UMEÅ UNIVERSITY

KBC Chemical Biological Centre
Umeå University/SLU
www.umu.se/en/kbc

SLU

KBC DAYS 2020

3-4 November, online

Programme - Research Infrastructures - Participants

DAY 1, Tuesday 3 November

SESSION 1:
Chairperson: Stefan Björklund

9.00 **Welcome**
Stefan Björklund
Scientific Coordinator for KBC

9.15 **Opening of the KBC DAYS 2020**
Hans Adolfsson
Vice chancellor, Umeå University

9.30 **Plenary lecture I: Multiscale, transdisciplinary research to guide the Great Green Wall for the Sahara and Sahel Initiative**
Deborah Goffner
CNRS, France and Stockholm Resilience Centre

10.15 **Responsible Artificial Intelligence**
Virginia Dignum
Department of Computing Science, Wallenberg Chair, Program Director WASP-HS, Umeå University

10.35 **To the rescue of sustainability - Society, the environment, and the humanities**
Janina Priebe
Department of Historical, Philosophical and Religious Studies

10.55 *Coffee break*

SESSION 2: NEW FACULTY MEMBERS, AWARD AND GRANT RECIPIENTS AT KBC
Chairperson: Judith Lundberg-Felten

11.05 **Chemo-optogenetic knock-on/off approach in autophagy research**
Yaowen Wu
Department of Chemistry, and Umeå Centre for Microbial Research (UCMR)

11.25 **Molecular players of photoprotection in plants**
Alizée Malnoë
Department of Plant Physiology, Umeå Plant Science Centre (UPSC), Umeå University

11.45 *Lunch break and time to …*
- watch video research pitch presentations by PhD students
- participate in a quiz organised by Agrisera
- upload a photo for the photo contest with the theme "Sustainability"

DAY 1, Tuesday 3 November

SESSION 3: PANEL DISCUSSION ON SCIENCE COMMUNICATION

13.00 **Panel discussion: Science communication with the public**

Moderator: **Hanne Kjöller**, Journalist and writer

Panel members:

Annika Egan Sjölander, Associate professor at the Department of Culture and Media Studies, Umeå University

Carina Keskitalo, Professor of Political Science at the Department of Geography, Umeå University, Sweden, and guest professor at the Unit for Landscape Studies at the Swedish University of Agricultural Sciences, Umeå

Joacim Rocklöv, Professor at the Department of Public Health and Clinical Medicine, Section of Sustainable Health, Umeå University

Johnny Ludvigsson, Professor emeritus, Department of Biomedical and Clinical Sciences (BKV), Linköping University

Stefan Jansson, Professor at the Department of Plant Physiology, Umeå Plant Science Centre (UPSC), Umeå University

Ulrika Björkstén, PhD, Head of Science at Swedish Public Radio (Sveriges Radio)

14.30 *Coffee break*

SESSION 4: DISCUSSIONS WITH PHD STUDENTS

14.40 **Break-out room discussions organised by the PhD students**

(Video Research Pitch presentations are available for watching and commenting throughout the conference. In the break-out room session, the PhD students will be available to answer questions and discuss their research projects)

Bacterial stringent response and antimicrobal resistance
Tetiana Brodiazhenko
Department of Molecular Biology, Umeå University

Forest residues for combined edible mushroom and biofuel production
Feng Chen
Department of Forest Biomaterials and Technology, SLU

Impact of root colonization by ectomycorrhizal fungi on drought resistance in pine seedlings
Lill Eilertsen
Department of Forest Genetics and Plant Physiology, Umeå Plant Science Centre (UPSC), SLU

Memory material for cancer early detection
Chau Huynh
Department of Chemistry, Umeå University

Apolipoprotein E and amyloid-beta in Alzheimer's disease
Tohidul Islam
Department of Medical Biochemistry and Biophysics, Umeå University

How bacteria can spread their genes
Lena Lassinantti
Department of Medical Biochemistry and Biophysics, Umeå University

Quest for Unknown: Hazardous Chemicals in the Environment
Andriy Rebryk
Department of Chemistry, Umeå University

Penicillin-binding proteins: key players to build the wall
Barbara Ritzl-Rinkenberger
Department of Molecular Biology, Laboratory for Molecular Infection Medicine Sweden (MIMS), Umeå University

Investigating how nutrient addition changes microbial communities
Andreas Schneider
Department of Plant Physiology, Umeå Plant Science Centre (UPSC), Umeå University

Impact of the pharmaceuticals residues from the sewage water on the river biota
Aleksandra Umanets
Department of Chemistry, Umeå University

Identification and characterization of transcription factor proteins that regulate wood formation and carbon allocation in trees
Sonja Viljamaa
Department of Forest Genetics and Plant Physiology, Umeå Plant Science Centre (UPSC), SLU

Corrosion into Refractory Materials
Naresh Kumar Wagri
Department of Applied Physics and Electronics, Umeå University

SESSION 5: INTERVIEW WITH HANNE KJÖLLER AND PLENARY LECTURE II

Chairperson: Ludvig Lizana

15.25 **Ola Nordebo**, political editor in chief for Västerbottens Kuriren, interviews **Hanne Kjöller**, journalist and writer, about her book "**Kris i forskningsfrågan: eller vad fan får vi för pengarna**".
(The interview will be in English!)

15.45 *Coffee break and time to …*
- participants' voting for the best PhD student presentation

16.00 **Plenary lecture II: Calling Bullshit: The Art of Skepticism in a Data-Driven World**
Jevin D. West
Information School at the University of Washington, co-founder of the DataLab, and director of the Center for an Informed Public

DAY 2, Wednesday 4 November

SESSION 6: RESEARCH INFRASTRUCTURES
Chairperson: Magnus Wolf-Watz

9.00 **Presentation of the KBC infrastructures: showcase discussion panel**

Moderator:

Linda Sandblad, Department of Chemistry and Director of Umeå Core Facility for Electron Microscopy (UCEM), Umeå University

Panel members:

András Gorzsás, Vibrational Spectroscopy Core Facility (ViSp)

Annika Johansson, Swedish Metabolomics Centre Umeå (SMC)

Hans Stenlund and **Jeanette Tångrot**, Computational Life Science Cluster (CLiC)

Henrik Larsson and **Annie Cox**, Technical platforms at Umeå Marine Sciences Centre

Irene Martinez Carrasco, Biochemical Imaging Centre Umeå (BICU)

Natuschka Lee, Fluorescence In Situ Hybridization (FISH)

Per Liljelind, Trace Analysis Platform (TAP)

Stina Berglund Fick, Chemical Biology Consortium Sweden (CBCS)

Tobias Sparrman, NMR Core facility

Uwe Sauer, Protein Expertise Platform (PEP) and X-ray Crystallography Platform

Xiao-Ru Wang, Ancient and Environmental DNA (aeDNA) Lab

Cheng Choo (Nikki) Lee, Umeå Core Facility for Electron Microscopy (UCEM)

9.30 *Technical break*

9.35 **Building networks: Cross-university bioinformatics and sequencing coordination**
Kristina Benevides

Bioinformatics coordinator. UPSC Bioinformatics Facility, and National Genomics Infrastructure (NGI), Umeå University

9.45 **Infrastructure at the Translational Research Centre**
Ola Billing

Department of Surgery and Perioperative Sciences, Umeå University

DAY 2, Wednesday 4 November

9.55 **Infrastructure at the Department of Forest Biomaterials and Technology, SLU**
Michael Finell
Department of Forest Biomaterials and Technology, SLU

10.05 **SLU Stable Isotope Laboratory (SSIL) - Adaptive excellence in analysis of elemental isotopes**
Mats Öquist
Department of Forest Ecology and Management, Director of the analytical infrastructure SLU Stable Isotope Laboratory (SSIL), SLU

10.15 **Presentations of the KBC infrastructures: round-table discussions in the break-out rooms**

Ancient and Environmental DNA (aeDNA) Lab (Host: Xiao-Ru Wang)

Biochemical Imaging Centre Umeå (BICU) (Host: Irene Martinez Carrasco)

Bioinformatics (Host: Kristina Benevides)

Chemical Biology Consortium Sweden (CBCS) (Host: Stina Berglund Fick)

Computational Life Science Cluster (CLiC) (Hosts: Hans Stenlund and Jeanette Tångrot)

Fluorescence In Situ Hybridization (FISH) (Host: Natuschka Lee)

NMR Core facility (Host: Tobias Sparrman)

Protein Expertise Platform (PEP) (Host: Mikael Lindberg)

Swedish Metabolomics Centre Umeå (SMC) (Host: Annika Johansson)

Trace analysis platform (TAP) (Hosts: Per Liljelind and Erik Björn)

Technical platforms at Umeå Marine Sciences Centre (Hosts: Henrik Larsson and Annie Cox)

Umeå Core Facility for Electron Microscopy (UCEM) (Hosts: Sara Henriksson and Michael Hall)

Vibrational Spectroscopy Core Facility (ViSp) (Host: András Gorzsás)

X-ray Crystallography Platform (Host: Uwe Sauer)

10.45 *Coffee break and time to ...*
- vote for the best "Sustainability" photo

SESSION 7: UMEÅ POSTDOC SOCIETY INITIATIVE
Chairperson: Magnus Wolf-Watz

11.00 **Umeå Postdoc Society: What the heck is that?**
Kerstin Seier
Umeå Postdoc Society (UPS), Department of Clinical Microbiology, Umeå University

DAY 2, Wednesday 4 November

11.15 **Roundtable with alumni: "Life after a postdoc at Umeå University"**

Moderator:

Andreu Vidal-Albalat, Umeå Postdoc Society (UPS), Department of Chemistry, Umeå University

Alumni guests:

Lindon Moodie, Associate Senior Lecturer at Uppsala University (Sweden)

Raquel Rodrigues, Project Manager at Coimbra University (Portugal)

Stefan Frost, Group Leader at Roche Innovation Center Munich (Germany)

Valerie Valeriano, Research Engineer at Karolinska Institute (Sweden)

12.00 *Lunch break and time to ...*
- participate in a quiz organised by Agrisera
- vote for the best "Sustainability" photo

SESSION 8: NEW FACULTY MEMBERS, AWARD AND GRANT RECIPIENTS AT KBC

Chairperson: Christoffer Boman

13.00 **Umeå Transformation Research Initiative (UTRI) - a new university-wide research network**
Carina Keskitalo
Department of Geography, Umeå University

13.10 **Hydrogen research, now and in the future**
Thomas Wågberg
Department of Physics, Umeå University

13.30 **Structural characterization of type-V fimbriae**
Karina Persson
Department of Chemistry, Umeå University

13.50 **Why is there so much non-coding transcription?**
Peter Kindgren
Department of Forest Genetics and Plant Physiology, Umeå Plant Science Centre (UPSC), SLU

14.10 **Redesigning photosynthesis for future food security**

SSF Agenda 2030 Research Centers (ARC)
Åsa Strand
Department of Plant Physiology, Umeå Plant Science Centre (UPSC), Umeå University

14.30 **Single cell damage: Detection of early plant stress responses after wounding**
Peter Marhavy
Department of Forest Genetics and Plant Physiology, Umeå Plant Science Centre (UPSC), SLU

14.50 **Understanding the fate of phosphorus in thermochemical energy conversion**
Nils Skoglund
Department of Applied Physics and Electronics, Umeå University

15.10 **Concluding remarks**
Announcement of the prize winners of the PhD Student presentation and of the "Sustainability" photo contest.

Information from Research Infrastructures

Ancient and Environmental DNA Lab - a/eDNA Lab

Analysis of ancient and environmental DNA (a/eDNA) is a rapidly expanding scientific field, opening exciting new possibilities to address paleoenvironmental, ecological and evolutionary research questions. The a/eDNA-based studies require DNA-free working environment to eliminate false signals from modern DNA contamination. To facilitate and promote innovative research development in paleoecology, evolutionary biology and aquatic ecology, where Umeå University has strong research groups, the Department of Ecology and Environmental Science (EMG) established an a/eDNA lab in 2018. This made it possible to process soil, peat bog, lake sediment and water samples in-house at Umeå University for subsequent DNA preparations, and cuts down the contamination risk and processing time for all projects.

LAB INFORMATION

- The lab is located in the basement of NC building. It consists of a shower room, 1st preparation room, 2nd preparation room (here you change to clean suit, mask, etc.), and the operation lab.
- The operation lab has positive air pressure, accompanied by a HEPA air filter system at 40 l/s.
- Both the preparation room and the operation lab have UV sterilization system and alarms installed.
- The a/eDNA lab provides the space for DNA extraction and pre-PCR preparations. The lab contains a -20°C freezer, a 4°C fridge, a droplet generator (for droplet digital PCR only), a centrifuge for Eppendorf tubes, an UV crosslinker, an oven with rotators, a biological hood, a notebook computer, shelves, and working benches.

TASKS THAT CAN BE PERFORMED IN THIS LAB

- DNA extraction from paleo- and environmental samples
- a/eDNA storage
- Pre-DNA amplification (PCR) preparations
- Droplets generation for droplet digital PCR (ddPCR) for DNA quantification
- Total DNA/RNA quantification using Fluorometer (Qubit)
- Library preparation for metagenomics

STEERING BOARD

Xiao-Ru Wang, Jonatan Klaminder and Christian Bigler
Department of Ecology and Environmental Science (EMG)

MANAGEMENT

Access to and utilization of the lab is coordinated and managed by Xiao-Ru Wang, Doreen Huang and David Hall (EMG).

CONTACT

Xiao-Ru Wang, xiao-ru.wang@umu.se, 090-786 9955
Doreen Huang, doreen.huang@umu.se
David Hall, david.hall@umu.se

MORE INFORMATION

Homepage will be launched Dec. 2020

The Biochemical Imaging Centre Umeå - BICU

The Biochemical Imaging Centre Umeå (BICU) provides state-of-the-art imaging technology including advanced light microscopy, affinity measurements and atomic force microscopy. BICU is an open-access imaging centre that offers cutting-edge techniques to researchers all over Sweden according to a fixed organization and user fees as described on the homepage. The centre includes widefield, confocal and Tirf microscopy, FLIM, FLIM-FRET, FRAP and live cell imaging with a wide range of instruments for an optimal spatial and temporal resolution. The centre includes dynamic live cell confocal microscopy and super-resolution microscopy. The state-of-the-art Atomic force microscopes allow for ultra resolution 3D-imaging and force-interaction measurements. Furthermore, the centre provides real-time quantification of binding of biosensors through solid-phase interaction techniques. Apart from providing microscopy services we also actively take part in programs aimed at training young researchers in the use of the basic as well as advanced microscopic techniques.

BICU is part of a **National Microscopy Infrastructure (NMI)**: a Swedish infrastructure for the use and support of advanced microscopy in life science. The mission of NMI is to provide faster access to innovative technology and competence in microscopy for the life science research community. NMI also coordinates national and international knowledge exchange in microscopy. NMI in Umeå is the node specialized for advanced correlative imaging techniques. Hereby, BICU closely collaborates with Umeå Core Facility for Electron Microscopy (UCEM) to provide correlative light and electron microscopy (CLEM).

EQUIPMENT

- Leica Thunder microscope (KBC building, H6)
- Nikon A1R Laser Scanning Microscope (KBC building, H6)
- Zeiss Spinning Disk Confocal Microscope (IMB building)
- Zeiss 710 Laser Scanning Microscope (6L, Oncology Department)
- Leica SP8 Falcon Confocal (KBC building, A4)
- Leica SP8 Confocal (Molecular biology Department)
- Bruker Atomic Force Microscope (KBC building, A5)
- Biacore 3000 (KBC Building, A5)
- Auto-ITC$_{200}$ (KBC Building, A5)
- Proteon XPR36 (KBC Building, A5)
- Ligand Tracer® Green (KBC Building, A6)
- IncuCyte S3 Live Cell imaging microscope (IMB building)

SERVICES

- Consultation, advice on experimental design and optimization of experimental conditions
- Technical support
- Personal training to provide drivers license for the user on the instrument
- Assistance with data analysis
- Data storage

CONTACTS

Facility Director: Richard Lundmark, richard.lundmark@umu.se
Facility Manager: Irene Martinez Carrasco, irene.martinez@umu.se
Senior Research Engineer for CLEM: Naga Venkata Gayathri Vegesna, gayathri.vegesna@umu.se

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/biochemical-imaging-centre-umea-bicu/

The Biogeochemical Analytical Facility - BAF

The infrastructure provides instruments for analysis of key chemical parameters in terrestrial and aquatic biogeochemical and ecological research and as such is of major interest for a large range of research groups. BAF act as a core analytical facility for several major research projects run by researcher at EMG together with their collaborators and is also open for other users at Umeå and other universities.

INSTRUMENTS

The facility covers a scope of different instruments including:

- Gas chromatograph (set up for analyses of CO_2, CH_4, N_2O)
- TOC analyzer (also including particulate carbon)
- Nutrient analyzer (NO_3+NO_2, NH_4, PO_4, TN, TP)
- Fluorometer
- Liquid scintillation counter (^3H, ^{14}C)
- Flow cytometer
- Respicond facility (to measure respiration)

CONTACTS

For analyses contact: Anders Jonsson
Department of Ecology and Environmental Sciences
Mobile: 070-2778659
E-mail: anders.jonsson@umu.se

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/baf/

Biopolymer Analytical Platform - BAP

The Biopolymer Analytical Platform (BAP) is dedicated to support research among KBC groups on cell walls of terrestrial and aquatic plants, and biopolymer materials. Our competence lies in applying a large range of standard methods for the analysis of lignocellulose, as well as in fine detection of soluble sugars and starch. The methods include carbohydrate and lignin composition analysis using conventional wet chemistry and state-of-the-art analytical devices. The instrumental backbone for many of those methods is gas chromatography/mass spectrometry (GC/MS). Pyrolysis-GC/MS is one of the most important analytical tools that quickly yields highly reproducible and comprehensive chemical fingerprinting of carbohydrate and lignin types in samples in the lower microgram range.

Postdocs, PhD students or project students with good lab work skills are required to do sample preparation in the BAP lab. We also provide an option to hire a professional staff hourly, in case your group has a lack of lab workers for sample preparation. It is possible to try a new method with us in the form of a project.

EXAMPLES FOR APPLICATIONS

- Pyrolysis-GC/MS for carbohydrate and lignin (G, S and H types) content estimation and for identification of organic compounds in soil/sediment
- TMS/Alditol acetate sugar-GC/MS for monosaccharide composition analysis
- Updegraff cellulose/anthrone assay for crystalline cellulose determination
- Klason, thioglycolic acid and acetylbromide lignin assay for lignin determination
- Enzymatic assays for soluble sugars and starch detection
- Size exclusion chromatography (SEC) for determination of MW, DP etc. of lignocellulose polymers

CONTACT

First contact for the customer: Laboratory manager, Junko Takahashi-Schmidt (Junko.TS@slu.se)

STEERING COMMITTEE

Totte Niittylä (Director), Dept. of Forest Genetics and Plant Physiology, SLU
Ewa Mellerowicz, Dept. of Forest Genetics and Plant Physiology, SLU
Hannele Tuominen, Dept. of Plant Physiology, UmU
Leif Jönsson, Dept. of Chemistry, UmU
Ola Sundman, Dept. of Chemistry, UmU
Junko Takahashi-Schmidt, Dept. of Forest Genetics and Plant Physiology, SLU

MORE INFORMATION

https://www.upsc.se/platforms/cell-wall-analysis/4845-biopolymer-analytical-platform.html

Chemical Biology Consortium Sweden - CBCS

CBCS Umeå (former LCBU) is part of the national SciLifeLab infrastructure service in Chemical Biology. The objective of CBCS is to provide Swedish researchers help to identify and develop chemical research tools for their research. This is achieved through both updated research facilities/equipment and staff with expertise in assay development, small molecule screening, medicinal and computational chemistry and profiling of compound quality. In addition, we have state-of-the-art compound collection that can be used in screening projects to identify compounds that target the biological processes of interest to the individual researcher. This approach can be used for both basic and applied research in e.g. life sciences and plant research.

Resources provided by CBCS are made available through a peer-review-process. Projects are prioritized based on merit, scientific impact and practical feasibility. CBCS Umeå also has an instrument park that can be accessed through different collaborative forms or user agreements.

CBCS recently entered a research collaboration with AstraZeneca. This collaboration will provide access for Swedish academic researchers to AstraZeneca's annotated small molecule compound library consisting of roughly 14,000 compounds specifically targeting over 1,700 human proteins.

EQUIPMENT AT CBCS UMEÅ

- Plate readers, i.e. Biotek Synergy H4 with Biostacker and Tecan 200
- High Content Screening Microscope – Thermo Scientific Array Scan VTI
- Liquid handling robotics, Beckman Coulter NxP with 96- and 384-well head.
- HPLC, Gilson & Shimadzu

SERVICES PROVIDED

- Development of biological assays compatible with high-throughput screening
- Biochemical (target based) and cell-based high throughput screening
- High-throughput imaging technology
- Computational chemistry & modelling
- Medicinal chemistry expertise
- General expertise in preparative and analytical chemistry
- Assay development and screening with bacteria, viruses, and fungi (BSL-2)
- Theoretical and practical courses in High Throughput Screening

CONTACTS

Department of Chemistry, KBC-building, Floor 4C
Erik Chorell: erik.chorell@umu.se
Stina Berglund Fick: stina.berglund.fick@umu.se

MORE INFORMATION

www.cbcs.se ; www.scilifelab.se/facilities/cbcs;
www.umu.se/forskning/infrastruktur/cbcs

Computational Life Science Cluster - CLiC

The Computational Life science Cluster (CLiC) is an Umeå node and representative within NBIS (National Bioinformatics Infrastructure Sweden) and the Umeå University data analytics platform focusing at research within the field of analysis of high-level structured and unstructured data. CLiC aims to support researchers in understanding complex chemical and biological systems and delivering high-quality results from their research via application and development of advanced data driven and computer based modelling tools and strategies. We are focusing on application on AI/deep learning, machine learning, multivariate analysis, statistics, bioinformatics and design of experiments methods for analysis of genomics (as part of NBIS), but also non-gene related data, such as downstream 'omics' (metabolomics), spectroscopy and imaging data. CLiC offers different kinds of support (e.g. short and long term bioinformatics support via NBIS, packaged data analytics services, expanded data analytics support for high-throughput experimental platforms and data science support for research projects), for all types of data and research questions. We also provide relevant courses and trainings.

SUPPORT FUNCTIONS

- Experimental design
- Bioinformatics (including bioinformatics drop-in support)
- Biostatistics
- Multivariate data analysis
- Deep learning and machine learning
- Image analysis

MAIN CONTACT PERSON

Johan Trygg, Professor, Director of CLiC, Department of Chemistry

Patrik Rydén, Assoc. Professor, Co - director, Department of Mathematics and Mathematical Statistics

PERSONNEL

Joakim Bygdell, NBIS, System Infrastructure, Department of Chemistry

Jeanette Tångrot, Genomics Core, NBIS, Short-term Bioinformatics support, Department of Molecular Biology

Alison Churcher, NBIS/WABI, Long term Bioinformatics support, Department of Molecular Biology

Nina Norgren, WABI, Long term Bioinformatics support, Department of Molecular Biology

Hans Stenlund, Biostatistics, Department of Plant Physiology (Swedish Metabolomics Centre)

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/clic/;
www.nbis.se

Fluorescence *In Situ* Hybridization - FISH (The Single Cell Detection Facility)

for environmental, clinical, food and biotechnology research

The goal of the Single Cell Detection Facility is to employ Fluorescence In Situ Hybridization (FISH) to identify genes in intact whole cells or viruses in their natural environment - without cultivation nor nucleic acid extraction. FISH can therefore complement not only other microscope based studies but also disruptive molecular biological methods, which rely on the extraction of cell components such as DNA. Thus, FISH can retrieve the information that is otherwise lost when extracting cell components, such as morphology, distribution, single cell activity and association with other cells or viruses.

FISH can be employed in different samples (environmental, clinical, food, industry/ biotechnology), and can target all cell types (Archaea, Bacteria, Eukarya) and certain viruses. The most common gene target for cell identification is the ribosomal gene, but new techniques are emerging that will also allow the in situ detection of other genes, such as housekeeping genes, functional genes, and pathological genes. FISH can also be combined with many other methods, such as cultivation, molecular methods, radioactive/isotope methods, flow cytometry, RAMAN spectroscopy, mass spectrometry, and spectral imaging.

The KBC FISH research facility is located at the department of medical biochemistry and biophysics, and is managed by the department of ecology and environmental science. The research facility contains all equipment necessary for FISH, including a large collection of gene probes for various taxa, reference samples, and a high performance computer for bioinformatics with a gene sequence database for phylogenetic studies, gene probe evaluation and design. Today, FISH is included in different research projects at UmU and outside, e.g. in plant, fungal and animal biology, microbial geoecology, pathogen detection, and different industrial applications, e.g. wastewater treatment, pulp and paper industry, and food production. Within the near future, two kinds of courses will be organized at KBC: a) introduction into the bioinformatic package ARB for phylogeny and biomarker design; b) overview of different FISH techniques for different research fields (environmental, clinical, industrial).

CONTACT

Natuschka Lee, Lab Microbial Geoecology and Astrobiology, Department of Ecology and Environmental Science and Department of Medical Biochemistry and Biophysics, Chemical Biological Center (KBC), Umeå University. E-mail: natuschka.lee@umu.se

References:

• Lee NM. 2018. Whole Cell Identification of Microorganisms in their Natural Environment with FISH. Analytical Geomicrobiology. Cambridge University Press. Eds: D Alessi, H Veeramani, J Kenney. In press

• Borecki G, Lee NM. 2016. Rapid Microscope Based Identification Method for Tuberculosis and Other

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/fluorescence-in-situ-hybridization-fish/

Technical platforms at Umeå Marine Sciences Centre

Chemical and biological analysis of marine samples

The platform provides analytical instruments and technical equipment for chemical and biological analysis of marine samples. The instruments are calibrated regularly and the expert staff provides necessary training. Analysis of samples may be ordered from the accredited laboratory specialized in marine samples. The platform also offers research vessels and advanced sampling equipment for sampling in the marine environment. A long term marine environmental database is available for background data on chemical and biological parameters.

MESOCOSM FACILITIES

The **indoor mesocosm facility** includes 12 mesocosms with control of a large number of physical parameters such as light, temperature, chemical composition of water, thermocline and rate of convective stirring. The facility has been upgraded so that projects that require ice covered water surfaces can be performed. The upgrade also includes state of the art lamps and a ventilation system that ensures natural levels of CO_2 in the room.

The **fish tank facility** is being renovated and upgraded. The renovated facility will be able to control the temperature of three different streams of running water. The facility also includes the possibility to test effects of toxic substances, such as pharmaceuticals, due to new equipment to remove toxins from the water. The facility will be up and running in 2021.

Standardisation of sea/lake based outdoor mesocosms have been performed at UMSC within the H2020 Aquacosm project and a **facility of 12 Aquacosms** has been produced.

EXAMPLES OF RESEARCH

• Lefebure, R et al. 2013. **Impacts of elevated terrestrial nutrient loads and temperature on pelagic foodweb efficiency and fish production**. Global Change Biology 19(5):1358-1372.
• Jonsson, S. et al. 2017. **Terrestrial discharges mediate trophic shifts and enhance methylmercury accumulation in estuarine biota.** Science Advances, 3(1)
• Båmstedt U., Larsson H. 2018. **An indoor pelagic mesocosm facility to simulate multiple water-column characteristics.** Int Aquat Res 10:13–29.
• Jonsson, S. et al. 2014. **Differentiated availability of geochemical mercury pools controls methylmercury levels in estuarine sediment and biota.** Nature Communications, 2014 Vol.5.
• Ripszam, M. et al. 2015. **Effects of predicted climatic changes on distribution of organic contaminants in brackish water mesocosms**. Science of the Total Environment 517: 10-21.
• Wikner, J., Andersson, A. 2012. **Increased freshwater discharge shifts the trophic balance in the coastal zone of the northern Baltic Sea.** Global Change Biology, 18(8): 2509-2519.

TEACHING ACTIVITIES / COURSES

Mainly PhD courses, for example NMA-course **Can eutrophication in the Baltic Sea be counteracted?**

HOST DEPARTMENT

Umeå Marine Sciences Centre, Norrbyn, Hörnefors

CONTACTS

Siv Huseby, Environmental analyst, siv.huseby@umu.se
Henrik Larsson, Senior research engineer, henrik.larsson@umu.se
Annie Cox, Research engineer, annie.cox@umu.se

MORE INFORMATION

https://www.umu.se/en/umea-marine-sciences-centre/

NanoLab

NanoLab is an open-access infrastructure located at the Department of Physics. It is a classified Class 100 cleanroom which comprises a variety of advanced fabrication and characterization setups, including, **thin-film deposition system (PVD75 thermal evaporator), nanoimprinter (Obducat NIL 2.5), mask aligner (Karl Süss Mask Aligner MJB3, X-ray diffractometer (PANalytical Xpert3 Powder), optical tensiometer (Attension Theta), low-pressure plasma system (diener electronics ATTO), Four-Point Probe system** as well as number of standard pieces of equipment, such as spin coaters, optical microscopes, vacuum ovens, hotplates, UV- curing boxes, analytical scales, etc. Visit NanoLabs website for more technical details, specific parameters and requirements for each individual equipment.

Original manuals and short user manuals for all equipment are to be found in KBC website and in the NanoLab.

The equipment in NanoLab is made available to all scientists at Umeå University, as well as external institutions, for just a minor fee. A discount is offered for frequent users or high-volume users.

Besides the equipment available in the Nanolab, the Nanolab offers space for user´s own experiment inside the cleanroom. Users have access to fume hoods and central gases (N_2, Ar, H_2, O_2, liquid CO_2, compressed air) and vacuum in each working station and inside the fume hoods.

Trainings are offered annually for using the cleanroom and for the most of the equipment. Check KBC or Nanolab homepage for recent course announcements or contact Dr. Roushdey Salh (the coordinator of the NanoLab).

The infrastructure is supported by KBC and supervised by experts from the department of Physics, Microbiology, and Applied Physics and Electronics. The NanoLab is used for both research and to educate student in advanced levels.

The NanoLab has special environment, with this unique opportunity comes many responsibilities and restrictions. All users are kindly asked follow the general rules of a cleanroom and to keep an active eye on the overall facilities and taking part in improving the cleanroom. Therefore, every user must take part in the cleanroom training seminar before having the license to use the NanoLab and the facilities independently.

CONTACT

Roushdey Salh, roushdey.salh@physics.umu.se

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/nanolab/

Nuclear Magnetic Resonance

The KBC Core facility NMR provides access to state-of-the-art NMR equipment and expertise for all researchers in the KBC and Campus environment. This infrastructure is part of the national infrastructures "NMR for Life" funded by KAW and SciLifeLab and operated by the Swedish NMR Centre at the University of Gothenburg and Umeå University. As part of "NMR for Life", the infrastructure grants access to academic and industrial researchers across Sweden.

The NMR facility offers access to powerful liquid and solid-state NMR infrastructure with in Umeå instruments at 850, 600, 500 and 400 MHz. New for 2020 is an ultrafast magic angle spinning probe enabling 1H detection on solids samples. High-field instruments are equipped with cryo-probes for optimal sensitivity for biomolecular solution NMR and environmental NMR. Robotic sample preparation and sample changers are available for high-throughput applications such as metabolomics of biofluids and fragment- based screening (FBS). This facility offers nationwide unique solid-state NMR at 850 and 500 MHz for studies of membrane proteins & amyloid fibrils and metabolomics on intact tissues.

SERVICE PROVIDED BY THE INFRASTRUCTURE

"NMR for Life" offers nation-wide NMR access in three areas: Liquid- and solid-state structure analysis, metabolite studies and chemical biology. In addition, we offer expert assistance throughout a project. Three-dimensional structures can be determined for soluble proteins, solid and membrane-bound proteins, nucleic acids and biomolecular complexes.
Metabolite studies, especially metabolomics, can be carried out on liquid and solid samples, including temperature-sensitive biological specimen. Advanced support of the entire process is provided, including bioinformatics data analysis support (through NBIS). Through collaboration with the Swedish Metabolomics Centre, we offer combined NMR- and MS-based metabolomics.
Our solid state NMR equipment allows structural studies of insoluble protein aggregates such as amyloid fibrils and membrane proteins in their functional lipid environment. FBS is routinely performed using substance libraries from - and in interaction with - Chemical Biology Consortium Sweden (CBCS) and Laboratories for Chemical Biology Umeå (LCBU).

PERSONNEL

Gerhard Gröbner, prof., Platform Director, Dept of Chemistry
Jürgen Schleucher, prof., Platform Director, Dept of Med Biochemistry and Biophysics
Mattias Hedenström, Senior Research Engineer, Dept of Chemistry
Tobias Sparrman, Senior Research Engineer, Dept of Chemistry
Ilona Dudka, Senior Research Engineer, Dept of Chemistry
Joao Figueira, Senior Research Engineer, Dept of Chemistry

MORE INFORMATION

www.umu.se/en/research/infrastructure/nmr/
www.nmrforlife.se

Protein Expertise Platform - PEP

The Protein Expertise Platform (PEP) is a strong environment at the Chemical Biological Center (KBC). PEP provides researchers with needed services and expert advice in questions of bioinformatics, cloning, growth optimization and protein purification.

MATERIAL

PEP keeps a set of cloning vectors, with a variety of fusion partners and purification tags, designed to improve protein solubility and to facilitate protein purification.
In addition, PEP also have different strains of competent E.coli bacteria ready for transformation, as well as various antibiotics and proteases that are commonly used in protein expression and purification.

CLONING

We offer cloning services e.g. PCR (standard cloning), subcloning, and mutagenesis.

PROTEIN EXPRESSION SCREEN (SMALL SCALE)

We can run a small-scale expression test to see if your protein of interest is expressed and soluble. If you experience problems due to low solubility or low expression, we can run a small-scale experiment to test a number of different setups.

PROTEIN EXPRESSION AND PURIFICATION (SCALE UP)

We also offer scaled-up protein expression and purification using affinity tags, IEX and SEC.

EDUCATIONAL ACTIVITIES

Graduate courses such as the fast "Cloning, Protein Expression and Purification" (CPEP), "Protein Crystallization" and "Basic Bioinformatics" courses address many topics of high interest for young researchers. Taking our courses enables them to independently solve general problems ranging from sequence analysis, primer design, molecular cloning to protein construct design and purification.

CONTACT

Mikael Lindberg, mikael.lindberg@umu.se

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/pep/

Swedish Metabolomics Centre - SMC

Swedish Metabolomics Centre (**SMC**; www.swedishmetabolomicscentre.se) was launched 2013 via an infrastructure grant from Knut & Alice Wallenberg Foundation and co-funding from Umeå University, Swedish University of Agricultural Sciences and Chalmers Technical University. From 2016 SMC is a part of SciLifeLab. The main aim of the centre is to support the researchers at Swedish Universities with mass spectrometry based small molecule, lipid and metabolomics analysis in biological tissues and fluids, and furthermore, to become a leading knowledge centre in metabolomics and related areas.

SERVICES

All service request starts with a meeting between the SMC and the customer, either in person or over the phone or Skype, to better understand the customer's research question and together decide the analysis of choice. SMC also offers an Open lab access service (OAP-service), where researchers after training by SMC personnel can rent an instrument and perform analysis themselves.

- Untargeted metabolite profiling (metabolomics)
- Targeted metabolite profiling, e.g. amino acids, sugars, fatty acids, TMAO (for details, contact Head of Facility).
- Lipid profiling (for details, contact Head of Facility).
- Study design
- Method development
- Basic statistics
- Open lab access services

EQUIPMENT

Mass spectrometers

- Leco Pegasus BT, GCTOFMS
- Leco Pegasus HT, GCTOFMS
- Agilent 7000C, GCQqQMSMS
- Thermo Scientific LTQ-Orbitrap XL
- Agilent UHPLC-QqQMSMS 6495
- Agilent UHPLC-QqQMSMS, 6490 (2)
- Agilent 6546 Accurate-Mass UHPLC-QTOFMSMS (2)
- Agilent 6560 Ion Mobility UHPLC-QTOFMSMS

CONTACTS

For service requests or questions please contact: info@swedishmetabolomicscentre.se

Facility Director: Ass. Prof. Anders Nordström (anders.nordstrom@umu.se)

Deputy Facility Director: Prof. Thomas Moritz (thomas.moritz@slu.se)

Head of Facility: Dr. Annika Johansson (annika.johansson01@umu.se), +46722445254

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/metabolomics/;
https://www.swedishmetabolomicscentre.se/

The Trace Analysis Platform – TAP

A Technical Platform at the Department of Chemistry

This platform aims to provide state-of-the-art equipment, user training and support for trace analysis of small molecules and metals in complex matrices, such as environmental and biological samples.

The platform supports the detection of minute quantities of analytes such as metals, organic compounds, organometallic compounds with both qualitative and quantitative methods, and gases with their isotopologues. For metals both total concentrations and speciation analysis are supported.

APPLICATION EXAMPLES

The equipment that forms the foundation of the platform is or has been supporting work in the following areas:

- Trace element analysis (metals, phosphorus, sulphur, chlorine and bromine)
- Speciation analysis (Hg, Sn and As compounds)
- Protein-metal complexes and interactions
- Trace analysis of persistent organic pollutants (POPs)
- Multi-residue analysis of pharmaceuticals
- Indoor air pollutant and metabolomics studies
- Non-target screening/characterization and identification of unknowns
- Online detection of gaseous analytes and their isotopologues

INSTRUMENTATION

The platform has mass spectrometry based equipment, most often coupled to initial chromatographic separation, encompassing the following fields:

- Organic GC-MS
- Organic LC-MS
- Organo-Metal ICP-MS
- Gas isotope-ratio MS and direct liquid or gaseous online sampling

SERVICES

The platform primarily provides access to instrumentation, but can also provide analytical services and operator training. The services may include: design of experiments, sample preparation, instrumental analysis and interpretation of data. Service is provided at three different levels: (1) Seed projects (a few samples), (2) Small projects (10s of samples), and (3) Projects and long-term service (100s of samples). *Contact the relevant co-ordinator for questions on availability, prices and level of support.*

CONTACTS

The facility is located on the 6th floor in the KBC building.

Main Contact:	Peter Haglund	Director, 090-786 6667
Co-ordinators:	Erik Björn	ICP-MS, 090-786 5198
	Peter Haglund	Non-Target MS Analysis, 090-786 6667
	Per Liljelind	GC-MS, 090-786 9321
	Richard Lindberg	LC-MS, 090-786 5464
	Dmitry Shevela	Isotope-ratio MS (3rd floor), 090-786 5293

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/tap/;
http://tap.chem.umu.se/; http://irms.chem.umu.se/

Umeå Core Facility for Electron Microscopy – UCEM

UCEM provides instruments and methods in Transmission Electron Microscopy (TEM) and Scanning Electron Microscopy (SEM) as a national research infrastructure. UCEM is an interdisciplinary core facility for imaging and advanced Electron Microscopy (EM). UCEM houses six EM instruments, sample preparation equipment as well as computer infrastructure and software for image processing. The facility staff provides service and training to users in the facility labs, where students and scientists can perform advanced sample preparation, imaging and image analyzes.

SEM instruments, Merlin and Evo, offer high-resolution surface imaging, with multiple detector systems operating under cryo, room temperature or heated conditions. Correlative Light and Electron Microscopy (CLEM) solutions for finding the precise location of a target proteins or structure of interest simplifying localization and high-resolution imaging of the same sample. The Scios DualBeam is an instrument combining SEM with a Focused Ion Beam (FIB) for micro-manipulation, volume imaging methodology and thin lamella preparation for subsequent TEM or tomography analyses.

TEM instruments Jeol 1230 and Talos L120 offer ideal TEM solutions for entry level and sample screening, electron tomography and CLEM. Service at UCEM also includes cell and tissue fixation, resin embedding, ultra-microtome sectioning, Tokuyasu sectioning, immunolabeling and staining techniques. Cryo-EM is the method of choice for visualization of hydrated proteins, viruses, cells and small organisms. Samples are plunge frozen in liquid ethane, preserved in amorphous ice and imaged under cryo-condition with Titan Krios 300 kV, equipped with autoloader for cryo samples, a phase plate for contrast enhancement and two direct electron detectors, Falcon3 and K2 BioQuantum. The method “Cryo-EM single particle 3D reconstruction” is used for structure biology studies and cryo-electron tomography is used to study e.g. molecular complexes, subcellular volumes or microorganisms in 3D.

Together with BICU and UCEM provides CLEM imaging support as part of the National Microscopy Infrastructure (NMI) and have during 2019 installed a new fluorescence microscope with a cryo sample stage. The cryo-EM facility is a SciLifeLab node and part of the Nordic facility network CryoNET. UCEM also support sample preparation for MAX IV microscopy beamline users. The establishment of an advanced EM facility in Umeå was made possible through external funding by the Swedish Research Council, Knut and Alice Wallenberg Foundation and the Kempe Foundations.

CONTACTS

For general enquiries: Linda Sandblad, Facility Coordinator / Director
Visiting address: Electron Microscopy Building (former Säkerhetshuset), KB-D, Umeå University
Mobile: +46 (0)70 932 49 36, E-mail: linda.sandblad@umu.se

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/umea-core-facility-for-electron-microscopy-ucem/

Vibrational Spectroscopy Core Facility - ViSp

ViSp provides FT-IR and Raman spectroscopy and microspectroscopy services, ranging from design of experiments to measurements and data analysis. ViSp has state-of-the-art instrumentation, including vacuum bench FTIR spectrometers, FTIR microscopes with focal plane array detectors, two confocal Raman microscopes with 7 laser lines (from 405 to 785 nm), a fiber optic probe and polarizers, and a portable Raman spectrometer. The techniques are suitable to detect (and localise at micron and submicron level) chemical changes in a wide range of samples, at high speed and low cost, non-destructively and label-free. ViSp can provide both hardware and software development to adapt the techniques to the needs of the users / projects.

EXAMPLE APPLICATIONS/RESEARCH PROJECTS

Due to the exceptional versatility of the techniques, example projects cover a wide range of scientific disciplines and applications. Among the most prominent are materials sciences (nanotechnology, semiconductors), plant sciences (high-throughput chemotyping/screening, investigating the effects of gene manipulations or environmental factors), environmental sciences (microplastics, biochars, algae), chemistry (absorption on mineral surfaces, real-time, in situ monitoring of reactions, protein conformational changes) and medicine (assessing tissue compositional changes under various pathological conditions, diagnosing and monitoring disease onset and progression, drug targeting and molecular mechanistic studies, *in vivo* chemical compositional analysis of tissues). ViSp is primarily research driven and actively participates in projects where new methods need to be developed as well as applying existing methodologies in new areas.

TEACHING ACTIVITIES / COURSES

A User License Course is run twice a year, giving a basic introduction to vibrational spectroscopy in general and training users in running their own experiments at ViSp in particular. ViSp is also involved at several courses at Umeå University and SLU.

LOCATION

Department of Chemistry, Building C, floor 1 (microspectroscopy) and floor 6 (spectroscopy).

CONTACT

András Gorzsás, manager
E-mail: andras.gorzsas@umu.se

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/visp/

The X-ray Crystallography Platform

The X-ray Crystallography Platform provides crystallographic expertise and access to state of the art equipment for crystal set-ups and data collection. Single crystal X-Ray Diffraction (XRD) provides 3D structural information at atomic resolution of small molecules as well as macro-molecules such as proteins, DNA, RNA, and their complexes. XRD is ideally suited for drug target screening ("High Throughput Screening") and "Fragment Based Drug Discovery" by determining the structure of proteins with bound drug candidates. In addition, the X-ray equipment can be used for powder and fibre diffraction.

EQUIPMENT

- Nano-drop crystallization robot (mosquito®, TPP LabTech) for screening of crystallization conditions
- A Formulatrix "Rockimager" crystallization imaging and storage cabinet and a "Rockmaker" liquid handling robot
- A high brilliance X-ray diffraction system (X8 PROTEUM, Bruker AXS) that produces a fine focused, monochromatic X-ray beam of a wavelength $\lambda = 1.54$ Å (Cu-Kα radiation). Crystals are positioned in the beam with a kappa goniometer
- A CryoStream 700 (Oxford) maintains the crystals at 100K during data collection
- High-end computing equipment and sophisticated software for data collection and analysis
- The platform has direct access to an Agilent 1200 Series High-Throughput LC/UV/Mass-Spec system

SERVICE

- Screening of crystallization conditions using the nano-drop pipetting robot (mosquito®)
- Monitoring, evaluation and scoring of crystallization screens
- Optimization of initial screens
- Diffractions tests and iterative crystal optimization (diffraction quality and resolution)
- Full diffraction data collection incl. data processing and data analysis
- X-ray crystal structure determination, refinement and validation
- Deposition of coordinates with the Protein Data Bank (PDB) or the Cambridge Structural Database (CSD)
- Compound screens: co-crystallization with fragments and compounds (in collaboration with LCBU)
- Cryogenic preservation of crystals (vitrification) and storage in liquid nitrogen
- Powder data collection

CONTACT

Uwe Sauer (coordinator): tel: 090-786 5930

E-mail: uwe.sauer@umu.se

MORE INFORMATION

https://www.umu.se/en/research/infrastructure/x-ray-crystallography-platform/

X-ray Photoelectron Spectroscopy Platform - XPS

The X-ray photoelectron spectroscopy (XPS) platform is an open infrastructure at Umeå University enabling users both within UmU and outside to obtain analyses of the chemical composition of their sample surface. Knowledge of the elemental composition, oxidation state and spatial distribution of atoms at surfaces, near-surfaces, and interfaces is crucial to our understanding of key reactions in nature and technology. Surfaces are, after all, the interface through which materials - as small as nanoparticles and bacteria, to as big as nuclear fuel reactors and spaceships - interact with their environments. XPS, also known as Electron Spectroscopy for Chemical Analysis (ESCA), is now one of the most widely used tools in countless fields of science and engineering where advanced analyses of surfaces and interfaces is needed.

The platform provides surface analysis by XPS technique. Full range of conventional XPS experiments is available including monochromatic Al Kα excitation, angle-resolved XPS, XPS imaging, and cryogenic measurements.

EQUIPMENT

AXIS Ultra DLD is an electron spectrometer manufactured by Kratos Analytical, Ltd. (UK). The instrument was installed at the Dept of Chemistry in 1999 and upgraded twice with a Delay-Line-Detector in 2004 and new X-Ray power supply in 2009.

SERVICE

In the outermost 10 nm of a surface (10 atomic layers), XPS provides:

- Identification of all elements (exc. H and He) present in concentrations >0.1 atomic %
- Semi quantitative determination of the elemental surface composition
- Information about the molecular environment (oxidation state, bonding atoms, etc.)
- Non-destructive elemental depth profile 10 nm into the sample and surface heterogeneity assessment
- Lateral variations in surface chemical composition (XPS imaging with spatial resolution of 5 µm)
- Studies on wet/hydrated (frozen) samples

The XPS platform is **the only facility for XPS analyses in Northern Sweden** (north of Uppsala). The platform supports a unique field of research, developed at the Department of Chemistry involving investigations of fast-frozen samples including mineral-aqueous solution interfaces, interfaces of biomaterials with biologically relevant media, and surface chemistry of microorganisms. The platform also supports a large range of research areas by providing state-of-the-art surface analysis in areas including ecology, chemistry, physics, archeology, molecular biology and engineering.

STEERING BOARD

Andrey Shchukarev (Researcher, Dept of Chemistry), Knut Irgum (Prof., Dept of Chemistry), Madeleine Ramstedt (Lecturer, Dept of Chemistry), Jean-François Boily (Prof., Dept of Chemistry), Ludmilla Morozova-Roche (Prof., Dept of Medical Biochemistry and Biophysics)

CONTACT

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MORE INFORMATION

https://www.umu.se/en/research/infrastructure/xps/

Overview Infrastructure Presentations

Research Infrastructure	Contact persons	Representatives at KBC DAYS 2020	Show-case panel	Break-out room
Ancient and Environmental DNA Lab - a/eDNA Lab	xiao-ru.wang@umu.se doreen.huang@umu.se david.hall@umu.se	**Xiao-Ru Wang**	yes	yes
Biochemical Imaging Centre Umeå (BICU)	richard.lundmark@umu.se irene.martinez@umu.se gayathri.vegesna@umu.se	**Irene Martinez Carrasco**	yes	yes
Biogeochemical Analytical Facility (BAF)	ann-kristin.bergstrom@umu.se anders.jonsson@umu.se			
Biopolimer Analytical Platform (BAP)	totte.niittyla@slu.se junko.TS@slu.se			
Chemical Biology Consortium Sweden (CBCS)	stina.berglund.fick@umu.se erik.chorell@umu.se	**Stina Berglund Fick**	yes	yes
Computational Life Science Cluster (CLiC)	johan.trygg@umu.se patrik.ryden@umu.se	**Hans Stenlund** **Jeanette Tångrot**	yes	yes
Fluorescence In Situ Hybridization facility (FISH)	natuschka.lee@umu.se	**Natuschka Lee**	yes	yes
Technical platforms at Umeå Marine Sciences Centre	siv.huseby@umu.se henrik.larsson@umu.se annie.cox@umu.se	**Henrik Larsson** **Annie Cox**	yes	yes
NanoLab	roushdey.salh@umu.se			
Nuclear Magnetic Resonance Core Facility (NMR)	mattias.hedenstrom@umu.se tobias.sparrman@umu.se jurgen.schleucher@umu.se gerhard.grobner@umu.se	**Tobias Sparrman**	yes	yes
Protein Expertise Platform (PEP)	mikael.lindberg@umu.se	**Mikael Lindberg** **Uwe Sauer**	yes	yes
Swedish Metabolomics Centre (SMC)	annika.johansson01@umu.se anders.nordstrom@umu.se thomas.moritz@slu.se	**Annika Johansson**	yes	yes
Trace Analysis Platform (TAP)	peter.haglund@umu.se	**Per Liljelind** **Erik Björn**	yes	yes
Umeå Core Facility for Electron Microscopy (UCEM)	linda.sandblad@umu.se	**Cheng Choo Lee** **Sara Henriksson** **Michael Hall**	yes	yes
Vibrational Spectroscopy Core Facility (ViSp)	andras.gorzsas@umu.se	**Andras Gorzsas**	yes	yes
X-Ray Crystallization Platform (X-ray)	uwe.sauer@umu.se	**Uwe Sauer**	yes	yes
X-Ray Photoelectron Spectroscopy (XPS)	andrey.shchukarev@umu.se			

MORE INFORMATION ABOUT RESEARCH INFRASTRUCTURES AT KBC

https://www.umu.se/en/chemical-biological-centre/kbc-scientific-infrastructures/

Coordinated Services at KBC

Coordinated services at KBC	Contact person/contact e-mail address
KBC Communications Office	Anna Shevtsova, Anne Honsel, info.kbc@umu.se
KBCon Interactive Learning Environment	Linda Pommer, linda.pommer@umu.se
KBC Service Centre	servicecenter.kbc@umu.se
KBC Printing service	lars.aberg@umu.se
Mechanic workshop at the Department of Physics	peter.wikstrom@umu.se isak.silander@umu.se
KBC IT-support (CAS Login)	http://kbc-support.ad.umu.se/IT/
KBC Chemical Store (CAS login)	https://chemshop.chem.umu.se

MORE INFORMATION ABOUT COORDINATED SERVICES AT KBC

https://www.umu.se/en/chemical-biological-centre/services-kbc/

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Participants

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Participants

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