UNIVERSITY OF MIAMI

Research Resources Expo

An Exhibition of the Core Facilities and
Shared Research Resources Across the University

Program and Poster Abstracts

March 12 & 14, 2024

UNIVERSITY OF MIAMI

Research Resources Expo

An Exhibition of the Core Facilities and Shared Research Resources Across the University

Seminar:

Core Facility Resources at the University of Miami: Catalysts for Advancing Research

Tuesday, March 12, 2024
12:00 pm - 1:00 pm

Bascom Palmer Auditorium

Research Resources Poster and Panel Sessions

$5,000 of lottery prizes for use of cores
will be awarded to poster session attendees!

Medical Campus - Poster Session

Tuesday, March 12, 2024
1:00 pm - 4:00 pm

Schoniger Research Quadrangle

Coral Gables Campus - Panel and Poster Sessions

Thursday, March 14, 2024
Breakout Panel Sessions: 10:00 am - 12:00 pm
Poster Session: 12:00 pm - 3:00 pm

Lakeside Expo Center

Register for all Expo events:
www.ora.miami.edu/about-ora/education-and-training/education-and-training/research-resources-expo-2024

The UM Research Resources Expo is organized by the UM Research Cores and Facilities Committee (RCFC) and is sponsored the UM Office of the Vice Provost for Research and Scholarship (VPRS), UM Office of Research Administration (ORA), and UM Clinical and Translational Science Institute (CTSI)

For information about this Expo, please contact George Grills at gxg766@med.miami.edu

UNIVERSITY OF MIAMI

Research Resources Expo

An Exhibition of the Core Facilities and
Shared Research Resources Across the University

Seminar on

Core Facility Resources at the University of Miami: Catalysts for Advancing Research

Maria Alcaide, M.D.
Vice Provost for Research and Scholarship
Professor of Medicine, Division of Infectious Diseases
University of Miami

Antonio Iavarone, M.D.
Professor of Neurological Surgery
Deputy Director, Sylvester Comprehensive Cancer Center
University of Miami Miller School of Medicine

Fabrice Manns, Ph.D.
Professor and Chair of Biomedical Engineering, College of Engineering
Professor of Ophthalmology, University of Miami Miller School of Medicine

M. Danielle McDonald, Ph.D.
Professor of Marine Biology and Ecology & Associate Dean of Research
Rosenstiel School of Marine and Atmospheric Science

Tuesday, March 12, 2024
12:00 pm - 1:00 pm

Bascom Palmer Auditorium, University of Miami Miller School of Medicine

Research Resources Poster and Panel Sessions

Medical Campus – Poster Session, Tuesday, March 12, 2024, 1:00 pm - 4:00 pm
Coral Gables Campus – Breakout Panel Sessions, Thursday, March 14, 2024, 10:00 am - 12:00 pm
Coral Gables Campus – Poster Session, Thursday, March 14, 2024, 12:00 pm - 3:00 pm

Register for all Expo events:
www.ora.miami.edu/about-ora/education-and-training/education-and-training/research-resources-expo-2024

For information about this Expo, please contact George Grills at gxg766@med.miami.edu

UNIVERSITY OF MIAMI

Research Resources Expo

An Exhibition of the Core Facilities and
Shared Research Resources Across the University

Core Facility Breakout Panel Sessions:

Core Talks and Panel Discussion on Issues and Advancements

Thursday, March 14, 2024
10:00 pm - 12:00 pm

Lakeside Village Expo Center, University of Miami, Coral Gables Campus

1. Genomics

10:00 am - 11:00 am, Auditorium

Sylvester Onco-Genomics Shared Resource
HIHG Center for Genome Technology
Specialty Diagnostics and Test Development

2. Biostatistics, Bioinformatics & Computer Science

11:00 am - 12:00 pm, Auditorium

Sylvester Biostatistics and Bioinformatics Shared Resource
PHS Biostatistics Collaboration and Consulting Core
HIHG Statistical and Bioinformatics Consulting Core
Frost Institute for Data Science and Computing (IDSC)

3. Flow Cytometry

10:00 am - 11:00 am, Training Room

DRI Flow Cytometry Core Center
Sylvester Flow Cytometry Shared Resource

4. Biorepository

11:00 am - 12:00 pm, , Training Room

HIHG Biorepository Facility
Sylvester Biospecimen Shared Resource
Brain Endowment Bank

5. Optical Imaging

10:00 am - 11:00 am, Pavilion

Miami Project Imaging Core
DRI Analytical Imaging Core Facility
BPEI Analytical Imaging Core Facility
Sylvester Flow Cytometry Shared Resource

6. Electron Microscopy

11:00 am - 12:00 pm, Pavilion

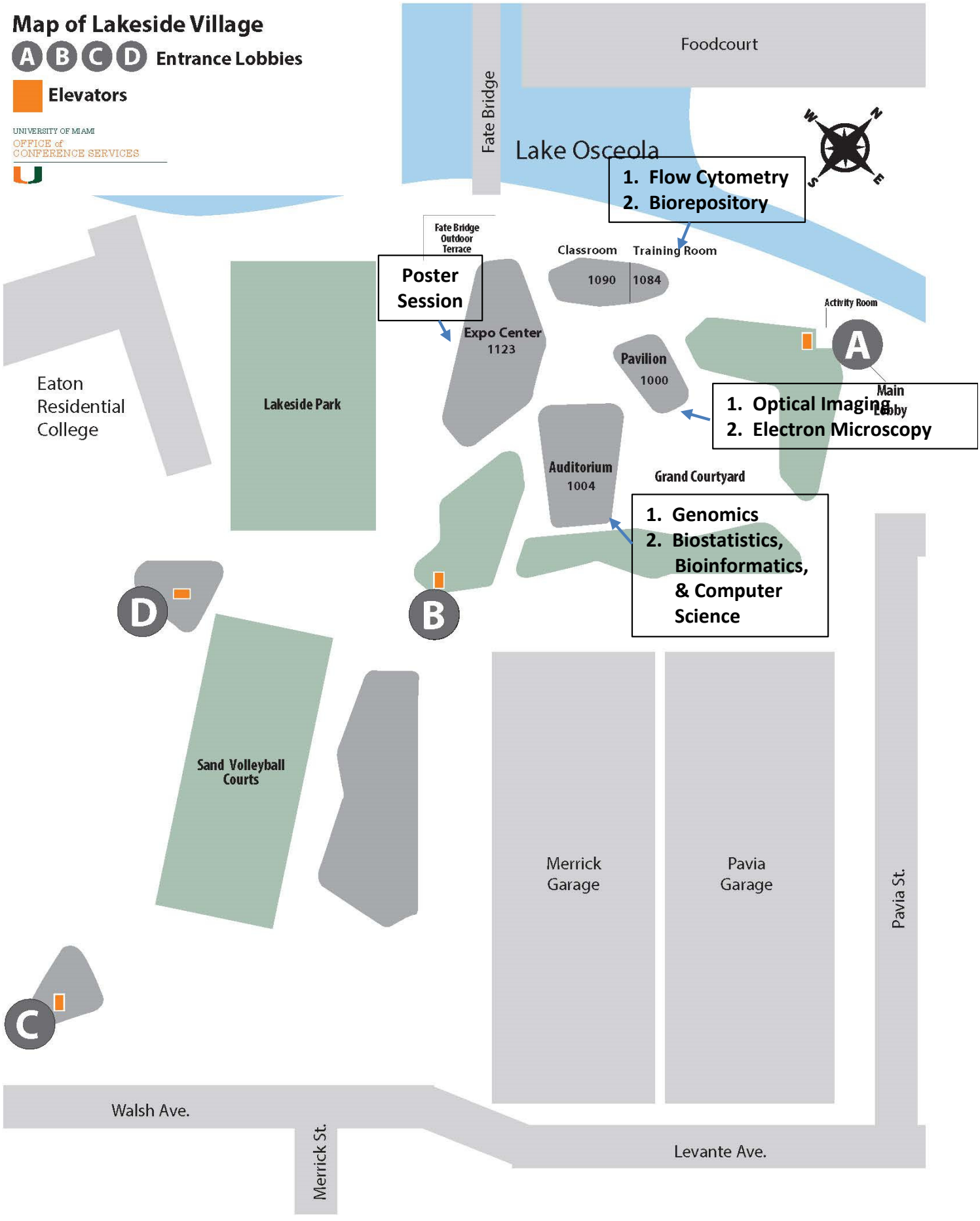
Miami Project Transmission Electron Microscopy Core
Frost Institute Molecular Electron Microscopy Center
College of Engineering Shared Facility Resources
BioNIUM Nanofabrication Facility

Register for all Expo events:

www.ora.miami.edu/about-ora/education-and-training/education-and-training/research-resources-expo-2024

For information about this Expo, please contact George Grills at gxg766@med.miami.edu

Research Resources Expo
Poster & Breakout Panel Sessions: Map



UNIVERSITY OF MIAMI

Research Resources Expo

Core Facility Breakout Panel Sessions:

- **Genomics**

  - **Anthony Griswold, Ph.D.**
    Associate Professor, Human Genetics
    Associate Director, HIHG Center for Genome Technology (CGT)
    Division Head, HIHG Center for Genetic Epidemiology and Statistical Genetics (CGESG)
    Co-Director, HIHG CGESG Statistical and Bioinformatics Consulting Core
    John P. Hussman Institute for Human Genomics (HIHG)
    Miller School of Medicine, University of Miami

  - **Benjamin Currall, Ph.D.**
    Assistant Director, Sylvester Onco-Genomics Shared Resource (OGSR)
    Sylvester Comprehensive Cancer Center
    University of Miami Miller School of Medicine

  - **Yi Zhou, M.D., Ph.D.**
    Clinical Associate Professor, Pathology and Laboratory Medicine
    Medical Director: Flow Cytometry at UHealth & Jackson Health System; Molecular Infectious Diseases at UHealth; Specialty Diagnostics and Test Development, Division Hematopathology
    University of Miami Miller School of Medicine

- **Biostatistics, Bioinformatics & Computer Science**

  - **Yan Guo, Ph.D.**
    Professor, Public Health Sciences, Division of Biostatistics
    Director, Sylvester Biostatistics and Bioinformatics Shared Resource (BBSR)
    Sylvester Comprehensive Cancer Center
    University of Miami Miller School of Medicine

  - **Shari Messinger, Ph.D.**
    Professor, Public Health Sciences, Division of Biostatistics
    Director, PHS Biostatistics Collaboration and Consulting Core (BCCC)
    University of Miami Miller School of Medicine

  - **Anthony Griswold, Ph.D.**
    Associate Professor, Human Genetics
    Associate Director, HIHG Center for Genome Technology (CGT)
    Division Head, HIHG Center for Genetic Epidemiology and Statistical Genetics (CGESG)
    Co-Director, HIHG CGESG Statistical and Bioinformatics Consulting Core
    John P. Hussman Institute for Human Genomics (HIHG)
    University of Miami Miller School of Medicine

UNIVERSITY OF MIAMI

Research Resources Expo

Core Facility Breakout Panel Sessions:

- **Nick Tsinoremas, Ph.D.**
  Vice Provost, Research Computing and Data
  Founding Director, Frost Institute for Data Science and Computing (IDSC)
  Professor, Biochemistry and Molecular Biology
  Professor, Computer Science
  Professor, Health Informatics
  University of Miami

- **Flow Cytometry**

  - **Oliver Umland, Ph.D.**
    Manager, DRI Flow Cytometry Core Center
    Diabetes Research Institute
    University of Miami Miller School of Medicine

  - **Shannon Saigh, Ph.D.**
    Associate Scientist, Sylvester Flow Cytometry Shared Resource (FCSR)
    Sylvester Comprehensive Cancer Center
    University of Miami Miller School of Medicine

- **Biorepository**

  - **Jacob McCauley, Ph.D.**
    Professor, Human Genetics and Pathology
    Director, Center for Genome Technology (CGT) and Biorepository Facility
    John P. Hussman Institute for Human Genomics (HIHG)
    University of Miami Miller School of Medicine

  - **Melinda Boone**
    Assistant Director, Sylvester Biospecimen Shared Resource (BSSR)
    Sylvester Comprehensive Cancer Center
    University of Miami Miller School of Medicine

  - **Xiaoyan Sun, M.D., Ph.D.**
    Associate Professor, Neurology
    Clinical Director, Brain Endowment Bank
    Education Director, McKnight Brain Institute
    University of Miami Miller School of Medicine

UNIVERSITY OF MIAMI

Research Resources Expo

Core Facility Breakout Panel Sessions:

- **Optical Imaging**
  - **Maria Boulina, Ph.D.**
    Manager, DRI Analytical Imaging Core Facility
    Diabetes Research Institute
    University of Miami Miller School of Medicine

  - **Yan Shi, M.S.**
    Manager, Imaging Core & High Content Screening Core
    The Miami Project to Cure Paralysis
    University of Miami Miller School of Medicine

  - **Juliano Frietas, Ph.D.**
    Research Associate, Sylvester Flow Cytometry Shared Resource (FCSR)
    Sylvester Comprehensive Cancer Center
    University of Miami Miller School of Medicine

  - **Valery Shestopalov, Ph.D.**
    Professor, Ophthalmology and Cell Biology
    Director, BPEI Analytical Imaging Core Facility
    Bascom Palmer Eye Institute
    University of Miami Miller School of Medicine

- **Electron Microscopy**
  - **Vania Almeida, M.S., C.E.M.T.**
    Supervisor, Transmission Electron Microscopy (TEM) Core
    The Miami Project to Cure Paralysis
    University of Miami Miller School of Medicine

  - **Bahar Motlagh, Ph.D.**
    Director, BioNIUM Nanofabrication Facility (includes TEM)
    JT Macdonald Foundation Biomedical Nanotechnology Institute (BioNIUM)
    University of Miami

  - **Charles Tomonto, Ph.D.**
    Professor of Professional Practice, Mechanical and Aerospace Engineering
    Director, Engineering Shared Facility Resources (includes SEM)
    College of Engineering, University of Miami

  - **Mark Yeager, M.D., Ph.D.**
    Professor, Chemistry
    Executive Director, Frost Institute for Chemistry and Molecular Science
    (includes the Molecular Electron Microscopy Center)
    University of Miami

UNIVERSITY OF MIAMI

Research Resources Expo

An Exhibition of the Core Facilities and
Shared Research Resources Across the University

Tours of Cores

Medical Campus - Tuesday, March 12, 2024, 4:00-5:00 pm

Gables Campus - Thursday, March 14, 2024, 3:00-4:00 pm

- The cores listed below are offering tours. To join a tour, please sign up in advance.
- To sign up for a tour of a core, please contact that core as listed below.
- At the end of the poster session, please gather at the poster of the core; someone from that core will walk the tour group to the core.
- Most of these core tours have a limit of 20 individuals, so please *sign up soon*.

Medical School Campus	**Contact Person for Tour of Core**
Sylvester Onco-Genomics Shared Resource	Benjamin Currall (bbc16@med.miami.edu)
Sylvester Flow Cytometry Shared Resource	Shannon Saigh (sjsaigh@med.miami.edu)
HIHG iPSC Core Facility	Brooke DeRosa (bderosa@med.miami.edu)
Miami Project High Content Screening Core	Hassan Ali (halali@med.miami.edu)
Miami Project Transmission Electron Microscopy Core	Vania Almeida (valmeida@miami.edu)
Miami Project Imaging Core	Yan Shi (yshi@miami.edu)
DRI cGMP Cell Processing Facility	Xiumin Xu (x.xu@med.miami.edu)
Laboratory for Clinical Bioscience	Ranjini Valiathan (rvaliathan@med.miami.edu)
BioNIUM Nanofabrication Facility	Bahar Motlagh (bmotlagh@miami.edu)
CFAR Clinical Sciences Core - CONNECT Mobile Unit	N. Fonseca Nogueira (n.fonsecanogueira@umiami.edu)

Coral Gables Campus	**Contact Person for Tour of Core**
MRI Neuroimaging Facility	Ekaterina Denkova (exn67@miami.edu)
Zebrafish Core Facility	Ricardo Cepeda (r.cepeda@miami.edu)
College of Engineering Shared Facilities	Siva Ramanathan (sivakumar.ramanathan@miami.edu)
Frost Institute Molecular Electron Microscopy Center	Mark Yeager (yeager@miami.edu)
Chemistry Shared Research Resources (NMR/Mass Spec)	Ziming Zhang (zxz696@miami.edu)
CFAR Clinical Sciences Core - CONNECT Mobile Unit	N. Fonseca Nogueira (n.fonsecanogueira@umiami.edu)

Register for all Expo events (seminar, six breakout panel sessions, and two poster sessions):
www.ora.miami.edu/about-ora/education-and-training/education-and-training/research-resources-expo-2024

Lunch will be provided at the Expo poster sessions

For information about this Expo, please contact George Grills at gxg766@med.miami.edu

UNIVERSITY OF MIAMI

Core Facilities Needs Survey:
What do you need?

is now open!

- **The goal** of this survey is to better understand the core facility and shared research resource needs of investigators across the University.

- **Survey questions** ask what proposed new instruments and services in existing core facilities, and what proposed new core facilities, are needed to advance your research.

- **This survey is now open** for responses from all faculty, trainees, students, and staff at UM.

QR code for Core Needs Survey
https://umiami.qualtrics.com/jfe/form/SV_8icH2QRuxIB2Pz0

For information about this survey, please contact George Grills at gxg766@med.miami.edu

UNIVERSITY OF MIAMI

Research Resources Expo

An Exhibition of the Core Facilities and
Shared Research Resources Across the University

Poster Sessions:

Core Facilities and Shared Research Resources Presenting Posters

Tuesday, March 12, 2024, 1:00-4:00 pm

Schoniger Research Quadrangle, University of Miami, Medical Campus

Thursday, March 14, 2024, 12:00-3:00 pm

Lakeside Village Expo Center, University of Miami, Coral Gables Campus

Five $1,000 lottery prizes for use of cores

will be awarded to poster session attendees!

- Sylvester Flow Cytometry Shared Resource
- Sylvester Onco-Genomics Shared Resource
- Sylvester Biostatistics and Bioinformatics Shared Resource
- Sylvester Behavioral and Community-Based Research Shared Resource
- Sylvester Biospecimen Shared Resource
- Sylvester Cancer Modeling Shared Resource
- Sylvester Data Portal
- HIHG Center for Genome Technology
- HIHG Statistics and Bioinformatics Core
- HIHG iPSC Core Facility
- Miami Project High Content Screening Core
- Miami Project Transmission Electron Microscopy Core
- Miami Project Imaging Core
- Miami Project Viral Vector Core
- DRI Flow Cytometry Core
- DRI Analytical Imaging Core Facility
- DRI Biomarker and Immunoassay Core
- DRI Animal Core
- DRI cGMP Cell Processing Facility
- CFAR Laboratory Sciences Core
- CFAR Clinical Sciences Core
- Center for HIV and Research in Mental Health (CHARM)
- Bascom Palmer Mass Spectrometry Core Facility
- ISCI Clinical Research Cellular Manufacturing Program
- CTSI Research Navigation Services
- CTSI Research Recruitment Resources
- CTSI UHealth IT Data Science & Research Informatics
- Frost Institute for Data Science & Computing (IDSC)
- PHS Biostatistics Collaboration & Consulting Core
- ICRT Imaging Core
- MRI Neuroimaging Facility
- Comparative Pathology Laboratory
- Pathology Histology Laboratory
- Laboratory for Clinical Bioscience
- Clinical Translational Research Site (CTSR)
- BioNIUM Nanofabrication Facility
- Veterinary Resources
- Zebrafish Core Facility
- College of Engineering Shared Facilities
- Frost Institute Molecular Electron Microscopy Center
- Gifford Arboretum
- Chemistry Department Shared Research Resources
- Research Vessel F.G. Walton Smith
- Writing Center
- Office of Research Administration
- University of Miami Libraries
- U Innovation

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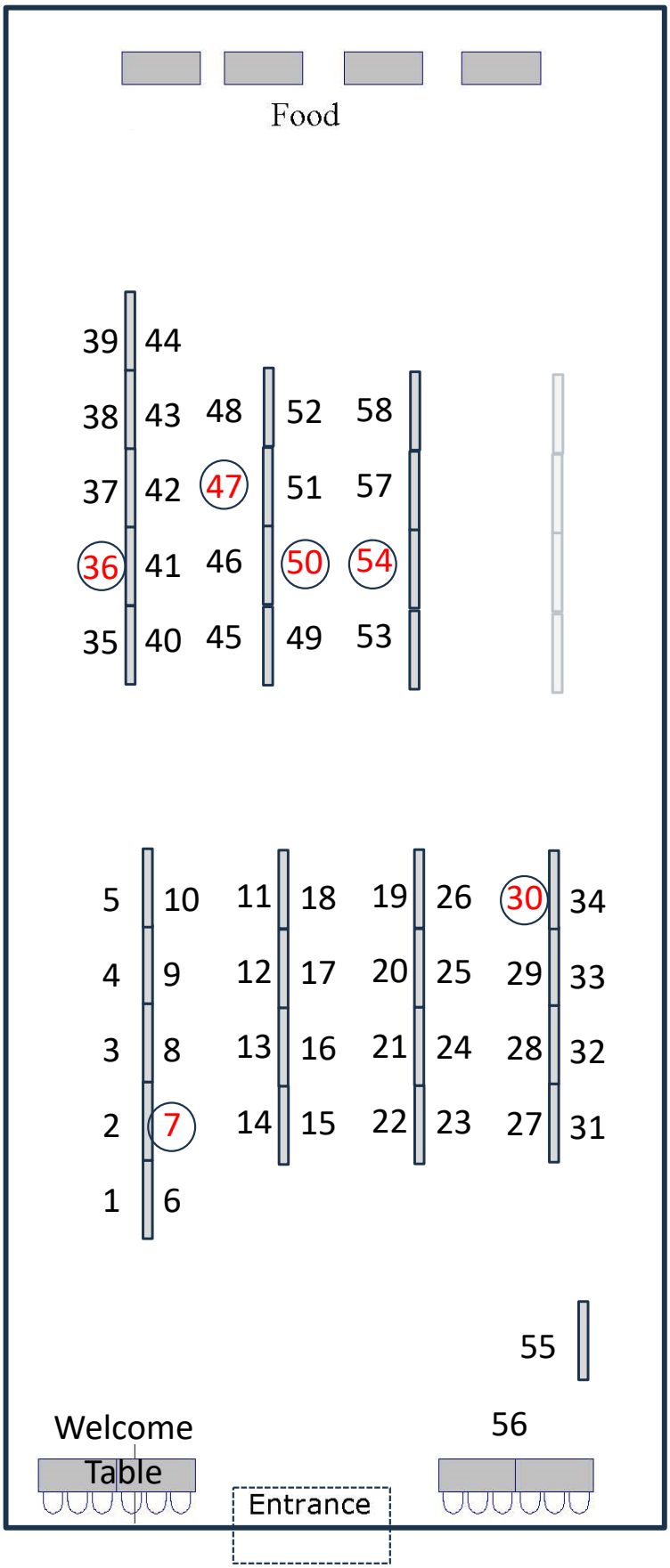
UM Research Resources Expo – Poster Numbers

Poster Number		Poster
Medical Campus Poster Session	Gables Campus Poster Session	
1	1	SR Committee Activities at UM: the RCFC and SCC
2	2	Office of Research Administration
3	3	Miami CTSI
4	4	CTSI - Research Navigation Services
5	5	CTSI - Research Recruitment Resources
6	6	CTSI - UHealth IT Data Science and Research Informatics
7	7	Overview of Sylvester Shared Resources - Virtual Tour
8	8	Overview of Sylvester Shared Resources
9	9	Sylvester Onco-Genomics Shared Resource (OGSR)
10	10	Multi-SR Support for Spatial Multiomics Research
11	11	Sylvester Flow Cytometry Shared Resource (FCSR)
12	12	Sylvester Biostatistics and Bioinformatics Shared Resource (BBSR)
13	13	Sylvester Cancer Modeling Shared Resource (CMSR)
14	14	Sylvester Biospecimen Shared Resource (BSSR)
15	15	Sylvester Behavioral and Community-Based Shared Resource (BCSR)
16	16	Sylvester Data Portal
17	17	Sylvester - Tracking SR support for grant awards
18	18	The Role of SRs in Support of Environmental Pathogen Surveillance
19	19	PHS Biostatistics Collaboration and Consulting Core (BCCC)
20	49	Comparative Pathology Lab & Pathology Research Resources Histology Lab
21	48	Pathology - Laboratory for Clinical Bioscience
22	20	HIHG Center for Genome Technology
23	21	HIHG Statistics and Bioinformatics Core
24	22	HIHG iPSC Core Facility
25	23	IDSC - Pegasus and Triton supercomputers
26	24	IDSC - Advanced Computing Resources
27		CFAR Laboratory Sciences Core
28	25	CFAR Clinical Sciences Core
29		CTSR (Clinical Translational Research Site)
30	26	CHARM (Center for HIV and Research in Mental Health)
31	27	Frost Institute - Molecular Electron Microscopy Center
32	28	Miami Project - Transmission Electron Microscopy Core
33	29	Miami Project - High Content Screening Core
34		Miami Project - Viral Vector Core
35	30	Miami Project - Imaging Core
36	31	Gallery of Miami Project, DRI, and BioNIUM imaging cores
37	32	DRI Analytical Imaging Core Facility
38		DRI Flow Cytometry Core Center
39	33	DRI Biomarker and Immunoassay Core
40		DRI Animal Core
41		DRI cGMP Cell Processing Facility
42		ISCI Clinical Research Cellular Manufacturing Program
43	34	Psychology Dept - MRI Neuroimaging Facility
44	35	Chemistry Dept Shared Research Resources - NMR and Mass Spec
45	36	BPEI MIMRC Ophthalmology Mass Spectrometry Core Facility
46	37	ICRT-Imaging Core for Research and Training - Vascular Biology Institute
47	38	COE - Engineering Shared Facilities
48	39	BioNIUM Nanofabrication Facility
49	40	Veterinary Resources
50	41	CAS - Zebrafish Core Facility - Virtual Tour
51	42	CAS - Zebrafish Core Facility
52	43	Gifford Arboretum
53	44	UM Research Vessel F.G. Walton Smith
54	45	UM Research Vessel F.G. Walton Smith - Virtual Tour
55	46	Writing Center
56	47	University of Miami Libraries
57		Biochemistry and Molecular Biology (BMB) Core Lab
58	50	U Innovation

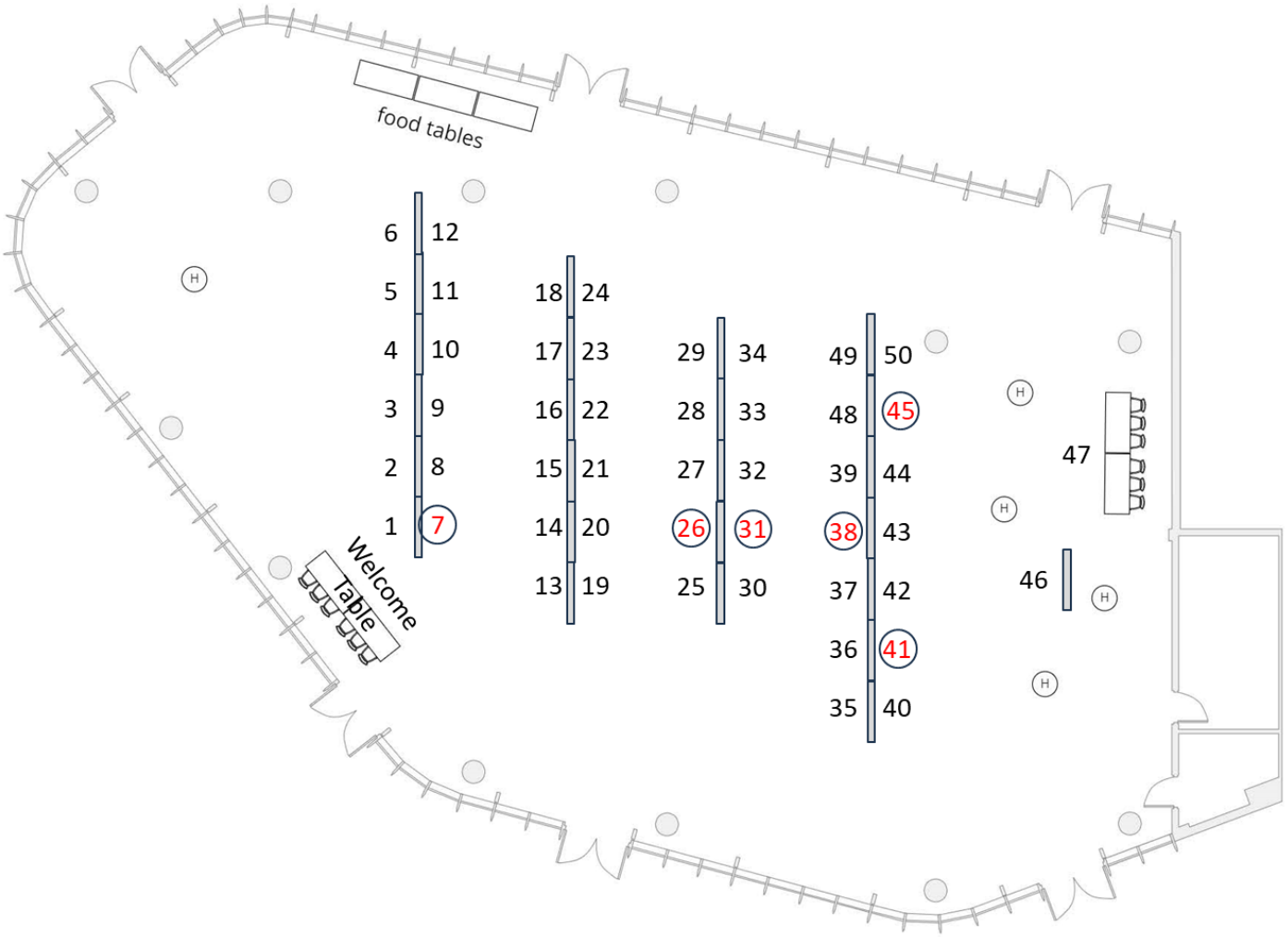
Red font = Electronic poster

UM Research Resources Expo – Poster Session
Medical School Campus



Lois Pope Life Center / Quadtrangle
40' x 66' Tent
32 - 4' x 6' Double Sided Poster Boards
64 Sides/ 32 Boards + 6 LCD displays

UM Research Resources Expo – Poster Session
Lakeside Village Expo Hall, Coral Gables Campus
March 14, 2024



25 - 4' x 6' Double Sided Poster Boards
50 Sides, 25 Boards + 6 LCD displays

Shared Resources Committees activities at the University of Miami

G. Grills[1], L. Kozma[2], L. Bianchi[3], University of Miami Research Cores and Facilities Committee[4], University of Miami Miller School of Medicine Shared Resources Committee[5]

[1]Sylvester Comprehensive Cancer Center; University of Miami Miller School of Medicine, Miami, FL, USA; [2]Office of Research Administration; University of Miami, Coral Gables, FL, USA; [3]Department of Physiology; University of Miami Miller School of Medicine, Miami, FL, USA; [4]Office of the Vice Provost for Research and Scholarship; University of Miami, Coral Gables, FL, USA; [5]Office of the Executive Dean of Research, University of Miami Miller School of Medicine, Miami, FL, USA;

Core facilities and shared resources provide critical support for research. The University of Miami (UM) Research Cores and Facilities Committee (RCFC) and the UM Miller School of Medicine (MSOM) Shared Resources Committee (SRC) work collaboratively to evaluate, support, and enhance the core facilities and shared research resources at the institution. Focus areas include tracking return on investment in cores; facilitating education and marketing about cores; enhancing recruitment, retention, and professional development of core leaders and staff; and promoting networking between cores to leverage synergies and enhance impact. Current committee activities include surveys of what do we have and what do they need for cores to meet investigators needs; expanding access to tools that facilitate core facility services and operations; and establishing a UM-wide institutional membership with the Association of Biomolecular Resource Facilities (ABRF), to enable core leaders and staff at UM to more readily access the resources of this national and international professional organization of core facilities. Furthermore, the RCFC organized the UM Research Resources Expo 2024, which included presentations from core facilities and shared research resources from across the University; an internal networking meeting of core leaders; a public seminar with talks by leaders from all the UM campuses; poster sessions on two campuses; breakout panel discussion sessions; and tours of cores.

University of Miami Office of Research Administration (ORA)

L. Kozma[1], B. Strickland[1], L. Vera[1], Y. Wu[1]

[1]University of Miami, Miami, FL, USA

This poster will share information on all areas of the Office of Research Administration at the University of Miami including areas of oversights and responsibility, services, key contacts and some best practices. In consideration of the expected audience, there will be a focus on the review and approval of rates for service centers.

Miami Clinical and Translational Science Institute

R. Perez[1], D. Ransford[1], S. Dominguez[1], E. Kobetz[1,2,3], O. Carrasquillo[1,3]

[1]Miami Clinical and Translational Science Institute; [2]Office of the Chief Health Equity Officer/Vice President for Health Equity; [3]University of Miami Miller School of Medicine, Miami, FL, USA

The University of Miami Clinical and Translational Science Institute (Miami CTSI) catalyzes the development, demonstration, and dissemination of scientific discoveries to improve the health of our community, address health disparities, and promote health equity. The Miami CTSI improves the efficiency, effectiveness, and quality of clinical and translational research through the bidirectional engagement of diverse stakeholders, including patients, community partners, and others to help identify gaps, challenges and bottlenecks in the translational research process. In response, the Miami CTSI develops tools, processes and resources, implementing and disseminating demonstrably successful interventions. Miami CTSI aims include:

1. Develop, demonstrate, and disseminate innovative resources and services that will increase the quality, efficiency, and effectiveness of research across the entire translational research spectrum.

2. Promote partnerships and collaborations aimed at facilitating and accelerating research to improve community health, address health disparities, and promote health equity.

3. Create and provide education, training, career development, and mentoring opportunities to support CTS and team science in a highly diverse and skilled workforce of multidisciplinary translational scientists and research professionals.

4. Support promising, early-stage investigator-led CTS pilot research studies, prioritizing stakeholder-engaged projects responsive to our overarching goals of community health, disparities, and health equity.

5. Conduct a research project that will develop, test, and evaluate the effectiveness of various approaches to increase opportunities for patients and community members to participate in biomedical research.

6. Sustain a robust leadership team of highly experienced investigators and research professionals to manage a dynamic CTSI program, ensuring the successful execution of the Hub's proposed goals, demonstrating impact with effective evaluative processes, and broadly disseminating our solutions to the CTSA network.

The Miami CTSI is funded by grant number UM1TR004556 from the National Center for Advancing Translational Sciences (NCATS) of the National Institutes of Health (NIH).

Miami Clinical and Translational Science Institute: Research Navigation Services

P. Atkinson, M. Couch, S. Dominguez

Miami Clinical and Translational Science Institute, University of Miami Miller School of Medicine, Miami, FL, USA

The Miami Clinical and Translational Science Institute (CTSI) provides crucial support and resources to the University of Miami's investigators as they plan and implement research studies and clinical trials that aim to improve the health of patients in our diverse communities and beyond. The CTSI provides two specific resources designed to help the University community successfully navigate the research environment at the institution.

The *Research Compass* is a dynamic online resource designed to guide researchers to crucial and timely information needed to facilitate research. It is organized around the stages of the research project lifecycle and offers resources for initiating your research program, finding collaborators and funding, developing proposals, implementing a research project, disseminating findings, engaging with communities, and more. The Compass is available to all faculty, staff, and students involved in the research enterprise.

The *Research Navigator* is a centralized one-to-one, concierge-style support service designed to connect researchers to the right resources when needed. The Navigator offers support designed to assist researchers personally in navigating research at the University by providing assistance with finding funding and collaborators and other resources, as well as guidance on proposal development, compliance, policies, systems, contracts, purchasing, and other research areas.

The Miami CTSI is funded by grant number UM1TR004556 from the National Center for Advancing Translational Sciences (NCATS) of the National Institutes of Health (NIH).

Miami CTSI Research Recruitment Resources: facilitate participant recruitment into research studies

C.C. Lee[1], D. Ransford[1], C. Canales[1], A. Barreto[1,2], I. Ramsingh[3], D. Maciel[2], and C.I. Schulman[1,4]

[1]Miami Clinical and Translational Science Institute, University of Miami Miller School of Medicine, Miami, FL, USA; [2]UHealth Information Technology, University of Miami Health System (UHealth), Miami, FL, USA; [3]Data Broker Research Privacy, University of Miami, Miami, FL, USA; [4]University of Miami Miller School of Medicine, Miami, FL, USA

Participant recruitment is critical to the success of all research studies. In an effort to advance clinical and translational science and help research study teams recruit volunteers for research studies, the Miami CTSI Research Resources program has three recruitment tools: 1) *Consent to Contact (CTC)*, an opt-in research registry where University of Miami Health System (UHealth) patients are asked for permission to be contacted about studies matching their demographic and/or health profiles; 2) *MyChart Research Recruitment*, allows research study teams to use MyUHealthChart messaging to contact UHealth patients who opted-in the CTC registry and have an active MyUHealthChart account; and 2) *UMiamiHealthResearch.org (UMHR)*, implemented with the Michigan CTSA, a community-based registry for volunteers to sign up and be contacted about studies. Research study teams can use these tools once they have obtained IRB approval for their research.

The Miami CTSI is funded by grant number UM1TR004556 from the National Center for Advancing Translational Sciences (NCATS) of the National Institutes of Health (NIH).

UHealth Data Science and Research Informatics / CTSI Informatics

W. Wu[1], T. Yuen[1], P. Taghioff[1]

[1]UHealth Information Technology / Miami Clinical and Translational Science Institute (CTSI) Informatics, University of Miami Miller School of Medicine, FL, USA

The UHealth Information Technology (IT) Data Science and Research Informatics (DSRI) team provides translational informatics support to the University of Miami research community. DSRI receives funding from the Miami Clinical and Translational Science Institute (CTSI) and serves as the Informatics Module lead for the CTSI (referred to as CTSI Informatics). The translational informatics support provided by DSRI/CTSI Informatics is intended to help reduce well known barriers in clinical research, including services such as providing clinical data from UHealth for IRB approved research studies, informatics consultations to help assess the feasibility of research studies using real-world data, informatics workshops designed to build the foundational expertise of researchers on informatics tools such as Epic SlicerDicer for preparatory-to-research activities, and management of secure computing workbenches for researchers working with data that requires strict controls around access and export. DSRI/CTSI also is responsible for maintaining the UM research data warehouse, comprised of clinical data from UHealth, and increasing the richness of the data through diverse processes (e.g., geocoding, linking to open-source neighborhood level data).

The Miami CTSI is funded by grant number UM1TR004556 from the National Center for Advancing Translational Sciences (NCATS) of the National Institutes of Health (NIH).

Virtual tour of the Sylvester Shared Resources

G. Grills[1], E. Wieder[1,2]

[1]Sylvester Comprehensive Cancer Center; [2]Department of Medicine; University of Miami Miller School of Medicine, Miami, FL, USA

Come join a virtual tour of the Sylvester Comprehensive Cancer Center (SCCC) Shared Resources. The Sylvester Shared Resources catalyze and promote cancer research by providing high-level expertise, advanced technologies and methodologies, state-of-the-art technologies, and a comprehensive array of services for Sylvester researchers and outside investigators. The Sylvester Shared Resources offer coordinated support for transdisciplinary and translational oncology research with resources and services for Onco-Genomics (OGSR), Flow Cytometry (FCSR), Biostatistics and Bioinformatics (BBSR), Cancer Modeling (CMSR), Biospecimen (BSSR), and Behavioral and Community-Based Research (BCSR). The Shared Resources provide coordinated crucial services that facilitate and advance impactful cancer research.

Sylvester Shared Resources

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The Sylvester Comprehensive Cancer Center (SCCC) Shared Resources (SRs) catalyze and promote cancer research by providing high-level expertise, advanced technologies and methodologies, state-of-the-art technologies, and a comprehensive array of services for Sylvester researchers and outside investigators. The SRs offer coordinated support for transdisciplinary and translational oncology research with resources and services for Onco-Genomics (OGSR), Flow Cytometry (FCSR), Biostatistics and Bioinformatics (BBSR), Cancer Modeling (CMSR), Biospecimen (BSSR), and Behavioral and Community-Based Research (BCSR). The OGSR provides next-generation sequencing (NGS), single-cell and spatial genomics, gene expression and molecular quantification, and sample processing. The FCSR provides high-parameter fluorescence-activated cell sorting (FACS), standard and spectral analytical flow cytometry, mass cytometry and imaging mass cytometry, and confocal microscopy. The BBSR provides biostatistics and bioinformatics support for basic and translational research, clinical trials, and population-based studies, including support for data analysis and interpretation; software access; and algorithm and database development. The BCSR provides services for behavioral, community, translational, and population-based oncology research that aligns with Sylvester's catchment area needs, including for the recruitment and retention of research subjects; development of culturally and linguistically tailored study materials; data collection and management in clinical and community settings; and the development and delivery of evidence-based interventions. The BSSR provides biorepository resources and services in support of clinical and translational cancer research, including a growing biobank of diverse tissue types, with services for biospecimen collection, annotation, processing, storage, and distribution, and support for non-interventional trials (NIT) that involve biospecimen collection, including study recruitment and retention. The CMSR provides integrated small animal cancer modeling services that facilitate generation of preclinical data for drug development and that support proof of principle efforts to evaluate novel therapies; services include support for development of mouse models of human cancer; development and application of treatment protocols in a pre-clinical setting; and diagnosis and evaluation of responses to treatment, including with noninvasive in vivo imaging and histopathology analysis. A Proteomics SR is in the process of being established. An online SR service request and instrument reservation portal (Agilent iLab) provides ready access to resources and services and enhances tracking of usage and impact. The SRs provide services that facilitate research rigor and reproducibility by developing and applying best practices, including standard operating procedures, quality assessment and quality controls, and robust data management. Moreover, the SRs provide multidisciplinary support for research projects, offering coordinated services for project design, data generation and data analysis. The SRs also provide consultation, training, seminars, and workshops that educate faculty, trainees, and staff about existing and emerging technologies, methods, and applications. Centralized SR management facilitates the implementation of emerging technologies and innovative new services and works to ensure that the SRs are efficiently operated, usefully integrated, effectively evaluated, and optimally catalyze research. The resources, services, usage, and impact of the SRs have grown year-over-year. The SRs provide coordinated crucial services that facilitate and advance impactful cancer research.

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Sylvester Onco-Genomics Shared Resource

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The Sylvester Onco-Genomics Shared Resource (OGSR) provides expertise and state-of-the-art resources and services for the study of cancer genomics epigenomics, transcriptomics, and metagenomics. Services include next-generation sequencing (NGS) and library preparation; single-cell and spatial multiomics; non-NGS gene expression assays; and sample extraction, quantification, and quality assessment. The OGSR is an early adopter of the Illumina NovaSeq X Plus, which provides uniquely fast and cost-effective NGS. The facility has expanded support for high-resolution spatial multiomics with 10X Genomics Visium applications and the nanoString GeoMx and CosMx platforms. NGS library preparation and sequencing services include whole transcriptome stranded RNA-seq for transcriptomics and non-coding RNA studies; DNA library preparation services for fragmented ChIP DNA, whole genome sequencing (WGS), shotgun metagenomics, and duplex sequencing panels for low frequency mutations. The OGSR also provides library QA/QC and sequencing services for investigator-generated libraries. Single-cell services enable profiling of gene expression, immune repertoire, cell surface markers, chromatin accessibility, and driver mutation profiling for heterogeneity studies. Gene expression assays are available using qPCR, dPCR, or the nanoString nCounter. Working closely with other Shared Resources, the OGSR supports coordinated project design and integrated workflows for projects that span multiple Shared Resources, including sample processing, data generation, and bioinformatic analysis. The facility also offers seminars and workshops on existing and emerging genomics technologies and applications. The OGSR is currently expanding support for WGS of low-input samples and single-cell WGS applications to facilitate studies of cancer heterogeneity; implementing the nanoString CosMx spatial molecular imager for tumor microenvironment and immuno-oncology research; building sample and library preparation services to support the use of new long-read sequencing platforms on the medical school campus, to enhance genomics and epigenomics research; and contributing to Sylvester-wide efforts to enable effective genomics data management and analysis in support of transdisciplinary cancer research.

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Sylvester Shared Resources integrated support for spatial multiomics research

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Spatial multi-omics enables the correlation of gene and protein expression data with cells or morphological regions across a tissue section. The Sylvester Comprehensive Cancer Center (Sylvester) Shared Resources provide multidisciplinary support through an array of resources and services for spatial multi-omics project design, data generation, data analysis and visualization. Integrated services include (1) tissue acquisition, and processing (2) slide preparation, automated immunostaining, and antibody panel validation; (3) data generation; and (4) data analysis and visualization. Tissue preparation, microarray generation, and histology services are provided by the Biospecimen Shared Resource (BSSR), the Cancer Modeling Shared Resource (CMSR), and the DRI Analytical Imaging Shared Resource (AISR). Of note, the CMSR has a Leica Bond RXm automated staining system to support standardized workflows. Spatial multi-omics data generation is offered by the Onco-Genomics Shared Resource (OGSR), Flow Cytometry Shared Resource (FCSR), and AISR. The OGSR provides 10X Genomics Visium data generation supported by CytAssist mRNA transfer and imaging, combined with Illumina next generation sequencing (NGS). The OGSR also offers digital spatial profiling with a nanoString GeoMx DSP, with readout via NGS or the nanoString nCounter. The nanoString CoxMx spatial molecular imager will be available in April 2024 providing single-cell resolution using transcript and antibody panels. The FCSR offers spatial multi-omics services using a CyTOF Hyperion imaging mass cytometry system that generates 30+ parameter images of sections or tissue microarrays at single cell or subcellular resolution. A repository of validated antibodies for human markers and a heavy metal-antibody conjugation service are also available. The AISR offers a Leica laser microdissection (LMD) instrument that can isolate regions of interest from tissues at low to single cell resolution. The FCSR provides software tools and training for mass imaging cytometry analysis, nanoString software is accessible through the OGSR, and the AISR offers LMD software tools and training. The Biostatistics and Bioinformatics Shared Resource (BBSR), in close collaboration with the other Shared Resources, offers spatial multi-omics project design and data analysis consultation and can support integration of data from different spatial multi-omics platforms and from companion single cell studies. This team science approach can significantly advance oncology research, particularly research on solid tumor biology, immunology, and microenvironment.

Sylvester Flow Cytometry Shared Resource

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The Sylvester Comprehensive Cancer Center (SCCC) Flow Cytometry Shared Resource (FCSR) offers expertise, resources and services for state-of-the-art fluorescence-activated cell sorting (FACS), standard and spectral analytical flow cytometry, mass cytometry and imaging mass cytometry, and confocal microscopy. The FCSR's resources and services are critical to the success of a wide range of cancer research, including studies involving complex immunophenotyping, DNA content and cell cycle analysis, cell signaling and pathway activation analysis, measurement of proliferation and apoptosis, interaction between cancer cells and their microenvironment, and development of new imaging biomarkers for early detection and diagnosis of cancer. The facility has four cell analyzers, three cell sorters, two mass cytometry platforms, and a confocal microscope. FACS instruments include the BD FACSAria Fusion, BD FACSAria-IIu, and a Beckman CytoFLEX SRT (which is available for investigator-operated sorting). Conventional and spectral FACS analyzers include the BD FACSymphony A5 SE, Cytek Aurora, BD LSR Fortessa HTS, and BD FACSCanto-II. The high-parameter cell sorters can sort into bulk tubes or multi-well plates for single-cell cloning under BSL-2 conditions. The FCSR offers expertise and access to spectral cytometric analysis of up to 40 fluorescent parameters for both cell surface and intracellular antigen detection in complex mixtures of cancer cells and adjacent normal tissue. The FCSR also offers mass cytometry and imaging mass cytometry services with the Standard BioTools CyTOF Helios and Hyperion platforms, which use cellular targets in suspension or solid tissue sections on slides, labelled with antibodies conjugated to heavy metal markers that are detected using time-of-flight mass spectrometry. These CyTOF platforms generate high-resolution phenotypic and functional profiles of cells and tissues from normal and diseased states, with the capability of multiplexing up to 50 markers simultaneously in single-cell suspensions or in tissue sections at sub-cellular resolution for spatial analysis of the tumor microenvironment. To facilitate CyTOF applications, the FCSR offers a heavy metal-antibody conjugation service for customized experimental panels. Furthermore, the FCSR offers a state-of-the-art confocal microscope, the Zeiss LSM 980 with AiryScan2, which provides multiplex spectral imaging performance with low phototoxicity and high speed; simultaneous spectral detection of multiple weak labels with high light efficiency; spectral flexibility with simultaneous channels; and the ability to use a wealth of fluorescent labels. Additionally, the FCSR offers experimental and panel design consultation, instrument and data analysis training, and seminars and educational workshops. Working closely with other Sylvester Shared Resources, the FCSR facilitates the development and implementation of multi-Shared Resource integrated workflows and new single-cell and spatial multiomics approaches that enable increasingly complex experimental design. Since 2022, the FCSR has been designated a Center of Excellence by the International Society for the Advancement of Cytometry (ISAC), an award that recognizes outstanding flow cytometry shared resources that follow best practices and demonstrate expertise in achieving performance standards.

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Sylvester Biostatistics and Bioinformatics Shared Resource

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The Sylvester Comprehensive Cancer Center (SCCC) Biostatistics and Bioinformatics Shared Resource (BBSR) provides state-of-the-art expertise and support in biostatistics, bioinformatics, clinical trial design, and statistical computing that is critical to the success of basic, clinical, translational, and population-based cancer research. The BBSR provides 1) statistical and bioinformatics services for study design, power analysis, sample size estimation, and feasibility assessment for basic, translational, and clinical research; 2) statistical and genomic data analysis services; 3) statistical review of clinical and population science research protocols; and 4) consultation and training. The BBSR offers assistance for biostatistics and bioinformatics needs through all phases of cancer research, from project design to execution, data analysis, interpretation of results, dissemination of findings, and data management and preservation. Biostatistics services include support for statistical design of clinical trials, population studies, and laboratory experiments; sample size determination and justification; statistical analysis plans; statistical support for data and safety monitoring of clinical trials (e.g., review of the statistical adequacy of study design, sample size calculation, and analytical planning); data analysis and interpretation; prediction model development using machine learning techniques; and database design and data management. Bioinformatics services include project design and analysis for high-throughput genomics data (e.g., RNA-seq, single-cell RNA-seq, ChIP-seq, ATAC-seq, microbiome, exome and whole genome sequencing, pathway, drug sensitivity, and advanced visualization), and the development of deep learning (e.g., convolution and graph neural networks) for project-specific analyses, including knowledge generation and predictions. The BBSR also provides education and training on both standard and novel biostatistical and bioinformatics methodologies relevant to data acquisition and analysis. Coordinating closely with the other Sylvester Shared Resources, the BBSR facilitates the development and implementation of analysis approaches that enable increasingly complex experimental design and high impact research results.

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Sylvester Cancer Modeling Shared Resource

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The Sylvester Comprehensive Cancer Center (SCCC) Cancer Modeling Shared Resource (CMSR) supports the design and execution of preclinical studies utilizing mouse models of human cancer. The CMSR provides an integrated array of high-quality services and extensive expertise for developing novel mouse models of human cancer; devising and implementing treatment protocols in a pre-clinical setting using these models; and evaluating responses to treatment using noninvasive imaging and histopathological analysis. CMSR services 1) support the development and use of experimental mouse models of human cancer, including generating human and mouse cancer cell line and human patient-derived xenografts (PDXs), genetically engineered mouse models, and humanized mouse models; 2) facilitate devising and implementing diverse cancer treatment protocols for pre-clinical studies using cancer models, including optimization of drug formulation and delivery, and drug toxicity and efficacy assessments, sample collection and biochemical assays for pharmacokinetics and pharmacodynamics (PK/PD) studies, blood counts and chemistry analysis, and total body and/or image-guided radiotherapy; 3) support diagnosis and evaluation of responses to treatment using a) noninvasive in vivo small animal imaging, including in vivo bioluminescence and fluorescence optical imaging, high-frequency ultrasound, structural and functional nuclear imaging (PET/SPEC/CT), and small animal magnetic resonance imaging (MRI); and using b) hematology, clinical chemistry, and histopathological analysis, including tissue processing, embedding, sectioning, tissue microarrays production, H&E staining and immunohistochemistry staining, whole slide scanning, and digital image storage and analysis. The CMSR offers the only small animal MRI, PET, and image-guided irradiation platforms, and the only automated immunohistochemistry instrument and digital research histopathology services at the University of Miami. The CMSR also now offers functional genomics services for mouse modeling using a CRISPR/Cas9 platform to screen sgRNA libraries and cell line production, and to generate novel genetic models more efficiently. The facility offers consultation, training, seminars, and educational workshops. The CMSR coordinates with other Sylvester Shared Resources to provide integrated services, including support for mouse model characterization and spatial multiomics research.

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Sylvester Biospecimen Shared Resource

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The Sylvester Comprehensive Cancer Center (SCCC) Biospecimen Shared Resource (BSSR) plays a vital role in advancing cancer-focused research by providing expertise and services for the collection, storage, and distribution of biological specimens. The BSSR has a diverse and growing biorepository of patient samples (e.g., tissue specimens, blood and other biofluids) and maintains an online clinically annotated biorepository database, providing a searchable public catalog of de-identified data that investigators can use to select specimens by tissue type, anatomical site, disease, demographics, and other metadata. The BSSR biorepository is a readily accessible resource for facilitating translational cancer research. The BSSR also provides services focused on facilitating non-interventional trials (NITs) that involve biospecimen collection, including protocol development and regulatory support, data management, participant recruitment and retention, and study-specific biospecimen acquisition, processing, and distribution. BSSR services include 1) screening, consenting, and enrolling patients for biospecimen collection studies; 2) plasma, buffy coat, serum, and peripheral blood mononuclear cell isolation and cryopreservation; 3) rapid acquisition of surgical tissue and fresh biopsies for development of patient-derived xenografts, cell cultures, and organoids; 4) clinical annotation, quality assessment and quality control of biospecimens; and 5) facilitating the retrieval and processing of tissue. The BSSR collects samples in both inpatient and outpatient settings. The facility also offers training, workshops, and seminars on best practices, innovative techniques, and the latest advances in biospecimen collection methodologies. The BSSR works closely with other Sylvester Shared Resources, including the Behavioral and Community-Based Research Shared Resource (BCSR), and with Sylvester's Clinical Research Services (CRS), the University of Miami's Hussman Institute for Human Genomics (HIHG) Biorepository Core, and the University's Department of Pathology and Laboratory Medicine, for coordinated support of biorepository-related oncology research.

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Sylvester Behavioral and Community-Based Research Shared Resource

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The Sylvester Comprehensive Cancer Center (SCCC) Behavioral and Community-Based Research Shared Resource (BCSR) provides services and expertise that facilitates a broad array of cancer research, including behavioral, psychosocial, clinical, translational, and population studies in both community and clinic-based settings. The leaders of the BCSR are national experts in cancer disparities, health equity, community engagement, qualitative and quantitative research methods, and translational science. The BCSR provides services that help maximize participation of diverse populations in Sylvester's interventional and non-interventional research studies. BCSR services include (1) coordinating the recruitment and retention of diverse study participants (e.g., diverse by gender, race, ethnicity, sexual orientation, language, and socioeconomic status) representative of Sylvester's South Florida catchment area (one of the most multicultural and multilingual regions in the US); (2) supporting the development of culturally and linguistically tailored study materials, including translation of informed consent forms and recruitment materials in Spanish and Haitian Creole; (3) facilitating data and laboratory specimen collection in clinical and community settings; and (4) assisting with the development and delivery of research interventions across the cancer continuum, from prevention to survivorship. The BCSR supports the development of culturally appropriate, innovative approaches to engage, recruit, and retain targeted populations for research studies in community settings, such as for prevention studies; provides participant screening for studies seeking to recruit cancer patients; and supports ongoing participant engagement towards retention in longitudinal studies. BCSR translation services help ensure that project study materials are appropriately aligned with cultural, linguistic, and other community-based needs and the preferences of a study's target population. BCSR data collection services include quantitative research services, such as developing and managing study-specific REDCap databases, and qualitative research services, including conducting focus groups, ethnographies, in-depth key informant interviews, and qualitative data analysis. BCSR services also include laboratory specimen (e.g., blood or saliva) collection for behavioral, community-based, and population studies. Moreover, the BCSR provides expert support for delivering evidence-based interventions (e.g., conducting culturally adapted cognitive based stress management for studies). Investigators can opt for support of selected research related activities (e.g., recruitment or translation) or for a full range of support, including study project management, operationalizing the study design, and intervention design, implementation, and delivery. The BCSR works collaboratively with other Sylvester Shared Resources, including the Biospecimen Shared Resource (BSSR), and with other Sylvester service groups, including Clinical Research Services (CRS) and Community Outreach and Engagement (COE), to develop and support coordinated approaches that engage and maintain community participation in Sylvester catchment area-relevant research studies..

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Sylvester Data Portal: a next-generation data management, analysis, and collaboration hub

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Designed and developed at the Sylvester Comprehensive Cancer Center, the Sylvester Data Portal (SDP) is an advanced multi-omics platform that streamlines the management of research and clinical datasets. The Portal employs cutting-edge software combined with hybrid-cloud computing technology and ensures compliance with FAIR standards, enhancing the findability, accessibility, interoperability, and reusability of securely stored and well-annotated datasets. Tailored to the needs of both computational and wet-lab researchers, the SDP features an intuitive interface and a robust API for efficient programmatic access.

At University of Miami (UM) Sylvester Comprehensive Cancer Center the SDP has integrated with the Onco-Genomics Shared Resource (OGSR) to enhance next-generation sequencing (NGS) services. This integration delivers advanced data management capabilities, including secure long-term storage, automated processing, and dynamic visualizations for data exploration and quality control. The Portal supports containerized and reproducible open-source bioinformatics workflows, facilitating demultiplexing tasks, as well as single-cell and bulk RNA-seq analyses. Currently, efforts are underway to expand the Portal's functionalities to include additional data types such as ATAC-seq and ChIP-seq, and analytical capabilities including integrated DNA analysis of germline and somatic variants.

In addition, the SDP system ingests and validates clinical data and metadata from genomic profiling vendors, ensuring its availability exclusively to IRB-approved researchers. Secure, compliant, multi-tiered interfaces, such as the SDP Clinical Dashboard, Clinical Browser, and Clinical Collections, offer varying levels of data granularity to the end-user, to support responsible data governance and stewardship.

Researchers are encouraged to leverage the SDP for processing and analyzing their data sets, now accessible via UM’s Secure Canes and VPN. Enhanced access security is provided through UM’s Single Sign-On (SSO) at https://sdp.miami.edu.

Tracking Shared Resources utilization in facilitating grant awards

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We have implemented a RedCap database to enhance the efficiency and effectiveness of tracking the use and impact of Shared Resources (SRs). As a National Cancer Institute (NCI)-designated cancer center, the Sylvester Comprehensive Cancer Center (Sylvester) is mandated to monitor the utilization of the Sylvester SRs by investigators. These SRs include the Flow Cytometry Shared Resource (FCSR), Onco-Genomics Shared Resource (OGSR), Biostatistics and Bioinformatics Shared Resource (BBSR), Behavioral and Community-Based Research Shared Resource (BCSR), Biospecimen Shared Resource (BSSR), Cancer Modeling Shared Resource (CMSR), and a new Proteomics Shared Resource (PSR; currently being established). The use of these SRs facilitates awards of new grants to members. We have implemented a REDCap database to track utilization of the SRs in supporting new grants awarded to Sylvester members. This database enhances tracking SR impact and informs strategic decisions and future investments in SRs.

Methods

1. *RedCap database implementation:* Set up a centralized database to track SR utilization efficiently.
2. *Standardized data entry:* Create uniform procedures for data entry to ensure accuracy and consistency.
3. *Integration with grant submissions and awards: Connect* the database with grant award processes to streamline resource identification.
4. *Data generation:* Capture data through targeted surveys to investigators.
5. *Performance metrics:* Develop metrics to analyze resource usage patterns.
6. *Stakeholder engagement:* Involve stakeholders in database development and seek their feedback for improvement.
7. *Continuous improvement:* Adapt and refine database based on evolving needs.

Outcomes:

1. Streamlined processes to identify SRs usage
2. Improved accuracy in tracking SRs usage
3. Data-driven resource allocation
4. Survey data captured on 26 recently awarded extramural grants
5. Identified the SRs that made a significant impact in research support

Current Status and Future Directions:

The database's implementation facilitates strategic decisions regarding SR investment. Future plans include expanding analytics, reporting capabilities, and integrating the system with other institutional databases to enhance shared resource management processes.

The role of Shared Resources in facilitating human and environmental surveillance for SARS-CoV-2

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The Sylvester Comprehensive Cancer Center Shared Resources, working closely with other shared resources at the University of Miami (UM), helped establish and provide coordinated support for a multi-institutional study on environmental monitoring of SARS-CoV-2, the virus that causes COVID-19 disease, including surface, air, and wastewater-based sampling. This project provides a case study of how a diverse array of shared resources can work together to facilitate human and environmental surveillance for SARS-CoV-2. The study is a collaborative effort between researchers at UM and Weill Cornell Medicine. The shared resources involved in this project include an array of Sylvester Shared Resources, including the Behavioral and Community Based Research Shared Resource (BCSR), Biospecimen Shared Resource (BSSR), and Onco-Genomics Shared Resource (OGSR), along with the Miami Clinical and Translational Science Institute (CTSI) Biostatistics Collaboration and Consulting Core (BCCC), and the Miami Center for AIDS Research (CFAR) Laboratory Sciences Core. UM deployed an extensive human surveillance testing, tracking and tracing system to monitor students, faculty, and staff. This study extended these efforts to encompass wastewater surveillance of SARS-CoV-2 from buildings on all the UM campuses, the city of Miami and surrounding county, public schools in the county, and UM-affiliated hospitals. The goals of this study are to generate, optimize, standardize, and compare SARS-CoV-2 human and wastewater surveillance with various sampling, processing, detection, and analysis techniques. The environmental viral surveillance data is integrated with community and hospital COVID-19 disease prevalence, with the aim of developing predictive models of local and regional level spread of the disease. The results from this effort are informing public health strategies on local and community levels and may serve as a model more broadly for existing and emerging pathogens. We present here lessons learned, current results, and future directions, with a focus on the role and impact of the shared resources.

Biostatistics Collaboration and Consulting Core (BCCC)

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The Biostatistics Collaboration and Consulting Core (BCCC) is organized as a shared resource and operates as a cost center within the Division of Biostatistics in Department of Public Health Sciences. The mission of the BCCC is to provide high quality statistical support for clinical and translational research. BCCC statisticians are available for ongoing statistical collaborations and short-term consulting support to faculty, staff, and students at the University of Miami Miller School of Medicine and throughout the University of Miami. BCCC statisticians are available for collaboration at all stages of research, including but not limited to preparation of grants and contracts, data analysis, and manuscript preparation. Services include: 1) *Support activities:* study design, randomization schemes, statistical analysis plan (SAP), sample size estimation or power analysis, statistical analysis, consulting statistician for staff and professional meetings, abstract/manuscript preparation, grant preparation, survey/questionnaire design, protocol review, safety committee, grant review, and REDCap. 2) *Support options:* a) Grants: biostatisticians are available to provide support in grant development and support funded research as % FTE on a grant budget; b) short-term activities: statistical support on a short-term project specific basis; and c) ongoing collaborative partnerships: statistical support under this structure is designed to ensure available support to an investigator or department/center and foster collaboration and team science. 3) *Educational activities:* the BCCC also offers numerous educational activities, including Biostatistics Roundtable Sessions in which investigators can bring specific statistical questions, Biostatistics Seminars which address a specific area or issue, and Biostatistics Clinics where investigators can bring quick questions without a scheduled appointment. 4) *CTSI support:* BCCC offers biostatistics support to clinical and translational researchers through the Research Design and Biostatistics component of the Miami CTSI. The Miami CTSI catalyzes the development, demonstration, and dissemination of scientific discoveries to improve the health of our community, address health disparities, and promote health equity.

Contact:
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Pathology Research Resources: Comparative Pathology Laboratory and Histology Research Laboratory

C. Cray[1], M. Chavarria[1], A. Bulgin[1]

[1]Department of Pathology and Laboratory Medicine, University of Miami Miller School of Medicine, Miami, FL, USA

The **Pathology Research Resources** (PRR) were established in 1982 by veterinary pathologists, with the goal of providing testing and services for researchers using animal models of disease. Today, the PRR includes two core laboratories. The **Comparative Pathology Laboratory**, staffed by 8 technicians and managed by a licensed medical technologist with over 20 years of experience, processes over 35,000 clinical pathology samples annually. The staff has expertise in routine hematology and biochemistry testing as well as specialized immunoassays. The **Histology Research Laboratory**, staffed by two licensed histotechnologists with over 20 years of combined experience, prepares more than 25,000 slides annually and can aid in tissue processing, frozen sectioning, and special staining.

Website:
https://med.miami.edu/departments/comparative-pathology/divisions/pathology-research-resources

Laboratory for Clinical Bioscience (LCB): research laboratory services

R. Valiathan[1], Y. Carattini[1] and D. Andrews[1]

[1]Department of Pathology and Laboratory Medicine, University of Miami Miller School of Medicine, Miami, FL, USA

The Laboratory for Clinical and Bioscience (LCB) has served as a core research facility at the University of Miami (UM) since 1996. Our lab supports ongoing research funded through federal, state, and local agencies, investigator-initiated studies, as well as through collaborations with industry partners. A core function of the LCB is to facilitate clinical research projects through testing, processing, and shipping of clinical research specimens as well as offering sample repository services. The LCB can divide primary samples into components needed for routine clinical testing and/or research purposes. We can facilitate any routine or specialty clinical laboratory test performed locally at the Department of Pathology and Laboratory Medicine (DPLM), UHealth Tower, Sylvester Comprehensive Cancer Center, other UM core laboratories, and external laboratories.

The LCB is equipped with the Luminex xMAP INTELLIFLEX System, an advanced and versatile multiplexing platform for protein and gene expression analysis, with the capacity to detect up to 500 cytokines, chemokines, and growth factors in a variety of sample types. We can also perform traditional ELISA testing for virtually any commercially available biomarker.

Additionally, we have the Roche Cobas 5800 analyzer, a clinical grade nucleic acid testing system that performs both qualitative and quantitative testing for many infectious diseases, including BKV, CMV, EBV, HBV, HBV, HCV, HIV-1, HIV-1/HIV-2 Qual, SARS-CoV-2 Qual, HPV, CT/NG, and TV/MG. The LCB also has quantitative PCR (qPCR, QuantStudio 7) and digital PCR (dPCR, QIAcuity 5-plex System) capabilities for custom assay development and validation. Our dPCR system is designed to deliver precise and multiplexed quantification for mutation detection, copy number variation (CNV) and gene expression studies.

The mission of the LCB is to provide investigators with high-level expertise and guidance for projects involving clinical samples, from project inception to achieving end-goals. We help investigators identify cost-effective and efficient workflows to promote ongoing research, discovery, and innovation.

The John P. Hussman Institute for Human Genomics (HIHG) Center for Genome Technology (CGT)

A. Griswold[1,2], W. Hulme[1], I. Konidari[1], J. McCauley[1,2], P. Whitehead[1,2]

[1]John P. Hussman Institute for Human Genomics, University of Miami Miller School of Medicine, Miami, FL, USA; [2]Department of Human Genetics, University of Miami Miller School of Medicine, Miami, FL, USA

The Center for Genome Technology (CGT), a part of the John P. Hussman Institute for Human Genomics (HIHG), was established in January 2007 at the University of Miami, Miller School of Medicine. The HIHG occupies 72,000 square feet of contiguous space in the Biomedical Research Building (BRB), shared with the CGT and the Department of Human Genetics. Led by Director Jacob McCauley, Ph.D. and Associate Director, Anthony Griswold, Ph.D., the CGT is dedicated to advancing scientific research by providing cutting-edge genomics services and expertise. Our mission is to empower students, scientists, and researchers with the tools and expertise needed to unlock the mysteries of genetics and genomics. Whether you're a seasoned researcher or new to the field, our facility, working closely with the HIHG Center for Genetic Epidemiology and Statistical Genetics to support experimental design and bioinformatic analysis, offers a range of services to meet your needs.

At our *Sequencing Core Facility*, we house platforms integral to genomic research. The Illumina NovaSeq X Plus is the pinnacle of high-throughput short-read sequencing, allowing for affordable, high-throughput whole genome sequencing and other sequencing applications. The PacBio Revio and Oxford Nanopore PromethION platforms generate exceptionally long reads with high accuracy and direct methylation detection. This allows for resolution of repetitive regions, structural variation, large-scale genomic rearrangements, inversions, and translocations previously missed by short reads. The 10x Genomics Chromium X enables single-cell sequencing, unlocking the secrets of individual cells within complex tissues. Profile millions of cells simultaneously, under various conditions, and at genome-scale.

At our *Genotyping Core Facility*, whether you're investigating genetic variations, conducting genome-wide association studies (GWAS), or exploring non-human genotyping, we have decades of experience to guide your research, and your budget. GWAS technologies, such as Illumina Infinium arrays, play a crucial role in unraveling the genetic basis of complex traits and diseases. Our team specializes in designing tailored genotyping solutions for both large-scale and small-scale projects. We'll work closely with you to select the technology and price point that best aligns with your scientific question and budget.

The goal of our *Biorepository Core Facility* is to create a readily accessible biological specimen bank in support of clinical trials and other biomedical research projects. Services include protocol preparation; specimen collection, processing, storage, and distribution; laboratory result data management and data analysis; and receipt and shipment of specimens to other research sites. The facility boasts the Azenta BioStore II, which is a fully automated -80^{o}C sample storage system, accommodating a wide range of labware types. Overcoming the challenge of storing and retrieving sensitive samples, this system ensures consistent temperature maintenance throughout the storage and retrieval processes. In addition, the use of highly specialized liquid handling equipment (such as the Hamilton Vantage platform) allows the processing of more samples in less time, minimizing the risk of error or variability in laboratory processes. The Biorepository Core Facility serves as a centralized biological sample bank for several international and cross-institutional collaborative studies.

The John P. Hussman Institute for Human Genomics (HIHG) Center for Genetic Epidemiology and Statistical Genetics (CGESG) Statistical and Bioinformatics Consulting Core

A. Griswold[1,2], D. Van Booven[1], B. Kunkle[1,2], F. Rajabli[1,2], G. Beecham[1,2], E. Martin[1,2,3]

[1]John P. Hussman Institute for Human Genomics, University of Miami Miller School of Medicine, Miami, FL, USA; [2]Department of Human Genetics, University of Miami Miller School of Medicine, Miami, FL, USA; [2]Department of Public Health Sciences, University of Miami Miller School of Medicine, Miami, FL, USA

The *Center for Genetic Epidemiology and Statistical Genetics (CGESG)* at the John P. Hussman Institute for Human Genomics (HIHG) includes faculty and staff who are leaders in computational genetics and conduct cutting edge research methods to discover and map the genes responsible for diseases in humans and in a variety of model organisms. The center pulls together expertise in genetic epidemiology, statistical genetics, and bioinformatics to advise on experimental design and assist with data analysis on a variety of projects.

The CGESG is led by Eden Martin, PhD, a statistical geneticist with experience in theoretical methods development and applied research known for her development of several popular association methods. The CGESG houses additional divisions that support the overall mission including the *Division of Genetic Epidemiology* led by Brian Kunkle, PhD, the *Division of Research Informatics* led by Gary Beecham, PhD, and Farid Rajabli, PhD, the *Division of Statistical Programming* led by Mike Schmidt, PhD, and the *Statistical and Bioinformatics Consulting Core* led by Anthony Griswold, PhD. These divisions, along with a staff of bioinformaticians and statistical analysts, offer a range of expertise to assist in your research.

The *Division of Genetic Epidemiology* applies statistical approaches in the conduct of research to identify genetic and gene-environmental interaction causes of human diseases. Experienced analysis teams composed of statistical analysts who work closely with project PI's on study design, analysis conception, implementation and interpretation, assisting in data management, analysis and reporting of results. Additionally, the Division works closely with the *Division of Statistical Programming* to maintain and update data processing and statistical analysis software and pipelines.

The *Division of Research Informatics* consists of cross-discipline teams working to help improve the understanding of genetic variation in human health and disease. This includes an interdisciplinary group of bioinformatics scientists, software developers and application support engineers providing informatics and bioinformatics support for applications in genomic research. This includes development of research applications, management and analysis of large and diverse datasets, maintenance and quality control of the next-generation sequence data pipeline and development of clinical and medical genetics databases, software and interfaces.

The *Statistical and Bioinformatics Consulting Core* provides analytic support for small and large-scale genomics projects. We can assist in all aspects including study design, quality control, statistical analysis, interpretation, and assistance with manuscript generation. Working closely with the HIHG Center for Genome Technology (CGT), the CGESG is prepared to assist with a variety of applications, including whole genome/targeted DNA sequencing, RNA transcriptomics, single cell sequencing analyses, epigenomics approaches, and any other application to assist in your research.

The John P. Hussman Institute for Human Genomics (HIHG) Induced Pluripotent Stem Cell Core

B. DeRosa[1], L. Coombs[1], L. Rothschild[1], D. Dykxhoorn[1,2]

[1]John P. Hussman Institute for Human Genomics, University of Miami Miller School of Medicine
[2]Dr. John T. Macdonald Foundation Department of Genetics, University of Miami Miller School of Medicine

The mission of the John P. Hussman Institute for Human Genomics (HIHG) Induced Pluripotent Stem Cell (iPSC) Core is to support researchers in their work by offering services, instrumentation, infrastructure, technologies, and expertise to enable the implementation of iPSC-based models of human disease.

The iPSC Core facility is in the Biomedical Research Building on the UM medical campus and is a part of the HIHG Center for Human Molecular Genetics. The HIHG iPSC Core provides services for the derivation and characterization of iPSC lines from patient blood and tissue samples. All iPSC lines obtained from the Core are fully validated according to standard operating procedure. Our robust quality control testing protocol assesses sterility, pluripotency, loss of episomal reprogramming vectors, chromosomal abnormalities, and mycoplasma. The HIHG iPSC Core also provides hands-on training and consultation services for the incorporation of iPSC-based approaches in disease modeling, including the development and optimization of protocols and workflows for differentiating a variety of disease-relevant cell types. Additionally, iPSC Core staff have extensive expertise in the genetic manipulation of iPSC lines using CRISPR/Cas9-based gene-editing to create or correct disease mutations.

Our facility includes two large, dedicated tissue culture suites, each containing multiple full-sized BSL2 hoods and CO_2 incubators, a biocontained fluorescent microscope for imaging and sterile manipulation of iPSC cultures, as well as two biocontained dissecting microscopes. The HIHG iPSC Core is equipped with an Amaxa 4D-Nucleofector, a Miltenyi MACSQuant Analyzer 10 flow cytometer, an Axion Maestro multielectrode array reader, a Tecan Spark 10M multimodal plate reader with Hydroflex unit, Sartorius IncuCyte SX5 and ZOOM live cell imaging systems, and a fully motorized Keyence BZ-X810 all-in-one fluorescent microscope for multicolor optical sectioning microscopy that is equipped with an environmental control chamber for live cell imaging. Additionally, the iPSC Core is conveniently located steps away from the HIHG microscopy facility, which houses multiple confocal and fluorescent microscopes, including a Zeiss LSM 780 laser scanning confocal microscope with Coherent Chameleon Laser, a AxioObserver Z.1 spinning disk confocal microscope, a AxioObserver laser capture microdissection microscope, and a Thermo Scientific ArrayScan XTI High Content Analysis (HCA) Reader.

Frost Institute for Data Science and Computing (IDSC): Pegasus and Triton supercomputers

E. Maradzike[1], N. Alberti[1], R. Pasupuleti[1], D. Kolesov[1], E. Marin[1], W. Baringer[1], R. Vadapalli[1,2]

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High-performance computing clusters play a pivotal role in advancing scientific research, enabling complex simulations, data analysis, and computational modeling across various domains. This poster presents an overview of the Pegasus and Triton computational clusters deployed at the Frost Institute for Data Science and Computing, each designed to cater to specific research needs. For more information after the poster session, please contact us at hpc@ccs.miami.edu.

Frost Institute for Data Science and Computing (IDSC) advanced computing resources

N. Alberti[1], E. Maradzike[1], R. Vadapalli[1,2], J. Baringer[1], R. Pasupuleti[1]

[1]Frost Institute for Data Science and Computing, University of Miami, Miami, FL, USA; Department of Electrical and Computer Engineering, College of Engineering, University of Miami, Miami, FL, USA

Frost Institute for Data Science and Computing (IDSC) services and resources are available to everyone: students, faculty, researchers, the public and private sector, nonprofits, industry, and beyond. This poster displays the numerous IDSC services, including software, storage, hosted machines, consultation, and grants. Our collaborative approach brings together talented minds at the interface of disciplines to harness the University of Miami's AI-ready TRITON and PEGASUS supercomputers. As a member of the University of Miami's Frost Institutes of Science and Engineering, IDSC is focused on utilizing the extraordinary potential of data science to tackle society's greatest challenges. From creative student projects to innovative industry-shaping ideas, IDSC services and resources can help you achieve your research, training, or business goals.

Miami Center for AIDS Research (CFAR) Laboratory Sciences Core

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The primary focus of the CFAR Laboratory Sciences / Advanced Technology Core is to conduct innovative HIV/AIDS research, support our funded research base, foster collaborations between basic and clinical investigators, and provide mentorship to early-stage investigators as well as to graduate students and rotating undergraduate students. The core functions as a *one-stop shop*, allowing investigators to easily access immunology, virology, and genomics services to fulfill their needs for high-demand and specialized assays. Additionally, the core provides mentoring support, such as consultation, training, and technical assistance for investigators (ranging from students to established researchers) to address their needs for study design, generation of preliminary data, data for publications, and assistance in grant application development. The core offers fee-based services, consultations and collaborative partnerships, which involve the active involvement of core investigators in the scientific process, including study design, assay optimization, and data analysis. Our fee-based services include sample processing, storage, shipping, and HIV reservoir assays. For *sample processing*, the core can isolate immune cells, plasma, and serum from blood and body fluids. Our sample storage services encompass short and long-term storage with comprehensive tracking and retrieval systems, 24/7 monitoring to ensure sample integrity, and multiple storage environments, including -20^{o}C, -80^{o}C, -150^{o}C, and liquid nitrogen. The core participates in the PBMC cryopreservation quality assessment (IQA) programs administered by NIAID/DAIDS. Furthermore, the core provides access to instruments, such as the Cytek Aurora Flow cytometer and Sony Cell sorter, and an ELIspot/Fluorospot reader, on a fee-based basis. In terms of collaborative research, core investigators collaborate with principal investigators (PIs) to develop their experiments. This encompasses high-dimensional *flow cytometry services* for immunophenotyping and the characterization of antigen-specific immune cell phenotype and function, cell sorting, multiplexed biomarker analysis, antibody assays targeting influenza, HIV, Mpox, and SARS-CoV2, as well as ELIspot/Fluorospot for assessing antigen-specific T and B cell function. The core also offers *virology services*, such as single genome amplification for phylogenetic analyses. Our *genomics services*, in collaboration with the Sylvester Onco-Genomics Shared Resource (OGSR), includes single-cell RNA-seq, shotgun sequencing for microbiome analysis, and single-cell multiomics involving combined transcriptional (Sc-RAN-seq), epigenetic (ATAC), repertoire (TCR/BCR), and surface protein analysis. Key indicators of the core's activities include cost recovery, grants submitted, training and mentoring support for pilot awardees, early-stage investigators (ESIs), and investigators new to HIV research, as well as publications that acknowledge core support. The core welcomes requests for consultations at all stages of the study, including during project development. Services and free consultations can be requested online at https://redcap.miami.edu/surveys/?s=FRJL83YYR7.

Center for AIDS Research (CFAR) Clinical Sciences Core

N. Fonseca Nogueira[1], P. Raccamarich[1], A. Diaz Vazquez[1], B. Laine[1], M. Gonzalez[1], M. Fernandez[1], D. Diaz[2], T. Liu[2], S. Messinger[2], S. Doblecki-Lewis[1], C. Mitchell[3], M.L Alcaide[1]

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[2] University of Miami Miller School of Medicine, Dept. of Public Health Sciences, Division of Biostatistics, Miami, FL.
[3] University of Miami Miller School of Medicine, Dept.of Pediatrics, Division of Infectious Diseases, Miami, FL, USA.

Under the leadership of Dr. Maria Alcaide, Dr. Charles Mitchell, and Dr. Susanne Doblecki-Lewis, the Clinical Sciences Core (Core C) of the Miami CFAR provides clinical resources and scientific leadership for the largest network of HIV investigators in South Florida. These efforts are supported through the provision of (1) state-of-the-art facilities for implementation of clinical and translational studies and support for clinical assessments, collection of biological samples, and data access; (2) research design methodology and technical assistance to meet regulatory standards in human subjects research, data collection, and biological specimens; and to facilitate training/education of investigators in clinical research; and (3) research design and biostatistical support through the CFAR Biostatistics Sub-core of the Biostatistics Collaboration and Consulting Core guided by Dr. Shari Messinger, Dr. Daniel Diaz, and Tianhao Liu. Core C supports HIV research in adults through fully equipped research units and mobile programs. Core facilities include the Infectious Diseases Research Unit supported by HIV/AIDS and Emerging Infectious Diseases Institute (HEIDI) and at Jackson Memorial Hospital and adjacent to the Special Immunology Clinic, the largest outpatient clinic for people with HIV in Florida, allowing efficient clinic recruitment and enrollment into diverse research projects and linking potential participants to ongoing cohort studies and clinical trials. In addition, CONNECT is a 32' mobile unit deployed in November 2023 and fully equipped with interview & examination rooms, phlebotomy area, refrigerator, and bathroom. CONNECT is an avenue for collaborative opportunities to investigators aiming to break down barriers to research participation by bringing research directly to community members. Core C services range from provision of research space, phlebotomy, blood processing, urine/saliva/hair/mucosal swabs collection/processing, specimen storage/shipping, study coordination, injection of medications, administration of rapid tests (e.g., COVID, pregnancy, HIV), fibroscans, EKGs, PFTs, anthropometry, biostatistical support (e.g., study design, power & sample size calculations, data analyses, grant submissions), REDCap survey design, access to large databases (e.g., CareWare, CNICS, MWCCS, STAR), to many others. With this extensive network and services available, Core C promotes high impact HIV translational and multidisciplinary research in partnerships with clinical, socio-behavioral, and basic scientists with the goal of improving health outcomes for people living with or at-risk for HIV.

Clinical Translational Research Site (CTRS)

C. Sandoval[1], J. Potter[1,2], M. Alcaide[1,3,4]

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The Clinical Translational Research Site (CTRS) is an outpatient facility that operates under a fee-for-service model as part of the Office of the Executive Dean for Research (EDR) at the University of Miami Miller School of Medicine (UMMSOM). We work closely with investigators to understand their needs and to provide a centralized clinical research infrastructure with highly skilled and experienced clinical research nurses, coordinators, and medical assistants. Our Clinical Research Nurses are credentialed to provide services to specific research protocols at Jackson Health System. The CTRS offers clinical research services to UM investigators across multiple disciplines. We provide guidance, training, facilities, tools, and services to support high-quality clinical research. The CTRS provides clinical research services for federal, foundation, and industry-sponsored protocols at multiple locations on the medical campus. Our laboratories at all CTRS locations operate under CLIA certificates. For more information about the CTRS, please contact us at CTRSReservations@miami.edu.

We can help you with:

- Study design and feasibility
- UHT / CTRS ancillary review committee approvals
- Clinical research nursing and coordinator services
- Administration of research tests and procedures
- Data collection and data entry
- Collection, processing, and shipping of biological samples

We provide multiple services:

- Clinical Research Coordinator services
- Clinical Research Nursing assistance with various medical procedures (e.g., lumbar punctures, biopsies)
- Medication administration/ infusions (IV, oral, SQ injections)
- Pharmacokinetic studies (PKs)
- Oral and IV glucose tolerance testing (OGTT, IVGTT)
- Standardized meal tolerance test (MMT)
- Peripheral blood mononuclear cell (PBMC) isolation.
- Vital signs, height, and weight assessment
- Phlebotomy
- Electrocardiogram (EKG)

The Center for HIV and Research in Mental Health (CHARM)

R. Smith-Alvarez Chinigo[1], M. Keita[1], R. Schmidt[2], S. Gonzalez[2], Y. Rivera[3], T. Sumpter[3]. M. Ilmet[1], A. Leon[1], A. Garcia[3], D. Feaster[2], D. Jones[4], S. Dale[1], V. Behar-Zusman[3], A. Harkness[3], S. Safren[1]

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The mission statement of the Center for HIV and Research in Mental Health (CHARM) is "To promote, develop, and support high-impact, high-quality, community-engaged HIV research addressing mental health and related disparities as a scientific, strategic, and mentoring resource to end the HIV epidemic." The *Administrative (Admin) Core,* as an organizational hub, provides Center leadership, strategic planning, and coordinates cross-Core activities. The *Developmental Core* awards pilot studies and mentors early-stage investigators and investigators new to HIV/mental health research. The *Methods Core* provides innovative research design, biostatistical (e.g., multilevel modeling, machine learning, geospatial analysis), data management, and qualitative research expertise and maintains the data elements for the Center's consent-to-contact databases and a REDCap measures library. The *Mental Health Disparities and Community Engagement (MHD-CE) Core* houses our community engagement activities and provides expertise and resources to promote culturally competent approaches, tools, and interventions for ethical, multi-level, community-engaged research addressing MH and HIV-related health disparities. The *Equitable Implementation Science (EIS) Core* provides design and implementation science resources and expertise to extend the equitable reach of evidenced-based interventions.

Molecular Electron Microscopy Center of The Frost Institute for Chemistry and Molecular Science

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The Molecular Electron Microscopy Center (MEMC) is a developing core resource of The Frost Institute for Chemistry and Molecular Science (Frost Institute) at the University of Maimi (UM). The goal of the MEMC is to provide state-of-the-art instrumentation for imaging and structure analysis, from atoms to cells. Early access to selected EM services is currently available. Additional cryoEM resources and services will come online this year. The MEMC is open to all scientists at the University of Miami and other institutions in the United States. Moreover, given the geographic location of Miami, scientists from across Central and South America are expected to use our instruments.

Located on the first floor of the Frost Building on the UM Coral Gables campus, the MEMC will offer state-of-the-art ThermoFisher electron microscopes, including a Glacios 2 for screening soft beam-sensitive biological materials, as well as hard materials; Krios G4 for molecular resolution imaging of frozen-hydrated macromolecular samples; Spectra for atomic resolution imaging of hard materials; and Talos 200X for training purposes. The second floor of the Frost Building will house an Aquilos 2 microscope for correlated light and electron microscopy and fib-milling of cells and tissues to enable electron cryotomography. The MEMC microscope rooms are designed to minimize vibration, acoustic interference, stray magnetic fields, and fluctuations in temperature and humidity (maintained at <30%). The Krios G4 and Spectra have been delivered and will be assembled sequentially. *The Glacios 2 (the first in the United States) has been installed and is now operational.*

Please contact Mark Yeager, M.D., Ph.D., Executive Director of the Frost Institute (yeager@miami.edu or text (858) 344-1834), to discuss potential projects.

Link: https://ficms.miami.edu/research/molecular-electron-microscopy-core

Representative publications:

Leonhardt SA, Purdy MD, Grover JR, Yang Z, Poulos S, McIntire WE, Tatham EA, Erramilli S, Nosol K, Lai KK, Ding S, Lu M, Uchil PD, Finzi A, Rein A, Kossiakoff AA, Mothes W, Yeager M. Antiviral HIV-1 SERINC restriction factors disrupt virus membrane asymmetry. *Nature Commun.* 14: 4368 (2023). PMID 37474505.

Adair BD, Xiong JP, Yeager M, Arnaout M. Cryo-EM structures of full-length Integrin αIIbβ3 in native lipids. *Nature Commun.* 14: 4168 (2023). PMID: 37443315

Khan, AK, Jagielnicki M, McIntire WE, Purdy MD, Dharmarajan V, Griffin PR, Yeager M. A steric “ball-and-chain” mechanism for pH-mediated regulation of gap junction channels. *Cell Reports* 31: 107482 (2020). PMID 32320665.

Marques MA, Purdy MD, Yeager M. CryoEM maps are full of potential. *Curr. Opin. Struct. Biol.* 58: 214-2,23 (2019). PMID 31400843

Miami Project Transmission Electron Microscopy (TEM) Core

V.W. Almeida[1], W.D. Dietrich[1,2]

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As the only core of this type for the entire University of Miami, the Transmission Electron Microscopy (TEM) Core has had a long-standing tradition of providing quality electron microscopy services for all interested investigators. Electron microscopy has been an invaluable tool for those investigators whose research projects require high magnification and high-resolution images of cellular ultrastructure and nanoparticles. Our dedicated staff has the expertise needed to advise investigators on how EM can further advance their research goals. We are committed to providing the best service possible, from careful fixation of the tissue for optimal preservation to acquiring high quality images in the electron microscope. The TEM Core operates under the aegis of The Miami Project to Cure Paralysis and maintains two JEOL JEM-1400 transmission electron microscopes, both equipped with digital cameras. The JEOL has received the Clinical Laboratory Improvement Amendments (CLIA) Certification by the State of Florida Agency for Health Care and Administration, thereby accrediting it for imaging clinical specimens. The TEM Core is capable of handling many types of samples and utilizing several different tissue preparations, such as: resin embedding of biological tissues as well as cell cultures and pellets; semi-thin (1µm) sectioning for light microscopy analysis; thin (100nm) sectioning for electron microscopy analysis; loading of exosomes and nanoparticles onto Formvar-coated carbon grids for electron microscopy analysis; and specialty resin (LR White) embedding and sectioning of specimens for immunogold labeling of thin sections on nickel grids.

Miami Project High Content Screening Core: if you can stain it, we can obtain it

Y. Shi[1], H.A. Ali[1,2], W.D. Dietrich[1,2]

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High content analysis (HCA) is an approach that combines automated imaging, quantitative image analysis, and machine learning to yield hundreds of phenotypic measurements (hence high content) on tissues, organoids, or even individual cells. It is a powerful tool for any research program utilizing cellular models. When implemented in a high-throughput format, high content screening (HCS) is suitable for large-scale applications such as drug discovery and systems biology. The *High Content Screening (HCS) Core* of the Miami Project to Cure Paralysis (Miami Project) at the University of Miami Miller School of Medicine, brings wo□d class assay development and phenotypic screening technology to researchers in both academia and industry. Major instruments in the HCS Core include an Opera Phenix HCS confocal system and a Janus high-throughput automated liquid-and-plate-handling robot from Perkin Elmer. From live to fixed cultures, 2D to 30, widefield to confocal, antibody to dye-based, we work with you to develop the assays and analytical pipelines that best suit your needs.

Overview of the Miami Project Viral Vector Core

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[2]Department of Neurological Surgery, University of Miami Miller School of Medicine, Miami, FL, USA

The Miami Project to Cure Paralysis (Miami Project) Viral Vector Core (VVC) assists researchers interested in gene transfer via viral vector methods. We specialize in generating lentiviral and adeno-associated virus (AAV) viral particles. The VVC provides diverse serotyping and pseudotyping choices, with our team available to help researchers select and design viral vectors. Additionally, we maintain a selection of stock viruses available for purchase by the vial at affordable rates, including GFP- and mCherry-expressing lentiviral and AAV particles. Our AAV particles undergo FPLC purification to yield high-titer particles with minimal contaminants (e.g., AAV8 titer up to ~1014 GC/mL). For custom viral particles, researchers are required to supply the VVC with a high-quality maxiprep of the transfer plasmid intended for packaging into viral particles. The production of both lentiviral and AAV viral particles typically takes around 2 weeks. The VVC generates viral particles of high quality and titer at prices more affordable than those often found with commercial providers. Moreover, the VVC offers substantial savings over the costs an individual laboratory would incur producing viral particles independently, taking into account expenses related to reagents, equipment, facilities, and labor (including troubleshooting), as well as time.

Miami Project Imaging Core

Y. Shi[1], J. Lee[1,2], W.D. Dietrich[1,2]

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The *Imaging Core* at *The Miami Project to Prevent Paralysis* provides state-of-the-art equipment and services available to all UM researchers. The Imaging Core offers training and assistance in a range of light microscope techniques including spinning disk confocal, super resolution imaging, lightsheet imaging of cleared organ and stereology systems. The Core also offers image analysis software (Imaris neuroscience package) including 3D image rendering, surface creation, spot detection and filament tracing. The Imaging Core focuses on providing state-of-the-art digital imaging technologies to ensure high-quality interdisciplinary data acquisition across multiple laboratories.

Gallery of The Miami Project, Diabetes Research Institute, and BioNIUM

H.A. Ali[1,2], V. Almeida[1], M. Boulina[3], Y. Shi[1], B. Motlagh[4]

[1]The Miami Project to Cure Paralysis, University of Miami Miller School of Medicine, Miami, Florida, USA; [2]Department of Neurological Surgery, University of Miami Miller School of Medicine, Miami, Florida, USA; [3]Diabetes Research Institute, University of Miami Miller School of Medicine, Miami, FL, USA; [4]Dr. John T. Macdonald Foundation Biomedical Nanotechnology Institute, University of Miami, Miami, FL, USA

The Diabetes Research Institute (DRI) Analytical Imaging Core Facility (AICF), The Miami Project Imaging, High Content Screening, and the Transmission Electron Microscopy (TEM) Cores, and the BioNIUM SEM Core are imaging core facilities at the University of Miami (UM) medical center that are available on a fee-for-service basis to the UM and external community. The AICF has two Leica SP5 confocal systems for high resolution imaging of fixed samples or live animal imaging. The Facility has an automatic slide scanner for high quality fluorescent and brightfield scanning of fixed slides and a Laser Microdissection System, which allows the isolation of specific regions of interest in tissue or individual cells. The Miami Project Imaging Core at the Lois Pope LIFE Center is equipped with Andor Dragonfly spinning disk confocal with super resolution capability, 3i lightsheet microscope, and stereology systems. The Core also offers image analysis software (Imaris neuroscience package) including 3D image rendering, surface creation, spot detection and filament tracing. The TEM Core at the Lois Pope LIFE Center is the only TEM facility at UM. The Core offers embedding, sectioning, and imaging of block tissue, cell cultures and pellets. TEM is used for high-magnification and high-resolution pictures of cellular ultrastructures and nanoparticles. The High Content Screening (HCS) Core brings world class assay development and phenotypic screening technology to researchers in both academia and industry. From live to fixed cultures, 2D to 3D, widefield to confocal, antibody to dye-based, the HCS Core works with users to develop the assays and analytical pipelines that best suit their drug discovery and biomedical research needs. The Dr. John T. Macdonald Foundation Biomedical Nanotechnology Institute (BioNIUM) is an institute for interdisciplinary science, focused on the application of nanotechnology to medical care at the University of Miami. With capabilities for thin film deposition, film etching & characterization, photolithography, electron beam lithography, and scanning electron microscopy, this facility supports research in biomedical devices, electronic chips, sensors and biosensors, MEMS, NEMS, BIOMEMS, nanomaterials, characterization, and packaging.

Advancing Research with the DRI Analytical Imaging Core Facility

M. Boulina[1], A.J. Mendez[1,2]

[1]Diabetes Research Institute, University of Miami Miller School of Medicine, Miami, FL, USA; Medicine, Department of Biochemistry and Molecular Biology, Division of Endocrinology, Diabetes and Metabolism, University of Miami Miller School of Medicine, Miami, FL, USA

The Diabetes Research Institute (DRI) Analytical Imaging Core Facility (AICF) at the University of Miami plays a pivotal role in advancing scientific discovery. Our facility provides cutting-edge technologies, specialized equipment, and expert services that foster collaboration and enhance research productivity.

The following instruments are hosted at the AICF:

- Leica STELLARIS 5 is a cutting-edge confocal microscope platform that sets a new standard for high-quality imaging and information generation. Features include an Integrated White Light Laser (WLL). The STELLARIS 5 is the only confocal system with an integrated next-generation WLL, which allows simultaneous unrestricted use of multiple single excitation lines across the spectrum, expanding options for fluorophore combinations and labels 405 nm to 850 nm into the NIR range. This instrument also has TauSense technology, which extracts an extra layer of information (lifetime of the dye) from every sample, enabling reduction of background noise and use of close-colored dyes.

- Olympus VS120 Virtual Slide Microscope allows scanning of whole slides in fluorescent and brightfield mode (IHC, HE) with minimal hands-on time, and the generation of publication-quality images at x2-x40 magnification.

- Leica LMD (laser microdissection system) enables precise isolation of specific live cells or tissue regions from slides for downstream analysis, including downstream DNA, RNA and protein sequencing.

- Leica TCS SP5 UPRIGHT Confocal Microscope delivers bright, noise-free images with minimal photo damage at high speed and is used in whole animal and tissue live imaging. The SP5 has an animal holder for intraocular access and a gas anesthesia unit for mouse work.

The AICF provides assistance with automatic image quantification, including complex custom pipelines, and provides guidance on how to get the best possible, scientifically accurate data.

DRI Flow Cytometry Core

O. Umland[1], A.J. Mendez[1,2]

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The mission of the Diabetes Research Institute (DRI) is to develop and apply the most promising research to treat and cure those now living with diabetes in the fastest, safest, and most efficient way possible. The *DRI Flow Cytometry Core*, directed by Dr. Oliver Umland, PhD, provides access to advanced flow cytometry technology to DRI faculty and staff, DRI collaborators, and other investigators within and outside of the UM research community. The DRI Flow Cytometry Core houses a Beckman Coulter MoFlo Astrios EQ highspeed cell sorter enclosed in a BSL-2 biosafety cabinet, a Cytek Aurora full spectral analyzer, and a Beckman Coulter CytoFLEX S. Services include high speed cell sorting of samples requiring BSL-2 containment, self-operated or assisted sample analysis, instrument and software training, consulting and experimental design, and data analysis using SpectroFlo, CytExpert, or Kaluza software. Cell sorting is available Monday-Friday from 10am-6pm; fully trained personnel with approved building access have 24/7 access to the two analyzers. Please email Dr. Oliver Umland at oumland@med.miami.edu to inquire about our current rates.

DRI Biomarker and Immunoassay Core Laboratory

R.I. Hernandez[1], R.B. Goldberg[1,2], A.J. Mendez[1,2]

[1]Diabetes Research Institute, University of Miami Miller School of Medicine, Miami, FL, USA; Medicine, Department of Biochemistry and Molecular Biology, Division of Endocrinology, Diabetes and Metabolism, University of Miami Miller School of Medicine, Miami, FL, USA

The Biomarker and Immunoassay Core Laboratory at the Diabetes Research Institute performs assays for the evaluation of metabolic control, hormone levels and disease biomarkers in human blood, urine, and saliva samples in support of clinical research studies and samples from *in vitro* experimentation (e.g., cell culture medium) in support of pre-clinical studies. The laboratory was established in 1986 by Ronald Goldberg, M.D., who continues to serve as the Medical Director. The laboratory is inspected by the State of Florida and has Clinical Laboratory Improvement Act (CLIA) certification and follows all CLIA guidelines established by for quality control and proficiency testing to ensure reliable, dependable, and meaningful results.

The lab has continuously provided services for the clinical research activities of the DRI and other University of Miami investigators since its inception. In addition to our current test menu, the lab can establish new methods as needed to meet the needs of investigators. The lab is experienced in best practices for sample collection and can provide guidance and protocols for standardized collection methods to minimize pre-analytical sample loss and improve stability until sample analysis can be completed.

Laboratory personnel have extensive experience with chemistry, special chemistry, and immunoassay methods utilizing automated and manual procedures. The laboratory is equipped with a Roche-Cobas 6000 analyzer for automated chemistry and immunoassay testing, all instrumentation needed for performing manual immunoassays (ELISA and radioimmunoassay) and a Luminex 200 analyzer for bead-based multiplexed immunoassays.

DRI Preclinical Cell Processing and Translational Models Animal Core

J Szust

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The mission of the Diabetes Research Institute (DRI) is to develop and apply the most promising research to treat and cure those now living with diabetes in the fastest, safest, and most efficient way possible. The *DRI Preclinical Cell Processing and Translational Models Animal Core* at the University of Miami (UM) Miller School of Medicine is directed by Joel Szust, DVM, CPTC, CTOP, and provides access to advanced cell processing technologies, tissue procurement, *in vitro* and *in vivo* technologies, and access to different transplant sites utilizing small animal models. The core is open to DRI faculty and staff, DRI collaborators, other UM faculty and staff, and investigators outside of the UM research community. Services are provided to researchers with IACUC approved protocols. Animal procedures include drug administrations (orally, IM, SC, IP, IV); bleeding; diabetes models short- and long-term care; metabolic testing such as IPGTT and MMT; diabetes monitoring; comprehensive necropsies; cellular transplants in different sites as well as pumps and scaffolds implantations; post-surgical care and monitoring; planning and protocol development; and training in various areas.

DRI cGMP Advanced Cell and Biologic Product Manufacturing Facility

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The objective of the Diabetes Research Institute (DRI) Current Good Manufacturing Practice (cGMP) Advanced Cell and Biologic Product Manufacturing Facility (also called the DRI cGMP Cell Processing Facility) is to facilitate translational research of basic science research into clinical practice in the area of islet transplantation, tolerance induction and other cellular therapies. The DRI cGMP Cell Processing Facility manufactures, stores and distributes human cells, tissue and cellular products for clinical applications and research. The facility meets the most rigorous standards put forth by the Food and Drug Administration (FDA) and defined in the Current Good Manufacturing Practices (cGMP), Good Tissue Practices (GTP), and Regulations for Biologics, and Quality System Regulation. The facility is registered with the FDA, and accredited by the Foundation for Accreditation of Cellular Therapies (FACT) and the AABB.

Services:

- Human pancreatic islet cells isolation, culture, and distribution for clinical and research applications
- Organoid generation services and organoid culture services
- Cell line expansion services: scalable bioprocessing solutions in both 2D and 3D culture
- Custom cell isolation and cell culture services to meet your specific research needs, including CliniMACS cell sorting of immune cells, CAR-T development, and Induced pluripotent Stem Cell (iPSC) culture
- Cellular-based vaccine products: establishment of Master Cell Banks & Working Cell Banks, culture, and expansion
- Product characterization and analysis: ELISA, FACS, cell counts and viability assessment, endotoxin testing
- Development and validation of product characterization, analytical and QC assays, and equipment validation
- Regulatory support: preparation of Standard Operating Procedures, QA/QC, development of regulatory strategy, FDA submissions (IND applications) and communications, IRB submissions

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Advancing Clinical Translation: The Clinical Research Cell Manufacturing Program (CRCMP) at the Interdisciplinary Stem Cell Institute (ISCI)

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The *Clinical Research Cell Manufacturing Program (CRCMP)* within the Interdisciplinary Stem Cell Institute (ISCI) is dedicated to accelerating the translation of basic research discoveries into viable therapeutic cellular products. Our mission is to unite leading scientists worldwide in the pursuit of innovative stem cell clinical trial research and regenerative medicine advancements. At the heart of CRCMP's operations is our core objective, facilitating rapid and safe transition of basic research ideas. The CRCMP offers a comprehensive suite of services aimed at swiftly and safely transitioning basic research ideas into clinical applications. This includes the qualification and testing of reagents, scale-up of methods, development of Standard Operating Procedures (SOPs), ongoing process validation, and the provision of a controlled Good Tissue Practice (GTP) and Good Manufacturing Practice (GMP) infrastructure.

Key features of the CRCMP include:

- *Expertise in process optimization:* Our team of skilled professionals excels in optimizing processes for the manufacture of therapeutic cellular products. From initial feasibility assessments to full-scale production, we ensure efficiency and compliance at every step.

- *Regulatory compliance and support:* As a FACT- and AABB-accredited institute as well as a FDA registered facility, the CRCMP adheres to the highest standards of quality and safety. We provide comprehensive support for compiling Investigational New Drug (IND) applications, guiding researchers through regulatory requirements to expedite the path to clinical trials.

Please contact us to learn more about the CRCMP's role in driving forward the translation of stem cell research into transformative therapies. Together, let's pave the way for groundbreaking advancements in regenerative medicine.

Magnetic Resonance Imaging (MRI) Neuroimaging Facility: a resource for imaging the human brain and body

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The Magnetic Resonance Imaging (MRI) Neuroimaging Facility occupies 1200 sq. ft. on the first floor of the Cox Annex Neuroscience building on the University of Miami's Coral Gables campus. The Neuroimaging Facility includes an MRI scanner suite with associated reception and waiting areas, dressing room, and an MRI simulator/mock scanner suite. The Facility has a state-of-the-art Siemens Magnetom Vida 3.0T MRI scanner (Erlangen, Germany). This is a wide bore whole-body scanner with a high-performance gradient system and phased array coils to provide highest possible image quality. This instrument can perform advanced imaging for neuro, cardiac, abdominal, and orthopedic imaging. The scanner suite is equipped to deliver visual, auditory, and tactile stimuli. In addition, the Facility has Resoundant Hardware to perform MR elastography of the liver.

Services:

- Advanced structural and functional imaging
- Access to a physicist and MRI technologist
- Time on the scanner and/or mock scanner
- Safety training for research teams
- Equipment to present stimuli, record behavioral responses, and measure psychophysiology and eye-tracking:
    - MRI System Simulator
    - Current Designs 932 fORP Response Devices (4-button diamond, 4-button inline, 5-button Pyka, Trackball2)
    - Hyperion MRI Digital Projection System
    - Biopac Physiological Recording (heart rate, respiration, skin conductance response, electrocardiography, electromyography, blood pressure)
    - Resonance Technology Eye-tracking
    - Video camera monitoring

Contact information:

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Shared Research Resources of the University of Miami Department of Chemistry

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The Chemistry Department at the University of Miami (UM) offers state-of-the-art instruments and services to both academic and industry users, including:

1. Nuclear Magnetic Resonance (NMR) Laboratory has four NMR systems:
    a. 300MHz (with auto sampler)
    b. 400MHz (with solid state probe, liquid state probe and imagery probe)
    c. 500MHz (with cryoprobe and autosampler)
    d. 800MHz (with cryoprobe and autosampler)

2. Mass Spectrometry Laboratory has three mass spectrometers:
    a. MicroQ-TOF ESI
    b. MALDI-TOF
    c. GC/MS with autosampler

3. Shared Instrument Laboratory (UV-Vis, UV-Vis-NIR, FTIR, TGA, EPR, HPLC, TOC, etc.)

Researchers from the UM community as well as from academic and commercial entities outside the University are welcome to use our facility. Our fee schedule is competitive with the fees of similar shared resources at other academic institutions.

Miami Integrative Metabolomics Research Center (MIMRC) Ophthalmology Mass Spectrometry Core Facility

I. Moceri[1], C. Yaros[1], S. Bhattacharya[1,2]

Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL, USA;
Department of Ophthalmology, University of Miami Miller School of Medicine, Miami, FL, USA

The Miami Integrative Metabolomics Research Center (MIMRC) of the Bascom Palmer Eye Institute at the University of Miami Miller School of Medicine aims to identify therapeutic strategies through the differences between control and disease states by qualitative and quantitative proteomics, lipidomics, and metabolomics. The Ophthalmology Mass Spectrometry Core Facility provides services to researchers at the University of Miami and its surrounding educational and health care institutions. We perform techniques such as TMT for protein identification and Isotopic Ratio Outlier Analysis (IROA) for metabolite quantification. To conduct various analysis, we utilize instruments such as the Q Exactive and TSQ alongside software's such as Proteome Discoverer, Lipid Search, and Compound Discoverer.

ICRT-Imaging Core for Research and Training - Vascular Biology Institute

A. Rojas[1], R. Vasquez-Padron[1]

[1]Vascular Biology Institute, DeWitt Daughtry Family Department of Surgery, University of Miami Miller School of Medicine, Miami, FL, USA

The University of Miami (UM) provides services at the Interdisciplinary Stem Cell Institute (ICRT) to the UM community, external institutions, and private companies. The Vascular Biology Institute (VBI) Imaging Core for Research and Training at the ICRT provides quality angiographic technology and the physiologic, soft tissue contrast of MRI to explore new fields of interactive and interventional imaging. The core's angiographic surgical suite is a fully equipped operating room for medium-to-large animals. This suite is dedicated to pre-clinical research and training, and includes the Axiom Artis, a biplane flat detector X-ray system that offers cardiac, neuro and vascular packages, 3-dimensional reconstruction angiography, and Dyna CT imaging. The MRI suite develops and optimizes MRI methods for cardiovascular and neuroimaging of *in vivo* or *ex-vivo* procedures. The Magneton Trio A Tim is a 3T system, incorporating a wide range of coils that allows working with small and big animals and includes software for applications in neurology, cardiology angiography, oncology and orthopedics.

The VBI provides support for the design and implementation of *in vivo* and *in vitro* procedures requiring endovascular techniques as part of research, testing or training projects. Fluoroscopy, rotational angiography, digitally subtracted vascular structures and 3D X-ray imaging are some of the capabilities used to analyze different diseases or treatments in these studies or device tests. Our portfolio includes ischemia models like myocardial infarction, peripheral disease and other vascular conditions such as aneurysms and arterio-venous malformations, selective vascular drug delivery for cancer treatment, and orthopedic device implantation. The endovascular hands-on experience obtained by interventional specialists enhance their skills in minimally invasive techniques, becoming acquainted with new technologies for the diagnoses and treatment of diseases in different disciplines. This experience can also be incorporated in course curriculum. Additional services provided include animal ordering, catering coordination for workshops, and conference room availability.

Miami Engineering Shared Facilities – College of Engineering Shared Services

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[1]Department of Mechanical and Aerospace Engineering, College of Engineering, University of Miami, Coral Gables, FL, USA

The University of Miami College of Engineering (UMCoE) core facilities are called the "Miami Engineering Shared Facilities" and offer the following services:

- Metal additive manufacturing
- Polymer 3-D printing
- Machine shop facilities
- Material characterization equipment suite

The metal additive manufacturing (3D printing) equipment includes three powder bed fusion metal printers, Tekna Tek plasma atomizer, vacuum arc melter, and a planetary ball mill. One of these metal 3D printers is the EOS M100 prototyping printer, which is utilized for parameter set development. We have a full suite of polymer 3D printers capable of printing various materials such as PLA, ABS, UV photopolymerized resin, carbon, and multi-jet printers. We also have a fully functional machine shop with lathes, band saws, two computer numerical control (CNC) equipment, wire EDM, and weld shop capabilities.

UMCoE also houses a full suite of material characterization equipment for multiscale physico-chemical characterization of materials such as ceramics, metals and alloys, electronic components, and biological specimens. The shared facility houses laser diffraction and Brunauer-Emmett-Teller (BET) equipment (for particle size and specific surface area analysis), x-ray fluorescence, inductively couple plasma – optical emission spectroscopy (ICP-OES), and mass spectrometers (for chemical analysis), x-ray diffractometer, environmental scanning electron microscope, and a field emission scanning electron microscope with a nanoindenter (for micro- and nano-structural characterization), and differential thermogravimetric analysis and differential scanning calorimeter equipment for phase characterization.

All the instruments in the Miami Engineering Shared Facilities can be reserved for use through the core's iLab portal at https://tinyurl.com/scmcf.

BioNIUM Nanofabrication Facility

B. Motlagh

Dr. John T. Macdonald Foundation Biomedical Nanotechnology Institute, University of Miami, Miami, FL, USA

The *Dr. John T. Macdonald Foundation Biomedical Nanotechnology Institute of the University of Miami (BioNIUM)* is an institute for interdisciplinary science, focused on the application of nanotechnology to medical care at the University of Miami. The *BioNIUM Nanofabrication Facility* occupies 2,800 ft^2 space in the UM Converge Miami Building. The facility consists of Class 100 and 1000 Cleanrooms and state-of-the-art equipment supporting successful micro- and nanofabrication crucial to numerous technologies.
The Institute's goal is to offer the expertise, infrastructure, and resources necessary to energize fundamental aspects of nanotechnology and to foster interdisciplinary research programs, capturing the essence of collaboration and shared growth across multiple disciplines. Aims include 1) enable technologies that solve global biomedical & environmental challenges through discovery and innovation; 2) educate the next generation of scientists, physician scientists, and engineers in nanoscience and nanotechnology; and 3) engage the community by disseminating technologies and discoveries through STEM activities.
The BioNIUM Nanofabrication Facility has capabilities for thin-film deposition, film etching and characterization, photolithography, electron beam lithography, and scanning electron microscopy, enabling support of research in the following areas:

- *Semiconductor manufacturing technologies* – electronic chips and nanoelectronics devices, gas, chemical, and biological sensing sensors
- *Biomedical devices* – biosensors, micro filters, microneedles, other micro tools
- *MEMS, NEMS, BioMEMS* – organ-on-a-chip devices, microfluidics
- *Optoelectronic and nanophotonic devices* – waveguides, LED, photodetectors, solar cells
- *Nanomaterials* – 1D & 2D material growth
- *Characterization and packaging of nanoparticles and drug delivery*

Equipment:

- *Metrology and Imaging*: SEM, EDS, AFM, Optical Microscopy
- *Packaging:* Ball & Wedge Bonding, Parylene Coating, Dicing
- *Etching:* RIE, Wet Etching, O_2 Plasma Cleaner
- *Thin-film Deposition:* E-beam/ Thermal Evaporation, DC/ RF Sputtering, PECVD
- *Photolithography and Lithography:* Photolithography, Mask Aligner, EBL, Profilometry
- *Thermal Processing:* High Temperature Tube Furnace (1000℃), RTP
- *Pharmaceutical Processing:* Nanoparticles Fabrication and Characterization

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Division of Veterinary Resources (DVR)

J. Zaias

Office for the Vice Provost for Research and Scholarship (OVPRS), University of Miami, Coral Gables, FL, USA; Department of Pathology and Laboratory Medicine, University of Miami Miller School of Medicine, Miami, FL, USA

The Division of Veterinary Resources (DVR) at the University of Miami is a core supporting research involving the use of animals. DVR's mission is to provide superior animal and clinical care, facilitate high quality research, teaching, and education, maintain regulatory compliance, and collaborate with our stakeholders/customers to enhance and advance institutional goals. We operate as a knowledgeable, professional, and responsive team, and promote a culture of trust, engagement, transparency, and respect. Our team of over 60 staff includes veterinarians, veterinary technicians, and animal care technicians and professionals. We provide research support through clinical care, treatments, surgical and anesthesia support, colony management and medication and supply sales. The DVR team also provides study consultations, budgeting, and clinical and histopathologic support as needed. We work closely with other core facilities at the University.

Virtual Tour of the Zebrafish Core Facility

R. Cepeda[1], J. Dallman[1,2]

[1]Zebrafish Core Facility, College of Arts and Science, University of Miami, Coral Gables, FL, USA;
[2]Department of Biology, College of Arts and Science, University of Miami, Coral Gables, FL, USA

This electronic poster will provide a virtual tour of the College of Arts and Science (CAS) Zebrafish Core Facility at the University of Miami (UM). The aim of this Facility is to provide UM and South Florida communities with zebrafish embryos, larvae and adult zebrafish for research and teaching. A single zebrafish female produces hundreds of embryos that develop externally and are transparent, making early developmental stages accessible to study. The development of both organ systems and behavioral repertoires are fast and stereotyped, and gene knock-down and transgenic technologies are inexpensive and rapid. These attributes have made zebrafish a popular choice for screens and cancer, physiology, regenerative medicine, neurological and developmental biology. The Zebrafish Core Facility houses 20 racks of recirculating Aquatic Habitat aquaria that can accommodate 20,000 adult zebrafish. Several experimentally useful lines of fish are hosted in the facility and more can be acquired depending on users' needs.

Zebrafish Core Facility

R. Cepeda[1], J. Dallman[1,2]

[1]Zebrafish Core Facility, College of Arts and Science, University of Miami, Coral Gables, FL, USA;
[2]Department of Biology, College of Arts and Science, University of Miami, Coral Gables, FL, USA

The aim of the College of Arts and Science (CAS) Zebrafish Core Facility at the University of Miami (UM) is to provide UM and South Florida communities with zebrafish embryos, larvae and adult zebrafish for research and teaching. A single zebrafish female produces hundreds of embryos that develop externally and are transparent, making early developmental stages accessible to study. The development of both organ systems and behavioral repertoires are fast and stereotyped, and gene knock-down and transgenic technologies are inexpensive and rapid. These attributes have made zebrafish a popular choice for screens and cancer, physiology, regenerative medicine, neurological and developmental biology. The Zebrafish Core Facility houses 20 racks of recirculating Aquatic Habitat aquaria that can accommodate 20,000 adult zebrafish. Several experimentally useful lines of fish are hosted in the facility and more can be acquired depending on users' needs.

The John C. Gifford Arboretum and Greenhouses

K.J. Feeley[1,2]

[1]Department of Biology, University of Miami, Coral Gables, FL USA; [2]The John C. Gifford Arboretum, University of Miami, Coral Gables, FL USA

The John C. Gifford Arboretum at the University of Miami (UM) is a collection of rare and important trees and plants that have been assembled for the purposes of education, research, and conservation. Visitors are permitted to freely visit the collection for self-guided tours, and guided tours and lectures that are conducted throughout the academic year. The Arboretum was originally planted in 1947 by Dr. Frank J. Rimoldi and Dr. Roy Woodbury, professors of tropical botany at the University of Miami. In 1949, the Arboretum was named for Dr. John C. Gifford, the first graduate forester in the United States, an expert on tropical woods, and professor of tropical forestry at the University of Miami. The living collections of the Arboretum, which today include over 500 plants representing hundreds of tropical and subtropical species, are organized for teaching and research purposes. It is also a place of peace and connection with nature as we hope to inspire interest in tropical trees as well as a better understanding of the history and importance of the plant world. Connected with the Arboretum, UM maintains a research-grade greenhouse with the mission of “empowering plant biology at UM through cultivation of plants for research, education, and outreach”.

Ship Operations for the University of Miami's Research Vessel F.G. Walton Smith

D. Cucchiara

Rosenstiel School of Marine, Atmospheric and Earth Sciences, University of Miami, Key Biscayne, FL, USA

The Research Vessel F.G. Walton Smith located at the University of Miami's Rosenstiel School of Marine, Atmospheric and Earth Science campus on Key Biscayne. This is the Rosenstiel School's primary research vessel. It was named in honor of the School's founder and first Dean, F.G. Walton Smith. The vessel was designed to the school's specifications, built in 1999, and placed into service in late 2000.

This 96-foot-long, 40-foot wide catamaran is capable of reaching speeds of 10 knots with a draft of only 7 feet. This designed shallow draft enables R/V F.G. Walton Smith to explore the various shallow water environments such as reefs, mangroves, and grass beds. The vessel accommodates up to 19 people (12 scientists, 7 crew) in its ten staterooms and encompasses 800 square feet of laboratory space, as well as an additional 950 square feet of multi-use back deck working area. It was designed by Timothy Graul Marine Design and built at Eastern Shipbuilding Group in Panama City, Florida. The catamaran has twin 750hp Cummins engines, dual Servogear variable pitch propellers and bow thrusters. Walton Smith has a fuel capacity of 10,000 gallons and a reverse osmosis water system that helps the ship hold 3,000-gallons of freshwater.

The vessel has the capability of using bow thrusters and controllable pitch propellers while conducting oceanographic operations at location. Other specialized instruments include transducer wells that contain ADCP and depth sounder transducers for measuring ocean currents and bottom profiling; a moon pool between the hulls for special instrument deployments; and a notched stern to facilitate maneuvering equipment into the water using the A-frame. Various instruments can be deployed off the stern and the data can be displayed in real time back on board in the laboratory. R/V F.G. Walton Smith is equipped to sample the seawater it is operating in with a sea surface flow-through system. This system continually pumps seawater from an intake at the bow and passes the water through various sensors/instruments (e.g., temperature, conductivity, fluorometers) collecting data 24/7. R/V F.G. Walton Smith is also equipped with a meteorological suite of instruments that measure the atmospheric conditions such as wind speed/direction, air temperature, relative humidity, barometric pressure and much more. A Nitrox dive compressor and up to four small boats can be loaded onto the ship for diving operations.

R/V F.G. Walton Smith operates in accordance with the University National Laboratory System (UNOLS). R/V F.G. Walton Smith is part of the U.S. Academic Research Fleet (ARF) and is a UNOLS designated operator. Walton Smith conducts all of its operations with strict adherence to UNOLS safety standards and is subject to regular, recognized ship inspection programs scheduled by established UNOLS procedures. The ship also follows UNOLS practices for cruise reporting, cruise assessment, cost accounting and performance standards.

Virtual Tour the University of Miami's Research Vessel F.G. Walton Smith

D. Cucchiara

Rosenstiel School of Marine, Atmospheric and Earth Sciences, University of Miami, Key Biscayne, FL, USA

This electronic poster will provide a virtual tour of the Research Vessel F.G. Walton Smith, which is located at the University of Miami's Rosenstiel School of Marine, Atmospheric and Earth Science campus on Key Biscayne. This is the Rosenstiel School's primary research vessel. It was named in honor of the School's founder and first Dean, F.G. Walton Smith. The vessel was designed to the school's specifications, built in 1999, and placed into service in late 2000.

This 96-foot-long, 40-foot wide catamaran is capable of reaching speeds of 10 knots with a draft of only 7 feet. This designed shallow draft enables R/V F.G. Walton Smith to explore the various shallow water environments such as reefs, mangroves, and grass beds. The vessel accommodates up to 19 people (12 scientists, 7 crew) in its ten staterooms and encompasses 800 square feet of laboratory space, as well as an additional 950 square feet of multi-use back deck working area. It was designed by Timothy Graul Marine Design and built at Eastern Shipbuilding Group in Panama City, Florida. The catamaran has twin 750hp Cummins engines, dual Servogear variable pitch propellers and bow thrusters. Walton Smith has a fuel capacity of 10,000 gallons and a reverse osmosis water system that helps the ship hold 3,000-gallons of freshwater.

The vessel has the capability of using bow thrusters and controllable pitch propellers while conducting oceanographic operations at location. Other specialized instruments include transducer wells that contain ADCP and depth sounder transducers for measuring ocean currents and bottom profiling; a moon pool between the hulls for special instrument deployments; and a notched stern to facilitate maneuvering equipment into the water using the A-frame. Various instruments can be deployed off the stern and the data can be displayed in real time back on board in the laboratory. R/V F.G. Walton Smith is equipped to sample the seawater it is operating in with a sea surface flow-through system. This system continually pumps seawater from an intake at the bow and passes the water through various sensors/instruments (e.g., temperature, conductivity, fluorometers) collecting data 24/7. R/V F.G. Walton Smith is also equipped with a meteorological suite of instruments that measure the atmospheric conditions such as wind speed/direction, air temperature, relative humidity, barometric pressure and much more. A Nitrox dive compressor and up to four small boats can be loaded onto the ship for diving operations.

R/V F.G. Walton Smith operates in accordance with the University National Laboratory System (UNOLS). R/V F.G. Walton Smith is part of the U.S. Academic Research Fleet (ARF) and is a UNOLS designated operator. Walton Smith conducts all of its operations with strict adherence to UNOLS safety standards and is subject to regular, recognized ship inspection programs scheduled by established UNOLS procedures. The ship also follows UNOLS practices for cruise reporting, cruise assessment, cost accounting and performance standards.

University of Miami Writing Center: support for faculty, researchers, and post-doctoral fellows

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The *University of Miami (UM) Writing Center* is hosted by the Department of Writing Studies at the UM College of Arts and Sciences. We provide a range of writing services for faculty, researchers, and post-doctoral fellows at all University of Miami campuses, helping you improve the writing of your grants and scholarly articles. We offer one-on-one assistance at any stage of the writing process, from brainstorming to final revisions.

Areas of individual faculty support include:

- Grant writing and editing
- Scholarly manuscript preparation and editing
- Poster presentations
- Multimedia and oral presentations
- Social media
- Translating your work for the general public
- Other professional writing

We also offer presentations for groups or departments on topics that include:

- Clear and concise scientific writing
- Writing and researching with AI
- Other writing topics upon request

Appointments for the Miller School of Medicine and the Rosenstiel School of Marine and Atmospheric Sciences are currently held online or by phone. Appointments for the Coral Gables campus are available online or in person at the Richter Library.

To schedule an appointment, faculty and researchers should:

- visit the CTSI Grant and Research Writing Support page at https://miamictsi.org/resources/grant-and-research-writing-support
- or email April Mann, Director, Writing Center, at a.mann@miami.edu.

University of Miami Libraries

E. Newcome[1], K. Bartley[1]

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The mission of the University of Miami Libraries is to provide faculty, students, researchers, and staff with the highest quality access to collections, information services, learning support, and digital expertise in support of the University's mission to transform lives. The University Libraries welcomes and incorporates advances and innovations in information technology and scholarly communication to ensure that our users can locate and use global information resources in all formats.

The Libraries ranks among the top 50 research libraries in North America, drawing scholars from around the world through its important print collection of over 4 million volumes and 130,000 serial subscriptions, rare and unique distinctive collections, state-of-the-art digitization and preservation facilities, and a staff of experienced professionals. The University Libraries comprises six libraries across all three of the University's campuses in Coral Gables, on Virginia Key, and in the Health District near downtown Miami. Libraries on the Coral Gables campus include: the interdisciplinary Otto G. Richter Library; the Architecture Research Center at the School of Architecture; the Judi Prokop Newman Information Resource Center at the Herbert Business School; and the Marta and Austin Weeks Music Library at the Frost School of Music. The Roberto C. Goizueta Pavilion at the Richter Library is home to the Cuban Heritage Collection. Also in Richter, the Kislak Center at the University of Miami is home to Special Collections and University Archives. The Miller School of Medicine hosts the Louis Calder Memorial Library, and the Rosenstiel campus hosts the Rosenstiel School of Marine, Atmospheric, and Earth Science Library.

Biochemistry and Molecular Biology (BMB) Core Lab

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The Department of Biochemistry and Molecular Biology (BMB) Core Lab at the University of Miami Miller School of Medicine is committed to facilitating efficient and cost-effective laboratory operations by offering comprehensive purchasing services tailored to support Principal Investigators (PIs) and laboratory members. Our strategic partnerships with renowned names in the laboratory supplies industry enable PIs and lab members to optimize research-related expenditures through our user-friendly website. By leveraging these partnerships, users benefit from exclusive advantages such as waived shipping charges, discounted rates on selected products (e.g., primers/oligos), and specialized storage services. Our platform streamlines the procurement process, sparing users the administrative burden of opening purchase orders, handling invoices, and managing supplier-related issues, including cancellations and out-of-stock products. Upon investigators placing orders through our website, items typically arrive at our office within two to five days, depending on supplier and product availability. Once we receive the product, we ensure proper storage at the indicated temperature on the packaging and promptly notify customers of its arrival. This approach allows users to pick up their items at their convenience. Customers seeking products not listed on our website can utilize our NEW PRODUCT FORM feature. This form allows them to request to add specific products to our platform, and we take care of the ordering process on their behalf. At BMB Core Lab, we are dedicated to providing a seamless and supportive purchasing experience, empowering researchers to focus on their scientific endeavors without the hassle of administrative intricacies.

U Innovation

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[1]Wallace H. Coulter Center for Translational Research; [2]Office of Technology Transfer; [3]The Launch Pad; [4]Office of the Chief Innovation Officer, University of Miami Miller School of Medicine; [5]Office of the Vice Provost for Innovation, University of Miami, Miami, FL, USA

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