FACILITIES AND OTHER RESOURCES

Environmental Contribution to Probability of Proposed Project Success

University of Florida

The University of Florida (UF) is the state's leading university and is consistently listed as one of the top public research universities in the nation. In 2018, UF became the first Florida school to break into the list of top 10 public universities. Since 2017, UF has advanced a record nine spots on the public university list and according to the recently released 2024 U.S. News & World Report Best Colleges rankings, UF is ranked 6th among top public universities.

As a prestigious research and teaching university, UF is highly successful in obtaining funds to support its missions. University of Florida faculty conducted a record $1.25 billion in research in fiscal year 2023, a nearly 15% increase over 2022 in support of research related to advancements in medicine, agriculture, engineering, sciences, and technology. Faculty from all of UF's 16 colleges and the Florida Museum of Natural History contributed, as did scientists at UF Scripps Biomedical Research, which UF acquired from the Scripps Research Institute.

Almost half of the research occurred in the seven colleges of UF Health, led by the College of Medicine in Gainesville and Jacksonville with $378 million; the College of Public Health & Health Professions with $34.0 million; the College of Veterinary Medicine with $31.1 million; the College of Pharmacy with $34.8 million; the College of Dentistry with $18.7 million; and the College of Nursing with $5 million. In addition, 2023 marked the first full year that The Herbert Wertheim UF Scripps Institute for Biomedical Innovation & Technology in Jupiter was part of UF's research enterprise, accounting for $97.6 million in research spending. UF Health has major research thrusts in cancer, diabetes, neurological diseases, gene therapy and many other areas, where scientists and physicians work together to develop new treatments and therapies for patients from Florida and beyond.

Researchers outside of UF Health conducted valuable research in agriculture ($300 million); engineering ($148.4 million); and physical sciences ($63.2 million). About $530 million of the research was funded by federal agencies, including the National Institutes of Health, the National Science Foundation, the U.S. Department of Agriculture, the Department of Energy, and NASA. Another $200 million came from the State of Florida. Other funding sources include industry and private foundations.

This highly ranked and well-funded research environment greatly benefits the work of the proposed project, "……*",* led by principal investigators from …...

In addition to being a research powerhouse, UF is a fully accredited member of the Association of American Universities (AAU), comprised of the top 63 public and private institutions in North America. With approximately 57,000 students annually, UF is one of Florida's oldest, largest, and most comprehensive universities, ranked 4th largest in the nation. UF offers more degree programs on a single campus than all but two other US institutions, with 16 colleges and more than 200 research, service, and education centers, bureaus, and institutes. UF offers more than 300 majors and 52 undergraduate degree programs, 123 master's degree programs, and 76 doctoral degree programs in eighty-seven schools and departments. It has also been designated by the Florida Board of Regents as one of four institutions in Florida focusing on graduate education and research. One of the nation's leading research institutions, UF has a long history of established programs in research and service. University of Florida faculty conducted a record $1.25 billion in research in fiscal year 2023, a nearly 15% increase over 2022. . UF is one of only about 35 public and private universities around the country with more than $1 billion in annual research spending. The Wall Street Journal lists the University of Florida as the No. 1 public university in its 2024 list of Best U.S. Colleges..

UF Health Sciences Center (HSC)

The University of Florida Health Science Center (HSC) celebrated its 68th year in 2024. It is one of the few academic health centers in the U.S. with six health-related colleges located on a single, contiguous campus.

The colleges, including Colleges of Dentistry, Medicine, Nursing, Pharmacy, Public Health and Health Professions, and Veterinary Medicine, teach the full continuum of higher education from undergraduates to professional students to advanced postdoctoral students, enrolling more than 6,900 students and 1,100 interns and residents each year. In addition to the six colleges, there are seven major health-related research centers and institutes (Clinical and Translational Science Institute, Institute on Aging, UF Health Cancer Center, Emerging Pathogens Institute, McKnight Brain Institute, The Herbert Wertheim UF Scripps Institute for Biomedical Innovation & Technology, and Genetics Institute) designed to create synergistic and collaborative research opportunities. Research activities at the HSC reflect a depth of purpose by focusing on the translational nature of biomedical research following the continuum from fundamental research to clinical research to patient care.

The HSC, the most comprehensive academic health center in the southeastern US, is dedicated to rigorous programs of education, research, patient care and public service. The HSC encompasses the colleges of Medicine, Nursing, Dentistry, Public Health and Health Professions, Pharmacy, and Veterinary Medicine. The HSC also encompasses the Clinical and Translational Science Institute (CTSI). In July 2009, UF received a $26 million dollar Clinical and Translational Science Award from National Institutes of Health. UF's CTSI is dedicated to improving human health by accelerating the translation of basic research into new clinical treatments as quickly as possible. The UF CTSI continues to receive support from programs are supported by multiple grants, most notably a CTSA from the National Center for Advancing Translational Sciences of the NIH, and by significant institutional support from UF. In 2013, the CTSI led the creation of the OneFlorida+ Clinical Research Consortium in collaboration with FSU, the University of Miami CTSA hub and other stakeholders to extend the impact and reach of translational science throughout the nation's third-largest state. The CTSI serves as the coordinating center for OneFlorida+, which bridges two national networks: the NIH-funded CTSA Trial Innovation Network and the Patient-Centered Outcomes Research Institute-funded National Patient-Centered Clinical Research Network. The facilities, resources and services described below are available through the CTSI. Generous additional support for the UF CTSI comes from the UF Office of Research and the UF College of Medicine. Collectively, these awards allow the UF CTSI to advance its goals, which are to accelerate scientific discovery, enhance patient care, produce highly skilled scientists and practitioners, and foster partnerships with the industry.

UF Health Shands Hospital

UF Health Shands Hospital ranks among the nation's top hospitals in five specialties, and UF Health Shands Children's Hospital ranks among the nation's top hospitals in four specialties in the most recent U.S. News & World Report Best Hospitals rankings. The Gainesville campus is home to UF Health Shands (Shands Teaching Hospital and Clinics Inc.). UF Health Shands has a total of 996 licensed beds and is staffed by 926 full-time faculty members of the UF College of Medicine. The campus is also home to 742 medical residents and fellows, six pharmacy residents, and more than 558 students from the UF colleges of Medicine, Pharmacy, and Nursing. It features a teaching hospital, UF Health Shands Hospital, which also includes UF Health Shands Cancer Hospital and UF Health Shands Children's Hospital; four specialty hospitals, UF Health Shands Rehab Hospital, UF Health Shands Psychiatric Hospital, UF Health Heart & Vascular Hospital, and UF Health Neuromedicine Hospital; a network of outpatient rehabilitation centers; and a home health agency. Each year, patients come to UF Health Shands from all 67 Florida counties, throughout the nation, and more than a dozen countries.

Nearly 900 expert UF College of Medicine and community physicians along with more than 9,000 skilled Shands nursing and support staff are employed at UF Health Shands Hospital.

UF Health Jacksonville

UF Health Jacksonville, located in Northeast Florida, is an academic health center providing education for health professionals, a hub for clinical research, and a venue for patient care. With 426 full-time faculty, the academic health center in Jacksonville is the largest UF campus outside of Gainesville. The campus is also home to 357 medical residents and fellows, 10 pharmacy residents, and more than 400 students from the UF colleges of Medicine, Pharmacy, and Nursing. At 37 clinical sites throughout Northeast Florida, UF physicians tallied more than 600K outpatient visits and more than 34,000 inpatient admissions annually. UF Health in Jacksonville consists of UF Health Jacksonville, a 695-bed academic health center; UF Health Science Center

Jacksonville, which encompasses three UF colleges in Jacksonville (Medicine, Nursing, and Pharmacy); and UF Jacksonville Healthcare, Inc., a network of primary and specialty care centers offering patient care throughout Northeast Florida and Southeast Georgia.

UF Health at Shands Cancer Center (UFSCC)

The University of Florida (UF) is a world leader in interdisciplinary research. The UF Health Cancer Center, UF Genetics Institute, UF Interdisciplinary Center for Biotechnology Research, UF Emerging Pathogens Institute, and the College of Medicine are designed to create synergies and collaborative research opportunities that focus on the translational nature of biomedical research, following the continuum from fundamental research to clinical research to patient care. These entities are poised to contribute to the success of this project by providing the highest intellectual and physical resources. UF, its Health Science Center and its fifteen Colleges are committed to providing an exceptional environment for the training of future leaders in the health sciences.

The **UF Health Cancer Center** (UFHCC) is part of UF's Health Science Center, one of the most comprehensive academic medical centers in the southeastern United States and located on the campus of the University of Florida –. The Center's membership is comprised of more than 250 researchers and clinicians drawn from 2 campuses, 11 colleges, 72 departments, 2 major teaching hospitals – Shands Gainesville and Jacksonville – and the nation's largest Veterans Administration hospital, the Malcom Randall VA Medical Center in Gainesville.

The UFHCC is dedicated to (1) providing state-of-the-art cancer treatment, prevention, control, and education to individuals of diverse races and ethnicities; (2) conducting original scientific research aimed at discovering and comparing mechanisms of cancer-causing and normal cell growth; and (3) fostering coordination and collaboration that facilitates the clinical translation of novel research findings into new therapeutic, diagnostic, or preventive trials.

Activities and programs at the UFHCC are acutely focused on the development of early-stage translational research aimed at the rapid advancement of scientific discoveries to clinical trials and resulting in improved patient care. The research and clinical facilities of the UFHCC represent a statewide resource that is sensitive to meeting the needs of Floridians. The Center's research and patient-care collaborations also have links to other institutions, including Orlando Health, the University of Miami/Sylvester Cancer Center, and the H. Lee Moffitt Cancer Center.

Over the past decade, UF has made unprecedented institutional investments in cancer research and clinical care that have resulted in significant progress in cancer discovery, education, and patient outcomes. Evidence of the institution's commitment to building on its state-of-the-art cancer programs includes the construction of the $84.5-million Cancer and Genetics Research Complex (CGRC), which was completed in July 2006. The CGRC added 284,000 square feet of basic and translational research space and high-tech laboratory space and research equipment. Dedicated to discoveries in cancer and genetics, the CGRC is shared by multidisciplinary teams of investigators conducting scientific discovery under a collaborative model. UF has also made major investments in collaborations to foster cancer research and patient care for Florida's residents. In 2023, the center became the 72nd NCI-Designated Cancer Center and the only one based at a public university in the state of Florida.

The cancer research building houses laboratories for approximately 30 PIs and is equipped with workbenches, shelves, sinks, centrifuges, refrigerators, -20º C and -80º C freezers, tissue-culture hoods, tissue-culture incubators, water baths, light microscopes, power supplies, electrophoresis apparatuses, PCR machines, real-time PCR machines, and flow cytometers. Laboratories provide technical expertise and advice in the areas of FACS analysis, protein sequencing, peptide synthesis, oligonucleotide synthesis, proteomics, mass spectroscopy, transgenic mouse production, and gene expression. Each floor in these facilities has an autoclave, dark room, library, small and large conference rooms, and walk-in cold and warm rooms. The core molecular laboratory for the Interdisciplinary Center for Biotechnology Research (ICBR) is in the research building and is available to all UFHCC members. The ICBR houses 12 partially subsidized facilities, including computing and bioinformatics, DNA sequencing, electron, and confocal microscopy, flow cytometry, hybridoma

production, protein chemistry, proteomics, mass spectrometry, microarray, and bioinformatics labs. The building also includes a vivarium on the 5th floor and has all the facilities necessary for animal care, procedures, and irradiation. The UFHCC Research Laboratories and the ICBR are accredited by the American Association for the Accreditation of Laboratory Animal Care.

Three cesium-137 irradiators are available for total body or local irradiation of mice – one located in the animal vivarium on the 5th floor of the CGRC and two located in the main animal facility located in the Biomedical Sciences Building. The animal facility in the Biomedical Sciences Building also has an XRAD 320 X-ray source for small animal irradiation. There is also a Varian Clinic 6/100C, located in Radiosurgery Biology Lab (RSB) in the McKnight Brain Institute, which is dedicated to use with animal models (non-human use) and image-guided stereotactic radiosurgery procedures.
The UF Health Cancer Center Biostatistics Core provides support for cancer researchers in the areas of biostatistics, epidemiology, health outcomes, healthcare economics, clinical trials, data analysis, and data management.

The UF Health Cancer Center Clinical Trials Office (CTO) supports principal investigators, maintains overall responsibility for the performance of clinical trials conducted by UFHCC investigators, and provides coordination and administrative support for the Center's scientific review process and Data and Safety Monitoring Board.

University of Florida College of Nursing (CON)

The College of Nursing is recognized nationally and internationally for innovative education, dynamic programs of research, and creative approaches to practice. As Florida's flagship nursing school, Dean Shakira Henderson, Ph.D., D.N.P., M.S., M.P.H., EMBA, who is also the System Chief Nurse Executive for UF Health, with seven associate and assistant deans, three directors and one urban campus director (Jacksonville branch), administers the operations of the College. Approximately 80 faculty members, the majority of whom are prepared at the doctoral level, are involved in regional/national research and in practice throughout the state. There are also many expert clinicians holding national certifications. The CON graduates the largest number of baccalaureate-prepared RNs in the state and is consistently ranked in the top ten percent of all baccalaureate and graduate degree-awarding nursing schools in the nation. The CON also provides urban access for graduate students at UF's Jacksonville campus. Since the establishment of the first Florida graduate program in nursing (1963), the CON has maintained a leadership role in graduate nursing education in the South: it established the first nurse practitioner program in Florida, the first BSN-to-PhD track in Florida, the Clinical Nurse Leader master's degree track, and the Doctor of Nursing Practice program, including one of the first BSN-to-DNP programs in the state and the country. The CON also offers, in conjunction with the University of Florida Graduate School, a Doctor of Philosophy (Ph.D.) degree, with a major in nursing. CON enrollment currently consists of approximately 608 undergraduate students and 326 graduate students in two departments: Biobehavioral Nursing Science and Family, Community, and Health System Science. All CON programs are State Board approved and/or nationally accredited. Nursing students have an opportunity to learn and work with students from other Health Science Center colleges in collaborative healthcare teams. The College maintains and participates in nursing and interdisciplinary clinics for women, children, adults, and elders in a variety of settings, with special emphasis on medically underserved and rural areas. Students have access to a fully integrated system of community hospitals and clinics, statewide home health care, and quaternary care at UF Health Shands Hospital.

For the third consecutive year, the University of Florida College of Nursing experienced significant growth in National Institutes of Health funding and national rankings. The College of Nursing now ranks in the top 20, landing at No. 18 nationally, No. 12 among public colleges of nursing, and No. 1 in Florida in NIH funding rankings for 2020.

Archer Family Health Care

Archer Family Health Care, located in the rural town of Archer, Florida, is the University of Florida College of Nursing's first nurse-led healthcare practice, and it offers adult, pediatric, and behavioral healthcare services to individuals and families who live in Archer and the surrounding areas. It was established in 2001 in order to

develop interprofessional collaborative practice environments that deliver patient and population-centered quality health care to those living in medically underserved or health professional shortage areas. As a federally designated rural health clinic, the clinic is managed by the University of Florida College of Nursing and is led by a group of family nurse practitioners who provide care. Health care services include diagnosis and treatment of illnesses and injuries; monitoring of chronic diseases; prescriptions; ordering, performing, and interpreting diagnostic studies, such as lab work or x-rays; physical exams; immunizations; medication consultation; health screenings for early detection of chronic diseases, such as high blood pressure, diabetes, asthma and cancer; family planning services; health education and disease prevention information; and connections to other community resources.

Center for Palliative Care Research and Education

Led by faculty from the College of Nursing on behalf of the health sciences colleges and welcoming participation from colleges campus-wide, the Center for Palliative Care Research and Education focuses on research and education to improve palliative care for persons and animals throughout Florida, across the nation, and all around the world. The palliative care philosophy values, respects, and supports individual dignity and autonomy and recognizes the need for informed decision-making to achieve comfort and relieve stress during and after a serious illness. The mission of the Center for Palliative Care Research and Education is to transform healthcare for people and animals with serious illnesses through knowledge generation and translation into practice, and education of future palliative care leaders from diverse backgrounds.

The Center for Palliative Care Research and Education's vision is to eliminate disease burden and optimize dignity and quality of life for human and animal patients with serious illnesses and their caregivers. Research and educational initiatives will generate and translate into practice new knowledge and technologies for treating pain and suffering, addressing multidimensional needs, and facilitating goals of care and shared decision-making to ensure high quality of life for patients and their caregivers.

CON Research Space and Equipment. The CON's 173,133-square-foot complex provides educational, administrative, and research space for the CON, the College of Public Health and Health Professions, and the College of Pharmacy. Over 1500 square feet of research space are available in the CON, located in close proximity to the offices of the Associate Dean for Research. A large conference room and space to house ten research assistants complete the area. Additional space in the HSC is available to faculty with funded grants to house their research staff. For this project, *dedicated space* has been allocated in a research suite on the ground floor of the Dental Science Building, which is in very close proximity to the CON. Each pilot investigator will have a desk, computer, printer, and all other necessary IT equipment. In addition, the PI and Co-Is will have desk space in the office suite. There is a large conference room in the suite that will be used for research team meetings.

CON Office for Research Support. The Office for Research Support (ORS), which was developed to facilitate faculty and doctoral student research, is led by the Associate Dean for Research, Leslie Parker, Ph.D., APRN, FAAN, FANNP and includes the Assistant Dean for Research Development, and Director of the Ph.D. Program, Angela Starkweather, PhD, ACNP-BC, FAANP, FAAN, and three research administrators as well as staff to support the editorial and statistical analysis needs of CON researchers. Staff members provide a range of administrative, editorial, and proposal submission assistance as well as post-award financial management and research coordination services; and student research assistants are available to perform a variety of support tasks for investigators and their teams. ORS offers bi-annual research retreats, monthly research collaborations, an annual Research Summit, and formal scientific reviews as part of its mission to provide a collaborative and supportive environment for fostering research at the CON. The ORS staff provided pre-award support for this proposal and are available to provide their post-award expertise and services to ensure proper research conduct and management of sponsored funds.

Florida Blue Center for Health Care Quality

The Florida Blue Center for Health Care Quality brings together experts from a variety of disciplines at UF, including health services administration, nursing, health policy, medicine, pharmacy, public health, and sociology, to design and evaluate improved approaches to health care access and delivery. The Center is supported by a generous gift from Florida Blue with the ultimate goal of improving health and health care for

the citizens of Florida. The Center's faculty, staff, and students are accountable for the quality and integrity of all work conducted in the Center.

Through three new strategic Drivers of Health, the Center is firmly positioned to make a difference in the health of individuals and communities in Florida through its philanthropic resources. The Foundation will focus its funding priorities on these three areas that have a significant impact on the health of Floridians: Food Security, Health Equity, and Mental Well-Being. As the Center looks at the magnitude of the challenges presented by COVID-19, the Florida Blue Center for Health Care Quality will stay focused on individuals, families, and communities in need, even more so, after the COVID-19 pandemic.

Technological Access and Support. PI computers are connected to networks and have remote access to the server and shared drives. The entire Health Science Center complex has high-speed, wireless internet throughout. Site licenses are available for a full array of software, including SPSS and Microsoft Office. PIs have access to at least 146GB of memory via the network, and system support includes 24-hour access to consulting/technical services through UF's Information Technology (IT) Center. The IT Center provides services to ensure the informed and efficient use of information technology resources. The *Customer Support* team provides a single point of contact for all services, including desktop support. *Information Management* develops and maintains data-rich systems in support of enterprise applications. *Systems Administration* provides central network operating systems support, including email, file sharing, security systems, and data backup. Additional services include virus protection, desktop operating system integration, and web and database hosting.

The College of Nursing is co-located with the UF Health Science Center Library (HSCL), comprised of the main library in the Health Science Center, the Veterinary Medicine Reading Room, and the Borland Library in Jacksonville. The HSCL, containing the largest collection of health science reference material in the Southeast (over 3.3 million books and periodicals), ranks among the top 10% of health research libraries nationally. A full range of computer-based bibliographic search services are available, and books and articles may readily be requested from other libraries through the interlibrary loan system. HSCL's primary users include the faculty, students, and staff of the six colleges (Medicine, Nursing, Dentistry, Public Health and Health Professions, Pharmacy, and Veterinary Medicine) of the Health Science Center.

Visualization Wall. A state-of-the-art 10 x 5.7 ft. multiscreen visualization wall, also known as a hyper wall, is conveniently located in a spacious 38-seat conference room on the third floor of the University of Florida College of Nursing. The visualization wall, which will be available to researchers on the proposed project, combines nine 46-inch Planar flat panels with narrow bezels to create a seamless surface of more than 18,662,400 pixels. On this surface, researchers can display high-definition movies (1280x720 and 1920x1080) as well as other images with high resolutions (e.g. 9600x3240) for authentic, sharp images. Because the wall is powered by an Intel Core i7-6700 processor and runs on high-speed, gigabit internet, a single visualization can be shown instantly across all 9 screens or up to 9 or more visualizations can be shown at once to compare important objects, data, or ideas. Significantly, the wall serves as a dedicated, collaborative space that researchers can use to display their data, test their models, and draw conclusions with extreme accuracy. It also enables them to:

- Visualize and organize large research data sets
- Grasp subtle relationships among the data
- Explore ideas with highly representative, virtual reality 2D/3D simulation
- Collaborate with a group locally or remotely
- Participate in a videoconference with other collaborators
- Hold a lecture or workshop
- Simulate treatments and visualize predicted outcomes

In sum, the visualization wall enhances comprehension of scientific ideas and complex, experimental data through very lifelike, digital representations.

Biomedical Media Services in the HSCL. Housed in the HSCL, investigators have full access to services including photography, slide production, video development, graphics, and related production assistance.

University of Florida Academic Health Center

Information Technology Resources. *Within a short walking distance of the CON's research offices*, the University of Florida Academic Health Center (UF AHC) is supported by the UF and UF Health Shands Information Technology organization (UF and UF Health Shands IT). Research technology services are carried out primarily by two departments in UF and UF Health Shands IT. The Clinical and Translational Research Informatics Program (CTRIP) is a dedicated core facility providing research support in the areas of project collaboration, data collection, software engineering, database design, and data management. The Technical Services Department (TSD) is a well-established professionally managed comprehensive infrastructure services provider, providing storage, systems administration, networking and data center services in a highly available and secure environment. Both TSD and CTRIP are situated in the UF and UF Health Shands IT organization and work closely to meet research technology needs at the UF AHC.

Health Science Center Library.

The UF Health Science Center (HSC) Libraries are active partners in the education, research, training, and clinical needs of the HSC colleges, centers, and institutes, UF and the state. The HSC Libraries include two facilities – the main library on the Gainesville campus and the Borland Health Sciences Library on the Jacksonville campus – and are affiliated with the College of Veterinary Medicine Education Center Reading Room and UF Health Archives. The main HSC Library in Gainesville, founded in 1956 along with the College of Medicine, is a 48,454 square foot, technology-enhanced facility whose users may access 160 publicly available computers on all three floors of the library, including 26 big screen monitors. Free wireless access is available throughout the library, and patrons not affiliated with UF may request temporary access. In addition, seating and study space accommodating up to 872 patrons is available across three floors, including 99 seats in 33 study rooms (18 individual and 15 small group study rooms.) The Gainesville Library is open an average of 95 hours per week and averages 33,000 visitors per month. Reference assistance and search help are provided at the Information Desk.

Library services include reference assistance, course-integrated library instruction, circulation, document delivery, Interlibrary loan, photocopy services, course reserves, lockers, and study rooms. Computer access to electronic databases, journals, and catalogs is available onsite and remotely to authorized users. Since 1999, the HSC Libraries have operated a Liaison Librarian program to facilitate partnerships with academic faculty, researchers, and clinicians by assigning each HSC college or department one or more dedicated librarians who work closely with its faculty, staff, and students.

The HSC Libraries' collection includes reference materials, journals, books, audiovisuals, and electronic resources. As of July 2023, the Libraries' collection totaled 268,418 volumes available for immediate access or housed in a remote storage facility. This includes 147,984 unique monograph titles (books) in all formats and 17,854 serial titles (journals) in all formats, and our users have access to 92 databases. Total expenditure for the collection in Fiscal Year 2022-2023 was $3,651,384

UF Computational Infrastructure. Research Computing is one of seven core units within Information Technology. Its mission is to support research-oriented computing activity as needed by UF faculty and drive the University toward its stated goal of becoming a top-ten public research university. The High-Performance Computing Center is the group within Research Computing that operates and supports large-scale computing systems and data storage facilities for the benefit of the UF research community. Funding comes from multiple sources within the University. The funding model distributes the cost of our facilities among several major stakeholders all of whom benefit from a strong and active large-scale computing center. To facilitate collaboration, Research Computing maintains and coordinates a number of important partnerships, including: the Sunshine State Education & Research Computing Alliance (SSERCA) developing a state-wide computational science infrastructure of advanced scientific computing, communication and education resources by promoting cooperation between Florida's universities; the Open Scalable File System Consortium (OpenSFS) created to maintain the Lustre parallel file system as an open source project; the Florida Lambda Rail (FLR) providing the high-speed network infrastructure in the State of Florida; Internet2 operating the high-speed backbone between research universities and institutions in North America; the Southern Universities Research Association (SURA) working to foster excellence in scientific research, to strengthen the scientific and technical capabilities of the nation and of the Southeast, and to provide outstanding training opportunities for the next generation of scientists and engineers; Coalition for Academic Scientific Computation (CASC) dedicated to advocating the use of the most advanced computing technology to accelerate scientific discovery

for national competitiveness, global security, and economic success; the Extreme Science and Engineering Discovery Environment (XSEDE) as a single virtual system that scientists can use to interactively share computing resources, data, and expertise. XSEDE is the NSF-funded follow-on to TeraGrid.

High-performance computing cluster. Florida's largest high-performance computing cluster infrastructure is owned and deployed by the University of Florida under the collective name of **HiPerGator.** HiPerGator features 23,000+ Cores, 4+ Petabytes of storage, 200+ Gigabit per second to the campus research network, and 100+ Gigabit per second to external partners (such as the Florida Lambda Rail). HiPerGator features several open-source software for high-throughput data statistics and bioinformatics. We have already invested in the HiPerGator, and as investors, we have privileged access to this computing resource. The **Research Vault (ResVault)** system offers a user-friendly data storage and data processing capability for research projects that include patient health information (PHI). Significantly, it provides the ability to work on *data within a secure, auditable, efficient, and high-performance environment, which ensures compliance with* federal, state, and university regulations for PHI data.

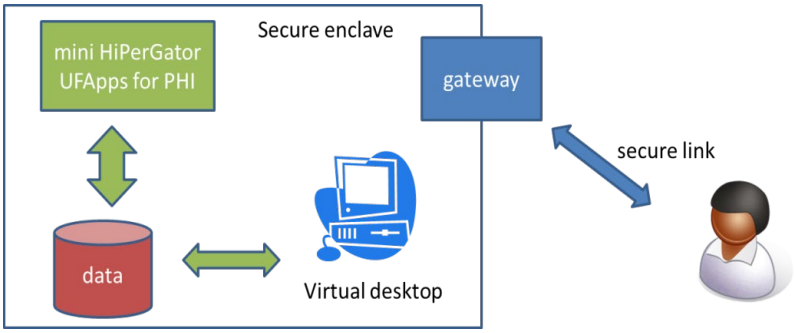

Figure 1: ResVault

ResVault is feature rich and allows researchers to (a) upload data for storage and easily access it for inspection and processing; (b) keep data secure from unauthorized access and log all authorized access to data and data movement; (c) share data between research projects when appropriate authorizations have been obtained; and (d) quickly process and analyze complex data sets. System administrators can also monitor system security and audit data access, reducing risk related to PHI data. Finally, the institutional review board (IRB) can review, approve, and monitor access to data, including access by collaborators to combined data.

General access to the services offered in the vault is from a client workstation or laptop computer that can be located anywhere on campus or in the world through a network connection and VPN. The display is shown on the client computer using virtual desktop and remote display technologies; no data is stored on the client workstation. High performance computing (HPC) software tools inside the vault allow researchers to perform complex data analytics (e.g. using maps-reduce programs (Hadoop) and machine learning tools (WEKA). Tools to import and export data in bulk are available, with proper authorization, to import large data sets with PHI (e.g. from a patient database like Epic) for HPC data analytics by an authorized project. Bulk export is needed to transfer large data sets (e.g. of de-identified data produced by HPC data analytics) for further processing by remote collaborators.

Software for big data processing and statistical computing. Satellite data base management systems and software for and warehousing, responding to the extraction-transformation-load (ETL) needs, as well as bridging the data storage at the physical level and proprietary DBMS (i.e. Oracle), is open-source and include: MySQL, Kettle – Pentaho, Jaspersoft, Talend Open Studio, and MethodBox, which offers reliable meta-data handling for the former suites. Regarding large data analytics and statistical inference, as well as for subsequent implementation, we will use R, Weka, and the integrated HPCC systems suite. Java is usually a preferred choice when writing new software because of its portability and the availability of a series of machine learning libraries coupled with big data frameworks like Hadoop. Python and C/C++ will be used if performance is required. Command-line software and libraries developed by us are released under the GNU general public license. All software is to be made available for download in well-known public repositories such as SourceForge.

Clinical and Translational Science Institute

The University of Florida Clinical and Translational Science Institute serves as a catalytic hub connecting resources, people and ideas across UF's 16 colleges, the state and the national Clinical and Translational Science Awards (CTSA) consortium. The CTSI's mission is to improve human health by accelerating the translation of scientific discoveries and the implementation of evidence-based best practices for the diagnosis, treatment, prevention and cure of human disease. Established in 2008 and headquartered in a dedicated LEED-platinum facility that opened in 2013, the CTSI amplifies the capabilities of individual and team investigators, and helps them more effectively and more quickly carry out clinical and translational research. The CTSI performs three central functions: 1) transforms and continuously improves the research environment by developing new capabilities for research and translation to practice; 2) delivers high-quality and efficient services and resources for translational research, and 3) cultivates a strong translational workforce. The CTSI offers a wide array of resources for teams interested in clinical and translational research. All 16 colleges at UF participate in the CTSI, and our partners include the UF campuses in Gainesville and Jacksonville, along with the UF Research and Academic Center at Lake Nona. The CTSI is an active member of the consortium ofClinical and Translational Science Award institutions funded by the National Institutes of Health, and also collaborates with numerous groups working throughout the state. The CTSI and its programs are supported by multiple grants, most notably a CTSA from the National Center for Advancing Translational Sciences of the NIH, and by significant institutional support from UF.

In 2013, the CTSI led the creation of the OneFlorida Clinical Research Consortium in collaboration with FSU, the University of Miami CTSA hub, and other stakeholders to extend the impact and reach of translational science throughout the nation's third-largest state. The CTSI serves as the coordinating center for OneFlorida, which bridges two national networks: the NIH-funded CTSA Trial Innovation Network and the Patient-Centered Outcomes Research Institute-funded National Patient-Centered Clinical Research Network.

Research Services and Resources. The CTSI offers more than 40 services to help streamline and accelerate the translational research process. Services address clinical, laboratory, consulting, informatics, recruitment, and other needs. In addition, the CTSI offers Research Project Navigators to assist with protocol development and provide regulatory support. Additional services include data analysis and research ethics support. The CTSI also offers pilot project awards to support innovative clinical and translational research.

The REDCap Consortium is comprised of 7,216 active institutional partners and supports a secure web application that supports research data capture. REDCap also allows quick and secure building and management of databases. At the University of Florida, REDCap backs data up to three off-site locations providing significant data protection.

Clinical Research Units. The CTSI offers 12 Clinical Research Units, which provide venues and expertise to support patient-oriented research around specific research areas or disease states (e.g. Aging, Pain, Cancer, Cardiovascular Disease, Dental, and Sleep Medicine).

Training and Professional Development. The CTSI Training and Professional Development Program supports the training and advancement of clinical and basic science investigators. Numerous opportunities are available for faculty, fellows, Ph.D. students, and research personnel. CTSI trainees and scholars represent all six colleges of the UF Health Science Center.

UF Health Integrated Data Repository. The UF Health Integrated Data Repository (IDR) was created to serve as a common source of information to be used by clinicians, executives, researchers, and educators. The IDR enables new research discoveries as well as patient care quality and safety improvements through a continuous cycle of information flow between the clinical enterprise and the research community. The IDR is a collection of disparate data organized in a manner that lends itself to understanding the relationships between data elements to answer questions. The UF Health IDR currently consists of a clinical data warehouse that aggregates data from various clinical and administrative information systems, including the Epic electronic medical record. The clinical data warehouse contains demographics, inpatient and outpatient clinical encounter data, diagnoses, procedures, lab results, medications, select nursing assessments, co-morbidity measures, and select perioperative anesthesia information system data. The IDR's clinical data

warehouse is HIPAA-compliant and can be accessed using i2b2, a web-based query, and analysis tool. IDR staff offer cohort discovery and honest broker services to Investigators.

Southeastern Center for Integrated Metabolomics

Part of the UF CTSI and the Southeast Center for Integrated Metabolomics (SECIM) bring together expertise and resources from multiple colleges and units at UF as well as Sanford-Burnham Medical Research Institute, the National High Magnetic Field Laboratory at Florida State University, Ohio State University, the University of Georgia, Imperial College London, the University of Geneva and industry partners IROA Technologies and Thermo Fisher Scientific.
SECIM provides comprehensive and complementary resources for clinical and basic science metabolomics studies. SECIM is developing an integrated metabolomics service to provide high-quality data, user-friendly statistical analysis tools, training and pilot funding to help users get the most out of a metabolomics study.

SECIM was funded in September 2013 by the NIH Common Fund's Metabolomics program, which has established a consortium of six Regional Comprehensive Metabolomics Resource Cores (RCMRC) and a Data Repository to serve users across the United States. SECIM will provide state-of-the-art metabolomics services to users in all areas of biomedical and biological sciences. Several technologies contribute to the SECIM pipeline, giving users the flexibility to choose the best approach for a particular problem. SECIM will also provide educational opportunities such as workshops and short tutorials to help train the next generation of metabolomics experts.

Core 1: Mass Spectrometry Services will provide high-throughput global and targeted metabolomic analysis.

Global metabolomics will be performed using state-of-the-art high-resolution mass spectrometry (HRMS) coupled to ultra-high pressure liquid chromatography (UHPLC) on serum, plasma, urine, tissue, cells, stool, and other sample types. Our primary platform for global services is a Thermo Scientific Q-Exactive mass spectrometer. Interactions with Core 3 will provide a mechanism to improve the overall global metabolomics platform as new technologies are developed.

Targeted metabolomics offerings include acylcarnitines, acyl-CoAs, amino acids, and organic acids in cellular extracts, plasma, or tissue using mass spectrometry. New assays will be developed based on:

- User demand and/or interest in other metabolite subsets and
- As a follow-up method development to validate putative metabolites identified by prior global metabolomics pursuits.

The targeted metabolomics—in partnership with Sanford Burnham in Orlando, FL—will employ MS with selected reaction monitoring (SRM) using either a direct infusion approach or after chromatographic separation (UHPLC or GC).

Core 1 is also responsible for developing and implementing SOPs for proper collection/storage of specimens and sample processing prior to MS and NMR.

Core 2: Nuclear Magnetic Resonance will provide a range of services for SECIM users:

Global metabolomics using standard 1D and 2D ^{1}H detection for solutions (serum, urine, extracts, cultures, etc.). These will utilize conventional 5-mm NMR tubes with sample volumes approximately 600 µL and a 600 MHz 5-mm cryogenic probe.

Tissue metabolomics using high-resolution magic angle spinning (HR-MAS). This utilizes a 4-mm Bruker HR-MAS probe operating at 600 MHz. HR-MAS provides high-resolution data without extraction, thus providing a link between *in vitro* and *in vivo* measurements.

In addition, Core 2 is developing the following areas of new technology, which are currently available through collaborative projects and will be available as services as they become fully established:

Biomarker identification using both automated and manual approaches using 2D NMR and MS/MS with Core 3. In addition to conventional 5-mm NMR probes, we have a 1-mm HTS NMR probe [1] that has the highest possible ^{1}H mass sensitivity for extremely mass limited samples.

Automatic mixture analysis using COLMAR [2], [3]. We are working with Prof. Brüschweiler on the development of new capabilities and improved database matching of mixtures.

Improved joint analysis of NMR and LC-MS datasets for more robust biomarker identification. This is in collaboration with the Nicholson/Holmes group at Imperial College and with SECIM Core 1 and Core 4.

^{13}C detection of both natural abundance ^{13}C and isotopically enriched samples. ^{13}C detection offers many advantages over conventional ^{1}H detection, primarily through the large chemical shift dispersion of ^{13}C. These capabilities utilize a novel 1.5-mm HTS NMR probe that is optimized for ^{13}C detection [4]. Sample volumes are about 40 µL.

Synthesis and characterization of DNP substrates. In collaboration with the Prestegard lab, we are working to expand the range of substrates for Dynamic Nuclear Polarization (DNP) NMR studies. Dissolution DNP can provide over 4 orders of magnitude enhancement of an NMR signal for a transient measurement *in vivo*. The goal of this SECIM offering will be to first identify relevant metabolic pathways using some of the standard approaches in solution using SECIM cores. Then, we will attempt to synthesize and test for DNP a substrate that will allow users to probe mechanisms *in vivo*. The DNP measurements will be made by our partner, the UF Advanced Magnetic Resonance Imaging and Spectroscopy (AMRIS) facility of the National High Magnetic Field Laboratory (NHMFL).

Core 2 utilizes NMR instrumentation in the AMRIS facility

Core 3: Advanced Mass Spectrometry will provide a range of services for SECIM users focused on unknown metabolite identification, metabolomics methodology development and imaging mass spectrometry. This core specializes in the analysis of small molecules and lipids from complex matrices using mass spectrometry. The facility is located in the Medical Sciences Building of the College of Medicine in room M641. We offer global metabolomic profiling and global lipidomic profiling using UHPLC-HRMS, which seek to find differences in small molecule or lipid expression in a given experiment. We have rigorous quality control guidelines and processes to ensure the reliability of results from these platforms.

We also offer quantitative targeted analysis of acylcarnitines, organic acids, amino acids, and short-chain Acyl CoAs. In addition, we have developed several other quantitative small molecule assays over the years including uric acid metabolites, tryptophan metabolites, one-carbon related metabolites (14 total compounds), DNA/RNA oxidation markers, DNA methylation, Coenzyme Q9 andQ10, Cholesterol, and rapamycin.

Integration of imaging mass spectrometry with global metabolomics, including MALDI/tandem mass spectrometric imaging of small molecules and correlation with MALDI/MS imaging of peptides and proteins

Biomarker identification in conjunction with Core 1 with accurate mass and high-mass resolution MS and tandem MS (MS/MS), as well as by correlation with NMR chemical shifts in conjunction with Core 2

In addition, Core 3 is actively developing the following areas:

Innovative isotopic methods for global metabolomics utilizing the IROA (isotope ratio outlier analysis) approach in conjunction with Chris Beecher at IROA Tech

Innovations and improvements in global metabolomics through close interaction with Core 1, including new methodologies, technologies, instrumentation, and software

Our Equipment:
Thermo TSQ Quantum Access: The TSQ Quantum Access can be used for a wide range of applications, including pharmaceutical, environmental, food safety, clinical research, and forensics.

Thermo TSQ Quantum Ultra: The TSQ Quantum Ultra can be used for quantitation of many molecules with astounding accuracy.

Agilent 5975 GC/MS: The Agilent GC/MS system is one of the most popular systems in the world. The reasons for this are the innovative features which increase productivity and the advanced analytical capabilities that provide better and faster results.

Thermo DSQ GC/MS: Our Thermo DSQ GC/MS can be used for small, volatile molecules. It can also be used to find small quantities of compounds in difficult matrices. This instrument can be used in a wide range of industries.

Thermo LTQ Velos: The LTQ is great for quantitative as well as qualitative analyses in all areas of industry.

Thermo Q Exactive Orbitrap: The Orbitrap boasts reliable high resolution and accurate mass which enables one to identify, quantify, and verify unknown compounds.

Core 4: Bioinformatics has three main components in SECIM:

A robust data pipeline and quality control standards will be established with the administrative core. The data will be stored and backed up with the UF high performance computing group, and the data structure will be compatible with easy transfer and deposition to the NIH Common Fund data repository center at UCSD.

Several interactive statistical tools will be developed and implemented on the Galaxy web interface. Users will receive their processed data that has been checked by quality control standards on this site, and several simple tools will be available for statistical analysis. This site will interface with and complement similar capabilities at the UCSD data repository to provide users with clean metabolomics data that can be integrated into other studies that have their own biostatistical support.

Education about the tools that are available in SECIM in conjunction with the Promotion & Outreach core.

The Promotion & Outreach Core will provide annual metabolomics workshops to educate new and experienced users, regular “brown bag lunch” discussions about specific focused topics in metabolomics, and other educational content. P&O will also be in charge of distributing SECIM pilot and feasibility (P&F) awards to help new users obtain metabolomics data to support future grant proposals. P&F awards will be made annually, with expected application deadlines in the spring of each year during our NIH funding. The P&O core will work with groups to assist them in their metabolomics proposal applications.

Unique Features of the Environment

College of Nursing is Co-located with Diverse Array of Resources

Unlike most other universities, UF’s health science colleges, medical research facilities, and liberal arts colleges are ***all within a short walking distance of each other.*** The following institutions collaborate closely with the CON:

UF College of Pharmacy

The UF College of Pharmacy (UF COP) was established in 1923, and is the oldest college in the UF Health Science Center. Today, the college is ranked among the top colleges and schools of pharmacy in the nation. In keeping with the University of Florida mission, the college is dedicated to excellence in pharmacy research, service, and educational programs enhanced through online technologies.

The UF COP prepares students who seek academic training and degrees in professional practice and graduate research areas. The doctor of pharmacy degree is offered to students in four Florida cities, and also to working pharmacists with bachelor's degrees across the United States. The college has five academic departments each with a unique research focus and a highly successful track record of obtaining extramural research support. UF COP faculty have appointments in one or more departments and often teach and conduct collaborative research projects with clinical and other basic scientists within the Health Science Center, UF Health Shands Hospital, or other colleges on campus. Many faculty also serve on editorial boards for scientific journals and maintain collaborative ties with scientists worldwide. The five research departments include the following:

- **Medicinal Chemistry**

The department of Medicinal Chemistry is a unique blend of the physical and biological sciences and has a broad field of scope that provides students with a rewarding and challenging program of study. Areas of active interest include drug discovery, organic synthesis of medicinal agents, natural product chemistry, prodrugs, topical drug delivery, peptide chemistry, molecular modeling, drug metabolism, and molecular toxicology.

College of Medicine

The UF College of Medicine continues to have one of the premier medical education programs in the country. Founded in 1956, the College of Medicine encompasses 29 clinical and basic science departments staffed by 1,400 faculty members between the Gainesville and Jacksonville campuses. Its research programs, featuring some of the leading basic and clinical scientists in their fields, increasingly focus on translational science and the college is the leading educator of outstanding physicians, physician assistants, and biomedical scientists for the state of Florida. College researchers are involved in collaborative research in several research institutes and centers within the university, including the Evelyn F. and William L. McKnight Brain Institute, the Emerging Pathogens Institute, the Genetics Institute, the Institute on Aging, the UF Health Cancer Center, the Diabetes Institute, the CTSI, the Institute for Child Health Policy and the Research and the Research and Academic Center at Lake Nona. New data on 2023 National Institutes of Health research funding places three UF College of Medicine programs in the top 5 nationally among their respective programs and a total of 10 ranked in the top 20 among public institutions. With more than $20 million in NIH research funding in 2023, the Lillian S. Wells Department of Neurosurgery landed the No. 2 spot nationally, according to rankings published by the Blue Ridge Institute for Medical Research in February. Under a combined neurosciences category, the departments of neurology and neuroscience ranked No. 3 among all institutions, bringing in nearly $32 million in total funding. And with more than $18 million in NIH funding, the department of surgery ranked 5th in the nation.

Through UF Health and a network of UF clinics, College of Medicine physicians provide cutting-edge care to residents of Florida and to patients around the world who travel to Gainesville and Jacksonville for specialized care. In addition to the medical degree, the college offers a variety of educational opportunities including the Interdisciplinary Program in Biomedical Sciences and joint programs for both M.D. and Ph.D. degrees. The college also plays an important role in the continuing education of resident physicians and fellows through its collaboration with the UF faculty group practice clinics and UF Health. Commitment to diversity is a core value in the UF College of Medicine and the college knows it is stronger when we draw on a broad variety of backgrounds and experiences in both patient care and research.

- **McKnight Brain Institute**

  The McKnight Brain Institute of the University of Florida is one of the nation's most comprehensive and technologically advanced centers devoted to discovering how the normal brain operates, and how we can repair the brain following injury, disease, or aging. Today the MBI-UF collaborative spirit is alive and growing and is represented by over 300 faculty from 51 academic departments and ten colleges and entails research and educational programs in nearly all aspects of basic, clinical, and translational neuroscience. Additional collaborators around the world expand this into an international effort. The

MBI is unique with its breadth and magnitude of multidisciplinary talent focused on understanding and developing new therapies for nervous system afflictions. With a design theme beyond the state-of-the-art, the conceptual mission of the extramurally funded, $60 million, 210,000 sq. ft. MBI-UF building was that it serves as a catalyst and focal point for widely diverse, but synergistically interacting multidisciplinary research programs. Thus, in addition to an obvious emphasis on high technology, the strategic design of the MBI-UF includes a strong emphasis on multi-user core facilities within research and clinical setting that includes highly dedicated and gifted basic science and clinical researchers.

- **College of Public Health and Health Professions**

  One of the largest and most diversified health education institutes in the nation, the College of Public Health & Health Professions is one of six UF Health colleges. Across its eight departments — biostatistics; clinical and health psychology; environmental and global health; epidemiology; health services research, management and policy; occupational therapy; physical therapy; and speech, language, and hearing sciences — the college offers two bachelor's, seven master's, eight PhD and three professional degree programs. The college is also home to five National Institutes of Health-funded training grants in breathing research and therapeutics; movement disorders and neurorestoration; physical, cognitive and mental health; rehabilitation and neuromuscular plasticity; and substance abuse. The college's research funding has more than doubled during the last decade, and its faculty members are among the most productive at the university. The College of Public Health and Health Professions ranks in the top 10 for NIH funding among schools of public health at public universities, according to the Blue Ridge Institute for Medical Research. College investigators received grants from a mix of federal, state, non-profit and industry partners. Federal funding, which increased by 33%, came from agencies including the National Institutes of Health, the Centers for Disease Control and Prevention, the Department of Defense, the Department of Veterans Affairs and the National Science Foundation. . Public Health & Health Professions faculty members are working on research projects close to home and in countries throughout the world on a diverse range of topics, including muscular dystrophy, dementia, sports concussions, driving safety among older adults and at-risk populations, rehabilitation following traumatic injuries, suicidal ideation, violence and addiction, obesity, nutrition, and physical activity, and infectious diseases such as cholera, Ebola, malaria, and Zika.

Pain Research and Intervention Center of Excellence (PRICE)

Dr. Fillingim is the Director of the University of Florida's Pain Research and Intervention Center of Excellence (PRICE), a multi-college Center of Excellence that serves as the professional home for UF scientists, clinicians and trainees dedicated to improved understanding and treatment of pain. PRICE is affiliated with and supported by the UF Clinical and Translational Science Institute (CTSI), and receives strong support from the UF Institute on Aging and the UF Health Shands Cancer Center. PRICE provides member investigators with several resources and services in order to facilitate clinical and translational pain research at UF.

Regulatory Support: Through its affiliation with the CTSI, PRICE offers investigators assistance with protocol development, and preparation of IRB and other regulatory documents in order to ensure rapid regulatory approval and full compliance with all appropriate standards.

Assistance with Recruitment of Research Participants: PRICE maintains a registry of more than 1,000 potential research participants who have expressed interest in research participation and have provided permission for future contact. This registry includes individuals from several different patient populations as well as those who are generally healthy and can serve as control subjects. The registry is comprised of an ethnically diverse group of individuals between 18 and 85 years of age who were recruited via multiple methods, including print, radio, and electronic advertisements, clinic-based recruitment, and word of mouth.

Facilities and Resources for Data Collection: PRICE offers facilities and services to assist investigators with the collection of pain assessment data in their research protocols, via the Pain Clinical Research Unit (see below). Investigators can conduct their own studies in the PainCRU, or they can request that the PainCRU staff collect the data for their protocol.

In addition, PRICE endeavors to enhance the intellectual and professional work environment for the UF pain research community by coordinating training activities related to pain, including our T32 training grant in translational pain research, as well as journal clubs, seminar series, and monthly Pain Interest Group.

In early 2013, PRICE occupied its physical home in the new Clinical and Translational Research Building (CTRB), and a state-of-the-art research building that serves as the home for clinical and translational research at the University of Florida. The CTRB provides offices for the PRICE Director and Program Manager as well as the Director of the Pain Clinical Research Unit (see below) and several PRICE research staff members.

Major equipment

The PainCRU is a component of PRICE, which provides a patient-oriented research venue designed to facilitate and foster clinical and translational pain research at UF. The PainCRU currently occupies space on the second floor of the Dental Tower at the University of Florida Health Sciences Center. This space includes ***two fully equipped quantitative sensory testing (QST) units***, each approximately 150 square feet. Recently, the PainCRU was provided two additional QST rooms in the Clinical Research Center in the north wing of the new Clinical Translational Research Building (CTRB). The PainCRU is staffed by well-trained research staff, including an Advanced Registered Nurse Practitioner, a phlebotomy-trained research coordinator, a lab manager, multiple research technicians, and numerous trainees, including undergraduate, graduate, and professional students, post-doctoral fellows, and junior faculty members.

OneFlorida Clinical Research Consortium

The consortium is a statewide partnership among the University of Florida, University of Miami, Florida State University, health care systems, health plans, providers and patients funded by the Patient-Centered Outcomes Research Institute (PCORI) to support patient-centered health care research throughout Florida and the country. It includes 14 academic institutions, 22 hospitals, 1240 clinical practices and 4,100 physicians, providing care for close to 40 percent of Floridians. The consortium is one of 13 clinical data research networks nationwide, which are working to accelerate the translation of promising research findings into improved patient care.

University of Florida Institutional Review Board (IRB)

The UF Institutional Review Board offers educational seminars and resources for investigators that cover regulatory requirements, research misconduct, conflict of interest, data management, and other pertinent research topics.