

Shared Resources

Centralized, subsidized and prioritized access to specialized scientific expertise, consultation and other technical services for comprehensive cancer center members conducting cancer-related research

UC DAVIS
HEALTH

COMPREHENSIVE
CANCER CENTER



The Shared Resources of the UC Davis Comprehensive Cancer Center provide the cancer research community with centralized, subsidized and prioritized access to the specialized scientific expertise, consultation and assistance, infrastructure and instrumentation necessary to conduct leading-edge scientific research focused on beating cancer.

In cooperation with other core service units at UC Davis, the shared resources provide a variety of in vitro (molecular, chemical, genetic, cellular) and in vivo (animal models, imaging) laboratory and research support (biostatistics, biorepository) products and services in support of experimental and translational cancer research. Through special funding arrangements, comprehensive cancer center members receive subsidies for and/or priority access to these resources. The shared resources are intended to facilitate research activities of all comprehensive cancer center members and to help them obtain extramural grant funding and publish high-impact and peer-reviewed cancer research.

For rates and additional information, please
visit ucdavis.health/sharedresources



Biorepository

Accredited by the College of American Pathologists, the Biorepository Shared Resource, or BRSR, provides well-characterized, high-quality, de-identified specimens with annotated data for clinical and basic science research purposes. The biorepository functions as a centralized tissue bank to provide researchers access to cancer- and non-cancer-related specimens (fresh/frozen tissue, paraffin blocks/sections and fluids), procured and stored using international standards of best practices and protocols compliant with the Office for Human Research Protection. Specimens can be obtained prospectively as part of clinical trials or accessed through UC Davis Health Clinical Laboratories, where over 5.5 million blood specimens are processed annually.

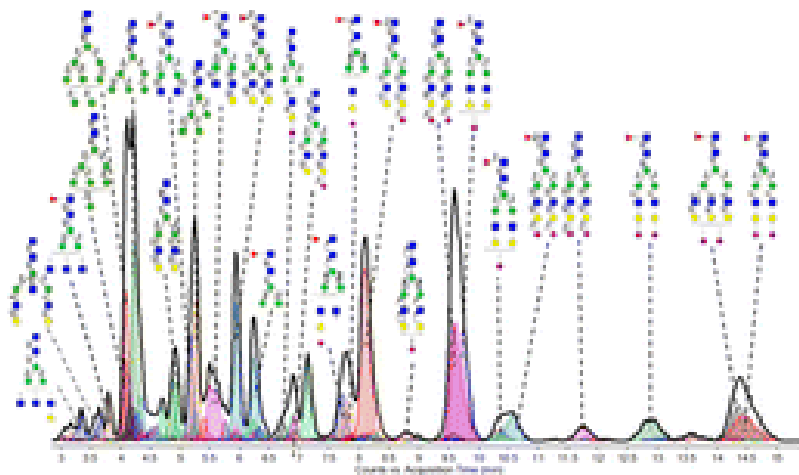
SERVICES

- Fresh/frozen tissue including malignant, benign and normal specimens
- Biological fluids such as whole blood, serum, plasma, PBMCs and bone marrow
- Routine histology, processing, embedding and sectioning of fixed wet tissue, H&E-stained paraffin sections, unstained paraffin sections and special stains
- Immunohistochemistry with commercially available/validated antibodies and custom and disease-specific tissue microarrays
- Consultative services, limited annotated data, extensive annotated data and pathologist consultation, interpretation and annotated images
- Biospecimen storage for investigator-initiated studies
- Access to clinical formalin-fixed paraffin-embedded blocks/sections

LOCATION AND CONTACT

Biorepository office/lab:
UC Davis Medical Center
Pavilion (SESP)
2nd Floor, Room 2P524
Sacramento, 95817

Histology lab:
Pathology Building
4400 V Street
Sacramento, 95817
916-734-3026



Biostatistics

The Biostatistics Shared Resource, or BSR, provides expertise in the design, analysis and reporting of cancer-related studies, including basic, translational, clinical and population-based research. BSR-affiliated faculty and staff work with investigators from the earliest stages of study planning. The shared resource is especially committed to mentoring early-career cancer researchers.

SERVICES

- Grant proposal preparation, including study design, analysis plans and sample size/power calculations
- Clinical trial design, analysis and monitoring
- Statistical analysis plans for Scientific Review Committee and IRB applications
- Analyses for manuscripts, abstracts, and presentations
- Response to statistical reviewer comments
- Mentoring of comprehensive cancer center trainees in biostatistics (fellows, junior faculty)

LOCATION/CONTACT

Department of Public Health Sciences

Medical Sciences 1C, Davis, 95616

bsr@ucdavis.edu

health.ucdavis.edu/cancer/research/sharedresources/biostatistics.html



Combinatorial Chemistry and Chemical Biology

The Combinatorial Chemistry and Chemical Biology Shared Resource, or CCCBSR, provides a high throughput screening platform for users to discover unique chemical probes against biological targets using various one-bead one-compound and one-bead two-compound combinatorial libraries. The CCCBSR interacts closely with resource users on optimization of the lead compounds via focused libraries and standard medicinal chemistry techniques. In addition, the CCCBSR provides custom synthesis of telodendrimer-based micellar nanoparticle platform for efficient drug delivery.

SERVICES

- Hands-on user training to perform library synthesis and screening
- Design, synthesis and screening of custom-made combinatorial libraries
- Screening of pre-made combinatorial libraries against user-provided targets
- Sequencing and structural determination of positive hits from library screening
- Re-synthesis of compounds (peptides, peptoids and small molecules) in on-bead and soluble form for in vitro and in vivo evaluation
- Telodendrimer-based nanomicelles for nanoformulation and in vivo delivery of hydrophobic drugs
- PVA-based nanomicelles for loading or conjugation of drugs
- HPLC purification, analysis and quantification
- Full consultation service

LOCATION/CONTACT

Research I, 2nd Floor, 4635 2nd Ave., Sacramento, 95817

916-734-0905

kslam@ucdavis.edu

rwliu@ucdavis.edu



Flow Cytometry

The Flow Cytometry Shared Resource, or FCSR, provides access to state-of-the-art flow cytometry, cell sorting and single cell genotyping and qPCR for researchers at UC Davis and industry partners. Expert staff can assist investigators with cell-sorting applications, experimental design, instrument operation and data analysis.

SERVICES

- Cell sorting into plates or tubes in 18 colors
- Analytic cytometry of fluorescently labeled cells in up to 40 colors
- Preparation for single-cell cDNA amplification
- Apoptosis and cell proliferation assays
- DNA content for cell-cycle distribution and RNA flow cytometry
- Fluorescence resonance energy transfer
- Intracellular calcium levels
- Mitochondrial membrane potential
- Single-cell genotyping and real-time qPCR
- Experiment design and trouble-shooting consultation
- Annual subscription access to FlowJo software
- Assistance with data analysis and instrumentation training
- Comprehensive week-long cytometry course offered semi-annually

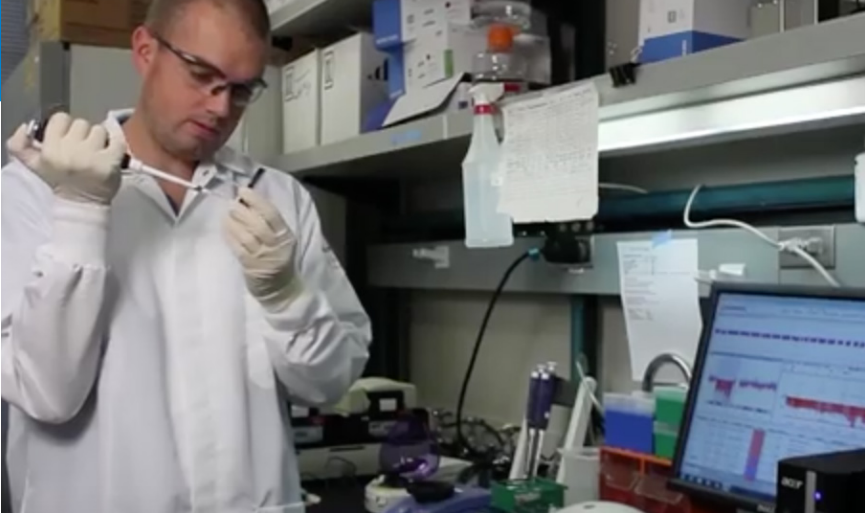
LOCATION/CONTACT

Davis campus
3425 Tupper Hall, Davis, 95616
Lab: 530-752-7205
Office: 530-754-9611

Davis satellite facility
321 Briggs Hall, Davis, 95616

Sacramento campus
Institute for Regenerative Cures
2921 Stockton Blvd., Suite 1670
Sacramento, 95817
Lab: 916-703-9307

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Genomics

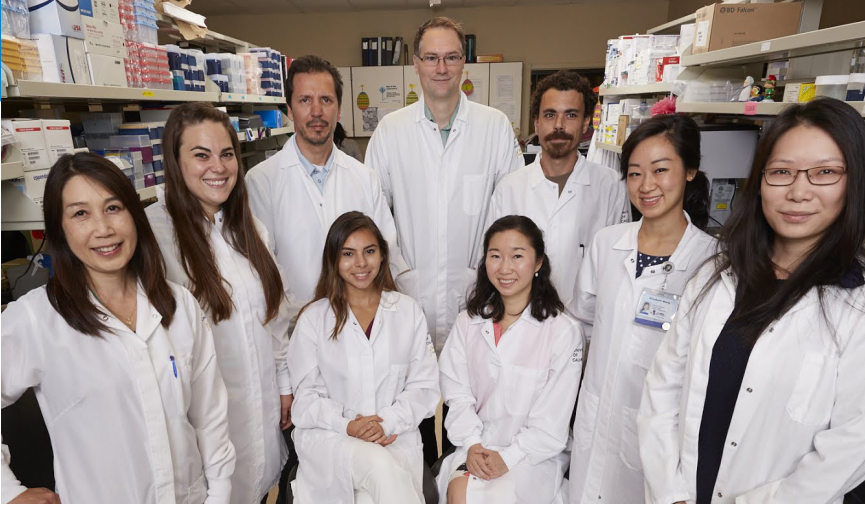
The Genomics Shared Resource, or GSR, provides expertise and comprehensive services to accomplish virtually every application of next-generation sequencing-based genomics research, including gene expression profiling, mutation/variant analyses, copy number analysis, epigenomics, metagenomics, single-cell sequencing and spatial transcriptomics services. The GSR also specializes in the development of custom protocols and extensive data analysis and integrative bioinformatics support. The shared resource provides a wide range of additional services for translational and clinical genomics research.

SERVICES

- RNA/DNA isolation and quality analysis
- Next-generation sequencing, targeted sequencing panels and metagenomic sequencing
- Sequencing library preparation for all applications: RNA-Seq, small RNA-Seq, exome, whole-genome, ChIP-Seq, CUT&RUN, Hi-C and microbiome
- Spatial transcriptomics: NanoString GeoMx DSP and 10x Genomics Visium
- Quantitative PCR validation and panels
- Translational and clinical genomics: tumor specimens, blood, FFPE tissue and pathology support
- Specialized sample preparation: ctDNA, low input, single-cell and exosomal RNA
- Data analysis and bioinformatics
- Consultation: experimental design, troubleshooting, logistics, manuscript preparation and grant proposal assistance

LOCATION/CONTACT

UC Davis Medical Center
Research III, Suite 2400, 4645 2nd Ave., Sacramento, 95817
916-703-0366
gsr@ucdavis.edu



Immune Modeling, Analysis and Diagnostics

The Immune Modeling, Analysis and Diagnostics Shared Resource, or IMADSR, is a CLIA-certified laboratory established to provide scientific support to investigators conducting clinical studies in humans, preclinical studies in animals and/or studies in veterinary medicine. It is well suited to conduct the immunology-based assays needed to monitor patients in clinical immunotherapy trials, but the IMADSR also offers a variety of different molecular and cellular assays for investigators in different fields, including custom assays designed to meet specific needs. Investigators at any of the University of California campuses, as well as outside investigators in industry and academia, are encouraged to contact the shared resource for research support.

SERVICES

- Immune cell profiling via flow cytometry
- Multiplex analyte detection, immune cellular assays and gene expression profiling
- Digital and multiplex quantitative real-time PCR assays
- Next-generation sequencing library preparation and data analysis for immune-targeted transcriptome monitoring
- Microbiome analysis
- Consultancy on immune assay design

LOCATION/CONTACT

Institute for Regenerative Cures
2921 Stockton Blvd., Suite 1630, Sacramento, 95817
916-734-2156



In Vivo Translational Imaging

The In vivo Translational Imaging Shared Resource, or IVTISR, provides access to a broad range of in vivo imaging technologies including molecular imaging, optical imaging, quantitative physiologic and anatomic imaging, and whole-body PET/CT scanning in humans and animals. It also provides targeted imaging probes and tracers as well as expertise in planning, executing and analyzing in vivo imaging studies. The resource can support imaging studies in small animals, large animals and humans.

SERVICES

- Initial consultation and study design
- Investigator training for unassisted imaging (CMGI)
- Assisted scanning
- Radiopharmaceuticals and development
- Animal handling, anesthesia and physiologic monitoring
- Data processing and archival
- Image analysis
- Scheduling and data management
- Other laboratory work
- Quality control of instruments
- Pilot small-grant program to obtain preliminary data (CMGI)

LOCATIONS/CONTACT

Center for Molecular and Genomic Imaging
Genome and Biomedical Sciences Facility, Davis, 95616
530-754-8960; cmgi@ucdavis.edu

Center for Imaging Sciences
UC Davis Veterinary School, Davis, 95616
azwingen@ucdavis.edu

EXPLORER Molecular Imaging Center
3195 Folsom Blvd., Sacramento, CA 95816
Inardo@ucdavis.edu



Molecular Pharmacology

The Molecular Pharmacology Shared Resource, or MPSR, provides services to support the development and implementation of clinical trials at the UC Davis Comprehensive Cancer Center. The MPSR oversees high-quality collection, processing, and analysis of clinical specimens for pharmacokinetic and pharmacodynamics studies. The MPSR also conducts preclinical modeling of novel anti-cancer agents to test hypotheses and develop the scientific rationale required for translation of laboratory concepts into clinical trials, including the assessment of DM/PK/PD properties.

SERVICES

- Protocol and study development: specimen collection protocols and language, development of hypotheses and objectives for translational studies, development of novel biomarker assays, HIPAA compliance and budget development
- Specimen analysis: new assay development for targeted analysis of drugs, metabolites and specific biomarkers, specimen biomarker analysis and data synthesis and analysis
- Preclinical modeling: new assay and methodology development, novel agent activity, synergism testing and target validation. Models include cell lines, traditional xenografts and PDXs
- DM/PK/PD: investigation of DM/PK/PD properties of new anticancer agents and potential DDIs

LOCATION/CONTACT

Cancer Center South Building
4501 X Street, Suite 3016, Sacramento, CA 95817

Oak Park Research Building
2700 Stockton Blvd., Room 2130, Sacramento CA 95817

916-734-1566
aimyu@ucdavis.edu
axmartinez@ucdavis.edu



Mouse Biology

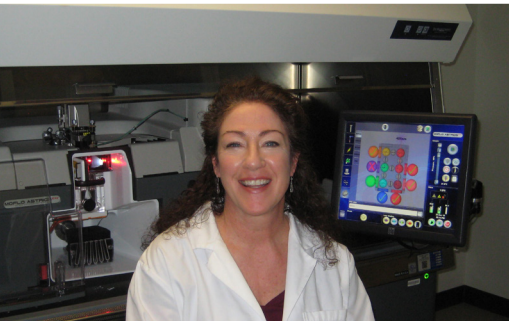
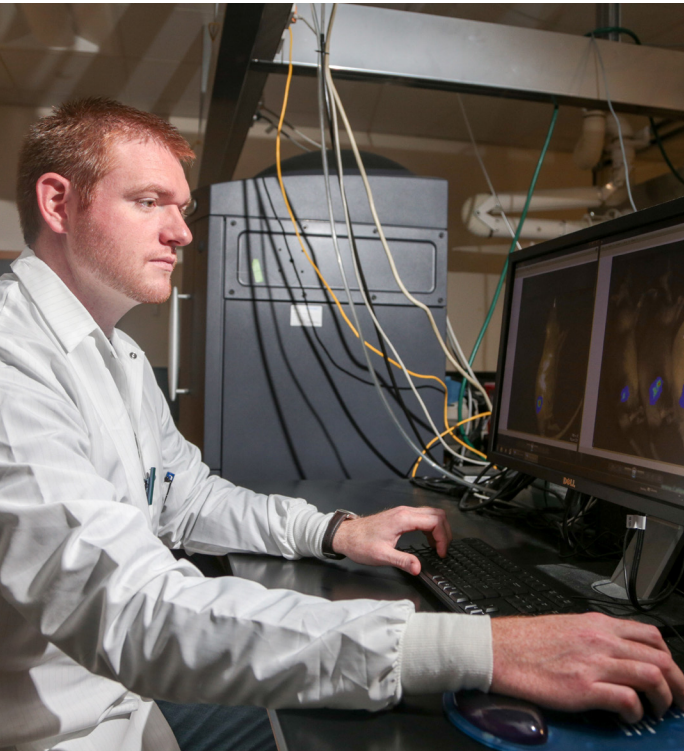
The Mouse Biology Shared Resource, or MBSR, offers services and procedures for mutant mice and mouse model use in basic and translational cancer research. Assembled from cancer-research relevant components of the UC Davis Mouse Biology Program, the MBSR provides scientific expertise, technical assistance and training, specialized and unique capabilities and dedicated infrastructure for mouse embryo manipulation, genome mutagenesis, husbandry, production and phenotyping and PDX and other surgical services. These capabilities are essential for supporting contemporary applied and preclinical studies using laboratory mice to understand mechanisms and pathways of cancer, assess drug and intervention strategies and test new hypotheses that advance research to beat cancer.

SERVICES

- Gene targeting and genome editing of mice and mouse embryonic stem cells
- Gross and microscopic pathology and histopathology
- PDX modeling
- Whole body phenotyping and immunophenotyping
- In vivo pharmacokinetics and pharmacodynamics
- Advanced surgical procedures
- Specialized care, colony management and transport of mice
- Gnotobiotic vivarium services for microbiome testing and manipulation
- Training, consultation, planning and project management

LOCATION/CONTACT

2795 2nd St., Suite 400, Davis, 95618
530-754-MOUSE (530-754-6687)
mbsr@ucdavis.edu



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