twofold: translate our knowledge from preclinical models into the clinic, and develop better imaging strategies that will allow more precise diagnosis and better assessment of treatment efficacy.</p>	
Selected publications	
<ul style="list-style-type: none"> • Zinnanti WJ, Lazovic J et al (2006) A diet-induced mouse model for glutaric aciduria type I. Brain 129(Pt 4):899-910. • Strauss KA, Lazovic J et al (2007) Multimodal imaging of striatal degeneration in Amish patients with glutaryl-CoA dehydrogenase deficiency. Brain.130(Pt 7):1905-20. • Zinnanti WJ, Lazovic J et al (2007) Mechanism of age-dependent susceptibility and novel treatment strategy in glutaric acidemia type I. Journal of Clinical Investigation. 117(11):3258-70. • Zinnanti WJ, Lazovic J (2010). Mouse model of encephalopathy and novel treatment 	

strategies with substrate competition in glutaric aciduria type I. **Mol Genet Metab.** 100 Suppl 1: S88-91.

- Zinnanti WJ, **Lazovic J** et al (2014) Mechanism of metabolic stroke and spontaneous cerebral haemorrhage in glutaric aciduria type I. **Acta Neuropathol Commun.** 2(1):13.

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Sylvia Badurek , Deputy head of core facility Preclinical Phenotyping : http://www.vbcf.ac.at/facilities/preclinical-phenotyping/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: sylvia.badurek@vbcf.ac.at , +43-1-796-2324-7224
Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . This can be of interest for any call involving basic or applied medical research that requires in vivo testing.
Call	Suitable for any topic which requires in vivo testing of behavior, metabolism, ECG or blood pressure of mice under different genetic or pharmacological treatment conditions
Background and motivation	
Many human diseases can be mimicked in transgenic mouse models. The thorough characterization of the phenotype of such mice will help to elucidate basic molecular mechanisms , help to identify novel drug targets and test potential therapeutic strategies . Our extensive experience with research projects as well as company-driven experiments are the best prerequisite for effective and fruitful collaboration within HORIZON2020 research and innovation projects.	
Main objectives	
<ul style="list-style-type: none"> • Mouse behavior tests to evaluate learning and memory function, anxiety-and depression-like behavior, pain thresholds, neuromuscular conditions • Measurement of circadian metabolic parameters and activity • ECG, blood pressure, core body temperature measurements • Surgical services 	
Equipment	
<ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	
Selected publication	
<ul style="list-style-type: none"> • Mihailovska et al (2014) Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes. Mol Biol Cell. 2014 Dec 15;25(25):4130-49 	

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Sylvia Badurek , Deputy head of core facility Preclinical Phenotyping : http://www.vbcf.ac.at/facilities/preclinical-phenotyping/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: sylvia.badurek@vbcf.ac.at , +43-1-796-2324-7224
Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . The basic idea is to offer this well-established expertise and equipment for in vivo testing of new therapies of the immune system.
Call ID	Personalised Medicine: SC1-PM-01-2016
Call title	Multi omics for personalised therapies addressing diseases of the immune system
Call deadline	13 th April 2016
Type of action	RIA
Background and motivation	
<p>Transgenic mice have been used as model organisms for a large range of human diseases. We offer our expertise and equipment for evaluating the metabolic, behavior and cardiovascular phenotype of transgenic or pharmacologically treated mouse models.</p> <p>We have been operating our facility since 3 years as a service provider for both academic and industry customers at Vienna Biocenter. Currently, we are expanding our services also to external customers and are open for new collaborations.</p>	
Expected output and impact	
<ul style="list-style-type: none"> • Contribution to better understanding the genetic and environmental factors of disease development and progression, thus pointing to possible novel drug targets 	
Equipment	
<ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	
Selected publication	
<p>Mihailovska et al (2014) Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes. Mol Biol Cell. 2014 Dec 15;25(25):4130-49</p>	

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Sylvia Badurek , Deputy head of core facility Preclinical Phenotyping : http://www.vbcf.ac.at/facilities/preclinical-phenotyping/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: sylvia.badurek@vbcf.ac.at , +43-1-796-2324-7224
Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . This can be of interest for any call involving basic or applied medical research that requires in vivo testing. The basic idea is to offer this well-established expertise and equipment for in vivo testing of health status before and after pharmacological interventions, which might be of a particular interest when studying host-pathogen interactions.
Call ID	Sustainable Food Security – Resilient and resource-efficient value chains: SFS-14-2016
Call title	Understanding Host-Pathogen Interactions
Call deadline	17 th February 2016 (1 st stage), 13 th September 2016 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Transgenic mice are a valuable tool to study immunological questions and understanding basic molecular mechanisms of host-pathogen interactions. We offer our expertise in metabolic, physiological and behavior screening of mice to gain insight about their health status before and after pharmacological interventions.</p> <p>We have been operating our facility since 3 years as a service provider for both academic and industry customers at Vienna Biocenter. Currently, we are expanding our services also to external customers and are open for new collaborations.</p>	
Expected output and impact	
<p>We intend to contribute to a better understanding of the molecular mechanisms of immune reactions by studying the phenotype of transgenic mouse models overexpressing or lacking certain genes and their importance for the general health of the mouse, which serves as a model organism for other terrestrial vertebrate livestock.</p>	
Equipment	
<ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	
Selected publication	
<p>Mihailovska et al (2014) Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes. Mol Biol Cell. 2014 Dec 15;25(25):4130-49</p>	

HORIZON 2020 COLLABORATION OFFER SUMMARY

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Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . This can be of interest for any call involving basic or applied medical research that requires in vivo testing.
Call	Sustainable Food Security – Resilient and resource-efficient value chains: SFS-15-2016-2017
Call title	Breeding livestock for resilience and efficiency
Call deadline	17th February 2016 (1 st stage), 13th September 2016 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Different laboratory mouse strains as well as genetically modified mice show different levels of resilience and breeding efficiency. We offer general health screening of mice by measuring metabolic and physiological parameters and performing a large range of behavior tests to help elucidate the role of genetic factors for the health and well-being of mice.</p> <p>We have been operating our facility since 3 years as a service provider for both academic and industry customers at Vienna Biocenter. Currently, we are expanding our services also to external customers and are open for new collaborations.</p>	
Expected output and impact	
We aim to help to elucidate molecular determinants for health, well-being and breeding efficiency of mice which serve as model organisms of other terrestrial vertebrate livestock.	
Equipment	
<ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	
Selected publication	
Mihailovska et al (2014) Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes . Mol Biol Cell. 2014 Dec 15;25(25):4130-49	

HORIZON 2020 COLLABORATION OFFER SUMMARY

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Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . This can be of interest for any call involving basic or applied medical research that requires in vivo testing.
Call ID	Sustainable Food Security – Resilient and resource-efficient value chains: SFS-38-2016
Call title	Impulsivity and compulsivity and the link to nutrition, lifestyle and the socio-economic environment
Call deadline	17th February 2016 (1 st stage), 13th September 2016 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Transgenic mice serve as model organisms for a large range of human diseases. We offer our expertise and equipment for circadian metabolic measurements, physiologic measurements as well as a wide range of behavior tests to help elucidate the molecular determinants of impulsivity and compulsivity disorders.</p> <p>We have been operating our facility since 3 years as a service provider for both academic and industry customers at Vienna Biocenter. Currently, we are expanding our services also to external customers and are open for new collaborations.</p>	
Expected output and impact	
<p>We intend to contribute to the understanding of the basic molecular mechanisms of impulsivity and compulsivity disorders and to help identify novel therapeutic targets and evaluate novel therapeutic approaches.</p>	
Equipment	
<ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	
Selected publication	
<p>Mihailovska et al (2014) Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes. Mol Biol Cell. 2014 Dec 15;25(25):4130-49</p>	

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Sylvia Badurek , Deputy head of core facility Preclinical Phenotyping : http://www.vbcf.ac.at/facilities/preclinical-phenotyping/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: sylvia.badurek@vbcf.ac.at , +43-1-796-2324-7224
Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . This can be of interest for any call involving basic or applied medical research that requires in vivo testing.
Call	Sustainable Food Security – Resilient and resource-efficient value chains: SFS-39-2017
Call title	How to tackle the obesity epidemic?
Call deadline	14 th February 2017 (1 st stage), 13 th September 2017 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Transgenic mice serve as model organisms for a large range of human diseases. We offer our services for circadian metabolic measurements (e.g. under physical exercise conditions or different diets), physiologic measurements as well as a wide range of behavior tests for many neurological conditions on transgenic mouse models or pharmacologically treated mice.</p> <p>We have been operating our facility since 3 years as a service provider for both academic and industry customers at Vienna Biocenter. Currently, we are expanding our services also to external customers and are open for new collaborations.</p>	
Expected output and impact	
<p>We intend to contribute to a better understanding of molecular determinants or genetic predisposition of obesity as well as interactions of genetic and environmental factors by using mice as model organisms.</p>	
Equipment	
<ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	
Selected publication	
<p>Mihailovska et al (2014) Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes. Mol Biol Cell. 2014 Dec 15;25(25):4130-49</p>	

HORIZON 2020 COLLABORATION OFFER SUMMARY

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Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . This can be of interest for any call involving basic or applied medical research that requires in vivo testing.
Call ID	Sustainable Food Security – Resilient and resource-efficient value chains: SFS-40-2017
Call title	Sweeteners and sweetness enhancers
Call deadline	14 th February 2017 (1 st stage), 13 th September 2017 (2 nd stage)
Type of action	RIA
<p>Background and motivation</p> <p>Transgenic mice serve as model organisms for a large range of human diseases and disorders. We offer circadian metabolism measurements (e.g. under different dietary conditions, exercise conditions,) as well as physiological measurements and a large range of behavior tests on mice which serve as preclinical model organisms.</p> <p>We have been operating our facility since 3 years as a service provider for both academic and industry customers at Vienna Biocenter. Currently, we are expanding our services also to external customers and are open for new collaborations.</p>	
<p>Expected output and impact</p> <p>We intend to contribute to a better understanding of the short- or long-term effects of sweeteners on the metabolism, neurological function and general well-being of mice, thus giving a potential insight on the effects of S&SEs on humans.</p>	
<p>Equipment</p> <ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	
<p>Selected publications</p> <p>Mihailovska et al (2014) Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes. Mol Biol Cell. 2014 Dec 15;25(25):4130-49</p>	

HORIZON 2020 COLLABORATION OFFER SUMMARY

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Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . This can be of interest for any call involving basic or applied medical research that requires in vivo testing.
Call	Sustainable Food Security – Resilient and resource-efficient value chains: SFS-46-2017
Call title	Alternative production system to address anti-microbial usage, animal welfare and the impact on health
Call deadline	14 th February 2017 (1 st stage), 13 th September 2017 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Transgenic mice are a valuable tool to study immunological questions and understanding mechanisms of anti-microbial drugs effects. We offer circadian metabolism measurements (e.g. under different dietary conditions, exercise conditions,) as well as physiological measurements and a large range of behavior tests on mice which serve as preclinical model organisms.</p> <p>We have been operating our facility since 3 years as a service provider for both academic and industry customers at Vienna Biocenter. Currently, we are expanding our services also to external customers and are open for new collaborations.</p>	
Expected output and impact	
<p>We intend to contribute to a better understanding of the short- or long-term effects of anti-microbial drugs on the metabolism, neurological function and general well-being of mice, thus giving a potential insight on the effects of anti-microbial drugs on humans.</p>	
Equipment	
<ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	
Selected publication	
<p>Mihailovska et al (2014) Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes. Mol Biol Cell. 2014 Dec 15;25(25):4130-49</p>	

HORIZON 2020 COLLABORATION OFFER SUMMARY

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Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . The basic idea is to offer this well-established expertise and equipment for in vivo testing of new biomaterials developed for diagnosis and treatment of demyelination diseases.
Institutional status	Medium-sized enterprise (SME)
Call	Nanotechnologies, Advanced Materials, Biotechnology, and Advanced Manufacturing and Processing: NMBP-09-2016
Call title	Biomaterials for diagnosis and treatment of demyelination disorders of the Central Nervous System
Call deadline	8 th December 2015 (1 st stage), 24 th May 2016 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Animal models are an indispensable tool facilitating medical research. Model organisms allow for better understanding the disease process without the added risk of harming an actual human. We offer our equipment and extensive expertise with mouse models for testing the general health status and well-being of transgenic mouse models of demyelination disorders treated with different biomaterials by testing for neurological/neuromuscular conditions and metabolic parameters. In addition, we provide surgical services.</p> <p>We have been operating our facility since 3 years as a service provider for both academic and industry customers at Vienna Biocenter. Currently, we are expanding our services also to external customers and are open for new collaborations.</p>	
Expected output and impact	
<ul style="list-style-type: none"> • Contribution to the development a new biomaterial through testing possible treatment options for humans • Decrease of treatment costs for demyelination diseases • Strengthening of academia – industry cooperation by involvement of SME 	
Equipment	
<ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	

Selected publication

Mihailovska et al (2014) **Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes.**
Mol Biol Cell. 2014 Dec 15;25(25):4130-49

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Sylvia Badurek , Deputy head of core facility Preclinical Phenotyping : http://www.vbcf.ac.at/facilities/preclinical-phenotyping/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: sylvia.badurek@vbcf.ac.at , +43-1-796-2324-7224
Basic idea	We offer preclinical phenotyping services including the behavioral, metabolic and physiological evaluation of transgenic mouse models and/or pharmacologically treated mice . The basic idea is to offer this well-established expertise and equipment for in vivo testing of new biomolecules carriers developed by the project partners.
Institutional status	Medium-sized enterprise (SME)
Call	Nanotechnologies, Advanced Materials, Biotechnology, and Advanced Manufacturing and Processing: NMBP-10-2016
Call title	Nanoformulation of biologicals
Call deadline	8 th December 2015 (1 st stage), 24 th May 2016 (2 nd stage)
Type of action	RIA
Background and motivation	
<p>Animal models are an indispensable tool facilitating medical research. Model organisms allow for better understanding the disease process without the added risk of harming an actual human. Nanocarriers developed in a research project can be tested with our expertise in preclinical mouse models. We can measure the efficacy and toxicity in terms of effects on metabolic, neurologic/neuromuscular or cardiovascular parameters in different transgenic or pharmacologically-treated mice.</p> <p>We have been operating our facility since 3 years as a service provider for both academic and industry customers at Vienna Biocenter. Currently, we are expanding our services also to external customers and are open for new collaborations.</p>	
Expected output and impact	
<ul style="list-style-type: none"> • Contribution to the development novel nanocarriers through validating the efficacy and testing the possible toxicity of the nanocarriers for humans • Finding better treatment approaches for human diseases. • Strengthening of academia – industry cooperation by involvement of an SME 	
Equipment	
<ul style="list-style-type: none"> • TSE phenomaster and motorater systems • DSI implantable telemetry system • Various behavior systems for evaluating a wide range of neurological/neuromuscular conditions 	

Selected publication

Mihailovska et al (2014) **Neuromuscular synapse integrity requires linkage of acetylcholine receptors to postsynaptic intermediate filament networks via rapsyn-plectin 1f complexes.**
Mol Biol Cell. 2014 Dec 15;25(25):4130-49

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Peggy Stolt-Bergner , head of core facility Protein Technologies : http://www.vbcf.ac.at/facilities/protein-technologies/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: peggy.stolt@vbcf.ac.at , +43-1-7962324-7070
Basic idea	We offer a multitude of services surrounding recombinant protein production and analysis, including preparation of DNA constructs, protein production in E. coli and insect cells, protein purification, and biophysical characterization . We can offer expertise in any call topic requiring production and/or analysis of pure proteins to be used for biochemical analysis, structure determination , preparation of reagents such as growth factors, or antigens for antibody production .
Call	Suitable for any topic which requires generation and/or analysis of recombinant proteins
<p>Background and motivation</p> <p>Many cutting edge research methods, such as single molecule experiments, high resolution microscopy, and biochemical interaction studies depend on the ability to produce the proteins of interest recombinantly, in high amounts and in pure form. Production of high quality proteins for scientific study is therefore a critical component of many research projects, from biochemistry and cell biology to human medicine. We can provide the necessary experience generate the proteins and protein complexes for your project, including proper quality control to ensure functional protein as the end product. We have extensive expertise in state-of-the-art molecular cloning technologies, protein production using the baculovirus system, purification of proteins and protein complexes, as well as biophysical analysis methods including Circular Dichroism, Microscale Thermophoresis, Dynamic Light Scattering, and many others.</p>	
<p>Main objectives</p> <ul style="list-style-type: none"> • Preparation of DNA constructs for protein expression in a variety of systems, including constructs for multi-gene expression • Development and improvement of protein production systems • Establishment of purification protocols • Biophysical characterization of proteins 	
<p>Equipment</p> <ul style="list-style-type: none"> • Aekta Purifier systems • Simple Western system for automated Western blot analysis • Instruments for biomolecular interaction analysis via Microscale thermophoresis • Chirascan Plus Circular Dichroism spectrophotometer • Robotic system for automated high-throughput purification screening 	

Selected publications citing the facility

- Uanschou et al (2013) **Sufficient amounts of functional HOP2/MND1 complex promote interhomolog DNA repair but are dispensable for intersister DNA repair during meiosis in Arabidopsis.** *Plant Cell* 25(12):4924-40
- Ribeiro et al (2014) **The structure and regulation of human muscle alpha-actinin.** *Cell* 159(6):1447-60
- Badarau et al (2014) **Structure-Function Analysis of Heterodimer Formation, Oligomerization and Receptor Binding of the Staphylococcus aureus Bi-component Toxin LukGH.** *J Biol Chem epub 2014 Nov 3*
- Herzog et al (2014) **A strand-specific switch in noncoding transcription switches the function of a Polycomb/Trithorax response element.** *Nat Genet* 46(9):973-981
- Santos et al (2014) **The unique regulation of iron-sulfur cluster biogenesis in a Gram-positive bacterium.** *Proc Natl Acad Sci* 111(22):E2251-60

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	Peggy Stolt-Bergner , head of core facility Protein Technologies : http://www.vbcf.ac.at/facilities/protein-technologies/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: peggy.stolt@vbcf.ac.at , +43-1-7962324-7070
Basic idea	We offer a multitude of services surrounding recombinant protein production and analysis, including preparation of DNA constructs, protein production in <i>E. coli</i> and insect cells, protein purification, and biophysical characterization including preparation and characterization of proteins for use as antigens in vaccines . The basic idea is to use our well established expertise for a vaccine development. We have extensive expertise in state-of-the-art molecular cloning technologies, protein production using the baculovirus system, purification of proteins and protein complexes, as well as biophysical analysis methods including Circular Dichroism, Microscale Thermophoresis, Dynamic Light Scattering, and many others.
Call ID	Personalised Medicine: SC1-PM-06-2016
Call title	Vaccine development for malaria and/or neglected infectious diseases
Call deadline	13 th April 2016
Type of action	RIA
Background and motivation	
Successful vaccine development depends on generation and characterization of high-quality proteins to be used as antigens. These antigens must be produced recombinantly, in high amounts and in pure form. Production of high quality antigens is therefore a critical component of vaccine research. We can provide the necessary experience generate the proteins and protein complexes for a project, including proper quality control and biophysical characterization to ensure functional protein as the end product.	
Expected outputs and impact	
Contribution to the elimination of bottlenecks in vaccine development through providing access to and analysis of high quality antigens that can be used in a variety of assays to assess their effectiveness as vaccine candidates.	
Equipment	
<ul style="list-style-type: none"> • Aekta Purifier systems • Simple Western system for automated Western blot analysis • Instruments for biomolecular interaction analysis via Microscale thermophoresis • Chirascan Plus Circular Dichroism spectrophotometer • Robotic system for automated high-throughput purification screening 	
Selected publications citing the facility	
<ul style="list-style-type: none"> • Uanschou et al (2013) Sufficient amounts of functional HOP2/MND1 complex promote interhomolog DNA repair but are dispensable for intersister DNA repair during meiosis in Arabidopsis. <i>Plant Cell</i> 25(12):4924-40 • Ribeiro et al (2014) The structure and regulation of human muscle alpha-actinin. <i>Cell</i> 159(6):1447-60 	

- Badarau et al (2014) **Structure-Function Analysis of Heterodimer Formation, Oligomerization and Receptor Binding of the Staphylococcus aureus Bi-component Toxin LukGH.** *J Biol Chem* epub 2014 Nov 3
- Herzog et al (2014) **A strand-specific switch in noncoding transcription switches the function of a Polycomb/Trithorax response element.** *Nat Genet* 46(9):973-981
- Santos et al (2014) **The unique regulation of iron-sulfur cluster biogenesis in a Gram-positive bacterium.** *Proc Natl Acad Sci* 111(22):E2251-60

HORIZON 2020 COLLABORATION OFFER SUMMARY

Contact person	<p>Krzysztof Chylinski, core facility Protein Technologies – CRISPR Lab: http://www.vbcf.ac.at/facilities/protein-technologies/ Campus Science Support Facilities, GmbH, Vienna, Austria: www.vbcf.ac.at Contact details: krzysztof.chylinski@vbcf.ac.at , +43-1-7962324-7074</p>
Basic idea	<p>Many of the topics published in Horizon 2020 Work Programmes 2016 – 2017 require use of variety of -omics methods including genome engineering. We offer expertise and services surrounding the CRISPR/Cas9 genome engineering technology, an innovative and fast-developing technique which simplifies and significantly speeds-up any procedure requiring genome engineering. We have extensive expertise in reagent preparation (DNA, RNA, and protein), generation of gene knock-outs or knock-ins in a variety of mammalian cell lines, as well as generation of CRISPR/Cas9 modified <i>A. thaliana</i> plant lines.</p>
Call	<p>Suitable for any topic which requires targeted genome engineering</p>
<p>Background and motivation</p> <p>The CRISPR/Cas9 genome engineering technology has revolutionized the life sciences field. Experiments that were not possible or complicated and time-consuming a few years ago, such as simultaneous targeted modification or transcriptional regulation of multiple genes, will soon become routine. Use of this technique holds an enormous potential to facilitate significantly progress in research activities connected to genetic modification technology in mammalian cells and/or <i>Arabidopsis thaliana</i>. We offer the established expertise as well as its further development for collaboration within Horizon2020 research projects.</p>	
<p>Main objectives</p> <ul style="list-style-type: none"> • Use of CRISPR/Cas9 genome engineering technology for fast and efficient targeted genome engineering • Research and development on applications and optimization of the CRISPR/Cas9 technology • Establishment of CRISPR/Cas9-related technologies in a variety of organisms and cell lines 	
<p>Equipment</p> <ul style="list-style-type: none"> • Standard molecular biology and cell culture laboratories • Access to state-of-the-art plant growth chambers through the VBCF Plant Sciences Facility 	
<p>Selected publications</p> <ul style="list-style-type: none"> • Deltcheva E, Chylinski K et al (2011) CRISPR RNA maturation by trans-encoded small RNA and host factor RNase III. <i>Nature</i> 471(17340):602-7 • Jinek M, Chylinski K et al (2012) A programmable dual-RNA-guided DNA endonuclease in adaptive bacterial immunity. <i>Science</i> 337(6096):816-21 • Chylinski et al (2013) The tracrRNA and Cas9 families of type II CRISPR-Cas immunity Systems. <i>RNA Biology</i>10(5):726-73 • Chylinski et al (2014) Classification and evolution of type II CRISPR-Cas systems. 	

Nuc Acids Res 42(10):6091-105