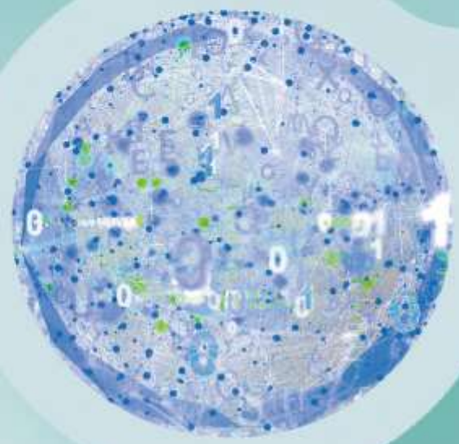
Academia Sinica Core Facilities



Academia Sinica
Department of Academic Affairs
and Instrument Service 2024

Core Facilities

Academia Sinica has established several core facilities equipped with valuable instruments, operated and maintained by dedicated personnel. These facilities, except for the Specific Pathogen Free (SPF) Animal Facility, are accessible to both the academic and industrial communities nationwide. These specialized facilities offer not only access to state-of-the-art instruments but also support from experienced professionals who can assist with experimental design, execution, and data analysis.

Each core facility specializes in different technical fields and offers:

- Specific instruments/equipment for experimental research
- Cutting-edge technologies for product development
- Services including personnel training, education, and professional consultation

Feel free to contact the facility managers anytime if you are interested in using any of the core facilities.

https://daais.sinica.edu.tw/pages/519

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DNA Sequencing Core Facility

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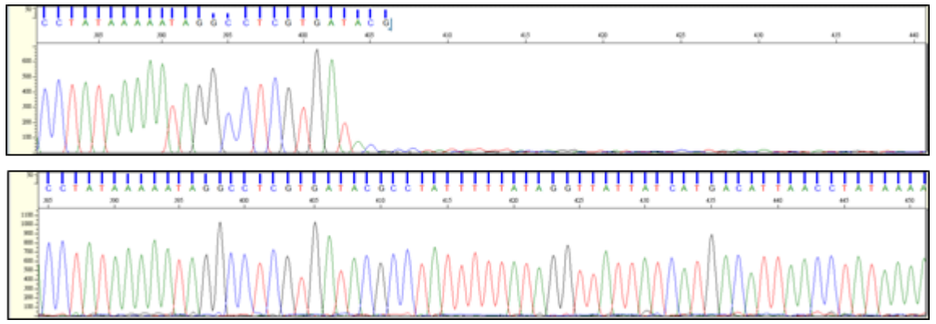
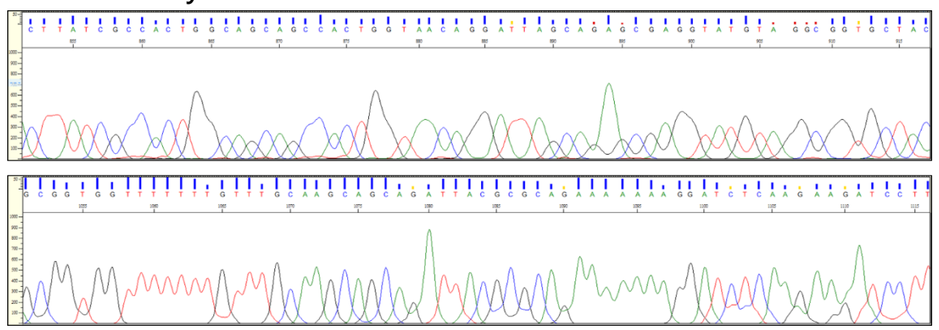
The DNA sequencing core facility is a campus-wide core facility in Academia Sinica. We provide high-quality, high-throughput, and low-cost DNA analysis for researchers with ABI 3730XL DNA Analyser. This technique applies to DNA sequencing for gene editing, CRISPR check, mutagenesis, transgenic model confirmation, genotyping, SNP, plants and cell line confirmation, plasmid confirmation, gene library construction, and NGS validation.

- **We have an optimal protocol to improve the readout length for difficult templates.**



- **The maximum read length of the common DNA plasmids is over 900 bp and 1100 bp processed by instrument manufacturer' s basecaller and Peaktrace™ basecaller individually.**



More Info:
https://www.ibms.sinica.edu.tw/support_dep/en/index21.html

Next Generation Sequencing High Throughput Genomics Core

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Established in 2008, the High Throughput Genomics Core Facility initially supported microbial sequencing for the national biofuel project. Through promotion, our core was integrated into Academia Sinica' s shared instrument facilities in 2014, and has been a centralized core facility in Academia Sinica in 2019.

With professional consultation for experiment planning and customization, we offer high-quality, diverse applications, and continuous development of technology innovations to meet various research needs.

Services:

- **Sequencing Platforms:** Equipped with 2nd-generation Illumina' s short-read platforms, and 3rd-generation PacBio and Oxford Nanopore' s long-read platforms, providing flexible options for different service requirements.
- **Advanced Applications:** Introducing innovative technologies like 10x Genomics for single-cell and spatial transcriptome analysis, and 3D genome spatial configurations.

Visit our website for service details, and apply online through the LIMS User system.

Category	System	Platform and function	Features
NGS	Illumina	NextSeq 2000, HiSeq, MiSeq	high acuracy short reads, paired-end
TGS	PacBio	Sequel IIe / Sequel	HiFi long reads, Kinnex concatenation
	Oxford Nanopore	GirdIon / P2 Solo Promethion	Ultra-long read, direct RNA-seq, methylation
10x Genomics	Chromium	Single-cell encapsulation	single-cell/nuclei barcoding, RNA/DNA analysis
	CytAssist	Spatial barcoded sequencing	spatial transcriptome analysis
Microscope	Thermo EVOS	full-slide fluorecent scanning	support all 10xG imaging and sample QC
Single-cell	LeviCell EOS	single cell/nuclei purification	gentle levitation for single cell/nuclei purificaiton
BFX Software	Partek	Single-cell & Spatial analyses	GUI-assisted bioinformatics for 10x data analyses
3D-Genome	Dovetail, PhaseG, Arima	Hi-C/OmniC, Micro-C, Hi-Chip	chromatin contact topology, genome scaffolding

More Info: https://ngs.biodiv.tw/NGSCore/

Biophysics Core Facility (BCF)

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Protein related Structure Analysis and Proteomics

The Biophysics Core Facility (BCF) of Academia Sinica is located in Room 402 in the Institute of Biological Chemistry. Previously known as Molecular Characterization Core, the facility, in operation since 2008, is the home of several state-of-art instruments, providing technical supports for facility users in terms of training, scheduling, workshops, user certification, trouble shooting and instrument maintenance.

BCF currently houses the following instruments:

- Analytical Ultracentrifuge (ProteomeLab XL-I): Providing sedimentation coefficient(s), molecular weight, shape, size and the oligomer species.
- Bio-layer Interferometry (Gatorplus and Octet RED96): Providing binding kinetics (on/off rate constants), affinity, and protein concentration.
- Circular Dichroism (Chirascan+ qCD): Providing the secondary structure, absorbance and spectrum similarity comparison.
- Differential Scanning Calorimeter (Auto PEAQ-DSC): Providing the transition temperature and heat capacity changes upon heat denaturation.
- Differential Scanning Fluorimetry (Tycho NT.6): Providing quick of screening protein quality and small molecule binding.
- Dynamic and Static Light Scattering Spectrometer (DynaPro NanoStar): Providing particle size distribution, molecular weight, T_{onset} and T_{agg}.
- Isothermal Titration Calorimeter (Auto PEAQ-ITC): Providing binding affinity, stoichiometry and enthalpy change.
- Mass Photometry (TwoMP): Providing molecular molar mass at single-molecule resolution.
- Surface Plasmon Resonance (Biacore T200 & Biacore 8K): Providing binding kinetics (on/off rate constants) and affinity (equilibrium constants).

In combination with the results from each instrument, researchers may gain insights into the thermodynamics, kinetics and structural information for interactions of biological molecules.

More Info: https://idv.sinica.edu.tw/bcf/index.html

Academia Sinica Cryo-EM Facility (ASCEM)

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The overall goal of establishing Academia Sinica Cryo-EM Facility (ASCEM) is to increase the energy of fundamental life science research of Taiwan and Academia Sinica via introduction of cutting-edge instruments and to assist analyzing protein structure and cellular ultrastructure for further solutions of bio-technology issues and serious disease problems. ASCEM equips with four cryo-EM instruments and opens to academic and industry users outside of Academia Sinica. ASCEM currently has established a single particle analysis pipeline for the protein macro-molecule structure determination, and provides three modes of technical support: basic, advanced, and collaboration (technical R&D). ASCEM also supports to establish electron cryo-tomography pipeline, and is also available for liposome and polymer experiments and so on. To facilitate efficient instrument application and usage, the application process is divided into different stages based on the instrument requested by the user, sample category, and the operating capability of the user.

Please see ASCEM website for details.

CEM1 JEOL JEM-1400	CEM2 Tecnai G2 F20	CEM3 Talos Arctica	CEM4 Titan Krios
120kV	200kV	200kV	300kV
		Volta phase plate Autoloader	Volta phase plate Autoloader
Getan UltraScan 4000 CCD	Getan UltraScan 4000 CCD DE20 DDD	Falcon III CMOS Detector	Falcon III
Sample quality by negative staining	Cryo-sample quality	Cryo-sample quality	Data collection
Room temperature TEM		Data collection	

More Info: https://cryoem.ibc.sinica.edu.tw

High Field NMR Center (HFNMRC)

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The High Field Nuclear Magnetic Resonance Center (HFNMRC) is one of the core facilities supported by Academia Sinica. Nuclear Magnetic Resonance (NMR) is a powerful and sophisticated biophysical technique with broad applications in many disciplines. The objectives of HFNMRC are: to provide a readily accessible, state-of-the-art facility to support NMR research; to provide competent technical support to assist NMR researchers; to develop new techniques and methodologies for NMR related researches; to train scientists to carry out advanced NMR experiments. Our goal is to support NMR related research in Taiwan.

The applications of solution NMR spectroscopy include: compound structures identification; natural product analysis; macromolecular structures and dynamics studies; interactions of molecules; screening ligands/drugs using NMR; identification and quantification of metabolites.

Currently, HFNMRC operates and maintains six Bruker NMR spectrometers.

NMR	Available Probes	Detection Nuclei
NEO500	QNP CRYO	1H/13C/19F/31P
	TXI CRYO	1H/13C/15N
AVIII600	TCI CRYO	1H/13C/15N
NEO 600	TXO CRYO	13C/15N/1H
AV600_CHEM	TBO Regular	Broad Band
	QXI Regular	1H/13C/15N/31P
AVIII800	TXI CRYO	1H/13C/15N
NEO850	TCI CRYO	1H/13C/15N

Service Mode	Type of Service
Basic Mode	Routine Service (Ex: data acquisition)
Collaborative	Advanced Service (Ex: structure determination)

More Info: https://www.nmr.sinica.edu.tw/en/?it=main

Academia Sinica Protein Clinic (ASPC)

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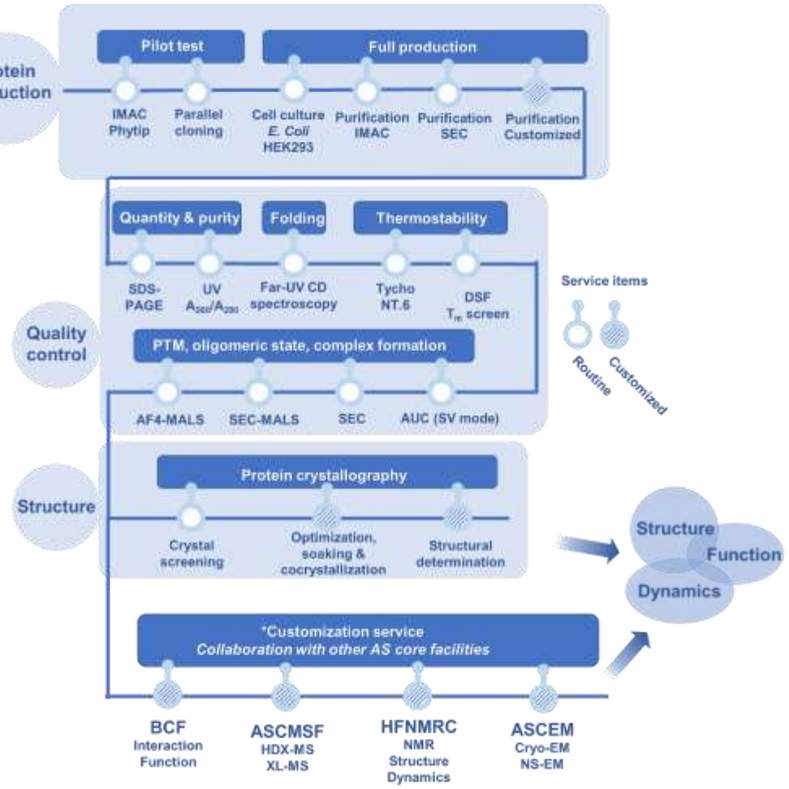
Academia Sinica Protein Clinic (ASPC) is a service provider for integrated and multiplex structural biology and biophysics with the know-how, streamlined workflow, and data analysis. ASPC provides initial consultations to assist users in obtaining recombinant protein sample and to design workflows for biophysical and structural characterizations. Reminiscent to health checkups, ASPC provides basic and advanced diagnosis packages or individual items to obtain an overview about the target protein system, which that can be seamlessly interfaced with more advanced structural and functional characterizations by other core facilities (such as Biophysics Core Facility, Common Mass Spectrometry Core Facility and cryoEM) within Academia Sinica. ASPC provides routine crystallization screening trials, and, on a collaborative basis, more advanced physicochemical, structural and functional analyses.



More Info: https://aspc.ibc.sinica.edu.tw/index-E.php

Mass Spectrometry Common Facilities for Proteomics and Protein Modification Analysis

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Protein related Structure Analysis and Proteomics

The Academia Sinica Mass Spectrometry Common Facilities for Proteomics and Protein Modification Analysis, located on the 4th floor of the Institute of Biological Chemistry, includes a fleet of hybrid and Tribrid Orbitrap instruments, configured primarily for advanced nanoLC-nanoESI-MS/MS analyses. The Thermo LTQ-Orbitrap Velos and Elite systems are used for routine proteomic ID and initial screening analysis on less complex samples, while the high-end equipment Orbitrap Fusion and Lumos systems are for advanced quantitative shotgun proteomics, PTMomics, glycoproteomics and glycomics. These facilities further house a Waters Synapt G2 HDMS, configured with a fully automated hydrogen-deuterium exchange (HDX) system for protein structure and conformation analysis. First-time facility users are strongly advised to contact the Manager to discuss research needs and workflow design from sample preparation to data analysis. Training courses, seminars, and lectures are also offered to prospective users.

Services:

- Simple/complex protein identification, post-translational modifications (PTM) analysis, and full scale quantitative shotgun proteomics applications.
- Training courses are offered on theories, sample preparation, and data analysis.

Equipment:

1. Thermo LTQ-Orbitrap Velos Mass Spectrometer
2. Thermo LTQ-Orbitrap Elite Mass Spectrometer
3. Thermo Orbitrap Fusion Tribrid Mass Spectrometer
4. Thermo Orbitrap Fusion Lumos Tribrid Mass Spectrometer
5. Waters Synapt G2 High Definition Mass Spectrometer

More Info: https://sites.google.com/view/ascmsf/

Small Molecule Structural Identification Mass Spectrometry Core Facility

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Small Molecule, Metabolites & Drug Analysis and Metabolomics

In diverse fields such as materials science, catalysis, energy, and biomedicine, the precise identification of the molecular weight of various organic or inorganic small molecules and metabolites is not only a prerequisite for pre-publication considerations, but also serves as crucial information for verifying the accuracy of compound structures. To address a spectrum of analytical demands and manage a substantial volume of analyses, the Mass Spectrometry Core Facility at the Institute of Chemistry has systematically established multiple mass spectrometry analysis platforms. These platforms exhibit proficiency in delivering precise molecular weight measurements, structural analysis, and quantification for an extensive array of organic or inorganic molecules. In essence, our overarching objective is to provide highly efficient and quality services for the comprehensive characterization of small molecules, thereby facilitating cutting-edge endeavors for the researchers.

Services:

No.	Facility	Sample Type
A-1	LR-ESI/FAB-MS	organic and inorganic molecules (polar) *m/z* <2000
A-2	HR-ESI/FAB-MS	organic and inorganic molecules (polar) *m/z*<2000
B-1	LR-EI/APCI-MS	organic and inorganic molecules (nonpolar, aromatic, alicyclic) *m/z*<1000
B-2	HR-EI/APCI-MS	organic and inorganic molecules (nonpolar, aromatic, alicyclic) *m/z*<1000
C-1	TLC/band	organic and inorganic molecules
E-1	Nanospray-ESI	noncovalent binding complex (supramolecular, self-assembling)
E-2	LC-ESI-MS/MS	peptides
E-3	User-ESI	organic and biomolecules *m/z* <2000
F-1	LR-MALDI-MS	organic and inorganic molecules (polar, nonpolar) *m/z* >1500
F-2	HR-MALDI MS-MS/MS	organic and inorganic molecules (polar, nonpolar) *m/z* >1500
G-1	LR-GC-MS	organic and inorganic molecules (nonpolar, aromatic, alicyclic) *m/z*<1000
H-1	Ion mobility	organic and inorganic molecules (polar) *m/z*<2000
I-1	LR/HR cold spray	organic and inorganic molecules (polar) *m/z*<2000

LR: Low Resolution

HR: High Resolution

More Info: https://masslab.chem.sinica.edu.tw/

Academia Sinica Metabolomics Core Facility (ASMCF)

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Academia Sinica Metabolomics Core Facility (ASMCF) was established in 2009 to meet the growing demand for small metabolites and metabolomics analyses, and specializes in providing mass spectrometry-based services. These services encompass both targeted analyses of predefined candidates and untargeted analyses, also referred to as global metabolite profiling. Leveraging state-of-the-art instruments such as liquid chromatography coupled with high-resolution mass spectrometry, we delivers highly accurate and sensitive metabolite profiles, even for complex biological samples.

Services:

- Identification and Quantification of Targeted Metabolites
- Untargeted Analysis or Metabolomics Profiling
- Structural Analysis of Novel Metabolites

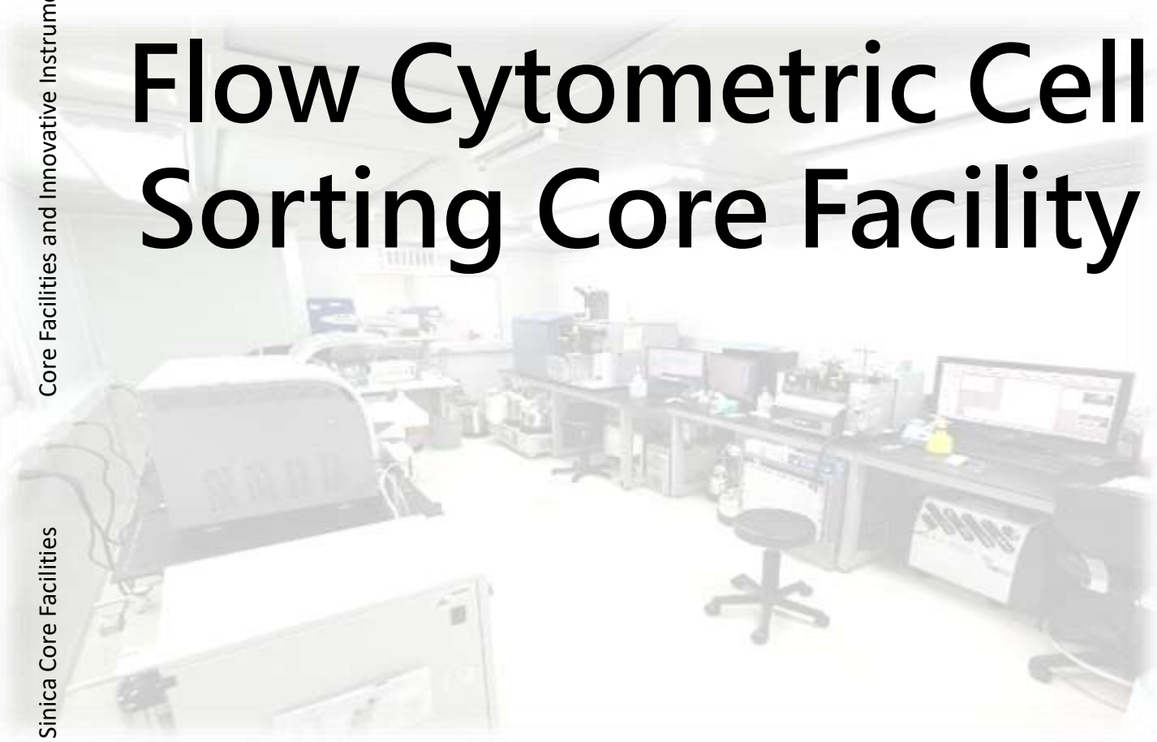
Equipment:

- Mass Spectrometry
  1. Tribrid Mass Spectrometer (Orbitrap Fusion Lumos and Orbitrap IQ-X)
  2. Hybrid Ion Trap-Orbitrap Mass Spectrometer (Orbitrap Elite)
  3. Dual- pressure Ion Trap Mass Spectrometer (Velos Pro)

- Sample Inlet Systems
  1. Ultra Performance Liquid Chromatography
     - Waters ACQUITY UPLC System
     - Thermo Scientific Vanquish UHPLC System
     - Thermo Scientific Vanquish Horizon UHPLC System
  2. Nano-Ultra Performance Liquid Chromatography
     - Thermo Scientific UltiMate 3000 RSLCnano System
  3. Capillery Electrophoresis
     - Agilent 7100 CE System

More Info: https://msomics.abrc.sinica.edu.tw/ASMCF/

Flow Cytometric Cell Sorting Core Facility



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The Flow Cytometric Cell Sorting Facility is located in Room N720 of the Institute of Biomedical Sciences, providing sterile sorting services for non-infectious animal cells to support biological research. Fluorescence-activated cell sorting technology (FACS) can isolate specific cell populations by their distinctive fluorescence patterns via dye labeling. Isolated cells can be further cultured or applied to subsequent cellular functional analysis, such as nucleotide assays, protein quantification, image analysis, or in vivo assays by injecting into animals. This core facility hosts three sorters for cell sorting services, operated by two professional technicians. Our Aurora CS sorter is capable of analyzing up to 40 fluorescence signals and allowing up to 6-way sorting into tubes with a high purity rate of over 98% simultaneously.

Services:

1. Non-infectous Animal Cell Sorting
2. 8+ Color Flow Cytometry Analysis
3. Small Particle Flow Cytometry Analysis
4. Technical Consultation

Equipment:

1. Cytek Biosciences Aurora CS
2. Becton Dickinson FACSAria IIIu Cell Sorter
3. Becton Dickinson FACSJazz Cell Sorter

More Info:
https://www.ibms.sinica.edu.tw/support_dep/en/index22.html

Comprehensive Flow Cytometry Laboratory

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The Comprehensive Flow Cytometry Laboratory is the only professional laboratory in Taiwan that provides both laboratory and field sample analysis and sorting of viruses, bacteria, algae, fungi, plants and animals. The number of types of samples sorted by the laboratory ranks first in Taiwan. Current equipment includes a CytoFLEX S flow cytometer, a CytoFLEX SRT cell sorter and a COPAS VISION 1000 brightfield imaging large particle sorter, which can perform precise cell counting, DNA content analysis, and multicolor fluorescence analysis, as well as high-purity four-way sorting and precise single-cell sorting services, which comprehensively assist scientific development. The laboratory is committed to providing high-quality analysis and sorting technology, while also providing the most advanced flow cytometry expertise and research consulting services. Interested parties are welcome to take advantage of the laboratory.

Innovation and Focuses:

- Single cell multiomics
- Biological nanoparticles research (viruses, extracellular vesicles, lysosomes)
- Cell isolation for synthetic biology
- CRISPR/Cas9-edited cells enrichment
- Basic life sciences, plant and environmental microbiology, biomedicine and translational medicine, smart and precision agronomy

Equipment:

- Beckman Coulter CytoFLEX S Cytometer, 4 lasers & 12 fluorescence detectors.
- Beckman Coulter CytoFLEX SRT Cell Sorter, 4 lasers & 15 fluorescence detectors.
- Union Biometrica COPAS VISION 1000, brightfield imaging large particle sorter.

More Info: https://ipmbfcass.jimdo.com/

Biological EM core facility

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The Biological Electron Microscopy (EM) Core Facility is administered and supported by the Institute of Cellular and Organismic Biology and the Academia Sinica (AS) Core Facility and Innovative Instrument Project. Its goal is to provide researchers with technical consultation and operational training for EM sample preparation, with services available to researchers both within and outside AS. This facility is equipped with one transmission electron microscope, as well as the equipment for carrying out sample processing for imaging from tissue to molecular levels.

Location: EM Room, 1F, Institute of Cellular and Organismic Biology

Services: We support various sample preparations (cells, tissues, and synthetic soft materials), including negative stains, heavy metal shadowing, conventional resin embedding/sectioning, high pressure freezes, and freeze-substitution embedding/sectioning.

Equipments:

1. FEI Tecnai G2 F20 S-Twin Electron Microscope
2. Ultramicrotome Micro-dissection Equipment
3. Microwave Sample Processor
4. High Pressure Freeze HPM101 and Freeze-Substitution Systems, Leica EM AFS 2
5. Vacuum Evaporator and Glow Discharge System

More Info: https://image-core.icob.sinica.edu.tw/pages/3788

Advanced Optical Microscope Core Facility

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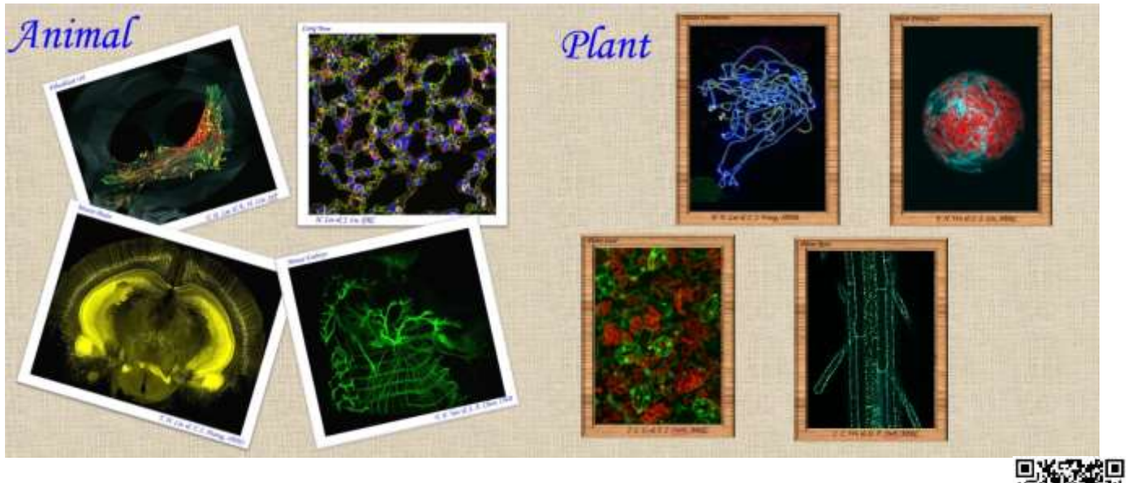
Advanced optical microscopes are essential scientific instruments for the observation and detection of fluorescence-labeled samples. This core facility was established in 2007 at the Agricultural Biotechnology Research Center (ABRC). Based on the principles of fair service and resource sharing for all, we have introduced various well-established and highly applicable optical microscopy technologies to serve the imaging needs of diverse life sciences research.

We currently have the following instruments and equipments:

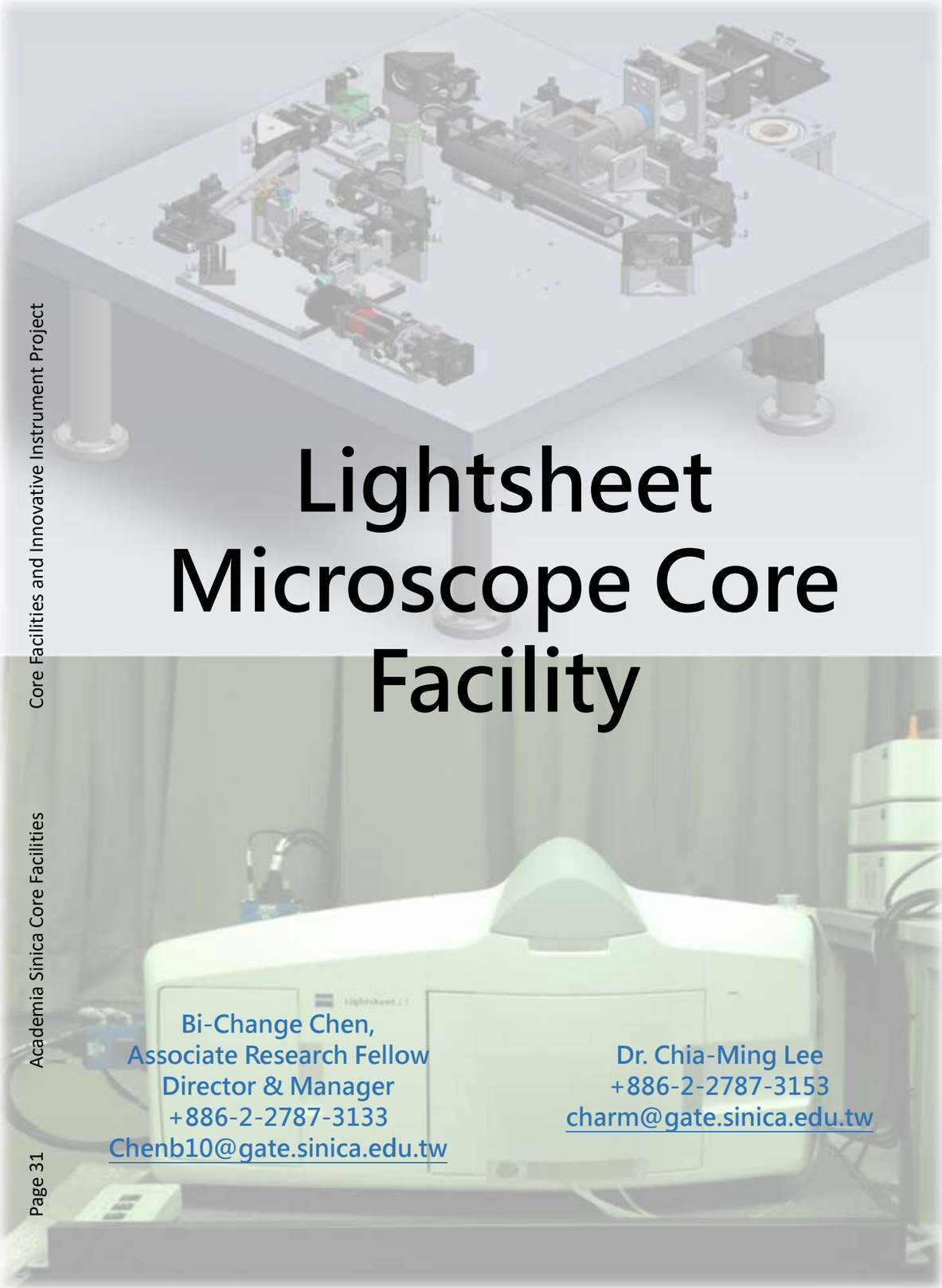
1. Confocal Microscope (LSM 980 / LSM 780): Removes out-of-focus noise and acquires de-blurred fluorescence images.
2. Super-resolution Microscope (Elyra 7, Airyscan2 / ELYRA S1, Airyscan): Enhances resolution higher than the limitations of optics.
3. Spinning Disk Confocal Microscope (Dragonfly): Offers high imaging speed with very low photo-toxicity for living samples.
4. Microscopy Image Analysis Software (Imaris): 3D animation, image processing, AI segmentation & classification, etc..

We provide the following services:

Administrator operation, professional training courses, self-operation, and research consulting.



More Info: https://abrc.sinica.edu.tw/icm/



Lightsheet Microscope Core Facility

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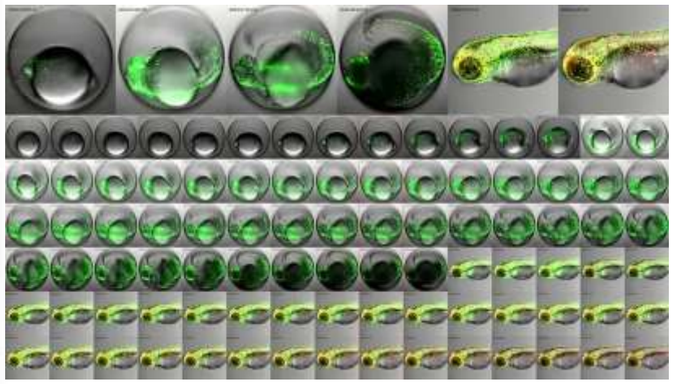
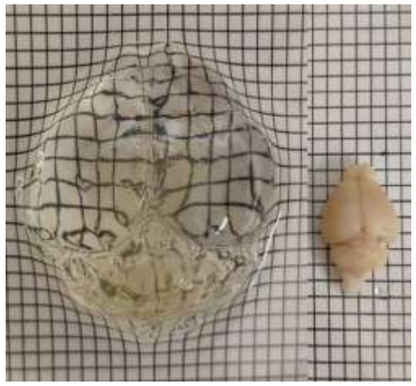
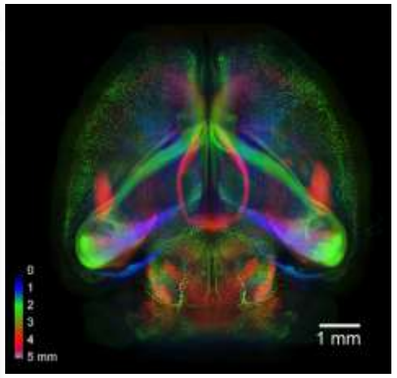
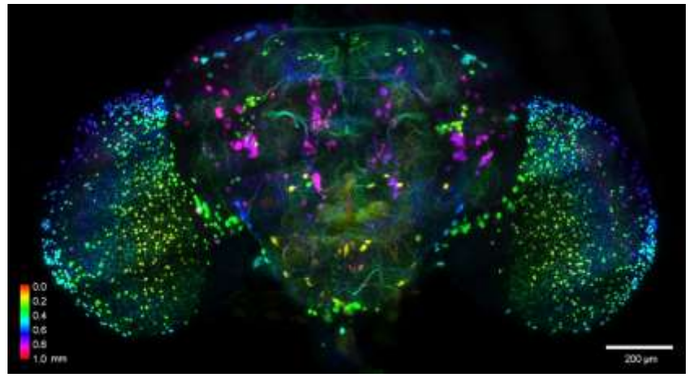
Image Analysis

The light sheet microscope adopts a different illumination method from traditional fluorescence microscopes. The direction of illumination is perpendicular (orthogonal) to the direction of objective lens observation, which can restrict the illuminated area to the focal plane to reduce photobleaching, phototoxicity, and background fluorescence interference from non-focal planes. Its image- capturing device uses a high-sensitivity, high-speed scientific-grade complementary metal-oxide-semiconductor camera (sCMOS Camera), capable of capturing images at a rate of 10 frames per second with a size of 2048x2048 pixels. Currently, our facility provides BLX-2 light sheet microscopy, which was developed by ourselves, as well as the Zeiss Lightsheet Z.1 microscopy service for high-speed, large-scale 3D fluorescence imaging of small living organisms or large expanded/translucent organs or tissues.









More Info: https://cbcgroup1.wixsite.com/lightsheetcore

Data Information Statistical Cooperation Center (DISC)

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Data Information Statistical
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Established in 2019, the Statistical Data Information Statistical Cooperative Center (DISC), affiliated with the Institute of Statistical Science, Academia Sinica, provides statistical consultation, data analysis, and educational training services.

Vision:

Guided by the motto "Do everything, nothing is strange," DISC supports various research fields through statistical analysis and professional assistance, and fosters collaboration between academia and industry to accelerate research and development across domains.

Services:

Service Item	Content
Statistical Consultation	DISC offers professional statistical and data science consultation services customized for individuals and institutions. These services include data preprocessing, statistical design, analysis, and integrated solutions. It blends tailored advice with industry expertise to provide clear guidance.
Statistical Clinic	The statistical clinic offers comprehensive support exclusively for internal staff, addressing statistical queries, experimental design, data analysis, visualization, clarification of statistical concepts, and assistance with statistical issues related to article submissions.
Educational Training Courses	Tailored training courses, conducted on-site or off-site, aim to boost statistical knowledge and foster industry-academia development. Seasonal expert lectures share the latest trends and insights in the field, welcoming collaboration from partners across diverse domains.
Undergraduate Internship Program	DISC offers undergraduates practical experience applying statistical knowledge learned in classes. The internship covers everything from data preparation to result summarization and communication with stakeholders. Students from any background are welcome to participate.
Visits and Exchanges	DISC regularly organizes visits and exchanges with experts and scholars to promote mutual growth between academia and industry. These activities facilitate knowledge sharing and foster unique insights, enhancing interaction between academia and industry.

More Info: https://disc.stat.sinica.edu.tw/en/about-us/

Scientific Computing and big data AnaLytics corE facility (SCALE)

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Accelerating Discovery and Innovation with Advanced Computing Services.

Services:

- Computing, storage and long-term backup, data transmission, analysis facility, machine learning (ML) environment, and performance tuning.
- Software deployment and integration: ML application framework; making good use of available resources; virtualization and containerization; service collocation.
- User support: training and promotion; technical and usage consultation.

Resources:

- Able to support 2,000 CPU Core scale parallel computing; 384GB RAM in a work node; 8xA100 GPU (80GB RAM) per node; 10PB+ disk storage space
- CPU: AMD Genoa 1,920 Cores; AMD Rome 768 Cores
- GPU: NVIDIA A100 (24), V100 (48), 3090 (24)
- Storage system: Ceph filesystem 20 Petabyte; Tape storage 12 Petabyte

Collaboration:

- Flexible collaboration model. For instance, integration experiment facility with data and computing facility; workflow integration and customized services; collocation and promotion of research outcomes; facility procurement; collaborative development of research services.
- Support joining international collaborations: establishment of interoperable research infrastructure.

The Team: Through international collaboration, the Team keeps upgrading the capacities of advanced ICT R&D as well as research services.

More Info: https://scale.grid.sinica.edu.tw

X-Ray Diffraction Materials Analysis Laboratory

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The laboratory provides three X-ray diffractometers: an environment-temperature X-ray diffractometer, a temperature-variable X-ray diffractometer, and a multi-axis X-ray diffractometer. For information on material analysis techniques necessary for scientific research and experiments, please consult the following instrument descriptions for detailed equipment introductions and pricing standards.

Services:

Our services include advanced analysis using powder X-ray diffractometers and multi-axis X-ray diffractometers, offering multifunctional solutions for material structural identification. The powder X-ray diffractometer, equipped with advanced copper target X-ray source and Empyrean detector technology, rapidly and accurately captures X-ray diffraction spectra for powder, bulk, and thin film samples. Moreover, this equipment facilitates variable temperature measurements, ranging from 77 to 700 degrees Kelvin, and employs HighScore Plus software for in-depth analysis of material crystal structure, arrangement, and grain size.

Our multi-axis X-ray diffractometer provides precise surface material structural analysis for users who focus on thin film material research. It enhances the analytical accuracy of thin film samples by employing a copper target X-ray source and integrating HighScore Plus software. This allows for comprehensive analysis of material crystal structure, arrangement, and grain size, while also generating pole figures to further identify material crystal orientations. These advanced analytical tools and methods provide a solid foundation for research and development in thin film materials, assisting clients in making breakthroughs in the field of material science.

More Info: https://www.phys.sinica.edu.tw/~XRDCF/

Neuroscience Core Facility

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We can help.

Do you want to try electrophysiology experiments? Would you like to study the basis of neuronal function or synaptic plasticity, but lack the equipment, skill, time, knowledge, or energy to do so? Well, the Neuroscience Core Facility can help.

Core Purpose:

The Neuroscience Core Facility is established to empower scientists to achieve their goals through technical support and services. This facility provides services in electrophysiology experiments to perform biopsies on animal brain tissue and record various electrophysiological and image signals. We offer services for live tissue culturing, instrument operation, image capture, and consultations on relevant information. We also have the calcium imaging system and confocal microscope to provide advanced fluorescence image acquisition and relevant analysis software.

Dr. Cheng has 18 years of experience in patch clamp electrophysiology encompassing both primary neuron cultures and acute brain slices. His work has been instrumental in helping scientists achieve better brain slices for electrophysiology.

For each facility, one-on-one teaching services are provided. We welcome scholars from and outside Academia Sinica to use our facilities.

Core Values

- **Professionalism**
- **Teamwork**
- **Trust**
- **Innovation**

Services:

- Field-EPSPs recording
- Multi-electrode fEPSP recording in hippocampal slices
- Whole-cell patch-clamp recording
- Calcium imaging recording
- Confocal imaging acquisition

Location: Room I-07, Basement 2, Interdisciplinary Research Building of Science and Technology

More Info:
https://npas.programs.sinica.edu.tw/core_facility/en/index.html

Inflammation Core Facility (ICF)

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The Inflammation Core Facility (ICF) was established in 2019 and is located in Laboratory N431, Institute of Biomedical Sciences, Academia Sinica. ICF provides services on immune responses that are known to play important functions in many diseases. The immune response (or inflammation) is relevant to a large number of subspecialties and may serve as a glue to bring biomedical researchers in many different disciplines together and promote to develop clinical treatments for inflammation-mediated diseases. ICF greatly contributes to help researchers better understand the mechanism of inflammatory response and develop understanding or treatments of inflammation-mediated diseases.

Primary Services:

- Multi-Plex Immunoassay (MPI)
  The expression of multiple immune factors can be quantified simultaneously with a small amount of samples. ICF provides a variety of human or mouse antibodies for detection.

- Immunohistochemistry (IHC)
  ICF provides staining services for tissue sections to analyze the distribution of immune cells or analyses in the tissue.

Secondary Services:

- Establishment of mouse models for skin diseases
  We can collaborate with other researchers on the skin mouse models, including psoriasis, atopic dermatitis, and contact dermatitis.

- Provision of galectin-related reagents

More Info:
https://www.ibms.sinica.edu.tw/inflammation_core_facility/index.html

Adeno-associated Viral Vector (AAV) Core Facility

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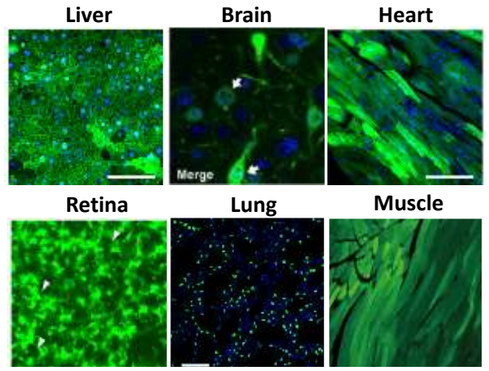
AAV Applications

- Long-term gene expression in mice (>1 yr)
- Gene regulation or editing
- Tissue tropism determined by AAV serotypes

Serotypes	Applications
AAV 1	Li, He, Ey, Ne, Mu
AAV 2	Li, Ne, Mu
AAV 5	Li, Ey, Ne
AAV 6	He, Lu, Mu, At
AAV 7	Ey, Mu
AAV 8	Li, Ey, Ne, Mu, At
AAV 9	Li, He, Lu, Ne, Mu

Examples



Advantages

- Over 20 years of AAV large-scale production experience
- Largest AAV supplier in Taiwan (> 2000 batches)
- Extensive experience in AAV-related animal experiments
- Expertise in various AAV vector designs and applications

Services

Cat no.	Service Item	Titer & volume	Application
AS01	Purified large (20 dishes/unit)	>10^{13} vg/ml, 1 ml (Free concentration to 200 µl)	Cell, Animal
AS02	Purified middle (20 dishes/unit)	>10^{13} vg/ml, 0.5 ml (Free concentration up to 200 µl)	Cell, Animal
AS03	Unpurified	>10^{12} vg/ml, 1 ml	Cell
AS04	Pre-made (commonly-used AAV)	10^{12} vg/vial	Cell, Animal
AS05	Single dish test	Need > 10^{11} vg/dish	Test yield
AS06	AAV plasmid construction		Construct AAV cassette
AS07	AAV plasmid Maxi	> 700 µg	For large-scale production

More Info: https://www.ibms.sinica.edu.tw/aav/index.html

Glycoscience Core Facility

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Established in 2023, the Glycoscience Core Facility is an essential resource that integrates equipment and resources from Academia Sinica's Genomic Research Center and the Institute of Biological Chemistry, offering a convenient solution for glycan analysis. Its importance lies in its ongoing support for the technical needs of glycoscience research, enabling researchers to focus on their investigations.

The primary services we offer include:

- Consultation services for glycan analysis
- Sample preparation
- Analysis of glycan composition and structures
- Data analysis and suggestions for subsequent related research

Our analytical methods include mass spectrometry analysis, glycan array analysis, plant lectin array analysis, and human lectin (C-type lectins and galectins) platform. These services cater to researchers in the field of glycoscience and those interested in entering this area of research.

We hope to integrate glycan analysis platforms across Academia Sinica and to establish a comprehensive solution. We continuously enhance our analytical platforms and offer consultation services to researchers in the field of glycoscience. From sample reception to delivering analysis results and providing research suggestions, we strive to facilitate communication and collaboration among laboratories. We aim to promote the development of interdisciplinary research, enhancing the capabilities of glycobiology research both within and beyond Academia Sinica.

More Info: https://sites.google.com/view/glycoascore/

Human Therapeutic Antibody R&D Platform

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Human Therapeutic Antibody R&D Platform
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Biomedical Translation Research Center (BioTReC)

Human antibodies possess characteristics such as high specificity, neutralization ability, low immunogenicity, and minimal side effects. They have been successfully utilized in the clinical treatment of cancer, autoimmune diseases, and infectious diseases, representing a major trend in global drug development. Currently, we have employed phage display of human antibody libraries combined with affinity screening techniques to target dozens of crucial proteins and carbohydrates associated with cancer and infectious diseases. This effort has led to the development of human antibodies with potential applications in therapy and diagnostics, with affinities reaching the level of 10^{-10} M. Our antibody development efforts have resulted in over 30 domestic and international patents, with several novel antibody patents licensed and transferred by the Academia Sinica. Platforms such as phage display antibody libraries, mouse hybridomas, single B cell technology, and humanization of antibodies have been established in the National Biotechnology Research Park (NBRP) and are operating steadily. These platforms offer academia and industry highly competitive, high-value antibodies with therapeutic or diagnostic potential on an international scale.

代號 No.	服務項目 Service items
109-A1	噬菌體顯現人類天然抗體庫製備抗體 (3 clones) Discovery of Ab from phage display human naïve scFv library
109-A2	小鼠融合瘤技術製備單株抗體 (3 clones) Generation of mAb by mouse hybridoma technique
109-A3	抗體B細胞抗原決定位之鑑定 (/clone) Identification of Ab epitopes by phage display peptides library
109-A4	抗體變異區序列之鑑定 (/clone) Identification of VH and VL sequence of antibody
109-A5	單株抗體之人源化 (/clone) Antibody humanization
109-A6	抗體親和力成熟化 (/clone) Antibody affinity maturation
109-A7	小鼠腹水之抗體生產 (5 mL/clone) Antibody production in murine ascites
109-A8	小鼠腹水之抗體純化 (/clone) Antibody purification in murine ascites
109-A9	人源、鼠源或人鼠嵌合抗體表現載體之建構 (/IgG clone) Construction of human, murine or chimeric IgG expression vectors
109-A10	抗體生產與純化-哺乳細胞搖瓶培養法 (25 mL/clone) Ab production and purification by suspension mammalian cells systems

More Info: https://biotrec.sinica.edu.tw/pages/2091

Medicinal Chemistry and Analytical Core Facilities
NMR Core

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Medicinal Chemistry and Analytical Core Facility-NMR Core is located in Room BB116, Basement 1, Building B of the National Biotechnology Research Park. We have three Bruker AVIIIHD 600 MHz NMR spectrometers equipped with BBFO probes, capable of observing signals of hydrogen (1H), carbon (13C), and other nuclei (from 31P to 15N and 19F). We also feature the Bruker IVDr metabolomics analysis platform, providing standardized, automated qualitative/quantitative analysis of human blood/urine metabolites. All NMR spectrometers are equipped with automatic sample changers for automated sample switching and spectrum collection, offering 24-hour service.

Services:

The NMR Core facility aims to provide convenient, stable, and professional NMR resources. Users certified through core education and training can operate the NMR spectrometers independently, enhancing service convenience. The core facility also offers spectrum acquisition, professional analysis, technical consulting, and customized commissioned services according to user needs. The advanced professional services provided include:

- NMR spectrum acquisition, analysis, and structural identification of small molecules, drugs, peptides, etc.
- Automated analysis service for human blood/urine samples, providing qualitative/quantitative analysis of 115 blood lipoprotein parameters, 41 blood metabolites, and 150 urine metabolites
- Precise quantification NMR (qNMR) analysis of small molecules
- Food adulteration testing
- In-depth analysis of polymer materials

More Info: https://biotrec.sinica.edu.tw/pages/2115

Medicinal Chemistry and Analytical Core Facilities

Mass Spectrometry Core Facility

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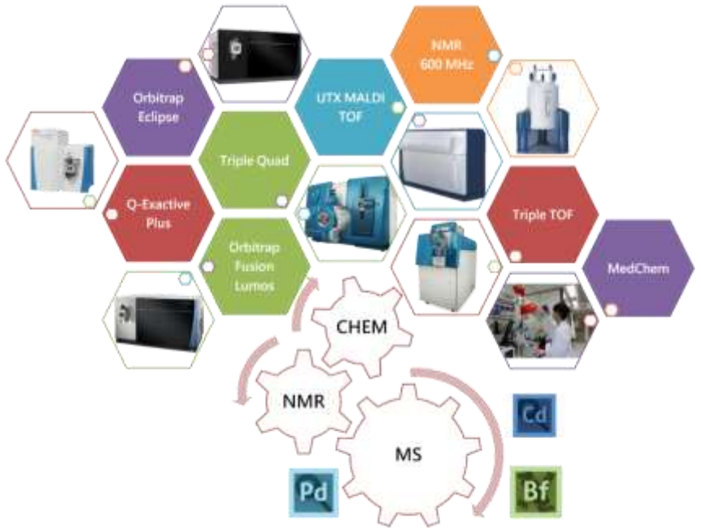

The mass spectrometry core facility is located on the 3rd floor of Building B in the National Biotechnology Research Park. It is currently equipped with six high-end mass spectrometers and one Ultra-High-Performance Liquid Chromatography (UHPLC) system. Among these, the Orbitrap Eclipse Tribrid Mass Spectrometer and Orbitrap Fusion Lumos Basic System with ETD are used for in-depth proteomic identification and post-translational modification analyses. The Q-Exactive Plus System with BioPharma Option primarily support the characterization of biotherapeutic products. The TripleTOF 6600+, Triple Quad 6500+, and UltrafleXtreme MALDI-TOF/TOF are utilized for qualitative or quantitative analyses of small-molecule drugs and metabolites.

We offer advanced analysis service from small molecules, protein drugs, cells, and human specimens, as well as several unique customized services. In addition to commissioned services, some instruments in the core facility are also open for academic research institution or resident companies to operate by themselves, which could retain the flexibility and confidentiality of research and developmental topics.

More Info: https://biotrec.sinica.edu.tw/pages/2116

Medicinal Chemistry and Analytical Core Facilities

Chemical Synthesis & Medicinal Chemistry Core Facility

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Chemical Synthesis and Medicinal Chemistry Core (CSMC) utilizes advanced synthetic technology to provide services such as asymmetric synthesis, metabolism and intermediates synthesis for new drug development, coupling reaction of small molecules with biological agents, innovative synthetic pathways, and synthetic and technological consulting. We also provide customized project services in the most efficient way to address the challenges and complexities encountered by clients during drug synthesis.

Services:

1. Small Molecule Design and Synthesis Service
2. Customized Chemical Synthesis for Active Pharmaceutical Ingredients (API) and Pharmaceutical Intermediates
3. Custom Synthesis of Pharmaceutical Impurity Reference Standards, Metabolite Reference Standards and Degradation Products
4. Structure-Activity Relationship (SAR) Development
5. Design and Synthesis of Compound Libraries
6. Development of Novel Synthetic routes
7. R&D Demo and Scale-Up Process Development
8. Analytical Method Development
9. Enantiomer Separation (Chiral Separation) and Purification
10. Impurities/API/Degradants Purification and Identification
11. Technical consultancy services
12. Other Customized Projects
13. Instrument Items: Analytic & Preparative HPLC, GC-MS, LC-MS, and MPLC

More Info: https://biotrec.sinica.edu.tw/pages/2118

RNA Technology Platform and Gene Manipulation Core

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Biomedical Translation Research Center (BioTReC)

The purpose of core facility is to serve the relevant research fields of biomedical science in Taiwan, including academia and biotech companies. We distribute various genetic manipulation tools including RNAi, miRNA, cDNA and CRISPR resources and provide related customized services. We also offer the production of lentivirus, adeno-associated virus (AAV) and retrovirus in combination with the RNAi, miRNA and CRISPR technologies mentioned above. These genetic manipulation reagents can not only verify the biological function of a gene, but also can be used for the genome-scale genetic screening for identification of drug targets.

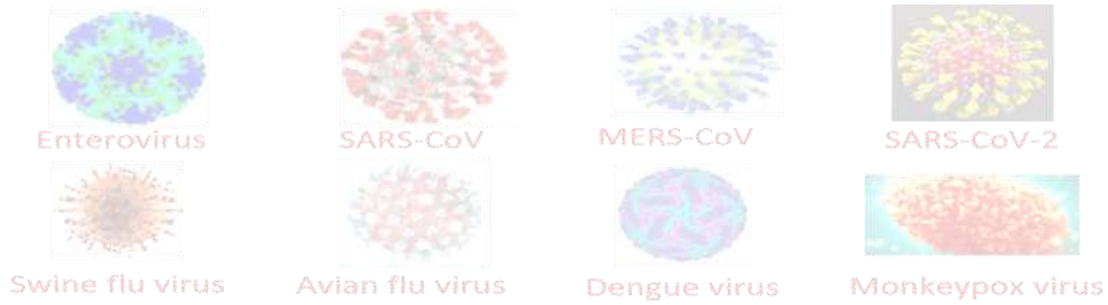
Services:

- One-stop mode (Biotech R&D is accepted.)
- RNAi, miRNA, cDNA, CRISPR technologies
- Lentivirus/retrovirus related services
- Adeno-associated virus (AAV) related services
- Genome-scale RNAi/CRISPR genetic screening
- Customized plasmid construction
- CRISPR-related customized services

Libraries:

Item	Contents
Genome-wide shRNA libraries (TRC1/TRC2)	Up to 130,767 shRNA clones have been validated for their gene knock-down efficiencies
Genome-scale miRNA libraries	Lentivector with Advanced Tet-on system
Human and mouse genome-scale pooled sgRNA libraries (GeCKO v2)	For human: 19,050 genes and 1,864 miRNAs For mouse: 20,611 genes and 1,175 miRNAs *(For collaborative projects only)*
Human genome-scale MGC cDNA libraries	National Institutes of Health (NIH) MGC cDNA libraries with 29,818 human clones

More Info: https://rnai.genmed.sinica.edu.tw



Infectious Disease Core Facility (ID Core)

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Biomedical Translation Research Center (BioTReC)

In response to the global prevalence of emerging infectious diseases in recent years, Academia Sinica established the Infectious Diseases Core Facility (ID Core) in the National Biotechnology Research Park. With nation-level P2 (BSL-2/ ABSL-2) and P3 (BSL-3/ABSL-3) laboratories, we provide research and technical services in the field of prevention and treatment of infectious diseases that are related to public health, and assist the development of infectious disease associated biotechnology and medical industries. Currently, our research team focuses on several critical and epidemic RG2/RG3 pathogens, such as seasonal influenza virus, high-pathogenic avian influenza virus (HPAI), seasonal human coronavirus (hCoV), respiratory syncytial virus (RSV), enterovirus, dengue virus, and other common zoonotic or human pathogens. These emerging infectious diseases result in the illness of gastrointestinal tract, respiratory tract, skin, nervous system, or genitourinary tract, and may cause mild-to-severe human health threats. Our goal is to assist in the development of technologies and testing platforms which are required for vaccines, drugs, therapeutic antibodies, screening reagents, etc., related to common infectious diseases in humans (animals/poultry), and to assist in the verification of important technologies/products to meet preclinical standards.

Services:

1. Development and testing of RG2 pathogen diagnostic reagents
2. RG2/RG3 pathogens culturing and titer determination
3. Screening and efficacy evaluations of vaccines and drugs associated with emerging infectious diseases
4. Preclinical animal (mouse, hamster, ferret) testing for vaccine and drug development
5. Whole blood phenotyping/blood biochemistry/cytokines and chemokines multiplex immune analysis
6. Anti-viral/bacteria drugs/antibodies/vaccines/disinfectant efficacy testing
   a. Antibody binding capacity (ELISA)
   b. Neutralizing antibody detection (authentic or pseudovirus neutralization test)
   c. Cellular immune response analyses (flow cytometry /Luminex multiplex)
7. BSL-2 laboratories (inclusive of important operating equipment and instruments) are available for short/long-term rental by domestic and foreign industrial or academic institutions

More Info: https://biotrec.sinica.edu.tw/posts/135925

BSL-2 ABSL-2

BioTReC Nucleic Acid Pilot Plant (BNAP)

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Co-Project Director

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Biomedical Translation Research Center (BioTReC)

We are the first to establish a comprehensive and scalable mRNA and mRNA-LNP manufacturing process domestically, along with a quality control analysis platform that meets industrial standards.

This facility meets customer needs by optimizing process key parameters for mRNA drugs of different natures, lengths, and sequences to achieve high yields and reduce by-product formation. Additionally, high-quality mRNA and mRNA-LNP at the research scale are provided to enable more basic research exploration of their clinical applications. On the other hand, comprehensive QA management ensures that production and quality analysis operations run in compliance with GMP principles, meeting regulatory requirements to provide customers with high-quality product manufacturing and analysis services.

Service Items: mRNA Vaccine and Therapeutics Development

Service Items	Description
mRNA Synthesis	Provide high-quality customized *in vitro* transcribed mRNA.
mRNA Purification	Provide a good basis for developing, evaluating, scaling up, and optimizing chromatography steps.
mRNA Encapsulation	Produce highly stable, reproducible, and uniformly sized lipid nanoparticles for encapsulation of mRNA, improving the stability of mRNA.

Service Items: Quality Control Analysis of mRNA Vaccine and Therapeutics

Service Items	Description
mRNA Quantification	Quantification of mRNA and encapsulation efficiency of mRNA-LNP by fluorescence dye
mRNA Purity	Quantification of mRNA and its degradants/aggregates by ion-pair reversed-phase HPLC
mRNA Integrity	Measurement of the mRNA integrity by capillary electrophoresis
Capping efficacy	Analysis of the mRNA capping efficiency by LC-MS
Poly A Tail length	Analysis of the poly A tail length of IVT mRNA by LC-MS
dsRNA Quantification	Determination of product-related impurities, double-stranded RNA (dsRNA), by ELISA assay
Residual DNA	Detection of residual plasmid DNA template used for IVT by quantitative PCR (qPCR)
Residual Protein	Detection of process-related impurities such as IVT enzymes and others
Lipid Composition	Analysis of lipid composition and impurity of lipid nanoparticles by UHPLC-CAD
Size distribution	Measurement of nanoparticle size distribution by dynamic light scattering
Zeta potential	Measurement of particle zeta potential and conductivity in solution by electrophoretic mobility analysis
Polydispersity Index	Evaluation of the average uniformity of nanoparticles in solution
Osmolality	Measurement of osmolality by freezing point depression

More Info: https://biotrec.sinica.edu.tw/pages/4131

Taiwan Mouse Clinic (TMC)

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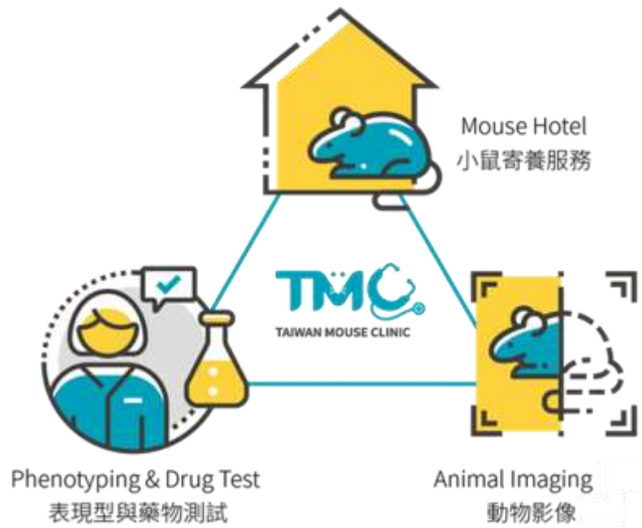
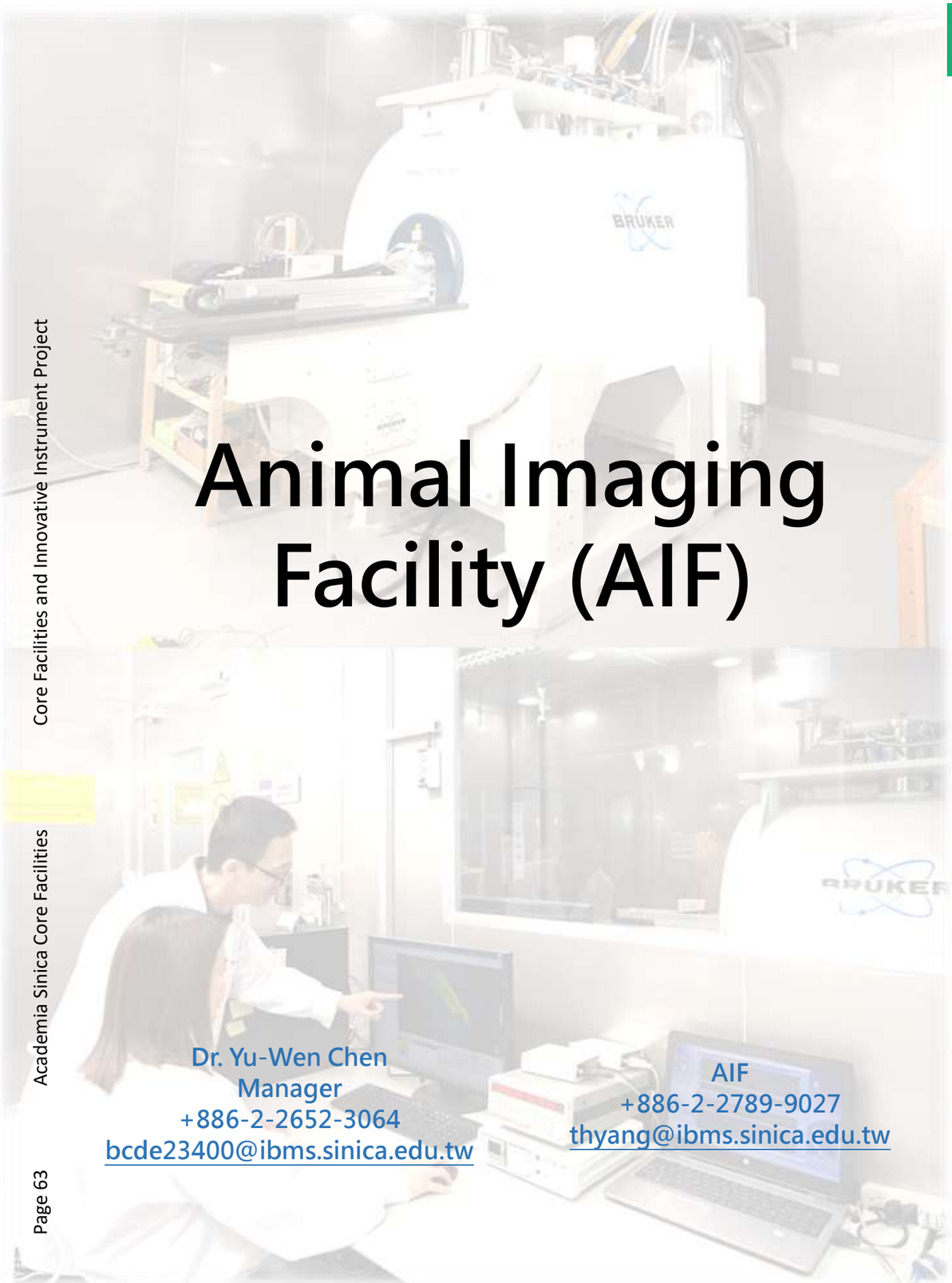
Biomedical Translation Research Center (BioTReC)

The Taiwan Mouse Clinic (TMC) is the national comprehensive mouse phenotyping and drug testing center in Taiwan. We are proud to provide our efficient analytical abilities, abundant research experiences, international perspective, and great quality control to help domestic companies in researching and fighting human diseases. **TMC offers three core services: 1. Rat and Mouse Hotel:** We allow SPF-mice entering to our facility without quarantine. **2. Phenotyping and Drug Test:** We keep developing new mouse phenotyping service, disease models, safety pharmacology and toxicology studies to serve and support users devoted to drug development. **3. Animal Imaging:** We are equipped with high-value instruments, for example, the Vevo LAZR-X Imaging System including a Vevo 3100 Imaging System and a Class IV Laser, the IVIS Lumina S5 with high-sensitivity bioluminescence and fluorescence, as well as the ultra-high resolution micro-computed tomography scanner (Skyscan 1276) with a finest resolution of 2.8 μm. TMC's core values are integrity, professionalism, innovation, quality and convenience, which guide our work culture and help TMC to be a successful preclinical Contract Research Organization (CRO).



More Info: https://tmc.sinica.edu.tw/index.html



Animal Imaging Facility (AIF)

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The animal imaging facility is located in the National Biotechnology Research Park. The facility provides magnetic resonance imaging (MRI) technical support, including experimental design, technology development, image data analysis, and biomedical application research. The goal of this facility is to promote Taiwan' s biomedical industry through advanced imaging technology and research, to support both academia and the biomedical industry in biotechnology research, drug development, and translational research, both nationally and internationally.

Services:

1. Customized MRI imaging services
2. Professional image interpretation and special scanning services
3. Ex vivo imaging
4. Consultation service for animal imaging experiments, including animal model construction and protocol designs

Equipment:

- Bruker BioSpec 70/20
- PharmaScan 70/16

We provide general services for MRI and spectroscopy, including consulting of the experimental design, image processing analysis, pulse sequence optimization, and the development of new imaging methods.

We offer services including structural measurements of rat brains and bodies, vascular imaging, blood flow imaging, diffusion tensor imaging, functional brain imaging, cardiac imaging, cardiac blood flow assessment, and heteronuclear experiments (31P, 23Na, 13C), etc.

More Info: https://biotrec.sinica.edu.tw/pages/2136

Core Facilities for Translational Medicine

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Biomedical Translation Research Center (BioTReC)

Our purpose is to support resident scientific research teams and biotech companies to carry out biomedical innovation research. We serve as a bridge between basic biomedical research and the development of biotechnology for academic research institutions, biotechnology, and pharmaceuticals. We hope to improve biomedical and drug research capabilities and promote the development of domestic biotechnology. The core facilities contain five key technology platforms: (1) Cell Sorting and Analyzing Core Facility (2) CTC Capture and Single Cell Analysis Core Facility (3) High-dimensional Advanced Imaging Core Facility (4) Digital Pathology Core Facility (5) Automatic Living Cell Assay Core Facility. We support the following eight main research directions:

1. **Precision Medicine in Cancer Treatment:** Understanding cancer subtype cells via gene mapping or follow-up on cancer treatment prognosis via pathologic spatial single cell analysis and BD Rhapsody™ Single Cell Analysis System.
2. **Research on Cancer Immunology:** Deciphering the interaction of cancer and immune cells, evaluation of cancer-immune treatment reaction.
3. **Research on Cancer and Tissue Fibrosis Matrix:** Establishing 2D and 3D cell structural images to conduct tissue matrix macro and micro perspective analysis, using high-content image, tissuegnostics scanning, SP8-DIVE Deep In Vivo Explorer Multiphoton confocal microscopy techniques.
4. **Research on Cancer Cell Drug Reaction:** Understanding cancer cell drug reaction analysis via flow cytometers, automatic image analysis, cell culture, and multifunction optical analysis systems.
5. **Research on Neurodegenerative, Metabolic, Cardiovascular Diseases, and Precision Medicine:** Understanding tissue regeneration prototypes and mechanism with combinative techniques of multiphoton confocal microscope, LSM 880 with Airyscan confocal microscope, Gate STED microscopy technology.
6. **Research on Transplant Immunology:** Evaluating post-transplant surgery immunology reaction with high-end flow cytometric analysis, and tissue section images from automated high-throughput scanning imaging systems.
7. **Research on Stem Cells:** Conducting various embryotic and somatic stem cell culturing and pluripotent induced stem cell experiments by using a high-class hypoxia workstation for cell culturing platform and supported by flow cytometer technology.
8. **Research on Personalized Disease Models:** Understanding personalized disease models via simulating humanized mouse models for drug discovery, supported by the five key technology platforms.

More Info: https://cftm.nbrp.sinica.edu.tw/

Biosafety Level 3 Laboratory in IBMS

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The BSL-3 Lab located in the Institute of Biomedical Sciences (IBMS) is specifically designed for handling biohazardous RG3 viruses in the Biosafety Level 3 environment.

The four main missions of this BSL-3 Lab are as follows:

1. Maintaining the regulated operations of both hardware and software equipment in this facility: The monthly maintenance is performed by the contracted manufacturers including replacing and repairing worn-out parts and the software upgrade.

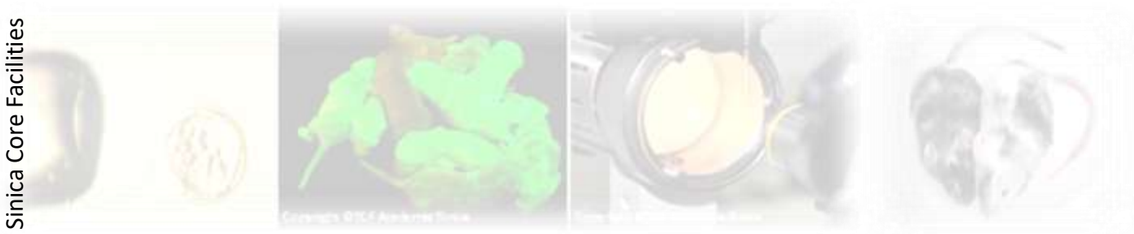
2. Providing relevant assistance and consultation for PIs to operate RG3 viruses by themselves: Applicants to become users of this BSL-3 facility must meet the following criteria: (1) According to the BSL-3 lab' s SOPs, submit applications to the faculty committee for consideration. (2) Complete enough official credits in education and training. (3) Priority goes to Academia Sinica faculty.

3. Providing related service for operating RG3 viruses for the PIs: Considering biosafety and biosecurity, only qualified operators are permitted to enter and work in the BSL-3 lab. The lab has a team of professionals who undergo long-term training to provide related services.

4. Providing a platform for the education and training of specialists in BSL-3 operations: The BSL-3 lab complies with the relevant regulations of the Taiwan Centers for Disease Control (CDC) regarding high protection laboratories, and is staffed with four professional operators, who regularly receive education and training.

More Info: https://www.ibms.sinica.edu.tw/support_dep/en/index28.html

Transgenic Core Facility (TCF)



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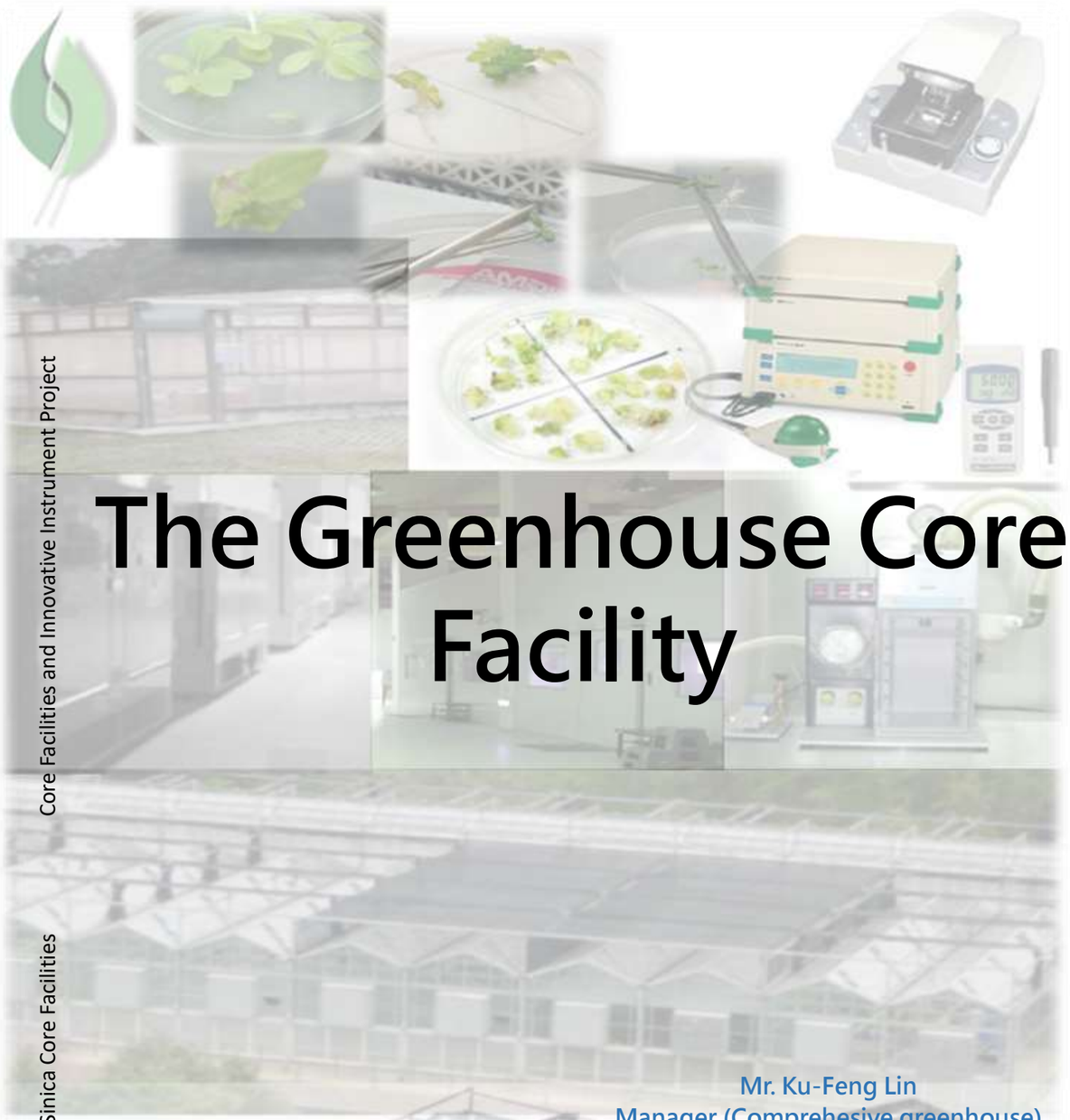
The Transgenic Core Facility (TCF) was established under the support of Academia Sinica (AS) in 1997, and serves as a nationwide facility for biological research. Its primary mission is to produce genetically modified, transgenic, gene knockout, and conditional knockout mice, etc., for researchers. In addition to genetically modified mice, TCF also provides technical consultation on mouse models for research, as well as services of embryo, sperm cryopreservation and in-vitro fertilization (IVF). TCF offers researchers with comprehensive services from production to breeding to preservation.

At TCF, gene-modified (GM) mice are produced by using highly advanced technology, including TALEN, CRISPR/Cas9-mediated genome editing.
Through accelerating GM mice production, TCF enhances research efficiency for researchers in both industry and academia, giving them a head start in publishing research results.

Table. List of services in TCF

TCF Service item	
Transgenic mice production	Genome Editing (TALEN/CRISPR)
Gene targeting in ES cells	Chimeric mice production
Embryo Cryo-preservation	Sperm Cryo-preservation
In-vitro Fertilization (IVF)	Embryo transfer /Rederivation
Tool mice (Cre, Flpe Tg)	Cre recombination in ES

More Info: www.imb.sinica.edu.tw/TCF



The Greenhouse Core Facility

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The Greenhouse Core Facility includes a Comprehensive Greenhouse Facility, a Molecular Breeding Greenhouse Facility, and a Transgenic Plant Core Laboratory.

In the **Greenhouse Facility**, we have built glasshouses and nethouses with pest-controlled containment system. We also have prepared growth chambers with well-controlled systems for those who require precise temperature and lighting. Besides these plant growth and propagation devices, various media, fertilizer and growth regulators are available. Additionally, in the greenhouse building, there are photo studios and facilities for seed processing and storage.

The **Trasngenic Plant Core Laboratory** provides Agrobacterium-mediated stable transformation services for nine plant species, including Arabidopsis, two types of tobacco, tomato, rice, Petunia, potato, Brachypodium, and Setaria. Since 2024, we have also started to provide transient expression services using tobacco suspension cells.

More Info of Greenhouse Facility:
https://abrc.sinica.edu.tw/greenhouse/

More Info of Trasngenic Plant Core Laboratory:
https://abrc.sinica.edu.tw/transplant/

Academia Sinica South Campus Greenhouse Core Facility

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The South Campus Greenhouse Core is located in Tainan City, a major crop-producing area in Taiwan and operates facilities at two locations: (1) the Transgenic Greenhouse in the Southern Taiwan Science Park, which is one of the few transgenic plant research facilities that conducts genetic trait stability tests of transgenic plants in Taiwan; and (2) the Greenhouse Complex on the South Campus, which consists of a Precision Greenhouse and several glass greenhouses (general greenhouses, air-conditioned greenhouses, and air-conditioned greenhouses for pathogen studies).

The Precision Greenhouse currently houses 60 growth chambers for small to midsize plants, along with four walk-in growth chambers capable of controlling temperature and humidity for large-size plants. The Precision Greenhouse also has Conviron growth chambers, equipped with precision air intake and environmental condition control that is suitable for studies of the effects of high CO_2 on plant growth and photosynthesis. The complete separation of the general and pathological greenhouses reduces the spread of pathogens into the general greenhouse areas. The size of the greenhouse space can be adjusted according to planting space, planting beds, planting grooves, or landing needs. In addition, users can set up special lighting panels according to their experimental needs.

To meet the research needs of researchers in the Nankang Campus, the Greenhouse Complex at the South Campus offers entrusted planting management services. The greenhouses are equipped with several small labs with benches to accommodate the needs of researchers for sampling and observation. Furthermore, to promote scientific exchange and development of agricultural biotechnology, the South Campus Greenhouse Core is open to users from other academic institutions and the agricultural industry with designated user fees.

More Info : https://abrc.sinica.edu.tw/core/gmogh_Eng/

Academia Sinica SPF animal facility (AS core)

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The Animal Facility provides 4,620 cages and up to 50 quarantine level for breeding specific pathogen free (SPF) animals; provides space for blood sampling, dosing, tumor cell transplantation, surgical experiments, anesthesia administration, and monitoring the physiological signals of experimental animals; collaborates with National Laboratory Animal Center (Narl) to provide regular quarterly sperm and embryo delivery services, including assisting facility user’s mice with ovulation induction.

Before applying for relevant services, please submit a research project to the Academia Sinica Institutional Animal Care and Utilization Committee (IACUC) for approval, and then provide health monitoring reports from animal sources prior to using our services.

Location: 9th and 10th Floor, Institute of Biomedical Science.

Availability: Services are available to Academia Sinica Project Directors.

Services: Space for breeding laboratory animals and subsequent research operations, and laboratory rental services.

Equipment: Individually ventilated cage (IVC), biosafety cabinet (BSC), gas anesthesia machine, and animal imaging fluorescent equipment (IVIS), which can be used for surgeries, tumor tests, drug testing, immunological, neurological, and developmental related animal experiments.

More Info : https://ascore.sinica.edu.tw/?language=en