

FACILITIES & OTHER RESOURCES

Updated June 11, 2018

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- OneFlorida Clinical Research Consortium
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- College of Agricultural and Life Sciences
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- College of Design, Construction & Planning
- College of Education
- College of Engineering
- College of Health & Human Performance
- College of Journalism and Communications
- College of Liberal Arts & Sciences
- College of Medicine
- College of Nursing
- College of Pharmacy

- College of Public Health & Health Professions
- College of the Arts
- College of Veterinary Medicine
- Levin College of Law
- Warrington College of Business Administration

ADDITIONAL FACILITIES AND RESOURCES AFFILIATED WITH THE CTSI

- Office of Biomedical Research Career Development
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 - UF Survey Research Center
- Cardiovascular Cell Therapy Center
- Cell & Tissue Analysis Core
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UF CTSA HUB FACILITIES AND RESOURCES

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 CTSA'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 CTSA amplifies the capabilities of individual and team investigators, and helps them more effectively and more quickly carry out clinical and translational research. The CTSA 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 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 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.

RESEARCH SERVICES AND ADMINISTRATION

Service Center. Facilitates rapid activation of research for investigators performing translational research across the UF campus and provides a range of research services and resources, including biostatistical and regulatory support, data support through the Clinical and Translational Science-IT and Research Electronic Data Capture (REDCap) teams, recruitment and retention support through the CTSI Recruitment Center, and facilities to conduct research through the UF Clinical Research Center. The CTSI Service Center also provides Regulatory Knowledge and Support for investigators, including access to a Research Subject Advocate, informed consent expertise, IND and IDE assistance, ClinicalTrials.gov assistance, ethics consults, data safety monitoring assistance, and Standard Operating Procedure development. The Regulatory Knowledge and Support team can also provide Good Clinical Practice, Good Laboratory Practice and Good Manufacturing Practice training. The CTSI Service Center's Research Navigators advise research teams on available resources and help them navigate research-related processes. Navigators are well-versed in IRB application preparation, protocol development, Good Clinical Practice guidelines, and NIH research rules and standards for the design, conduct, performance, monitoring, data collection, management, analysis, and reporting of clinical trials. Through consultation, Navigators help investigators assemble research teams to conduct studies, provide budget reviews, and oversee study management. The CTSI Service Center also links investigators to other CTSI resources and CTSI-affiliated core facilities such as the Human Imaging Core and the Center for Safety, Simulation and Advanced Learning Technologies. The CTSI Service Center works closely with investigators, the UF Institutional Review Boards, the CTSI Office of Clinical Research, and numerous service providers across the CTSI.

The service center holds monthly liaison meetings with all component/program leads, who cross-refer investigators as appropriate to resources available throughout the study life cycle.

Services

The CTSI Service Center provides a central access point to services across the components.

Component	Service
Administrative Core	<ul style="list-style-type: none"> ● Navigation support and referrals ● Communications consultation ● Dissemination consultation
Informatics	<ul style="list-style-type: none"> ● CTS-IT (data management, database and software development services, including REDCap) ● IDR/i2b2 ● OneFlorida Data Trust/i2b2 ● Advanced Data Capabilities
Community Engagement	<ul style="list-style-type: none"> ● HealthStreet ● Citizen Scientists
Biostatistics, Epidemiology and Research Design (BERD)	<ul style="list-style-type: none"> ● Consultation, Study design, data analysis, design studios, data coordinating
Regulatory Knowledge and Support	<ul style="list-style-type: none"> ● ClinicalTrials.gov, IRB, IACUC, IND/IDE, DSMB, billing/compliance reviews, ethics, research participant advocate, translational drug development Internal audits, quality assurance support, human subjects protection monitoring, ● Fee-for-service model to assist investigators with completion of regulatory documents ● Plan bioanalytical or animal testing; 3) identify companies for outsourcing; and 4) assist in preparing data for licensing submission through UF Innovate, the university's technology commercialization enterprise
Hub/Network Capacity	<ul style="list-style-type: none"> ● Navigation support, consultation and referrals

	<ul style="list-style-type: none"> • Pilot grant opportunities with consultation and scientific review • Clinical Research Center (space, nursing, laboratory, nutrition, specialized equipment, study personnel, quality monitoring, OnCore support) • Investigational Drug Service, support, quality, safety reviews • Recruitment Center (recruitment and retention planning, cohort feasibility discovery, strategy development, templates, Consent2Share, HealthStreet, ResearchMatch, social media, special populations) • Multisite Study Support - Trial Innovation Network, SMART/Central IRB, Office of Clinical Research, OnCore, ACT, OneFlorida, recruitment, pharmacy, billing and troubleshooting services, investigator/collaborator/partner site support
Other: Cross-Cutting Translational Technologies/ Facilities	<ul style="list-style-type: none"> • Biobehavioral, cellular reprogramming, imaging, simulation, biorepository, metabolomics, pharmacogenomics, genotyping

Office of Clinical Research. Created in 2017 as a one-stop shop for managing clinical studies from start to finish. Part of the CTSI, with support from the UF Office of Research and the UF College of Medicine, the Office of Clinical Research leads two major initiatives: 1) Implementation of OnCore as an enterprise-level clinical research management system; and 2) reorganization of clinical research resources and administration into a more facilitative model that merges staff and functions from Research Administration and Compliance, CTSI, UF Health, Cancer Center and Office of Research units. In use at the UF Health Cancer Center since 2009, OnCore manages multiple aspects of clinical research, including protocols, participants, billing, data and specimens. Housed under the CTSI, the Office of Clinical Research redesigned workflows to leverage the full functionality of OnCore, minimize bottlenecks and streamline processes. In response to recommendations of the UF Human Subject Research Taskforce convened in the fall of 2015, the Office of Clinical Research provides support to clinical research teams campuswide, with major functions of the office including OnCore user support, system maintenance, analytics and reporting; education and training, including OnCore utilization and regulatory and compliance processes; study finance, including sponsor invoicing and collections, contract negotiations and budgets, and OnCore protocol calendars and billing grids; and clinical research support and facilitation through the CTSI Service Center, which provides Clinical Research Center, recruitment, navigation, regulatory, quality management, biostatistics and investigational pharmacy services.

INFORMATICS

Biomedical Informatics Program. BMI has a programmatic home in the CTSI and an academic home in the Department of Health Outcomes and Biomedical Informatics. Since August 2015, Biomedical Informatics launched three graduate programs hosted in the Department of Health Outcomes and Biomedical Informatics: a graduate certificate, master's concentration in BMI, and a PhD concentration in BMI. There are six faculty, one postdoctoral fellow, and 10 staff in the program, located in the CTSI's office space within the Clinical and Translational Research Building and in separate Health Outcomes and Biomedical Informatics office space. In addition to these academic components, Clinical and Translational Science Informatics and Technology (CTS-IT) is also a component of the BMI Program. The BMI Program also encompasses the research-focused activities of the Integrated Data Repository and the IT-related activities of the Office of Clinical Research.

- **Clinical and Translational Science Informatics and Technology (CTS-IT).** A CTSI informatics support unit with 21 employees and 3,645 square feet of office space separate from the CTRB and Health Outcomes and Biomedical Informatics space. The CTS-IT cost-recovery unit provides data-management, database and software services to investigators, research centers and consortia. CTS-IT staff offer design and development of custom software applications for research including RED-I, UF's software application to move data from UF's Integrated Data Repository, and other institutions' EHR data, to REDCap. CTS-IT also offers informatics consults, research system hosting in accordance with UF's strategic plan for biomedical informatics, data workflow development and management of research software. CTS-IT summer informatics student internships, a project-driven approach to expand the data-driven knowledge of healthcare research, offer students the opportunity to gain informatics skills such as data harvesting, manipulation, translation and analysis. Business informatics internship entails financial analysis, charts and narrative about accomplishments in the fiscal year.
- **mHealth Laboratory.** The mHealth Laboratory develops apps to: 1) support clinical interventions that improve the management of chronic conditions; and 2) improve cancer control, from prevention to survivorship. It has analyzed the quality of pre-existing apps and reported on its own apps. Focuses on the development of algorithms and their informatics implementation in biomedical research (health informatics

and bioinformatics), with a particular emphasis on the understanding of medical decision-making processes, involving patients and healthcare providers.

CTSI Data Coordinating Center. In February 2018, the CTSI created a Clinical and Translational Science Data Coordinating Center. While Biostatistics has a long history of data coordinating capabilities, these efforts have been focused on the Children's Oncology Group. In the new center, a coordinated group of biostatisticians and data scientists will provide clinical trial data management, develop data privacy technologies, and enable crowdsourced data collection and medical data sharing.

The new center will leverage the CTSI Biomedical Informatics Program's development of OnCore-REDCap interfaces for a web-based platform that integrates electronic data capture and clinical trial management capabilities. It will provide support for all study operational activities with the CTSI Service Center, including development of study protocols and case report forms, seamless and innovative/ adaptive randomization, regulatory document management, and medical safety, data quality and trial progress monitoring. The integration of data collection and trial management will make it feasible to implement innovative designs when appropriate, improve efficiencies of clinical trial development and execution, and enhance chance of trial success.

Also, the center will expand its research on data privacy technologies and implement these methods for sensitive information collection and medical data sharing. The team invented data masking technologies such that, without sharing the original data, standard statistical analysis can still be performed with the same results for masked data. These technologies will greatly increase people's willingness to reveal sensitive information or participate in crowdsourced projects and research teams and institutions to share medical data.

The center can serve as a laboratory where BERD, RKS and BMI faculty can collaborate to advance innovation in regulatory science, privacy protection, data security and data analysis.

Platforms and Systems.

- **REDCap (Research Electronic Data Capture).** A secure, web-based application designed to support traditional case report form data capture for research studies, provided at no cost for use with any research project. For those with funding, fee-based configuration services are also available to jump-start a given project. REDCap was developed at Vanderbilt University. UF and more than 2,100 other partners now comprise the REDCap Consortium that continues to develop and support the software. Using REDCap's streamlined process for rapidly developing databases and/or surveys, users create a project, define and organize the data they wish to capture, build the related forms/surveys and associate them with study events. Other features include automated export procedures for seamless data downloads to Excel and common statistical packages (SPSS, SAS, Stata, R), as well as a built-in project calendar, a scheduling module, ad hoc reporting tools, and advanced features, such as branching logic, file uploading, and calculated fields. At the time of this assessment, the UF REDCap supported 544 projects with 2,120 users. The system held the records of approximately 12,000 study participants and an annual growth rate of 3,000 per year. The REDCap Web Application is supported and managed by the CTSI team, and the REDCap backend database is managed by the UFHealth Enterprise server team. All components are housed in the UFHealth Data Center. REDCap authentication uses the UF enterprise Shibboleth system.
- **EpicCare Electronic Health Record/MyChart.** In use at UF Health since 2011, the EpicCare Electronic Health Record system offers a patient portal, MyUFHealth (using the MyChart software) that allows patients to communicate with providers and access portions of their medical records, such as schedule and test results, from a computer or smart device.
- **OnCore Clinical Trials Management System (CTMS).** UF uses the web-based OnCore® Enterprise Research system to streamline its data management needs for clinical research. The OnCore® application enables research teams to efficiently manage their research portfolios by supporting the management of regulatory, clinical, and biospecimen data. Financial management of accounts receivable ensure timely and accurate invoicing. Additionally, UF has implemented an integration with the electronic health system (Epic®) at UF Health. The Epic® interface moves demographic data from Epic® into OnCore® and OnCore® creates research records and patient timelines in Epic. The movement of patient data between interfaces is completely within the secure UF/UF Health computing environment (please see below). Functionally, this reduces manual data entry, supports harmonized data within the two systems and ensures accurate and timely information within the patient's medical record that is available at the point of care.

OnCore® can also track regulatory and patient information centrally at multiple clinical sites. These sites are

considered “affiliate sites” within OnCore®. Clinical and research staff working on the protocol can securely access a central repository of information and track patient enrollments and data. In order to accomplish this securely, the staff must be added to the UF directory and will need to both run the UF Health virtual private network and provide current credentials for secure authentication (please see below for more details on OnCore® security).

The OnCore® support team provides UF investigators with the needed resources and technical support to manage their clinical research projects. This team of OnCore® analysts provides service and support to investigators through end-user training, product builds within the application, and report design services.

OnCore® has four instances: training, validation, staging, and production. OnCore® a JBOSS Enterprise Application Platform front-end which is connected to an Oracle SQL database back-end. The OnCore® support team facilitates the implementation of all product updates by conducting thorough testing of all product patches and upgrades in the validation and staging instances. After successfully passing all validation steps, these application updates are then placed into production. Back-end database security, system back-ups, and database upgrades are managed by the UF academic health center database core.

The OnCore® Enterprise Research system uses internal security controls which meet or exceed the relevant requirements of the federal information system standards (FISMA and FIPS). These security requirements include: access control; audit functionality; configuration management; identification and authentication functionality; system and communication protections; and, system and information integrity. The OnCore® system is also positioned within a secure network only allowing access users within the private UF network. Users external to the UF network must connect to the network using a virtual private network connection. These security measures help keep important research data free from unauthorized access, use, disclosure, disruption, modification, or destruction.

- **UF Health Integrated Data Repository.** Serving as both as the CTSI’s research data warehouse as well as the UF Health enterprise data warehouse, the Integrated Data Repository is a collection of disparate data organized in a manner that lends itself to understanding the relationships between data elements to answer questions. The Integrated Data Repository 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 research community. A clinical data warehouse that aggregates data from the various clinical and administrative information systems, including the EpicCare electronic health record, it 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. Staff offer cohort discovery and honest broker services to investigators. The Integrated Data Repository used the open-source RED-I software developed by Clinical and Translational Science Informatics and Technology to automate daily pulls of clinical laboratory data and load them into REDCap.
- **CTSA Accrual to Clinical Trials Project.** This initiative will create a CTSA Federated Network designed to significantly increase participant accrual to the nation’s highest priority clinical trials. To achieve this goal, the Accrual to Clinical Trials Project will leverage the widespread implementation of the electronic health record (EHR) and the extensive informatics and regulatory expertise within the CTSA network. Early work will enable cohort exploration across the federated network. This will build upon the accomplishments of individual CTSA’s and networks of CTSA’s that have created informatics infrastructure, policies, and procedures that have successfully demonstrated the capacity to conduct EHR-driven cohort exploration. Initially, the most experienced sites will form the federated network. Additional sites will join every six months.
- **OneFlorida Data Trust.** Informatics infrastructure that supports pragmatic trials; comparative effectiveness research, implementation science, and other research in the OneFlorida Clinical Research Consortium. The OneFlorida Data Trust serves as the Data Hub for the South East Enrollment Center, part of the NIH’s All of Us Research Program. The OneFlorida Data Trust contains collated health care claims, electronic health record (EHR), and other data on a broad-based population of ~15 million people in Florida. These data exist as one or more limited data sets, as defined by the Health Insurance Portability and Accountability Act (HIPAA) laws and associated regulations. EHR data are submitted to the Data Trust in two formats: 1) the Patient-Centered Outcomes Research Institute’s Common Data Model, and 2) as close

to raw files as possible. In both cases, OneFlorida does not request any contact information for patients (i.e., only a limited data set). The contact information for the patients is held at the local sites of the clinical partners. An honest broker system is used with linking variables so that patients can later be re-identified for studies. Data for the Florida Medicaid and Medicare (dual eligibles only) programs are submitted as enrollment files and claims data with fully identified information.

- **Accessing the OneFlorida Data Trust:** All OneFlorida Data Trust access is provided solely through the use of a Virtual Desktop Infrastructure (VDI), which can be accessed from academic health center networks on campus or through the use of the academic health center VPN when off-campus. These VDI machines have MS SQL Management Studio installed locally so that SQL databases can be manipulated directly from the VDI. There are two “versions” of the VDI machine: one which has persistent storage, on which saved data is retained upon system reboot, and another which has non-persistent storage, meaning that anything saved to the VDI itself is lost upon system reboot. Persistent VDIs are typically used for those with administration responsibility in OneFlorida. Non-persistent VDIs are typically used for research and other non-administrative access. In general, however, the VDI machines are not intended to be used for heavy workloads, but rather as a vehicle for remote desktop connections to various OneFlorida servers.
- **VDI Infrastructure:** Powered by two HP Proliant DL560 Gen9 servers. Each of these has two E5-4699 CPU's with 18 cores running at 2.1 GHz, 384 GB of RAM, two 10 Gbps NIC's, and two 16 Gbps HBA's. VMWare Horizon View version 7.1 is the software used to provide the VDI environment itself. VDI's themselves are configured as persistent and per-user, or more generic and non-persistent depending on the role and needs of the end user.
- **Server Infrastructure:** Completely virtual and powered by three HP Proliant DL360 Gen9 servers. Each of these has two E5-2697 CPU's with 14 cores running at 2.6 GHz, 384 GB of RAM, two 10 Gbps NICs, and two 16 Gbps HBAs. VMWare ESXi 6.5.0 is the software used to provide the virtual server environment itself.
- **Disk Infrastructure:** All storage for OneFlorida is provided by a 2-node IBM V700, Gen2 array. This consists of 159 600GB/15k RPM disk drives, with 7 drives as dedicated spares. This array is broken up into 19 RAID5 mdisks of 3.82 TB in size. Total usable capacity of the array is 72.51 TB, compressed and encrypted. At this point, 84TB across 43 virtual LUN's has been provisioned for OneFlorida, with only 20.87 TB of actual storage being consumed due to the use of disk compression. Scheduled for early July is the addition of 24 800GB solid state drives (SSDs). These will provide dramatically increased read times, especially important for things like SQL temp space which should see a significant improvement in performance.

COMMUNITY ENGAGEMENT

Engagement Programs.

- **UF HealthStreet.** A cornerstone of the community engagement program, HealthStreet has enrolled more than 10,000 members. The HealthStreet team supports community engagement activities across CTSI programs out of a Gainesville facility that provides a one-stop portal of entry for linking and navigating underrepresented populations to social services (food pantry, housing, criminal justice, etc.), medical and psychiatric services (MDs, nurse practitioners, drug treatment, blood pressure, glucose screenings, etc.), and research opportunities. The 10K-square-foot southwest Gainesville location also includes a lobby, a community center, a conference room, multiple meeting spaces, several interview rooms, two kitchen facilities and handicap accessible restrooms and showers. HealthStreet relies on Community Health Workers, who drive three seven-passenger vans drive to outreach locations and to provide transportation to community members for engagement. Community Health Workers operating in 46 of 67 counties in Florida complement the Gainesville outreach efforts. Additionally, HealthStreet leads a national network of 18+ CTSA sites in conducting Our Community, Our Health events. These monthly forums promote bi-directional communication between researchers and the communities they serve, addressing relevant health topics and disseminating research findings. The events are streamed nationwide and are interactive using text messaging and social media.
- **Citizen Scientist Program.** Adult and adolescent Citizen Scientists offer a lay perspective in proposal review, patient recruitment strategies, and in other areas where stakeholder engagement may be needed.

The program developed an online educational curriculum to help train new Citizen Scientists who join the group at UF or elsewhere. The curriculum is broken out into seven topical modules, each of which contains several videos that are accompanied by resources to aid learning. Each didactic presentation is followed by a brief assessment to gauge comprehension of the topic presented. All modules include videos of Citizen Scientists offering insights from their work and guidance for new Citizen Scientists. These materials are offered as an Open Educational Resource at <http://citizenscientist.ctsi.ufl.edu/>. An instructor guide has been created as a companion resource to the modules, and contains additional elements that will help learners apply lesson content in real-world settings. The raw curriculum materials are available upon request and may be ported into an online learning management system to enhance structure and compliance.

Outreach Collaborators.

- **Institute of Food and Agricultural Sciences (UF/IFAS).** An integrated unit with missions dedicated to teaching, research, and outreach. The research mission is pursued through the Florida Agricultural Experiment Station, where faculty conduct cutting-edge research in agriculture, natural resources, and life sciences through the Florida Agricultural Experiment Station in order to facilitate solutions in Florida, the country, and the world. An integrated unit with missions dedicated to teaching, research, and outreach. UF/IFAS conducts groundbreaking research in program areas vital to people and the environment such as sustainability, energy, climate change, water, food systems and human health, ecosystem health and services, and resource production. With nearly 500 faculty members with research appointments in 15 academic departments, UF/IFAS research is robust across disciplines. UF/IFAS scientists collaborate among departments and fields and with researchers at other UF colleges and institutions in the US and abroad to address key issues in agriculture and natural resources. UF/IFAS research is located throughout Florida, including 12 research and education centers, four research and demonstration sites, a research forest, a biological field station, and a tropical fish hatchery. UF/IFAS has 10 members in the American Association for the Advancement of Science and three members in the National Academy of Sciences. The diversity and complexity of UF/IFAS research projects are astounding, from studying waterways in Florida's backyard to researching how microbes grow on Mars. Among many other topics, UF/IFAS research projects encompass topics such as how to be contributing knowledge that will help breed tastier tomatoes, combat citrus greening, produce more efficient biofuels, create better pine forest management techniques, discover linkages between digestive tract bacteria and Type 1 diabetes, and grow rice in aerobic conditions using less water.

TRANSLATIONAL COMMUNICATION

Translational Communication Program. A collaboration with the STEM Translational Communication Center in the UF College of Journalism and Communications, the CTSI Translational Communication Program unites UF's communications professionals, communication researchers and translational scientists to expand the integration of communication practice, science and pedagogy in translational research. The program incubates cutting-edge, interdisciplinary health communication research; catalyzes work at the intersection of communication research and practice in support of the CTSI Recruitment Center and other programs; expands access to College of Journalism and Communications graduate courses, lectures and programs to help current and future translational researchers develop core competencies and skills in health and science communication; and offers a consultation service through which research teams can obtain expert guidance on communication or dissemination strategy development, audience analysis and segmentation strategies, templates and best practices, and referrals to related resources and collaborators. The program team includes the CTSI Recruitment Center postdoc and works closely with STEM Translational Communication Center affiliates, the CTSI's strategic communications team and the UF Health Communications division. Program faculty and STEM Translational Communication Center affiliates have direct expertise in the area of patient participation and retention in clinical research and health inequities. The program's research in this area includes message framing, physician-patient communication, family-patient communication, and community engagement as related to health inequities regarding research-study participation.

The goal of the program is to contribute to translational communication research and practice through theoretically informed and evidence-based health message design, dissemination, and evaluation. Specifically, the Translational Communication Program supports the formation and development of interdisciplinary teams focused on improving communication with patients, caregivers, and community members. Established in 2009, the program has grown to not only connect researchers with similar interests, but to also provide funds to

support preliminary studies and offer seminars, workshops, and colloquia for faculty and students. The program director, Janice Krieger, PhD, as well as several faculty affiliated with the Translational Communication Program, have direct expertise in the area of patient participation and retention in clinical research and health inequities. The Translational Communication Program includes research topics on message framing, physician-patient communication, family-patient communication, and community engagement as related to health inequities regarding research-study participation. This background, coupled with extensive experience working in interdisciplinary, federally funded research teams, will support the development of theoretically informed and evidence-based interventions to promote recruitment and retention of research participation as described in the current proposal. The Translational Communication Program has a number of resources in place to support continued success in collaborative efforts. One is significant commitment of effort by the director to actively participate in the proposal. Another is a PhD-level research assistant who is available to consult (under the direct supervision of the director) with CTSI researchers about communication issues related to research participant recruitment and retention. Finally, the Translational Communication Program has access to resources and dedicated space associated with the STEM Translational Communication Center located within the College of Journalism and Communications. Resources include half-time administrative personnel, office space, and a meeting room with top of the line technology for conducting interviews and focus groups.

STEM Translational Communication Center. Housed in the College of Journalism and Communications, the center helps to make findings from basic science useful for practical application to enhance human well-being in science areas. Properly translated and communicated to various audiences, complex science can inform decisions about any number of areas, including the environment, technology, engineering, health, and policy. The center aims to make the public, and communication and science/health investigators partners in research. Communication is vital to the STEM disciplines for translation and dissemination of consequential science and health knowledge to individuals and stakeholder groups. Communications research about these areas is necessary to generate understanding of how people come to know science and health and its associated benefits and risks and how people make informed decisions about science and technology areas that affect their health, security, and the environment. Partnerships formed among STEM and communication researchers will bridge academia, industry and the communities to disseminate consequential science and health knowledge to stakeholder groups. The messages, techniques and strategies resulting from these collaborations can foster improved science and health literacy, which in turn can yield enhanced engagement, support, prestige and visibility in areas UF and its stakeholders want to advance. The STEM Center is housed within the College of Journalism and Communications with connections across the UF Health campus, including the CTSI and UF Health Cancer Center. The STEM Center fosters strategic communication partnerships across diverse disciplines at UF and internationally (Ireland, Australia, Bangladesh). The center offers trainings, consultations, and seminars to enhance research and methodological rigor across disciplines, and fosters community interest in the recruitment and translation of health communication research.

The Innovation News Center is a real-world, working newsroom producing content for the UF's seven broadcast and affiliated digital properties, including PBS and NPR public media stations. The two-story, 14,000-square-foot Innovation News Center facilities include almost 100 seats for student reporters, producers, and editors, breakout rooms for team meetings, tablet publishing, television, and radio editing rooms, audio booths, and a mini-studio (or "live-shot area") to create video content for broadcast and online streaming. The Summer Journalism Institute is a weeklong camp at the UF College of Journalism and Communications for high school students. Started in the 1960s, the camp immerses the participants into the INC where they work with faculty and professionals on news stories and broadcasting on multiple television and radio stations and WUFT.org.

UF Health Communications. A division of 80 communication professionals, UF Health Communications provides integrated communications support to all UF Health executive and administrative divisions, colleges, institutes, physician practices, and hospitals. With staff in Gainesville and Jacksonville, UF Health Communications mobilizes expertise across six specialized teams to meet UF Health's full scope of internal and external communications needs. The Strategic Communications & Public Affairs team, which includes the CTSI strategic communications team, is responsible for strategic communications and public relations planning and execution; internal communications and employee-focused events; corporate communications; public affairs and government relations/advocacy communications; community health outreach and education programming; and issues and crisis management. The Creative Services team provides print layout and graphic design, creative consultation, video and audio production, voiceovers, multimedia design (including 3D

animation), digital publishing, and photography. The Marketing team provides strategic marketing services for UF Health's clinical lines and affiliate and joint venture partnerships, including marketing consultation, marketing plan development and implementation, production of advertising campaigns and marketing collateral materials, and website content development. The Advancement and College of Medicine Communications team provides strategic planning and execution for public functions, alumni relations, and fundraising initiatives, as well as strategic communications and public relations planning and execution, and internal communications for the college. The News & Publications team maintains relationships with local, regional, and national news media and provides expertise in publications, editing, science writing, media training, and news dissemination. The Web Services team offers full-service website design and hosting, web application development, website refurbishment, usability testing, search engine optimization, analytics and metrics, social media consultation, and email newsletters. In addition, UF Health Communications has a long-standing collaboration with the UF College of Journalism and Communications to produce Health in a Heartbeat, a national consumer health radio program that airs on public radio affiliates in 18 states and in Washington, D.C. The program features two-minute segments providing the latest news on medical research, patient-care breakthroughs, and health-care trends.

TRANSLATIONAL WORKFORCE DEVELOPMENT AND TEAM SCIENCE

Translational Workforce Development Program. The principal TWD aims are to: serve as the primary coordinator, provider and champion of education and training in translational science at the UF Health Science Center; provide onsite and online knowledge, training, resources, and networking to community collaborators in Florida; contribute to the CTSA network through creation of externships, mentor networks and sharing of education and training resources; and evaluate the creation of leaders, mastery of core competencies, and completion of learning objectives. The TWD Program's leadership, infrastructure, program models and expertise have positioned it as a university-wide hub that catalyzes new opportunities in translational science graduate education and training. The participation of more than 180 fellows and junior faculty in the CTSI's "K College" is an example along with the significant increase in the numbers of K and T32 awards at UF. In addition, TWD integrated Biotility's Bioscience Industry Workforce Program as part of the TWD structure, including a Biotechnician Assistant Credentialing Exam approved in two states: Florida (2012) and Arizona (2016).

Pathway and Career Development Programs.

- **Biomedical Scientists as Educators Certificate.** A 9-credit hour certificate, sponsored by CTSI and the College of Medicine will prepare the next generation of biomedical scientists for proficiency as faculty. These courses, taught with didactic, reflective, and hands-on experiential learning activities have been designed to certify that program participants will be prepared to teach, conduct educational research and mentor students upon entry into their future academic positions. Courses are taught online.
- **Biotility** (Center of Excellence for Regenerative Health Biotechnology). Established in 2003 with launch of operations in 2006, Biotility was created as a state resource to expand and improve workforce talent for Florida's bioscience industry. In 2016, Biotility was fully integrated into the CTSI's translational workforce development portfolio. Efforts are directed to three key areas: 1) Direct industry training and certificate short-courses; 2) Secondary and postsecondary program development and support, including teacher training and certification; and 3) Development and administration of the industry-recognized Biotechnician Assistant Credentialing Exam (BACE) within Florida and nationally. Biotility functions at the intersection of academia and industry and is proximal to the cluster of biotechnology companies in the Gainesville/Alachua area. The education and training center includes classrooms, conference areas, a cleanroom simulator, and wet labs outfitted with state-of-the-art equipment. Proximity to Florida's northeast bio-industry cluster facilitates student internships, incumbent employee training, pre-employment training, and participation of industry leaders in course development. Certificate short courses that integrate industry concepts and skills into traditional biomedical research are offered to undergraduate and graduate students, researchers and faculty, and companies throughout the state. Courses are created based on emerging industry needs, with a focus on product and process development, biomanufacturing processes, analytical methods, quality systems, and regulatory compliance.
- **Certificate of Basic Coordinator Training.** Experienced research coordinators are in demand both locally and nationwide. Training and certification can lead to many different career possibilities that can include clinical and commercial applications with greater professional growth and higher levels of pay. The CTSI

Certificate of Basic Coordinator Training provides entry-level education for those who wish to become a clinical research coordinator. Potential students include health professionals working in nursing, nutrition, respiratory therapy, occupational/ physical therapy, or similar allied health fields. The certificate program consists of two required courses and one optional course. These courses can be taken in any order. Students set their own pace, and most are expected to complete all requirements in approximately two semesters.

- **Clinical Research Professionals Advisory Council.** Representatives from a variety of departments serve on the council, a diverse group of clinical research professionals who promote cross-functional collaboration for research initiatives at UF. The council's goal is to help clinical research coordinators grow professionally and to achieve success at UF by being champions for clinical research, and facilitate collaborative discussion forums to exchange information.
The members of the council:
 - Act as advocates for professional development opportunities for the clinical research coordinator community
 - Offer insight to senior leadership about workflows in order to help strategize training plans for all clinical research professionals
 - Provide a connection between clinical research professionals and functional units involved with clinical research
 - Identify and disseminate best-practice information within the clinical research professional community
- **Clinical/Translational (CTS) Certificate.** This Clinical & Translational Science Predoctoral Training Program certificate provides junior trainees with the skills required to develop a career in multidisciplinary clinical and translational research. Completion of program requirements results in the award of a certificate in Clinical & Translational Science.
- **Clinical/Translational (CTS) Concentration.** This training program provides junior trainees with the skills required to develop a career in multidisciplinary clinical and translational research. The program uses a team-science approach and provides mentoring and didactic training for predoctoral students performing clinical and/or translational research in health-related fields at UF. Completion of program requirements results in the award of an interdisciplinary concentration in Clinical & Translational Science
- **Educational Scholarship Program:** Focuses on teaching scholarship and educational research for all professional faculty, as well as graduate students and postdocs interested in academic careers, within the six co-located health science colleges. Seminars and workshops tailored to faculty needs will be planned for each academic year. Participants have the opportunity to earn tiered certifications akin to an academy level recognition. As shown on the ESP Award Criteria page, there are five levels of certification: Educator, Educational Innovator, Educational Collaborator, Educational Researcher, and Educational Leader. The program's goals are to:
 - Provide a platform for sharing expertise across colleges,
 - Sponsor educational development efforts for faculty in all health-science colleges,
 - Enhance recognition of educational scholarship across the academic health center,
 - Reduce duplication of faculty development effort,
 - Coordinate and cross-advertise relevant faculty development events,
 - Promote interprofessional collaboration across colleges, and
 - Support promotion and tenure processes in all health-science colleges.
- **K College.** A monthly luncheon seminar series for about 150 early-stage and early established investigators, and pre- and post-doctoral researchers (20-50 attendees at each session). The series ranges from life-work balance to identifying core facilities available to scholars. It provides peer support and opportunities to raise issues of concern and discuss need for resources to support career development in clinical and translational research.

- **KL2 Scholar Multidisciplinary Program.** For junior faculty, provides two years of financial support and research training to develop the skills necessary to build a well-funded, collaborative career in clinical and translational research
- **Mentor Academy.** More than 50 members from nine colleges have participated in the CTSI Mentor Academy's Master Mentor program since its launch in 2013. The four-month program for current and potential research mentors offers biweekly sessions on topics relevant to successful mentor-mentee interactions. Supported by UF Health, the UF College of Medicine, and the UF CTSI, the Mentor Academy promotes the development of the next generation of clinical and translational scientists through a culture of support for mentoring and training in optimizing mentoring relationships for mentors and mentees at all levels of career development.
- **TL1 Predoctoral Training Program.** Provides graduate students with skills to develop a career in multidisciplinary clinical and translational research. The program uses a team-science approach and provides mentoring and didactic training for predoctoral students performing clinical and/or translational research in health-related fields at UF. The Clinical & Translational Science field of study is available to UF PhD students as an interdisciplinary concentration ("co-major") and as a graduate certificate.
- **Research Coordinator Certification Study Groups.** Facilitated study groups for clinical research professionals seeking national certification in clinical research coordination. The Association of Clinical Research Professionals (ACRP) offers Clinical Research Associate, Clinical Research Coordinator and Physician Investigator certifications. A nonprofit founded in 1976, ACRP has grown to more than 13,000 members worldwide today. The Society of Clinical Research Associates (SoCRA) offers Clinical Research Professional certification. SOCRA is a nonprofit with more than 15,000 members worldwide.
- **Training and Research Academy for Clinical and Translational Science (TRACTS).** A two-year training program for early career faculty at UF who have an interest in pursuing clinical and translational research as a major component of their careers. TRACTS consists of three components: 1) Didactics (Intro to CTR, Quantitative Literacy), 2) Mentor identification and 3) Individual and group career support aimed at balancing the demands of clinical and academic pursuits. The goal of TRACTS is to prepare clinicians for roles in health sciences, including further research career development. The TRACTS model represents a significant change to a long-standing program formerly known as the Advanced Postgraduate Program in Clinical Investigation (APPCI), which was originally supported through the NIH Clinical Research Curriculum Award (K30) program from 1999-2009. Under the CTSI since 2009, the program was refocused, reconfigured and renamed in 2014 as TRACTS targeted specifically to research-oriented junior faculty with high potential for a productive clinical/ translational research career.

Diversity and Pipeline Programs/Outreach.

- **Center for Precollegiate Education and Training.** Since 1995, the center has involved hundreds of faculty in offering content-rich, laboratory-based, professional development programs for secondary school teachers coupled with school-year follow up. The Center for Precollegiate Education and Training collaborates annually with more than 300 faculty volunteers and hundreds of educators from around the state of Florida. The center assists more than 30 researchers with the design and implementation of specific activities to broaden the impacts of their individual grants or pending proposals. Programs incorporate bridging activities that include teachers, researchers, and industry professionals in preparing and delivering effectual science education and career investigation from middle school through graduate school. Its instruction incorporates multiple research-based and novel teaching/learning strategies and is aligned with national and state education standards. The Center for Precollegiate Education and Training extensively interacts with graduate students across campus and actively solicits, coordinates, and oversees their voluntary or for-credit participation in precollege programs.

Center for Precollegiate Education and Training programs are designed to expand the content knowledge, skills, resources, networking, and enthusiasm of teachers and to reengage them with the university community. Newly generated and published curricular materials, methods and modules, and increased involvement of teachers and their students in school-site, inter-school, and university campus research and career-related activities are used to measure success. Outcomes include rich curricula related to research and aligned with education standards that will be shared face-to-face and online as well as successful dissemination of UF research and recruitment of new "gators" and future STEM and health professionals. Outcomes also include increased funding and sustainability through leveraging for precollege education;

broader impacts for research; exposure to STEM academic, health, and industrial careers (pipelines); and a growing culture of interest and experience in research teaching, outreach, and associated professional development in mentoring and science communication for graduate students and their research mentors.

- **UF President's Council on Diversity.** The Institutional Equity & Diversity Office has the organizational structure to respond to the university's vision for a diverse workforce and provide a highly inclusive perspective on university issues. University diversity efforts will be assimilated into the campus and surrounding communities; making the university partner with other stakeholders interested in the quality of campus life. This will be accomplished in part through the efforts of the Council on Diversity. The council's constellation will have campus-wide representation. It is conducting timely investigations, examining equal opportunity reporting and administrative policies to set new strategies for a positive impact on diversity and the elimination of discrimination of any kind in the workplace or classroom. Diversity activities will be made familiar to the entire community through heterogeneous discourse, administrative and managerial outreach, conferences, publications and electronic communications. The EEO office takes responsibility for the coordinated united efforts of key players at UF with responsibility for diversity among students, faculty and staff.
- **Historically Black Colleges and Universities (HBCUs).** The UF CTSA hub has ties to several HBCUs including:
 - **Bethune-Cookman University.** Located in Daytona Beach, Bethune-Cookman University has graduated more than 13,200 students since 1943. Traditionally, Bethune-Cookman has maintained intercollegiate athletic programs and instrumental and choral groups that have achieved national recognition. Many alumni are employed in the fields of education, medicine, business, politics, government, science, religion, athletics and environmental sciences.
 - **Edward Waters College.** Founded in 1866, Edward Waters is the oldest historically black institution of higher education in the state. Located in Jacksonville, it is a four-year liberal arts, co-educational institution, and is affiliated with the African Methodist Episcopal Church. Edward Waters continues to build upon its solid foundation of teaching, research, and community outreach. The College's current enrollment is 839 students; approximately 51% of the student body is male, 49% female, and over 90% of the students rely on financial aid. The college has also expanded its land and continues to experience positive growth. It was highlighted in The Florida Leader Magazine "The Best of Florida Schools 2004" as having the "Biggest Growth for Private Colleges".
 - **Florida Agricultural and Mechanical University (FAMU).** In 2014, FAMU was recognized among the 2014 U.S. News & World Report's "Best National Universities." U.S. News & World Report lists FAMU as the top public historically black college or university in the nation for 2015. It is also listed among The Princeton Review's "Best in the Southeast" colleges and is one of the top picks for providing a high quality education at an affordable price in Florida, according to The College Database (2013). FAMU values diversity in thought, perspective, and culture. The university enrolls nearly 10,000 students hailing from across the United States and more than 70 countries, including several African countries, the Bahamas, Brazil, Indonesia, China, and the United Arab Emirates, to name a few. The student body includes representatives from all ethnic, socio-economic, and religious backgrounds. The **FAMU-FSU College of Engineering**, a joint program, serves both universities in Tallahassee.

Team Science Expertise and Collaboration Resources.

- **Network Science Program.** Uses Network Science and Social Network Analysis to map, visualize and analyze patterns of collaborations among UF scientists over time. These include publication co-authorship, co-participation to grant proposals and awards, co-membership in graduate committees, and proximity of office spaces. The Network Science Program gathers investigators from the UF Bureau of Economic and Business Research, the Department of Sociology and Criminology & Law, and the Department of Anthropology. Network methods have been used in the program to identify emerging scientific communities and research fields at UF, design innovative interventions for matching potential collaborators, inform CTSI pilot programs, and evaluate the role of the CTSI on the growth of interdisciplinary research at UF. The Network Science Program is available to provide network methods consults to other UF investigators.

- **Collaboration Platforms.** Many software solutions enable and enhance collaboration for team science and beyond. Tools include:
 - Web and voice conferencing: Adobe Connect, Cisco, Skype for Business, Webex Event Center, Zoom
 - Distance Learning: Canvas, Office Mix, Storyline 360
 - Cloud-based software and storage: DropBox, Lucid Chart, One Drive, Slack, Voice Thread
 - Software: Endnote, Express Scribe, Transcription Pro, Mediasite, Libre Office, Yammer
- **UF VIVO.** A scholarly networking and discovery tool that enables understanding and collaboration among all disciplines. VIVO represents scholarship using the VIVO-ISF ontology and its data is publicly available in Resource Description Framework (RDF), a World Wide Web Consortium (W3C) standard. Thirty-six CTSA institutions provide data using the VIVO data standard. In 2012, the CTSA network recommended all CTSA to provide data regarding their scholarship using the VIVO data standard. At UF, VIVO is automated to collect contact and employment data from Human Resource Services, grant data from the Division of Sponsored Programs, papers and other publications from BibTeX exports from Thomson Reuters Web of Science, and teaching data from the Office of the University Registrar. Data are updated weekly. Individuals may sign on to VIVO using their GatorLink username and password to edit their profile information. The SPARQL query language is used to extract data for ad hoc reports, standardize website content and provide data for CTSI operations, including evaluation, governance, network science and training programs. VIVO provides a comprehensive view of the university and its scholarship. As of February 2018, VIVO at UF contained approximately 16K organizations, 289K people, 154K publications, 25K grants, 8,051 courses, and 87,268 course sections. Originating at Cornell, VIVO was further developed as the result of an NIH ARRA award (2009-2011) to UF and a consortium of six schools (Cornell, Weill Cornell Medical College, Indiana University, Washington University at St. Louis, Scripps Research Institute, and Ponce Medical School in Puerto Rico). VIVO is an open-source, sponsor-supported software project managed by Duraspace, a nonprofit corporation dedicated to the representation and presentation of the academic record. VIVO is a network in which more than 140 institutions and agencies in more than 25 countries are implementing VIVO or producing VIVO-compatible data, including the USDA and the American Psychological Association.

LEARNING HEALTH SYSTEM

Learning Health System Program. This program grew from the Implementation Science Program, created in 2013. The focus of Implementation Science Program was to strengthen the learning health system capacity at UF Health and advance implementation science across the state in collaboration with the OneFlorida Clinical Research Consortium and other CTSI partners. Implementation science focuses on the use of strategies to adopt and integrate evidence-based health interventions that change practice patterns and improve health. Implementation science emphasizes outcomes that consumers, practitioners, health systems, and communities value, and thus takes a stakeholder- and community-centered approach. In 2017, the Implementation Science Program transitioned to the Learning Health System Program to better align with the priorities of health system leaders, clinicians and patients combined with scientist expertise from researchers. The Learning Health System Program is described in depth in the Translational Research Endeavors component. Implementation Science Roundtables for investigators who wish to incorporate implementation science into their research, and the Citizen Scientist Program to engage patients and community members as collaborators throughout the research process were key components of the Implementation Science Program and remain so for the Learning Health System Program.

Center for Safety, Simulation & Advanced Learning Technologies. The center has access to two different state-of-the-art simulation spaces in the Harrell Medical Education Building. The Lou Oberndorf Experiential Learning Theatre contains 1,600 square feet of flexible simulation space that can be transformed into any healthcare provider setting (OR, L&D, ER, ICU, etc.). The Simulation OR has 700 square feet of space that is equipped with an anesthesia machine, laparoscopy equipment, OR lights and table. These simulation spaces feature multiple in-ceiling cameras with microphones (ceiling and lapel) to record video that can be used for debriefing. In addition to simulation space, there are another 430 square feet of office and workshop space in the Harrell Medical Education Building that are used to develop simulators and medical-device technologies.

These spaces house a number of different simulators and medical devices including three CAE/METI mannequin human patient simulators: adult, pediatric, and infant; a bronchoscopy part task trainer; a transthoracic/transesophageal echocardiography simulator; and two Virtual Humans developed at the UF Department of Computer & Information Science & Engineering. Part task trainers include those for central venous access, regional anesthesia, ultrasonography skills and cross-sectional literacy, airway trainers (7), central venous cannulation, IV placement in the foot and arm, and spinal injection. Medical equipment includes three anesthesia machines, an ultrasound machine, state-of-the-art physiological monitors and gas analyzers, an array of airway devices, a defibrillator with crash cart, a 62" touch-sensitive display, a Polycom video conferencing system, piped medical gases, clinical supplies, and two calibrated mechanical lung models. Other development equipment includes a wearable optical display, a virtual reality device, a 3-D printer, and microcontrollers. Ceiling-mounted IR tracking cameras in the simulation and engineering labs and magnetic tracking systems enable mixed reality applications.

The simulation center also encompasses the Virtual Anesthesia Machine website, which hosts a portfolio of web-enabled transparent reality simulations and PK/PD models developed by center personnel and used worldwide and through the <http://simulation.health.ufl.edu> website.

BIOSTATISTICS, EPIDEMIOLOGY AND RESEARCH DESIGN

Biostatistics, Epidemiology and Research Design (BERD) Program. Provides a central location for investigators seeking quantitative and qualitative research design and analysis support through the CTSI. BERD links investigators with multidisciplinary faculty members and experts in various methodological techniques including biostatistics, epidemiology, qualitative data techniques and measurement and evaluation in health-related research. This program also assists students and young investigators in accessing basic and advanced graduate classes in research design, data acquisition and management and data analysis that are applicable across the entire spectrum of clinical and translational research. It serves as an early point of contact for investigators to facilitate their research, whether standalone or multidisciplinary, with high-quality research design and analysis assistance for their grant applications. Additionally, BERD acts as a liaison to ensure that the educational needs in both quantitative and qualitative methods are individually tailored to students' and young investigators' needs while developing and adopting new methodology as needed for specific clinical and translational research. Study design, database design, and data analysis services are available to investigators. Investigators can also take advantage of Design Studios and office hours offered by BERD faculty.

- **SampleSizeShop.org.** In collaboration with the University of Colorado, Department of Health Outcomes and Biomedical Informatics faculty provide tools as a free resource resulting from the CTSI Power and Sample Size for Multilevel and Longitudinal Study Designs" workshops, including the GLIMPSE software for calculating sample size and power, tutorials related to sample size and power, and links to related sites and software.

BERD Departments.

- **Department of Biostatistics.** Dual-governed by the colleges of Public Health and Health Professions and Medicine, the department is primarily located in the Clinical and Translational Research Building, where it occupies 6,700 square feet. The department has a secondary campus location in Dauer Hall, in the Center for Statistical and Quantitative Infections Diseases. In addition, 5,605 square feet of leased off-campus space houses personnel from the Children's Oncology Group. The department has 18 faculty members assisted by six full-time staff members who provide the academic and departmental functions. The department has two "smart" conference rooms, including a large digital flat-screen, a web-linked computer and conference phone as well as collaboration areas for informal research collaboration meetings. The Department of Biostatistics offers three degree programs: the Master of Public Health Program (Biostatistics concentration); the Master of Science in Biostatistics Program; and the Doctor of Philosophy in Biostatistics Program. Faculty members are also dedicated to performing cutting-edge theoretical and applied research. Areas of expertise include clinical trials and study design, big data and data networks, metabolomics, medical imaging, population data analysis, causal inference, longitudinal data analysis, statistical genetics and genomics, and survival analysis. Department faculty provide scholarship in biostatistics and partnership in research for colleges across UF and worldwide. They are widely published in academic journals and well-funded by numerous sponsors such as the NIH, the National Science Foundation, the National Children's Cancer Society, the St. Baldrick's Foundation, the Leukemia &

Lymphoma Society and the US Department of Veterans Affairs.

- **Department of Epidemiology.** Formed in 2011 and dual-governed by the colleges of Public Health and Health Professions and Medicine. Five full-time staff members provide the academic and departmental functions alongside 17 full-time and three part-time faculty. Located in the state-of-the-art Clinical and Translational Research Building, the department occupies 6,700 square feet of the fourth floor. HealthStreet, the community engagement arm of the CTSI founded and co-directed by Dr. Cottler, is also part of the Department of Epidemiology. The department offers four academic programs, including a Master of Science in Epidemiology and a Certificate in Psychiatric Epidemiology. The epidemiology concentration in the Master of Public Health Program is typically the largest cohort within the program, and the PhD in Epidemiology Program is rapidly growing, now with 20 graduates. The department is also home to two training programs: a National Institute on Drug Abuse T32, UF Substance Abuse Training Center in Public Health, about to enter its fourth year; and a Fogarty International Center D43, Indo-US Training in Chronic Non-Communicable Disorders and Diseases Across the Lifespan, with 18 past and current trainees from India. The department is also home to the Southern HIV and Alcohol Research Consortium, recently approved as the SHARC Center for Translational HIV Research, which provides research infrastructure, training, and mentoring to improve health outcomes and reduce HIV transmission among the diverse range of populations affected by alcohol and HIV infection in the Southeastern United States. Fields of expertise include community engaged research, public health surveillance, global health, methodology, healthcare safety and quality, violence and victimization, and areas within epidemiology such as psychiatric, behavioral, cancer, cardiovascular, environmental, genetic, and infectious disease. Epidemiology faculty members engage in numerous collaborations throughout UF and across the country.
- **Department of Health Outcomes & Biomedical Informatics.** The department, formerly Health Outcomes and Policy, in the College of Medicine, was renamed in 2018 to reflect the growing importance of big data in conducting clinical research, examining health outcomes, addressing health disparities, and improving health care delivery. In health care science, numbers matter. They are the evidence researchers use to validate interventions to improve health care delivery, individual health outcomes and the health of populations. They are a measure of the countless points of data that drive innovation. Faculty in the department focus on developing more precise strategies to prevent, diagnose and treat chronic health conditions and diseases through the integration and interpretation of data from diverse sources. The multidisciplinary faculty, which includes health outcomes researchers and biomedical informaticians, work with computer and information science engineers, physicians and other health care professionals, to assemble patients' genetic, lifestyle, social determinants of health, and clinical information, compare this to thousands of other similar subjects, and in order to develop, implement and test personalized health interventions to achieve improved health outcomes at the individual and population level. The department focuses on: 1) using transdisciplinary team science; 2) conducting novel clinical trials and precision population health initiatives that leverage large, linked health-related data; 3) translating findings into clinical practice using implementation science strategies; 4) creating and implementing novel methodological approaches for the acquisition, validation, enrichment, and linkage of data; and 5) providing advanced training and mentoring programs. Twenty-three faculty sustain a large and diverse research portfolio in prevention science, health promotion, policy evaluation research, health disparities, health outcomes studies, and biomedical informatics. The CTSI Biomedical Informatics Program has an academic home in this department. Areas of focus for faculty include health care outcomes and preventive interventions for low-income children and adolescents, risk behavior reduction, alcohol and drug abuse prevention, community intervention trials, community-engaged research, health care quality and outcomes for disadvantaged populations, health care economics and delivery system factors related to the quality and outcomes of cancer care, and cancer outcomes, including health promotion related to the prevention and early detection of cancer and cancer survivorship. The biomedical informatics team asks critical questions about the very nature of information, and its integrity, to leverage the ever-increasing amount of health data to improve health, health care and health policy. The team collaborates with researchers and clinicians throughout the UF Health system and UF to conduct research using big data. These collaborations offer abundant opportunities for real-world learning for students and innovative research with interdisciplinary faculty members. All full-time faculty members have joint appointments with the Institute for Child Health Policy, which provides a venue for collaboration around children's health issues university-wide. To support this diverse portfolio, the department and institute house more than 150 professional and support staff.

- **Department of Health Services Research, Management and Policy.** The department's mission is to prepare highly qualified and motivated students in master's degree programs to become effective managers and leaders of health care and public health organizations; educate outstanding doctoral students to become health services researchers who contribute to the body of knowledge regarding the organization, delivery, and financing of health services; conduct research that achieves national peer recognition for its contribution to creating new knowledge and for its value in informing health services practice and policy; and serve as active participants and leaders in the university, professional, and health services communities. It offers degree programs at both the master's and doctoral level: The Master of Health Administration is an on-campus program designed to prepare individuals for management positions in the healthcare field; the public health management and policy concentration within UF's Master of Public Health program; the PhD in Health Services Research is a full-time doctoral program that prepares individuals to study the healthcare system as a whole; health services research is a multidisciplinary field of inquiry that examines the organization, delivery, and financing of health services.

REGULATORY SCIENCE

RKS Catalyst. This program combines the CTSI Translational Drug Development Core and the Joint Research Program in Systems Pharmacology and Pharmacoepidemiology, which draw on the following resources:

- **Center for Pharmacometrics & Systems Pharmacology.** The center's purpose is to create a uniquely rigorous and integrative academic translational science program in quantitative clinical pharmacology with a focus on personalized medicine. Integral to this mission is the education and training of doctoral students and post-doctoral fellows in the discipline of drug development and regulatory science. Using systems biology approaches, researchers study drug activities, targets, and clinical effects to support and advance translational research, which improves the process of bringing new drugs to market for improved patient therapies, including personalized medicines.
- **Department of Pharmaceutical Outcomes and Policy.** Includes a broad range of programs and resources. Faculty is actively engaged in the entry-level PharmD program and its own graduate program, including about 25 PhD students, a small number of residential and more than 150 online MS students. The department's focus in research and graduate training is centered on the evaluation of drugs and related medical technology. This focus includes classic pharmacoepidemiologic and pharmaco-economic work in areas such as drug safety and comparative effectiveness, as well as patient safety and program evaluation as related to medication use. The department has excellent facilities for quantitative research including a data center with a state-of-the-art, 32TB, privacy-approved research server and a variety of billing record and clinical research databases. UF Health, the largest fully integrated academic health center in the Southeast with all six health colleges on campus, allows broad interdisciplinary collaboration as well as access to a fully integrated electronic health record system.
- **Translational Drug Development Core.** Provides services and expertise in bioanalytical drug metabolism and preclinical pharmacokinetics in order to help faculty bridge the gap between the lab and clinical trials, which generate the in vivo data needed for continued federal funding and licensing. The core laboratory is fully equipped for pharmacokinetic studies, metabolism studies, analytical method development, stability studies, chemical storage, refrigeration, freezer and ultra-low freezer facilities. Laboratory computers are equipped with the required statistical, pharmacokinetic and other software programs to perform graphics, spreadsheets, and word processing, curve fitting and statistical analysis.
 - **Space:**
 - Wet lab and analytical space: (2112sf) M6-34A 145sf, M6-34B 77sf, M6-34C 56 sf, M6-34 743sf, M6-46 531sf, M6-46A 83sf, M6-46B 121sf, and P1-37 356sf
 - Office space: (156sf) P1-20A
 - Animal space: (270sf) Communicore-140 135sf and Communicore-141 135sf

UF Innovate. Comprises four entities in the university's technology commercialization ecosystem: Tech Licensing, Ventures, and two incubators, The Hub and the Sid Martin Biotechnology Incubator. UF Innovate's quartet forms a comprehensive commercialization system that brings together five critical elements: intellectual property, technology-transfer expertise, facilities, talent and capital management. To inventors, this means UF Innovate cares for their intellectual property by seeking patent or other protection and by marketing it to find the perfect licensee that can further develop or use those inventions. To entrepreneurs and startup companies, UF Innovate provides facilities and programs to help them find or develop the talent and funding they need.

- **Tech Licensing.** Established as the Office of Technology Licensing in 1985 after passage of the Bayh-Dole Act that encouraged universities to commercialize their discoveries. The office has earned a reputation as a leader in commercializing discoveries that cure diseases, create efficiencies, improve quality of life and create jobs. Consistently ranks among the top universities for startup launches and licensing. Since the office opened, it has launched nearly 200 biomedical and technology startups. In fiscal year 2015-16, the office received 311 invention disclosures, signed 122 licenses and options, and launched 17 companies. This is a result of the collaborative working relationship between faculty generating new discoveries and Tech Licensing working to find commercial partners.
- **Ventures.** Seeks to fuel consistent growth in the number and quality of UF technology-based startup companies. Ventures will serve as a liaison between public and private sectors as it implements an investment program intended to support UF startups. The goal is to link new venture investments with companies, work closely with angel groups and other investment funds, and to develop entrepreneurs.
- **The Hub.** Formerly known as the Innovation Hub, located in UF's Innovation Square between campus and downtown Gainesville. It recently opened a second phase that doubles the space available for young technology companies. Both the Hub and Sid Martin Biotech foster an innovation ecosystem that nurtures startups with the resources and expertise they need to thrive, thereby creating jobs and economic prosperity. Its mission is to provide an innovation ecosystem for connecting all the elements critical to creating and supporting technology-based companies. It is one of the only incubators in the nation to house a leading university technology transfer office, numerous service providers, and other partner organizations that nurture high-tech companies. It opened its doors in October 2011 and has already nurtured the creation of more than 400 jobs.
- **Sid Martin Biotech.** Named the world's top incubator in 2017, incubates biotech startups at its location in Alachua. Expedites research and commercial development of promising biotechnologies in the context of viable, well-managed startup companies. The incubator, a specialized complex, with BSL II labs, offices, vivariums, greenhouses, and shared scientific equipment, is twenty minutes from the UF campus in Progress Park, in the city of Alachua, which is home to many of UF's bioscience startups. Companies in this 204-acre private park may apply for Foreign Trade Zone status. The incubator's relationships, services, and programs include introductions to investors, early recruitment of experienced leadership, networking opportunities, and seminars. By bringing together a critical mass of university and private sector specialists, the program is a magnet for scientific expertise, novel problem solving, and successful commercial ventures. The program is particularly interested in supporting companies, which have established research relationships with the UF, or which have an interest in and potential for initiating such relationships. The Sid Martin Advisory Committee and program management grant companies that successfully apply for admission one-year terms with the chance of renewal subject to successful reviews. In 2009, SMBI developed the Florida BioDatabase, an online searchable database of all Florida bioscience companies, available to the public. The site provides address, website, founding date, a summary of a company's technology, sector, research focus, whether they have products on the market, and publicly disclosed investors. Sid Martin Biotech has served over 70+ companies and 78% of companies are still in business five years post-graduation.

HUB AND NETWORK CAPACITY

Services and Navigation.

- **OneFlorida Clinical Research Consortium.** Founded by UF and FSU in 2011, the combined network includes health systems that provide care for approximately 15M or over half of all Floridians through 4,100 physician providers, 1,240 clinic/practice settings with a catchment area covering all 67 Florida counties. OneFlorida aims to unite its stakeholders to address some of the nation's biggest health challenges and serve as a resource for the state in improving health, health care and health policy. To support research

aimed at addressing these challenges, the OneFlorida Data Trust and OneFlorida Practice-based Research Network allow investigators to identify cohorts and conduct observational research using aggregate and de-identified patient-level health data from diverse partners across the state; identify and intervene with patients at the point-of-care; and conduct pragmatic clinical trials and other interventional studies, including implementation science and comparative effectiveness research, in eligible, research-ready clinics. The OneFlorida coordinating center is housed at the UF CTSI and facilitates streamlined support for network-wide research through a centralized IRB process, integrated programs, budgeting, contracting and stakeholder engagement, and a front-door process to assist investigators. The strength of the consortium is in the diversity of its patients, partners and clinical settings. The consortium actively participates in two national networks dedicated to translational research: the CTSA Program, with CTSA hubs at UF and the University of Miami, and the Patient-Centered Outcomes Research Institute's PCORnet, as one of 13 clinical data networks nationwide. Other resources available include:

- **OneFlorida Study Development Program**, which has a group of research coordinators trained in recruiting and retaining clinicians and practices
- **OneFlorida Maintenance of Certification Program** for clinicians participating in studies, an engagement tool that integrates quality improvement opportunities into studies, making interventions more sustainable after research completion
- **OneFlorida Executive Committee**: The main governing body, the committee oversees the consortium, provides strategic direction, approves and monitors studies, and establishes and maintains policies and procedures.
- **Recruitment Center**. Optimizes recruitment and retention of study participants through consultations and services that help UF research teams address their study recruitment needs. The Recruitment Center supports several resources to help facilitate cohort identification and the recruitment of research participants, including access to electronic health record data for cohort discovery, consent for contact to participate in research and participant-centered engagement methods to reach clinical, community and special populations. Additional resources within the Recruitment Center include the UF Health Integrated Data Repository and i2b2 cohort discovery tool (>1M patients as of February 2018) HealthStreet (>9849 members as of February 2018), and the Translational Communication Program.
 - **Consent2Share**: An initiative that offers UF Health patients an opportunity to allow UF researchers to contact them about research studies for which they might be eligible based on information in their electronic health record. As of October 2017, more than 40,000 patients have consented to participate through UF Health's internal medicine and medical specialties, family medicine, cardiovascular and pediatric practices, with ongoing expansion underway. Consent2Share participation is recorded in the electronic health record system and is part of the HIPAA-compliant limited data set made available to researchers via the UF Health Integrated Data Repository's i2b2 query tool. The UF Health Office of the Chief Data Officer oversees the Integrated Data Repository and works closely with the UF Institutional Review Board to manage the Integrated Data Repository's honest broker process and to oversee quality assurance for the Consent2Share initiative. To date, 43 studies have used Consent2Share to identify patient cohorts, and 28,205 potential study subjects' names have been provided to investigators.
 - **UFHealth.org Study Listings**: In collaboration with the four UF Institutional Review Boards, UF Health and UF research teams, the CTSI maintains and promotes central UFHealth.org listings of UF clinical research studies seeking volunteers (>280 studies listed as of December 2017).
 - **UF Studies Facebook**: The Recruitment Center maintains the UF Studies Facebook page, designed to connect community members with research participation opportunities and information. The page was developed as part of an institutional effort to address recruitment needs on social media and is intended as a central location for research-study advertising.
 - **ResearchMatch**: A national research volunteer registry that brings together researchers and willing volunteers who want to get involved in research studies. This national registry, developed by institutions affiliated with the CTSA Program, provides a secure, web-based approach to address a key barrier to advancing research: finding research participants. The goal of ResearchMatch is to better connect volunteers with potential study opportunities. As of February 2018, ResearchMatch.org had registered more than 127,000 volunteers nationwide (>5,100 volunteers in

Florida)

Trial Innovation Network. The UF CTSI has a hub liaison team that provides facilitative support to UF investigators leading or participating in multisite studies who wish to access the services and resources of the CTSA Trial Innovation Network, which launched in October 2016. The Trial Innovation Network is a new collaborative initiative within the national CTSA program and is composed of three key organizational partners: institutional CTSA hubs, Trial Innovation Centers (at Duke-Vanderbilt, Utah, Johns Hopkins-Tufts universities), and a Recruitment Innovation Center (at Vanderbilt University). The Trial Innovation Network will feature a single IRB system, master contracting agreements, quality by design approaches, and a focus on evidence-based strategies to recruitment and patient engagement. The goal of the Trial Innovation Network is to execute trials better, faster, and more cost-efficiently and to be a national laboratory to study, understand and innovate the process of conducting clinical trials.

Venues.

- **Clinical Research Center.** Occupies 14K square feet on the first floor of the Clinical and Translational Research Building (CTRB). The dedicated research space includes 14 exam rooms, a large infusion suite, two procedure rooms, and a large exercise physiology room. The unit also includes administrative offices and is equipped for complex exams such as bronchoscopy, liver biopsies, and gene therapy. Other available equipment includes pulmonary function equipment, dental chair, Bod Pod, Body Box, Basal Metabolic cart, Ultrasound machine, EKG machine, and blood pressure monitors. Located within the CRC are an investigational pharmacy, a conference room, work areas for nursing and study staff, and a sample processing lab which houses refrigerators, centrifuges and -80° freezers. The CRC provides a highly trained research staff including registered nurses, a medical technologist, a research dietitian, and administrative staff. All staff have human-subject protection and Good Clinical Practices training and participate in ongoing education. Services include administration of investigational medications, specimen collection including pharmacokinetic sampling, monitoring of vital signs, administration of glucose tolerance tests, euglycemic clamp procedures, diet recalls, specimen processing, and exercise testing. CRC also provides study coordinator and internal study monitoring services.
 - **CRC Advanced Research Resources.** The CRC provides a coordinator pool of 5.0 FTE for study coordination and quality monitoring support to clinical trials on a study-funded basis. This pool serves numerous investigators and provides a nurse liaison to the CTSA Trial Innovation Network. The CRC quality monitoring staff resolves regulatory issues and contributes to overall improvement in the responsible conduct of research, data quality and safety. The Institutional Review Board conducts both random and for-cause audits. The quality monitoring team is available for consultation and services upon request by the Institutional Review Board and/or investigators.
 - **Investigational Drug Service (IDS) Pharmacy.** Provides a full list of services related to investigational drug management. In addition to standard investigational drug management, the IDS Pharmacy provides sterile compounding services (including complex gene therapy preparation) and oral blinded dosage form compounding (over-encapsulation). The IDS Pharmacy offers all levels of investigational product storage (room temperature, refrigeration, freezer, and ultra-low freezer). All storage locations are located in restricted pharmacy areas and under continuous temperature monitoring. The IDS Pharmacy is staffed by four pharmacists (all PharmD with residency and/or management training) and two technicians (registered and certified). The IDS Pharmacy conducts quality and safety reviews at multiple stages. Pharmacists work closely with the research staff to create protocol-specific dispensing systems and a customized protocol-specific template for ordering investigational medication to minimize errors at the point of order entry. All investigational medication orders undergo a dual check process and are filled by a technician and checked by the pharmacist. This includes independent dose calculations and verification of treatment assignment. The pharmacy staff perform a quarterly physical inventory of all investigational medications in stock and receive investigational medication shipments on a daily basis, which are carefully evaluated to ensure accurate contents and that the appropriate temperature was maintained in transit to site. Per the requirements of the pharmacy's Sterile Compounding Permit, cleaning of the laminar hood and clean room are documented, as well as the clean room temperature and air pressure. Any compounded sterile product held for long-term storage must undergo quality assurance testing (sterility and pyrogenic testing). The Assistant

Director of Pharmacy for UF Health serves as the Consultant Pharmacist of Record and performs monthly inspections of the pharmacy. The pharmacists meet with sponsor monitors and auditors per sponsor protocol to review all dispensing activities and to perform complete medication reconciliation throughout the clinical trial. UF IDS Pharmacy recently implemented Vestigo®, a web-based software product adapted at several IDS pharmacies around the country. Vestigo® facilitates protocol and investigational drug management. It has multiple automated safety features that help improve accuracy, efficiency and safety. The implementation of this product is expected to reduce potential transcription errors that can occur with manual processes. Vestigo® is expected to streamline and automate pharmacy protocol management, inventory control, dispensing, billing, drug accountability, competency management, and monitor/auditor access.

- **Dental Clinical Research Unit.** The facilities enable performance of state-of-the-art clinical research in the field of oral and craniofacial clinical and translational research, and foster collaborative research with areas of biomedical research. Examples of investigational research include fundamental clinical studies funded by the NIH exploring the etiology and pathologies of oral infectious diseases and translational research that evaluates the efficacy of anti-inflammatory products, growth factors in periodontal regeneration, systemic and locally delivered antibiotics, other antimicrobials and antiseptic agents, and newly developed health care products or devices. The Dental Clinical Research Unit also assists with in vitro studies of antimicrobial compounds and susceptibility studies and evaluate diagnostic methods and procedures.

The Dental Clinical Research Unit has the capability to direct phase I, II, and III trials complete with microbiological analysis. Investigators affiliated with the unit may perform clinical trials within the facility located at the UF College of Dentistry and/or within other facilities associated with the Dental Clinical Research Unit or the CTSI. Clinical and laboratory staff are knowledgeable and experienced in clinical trials involving pharmacology, immunology, microbiology, periodontology, and hypersensitivity and are willing to explore new areas of collaborative research. Facilities and resources within the Dental Clinical Research Unit include six enclosed private dental operatories, office space, dental laboratory, wet lab space for processing of samples, first aid emergency kits, radiography, and secure individual storage space.

The Dental Clinical Research Unit provides advice, assistance, design, and/or direction to short- and long-term clinical/translational research projects. Services offered include protocol reviews, assistance with budgets, calibration of equipment, subject recruitment, staffing, scheduling assistance, assistance with regulatory issues, diagnostic methodology project closures, safety and efficacy testing, claim support, and pharmacokinetic testing. Assistance with data collection, management and analysis is also available. Data systems are subject to continuous quality control. Standard and electronic chairside data entry is available as well as clinical and microbial integration.

Assistance is available for specialized reports such as the final report for corporate sponsors, ADA or FDA submissions, or preparation of scientific abstracts.

Available equipment includes six Adec dental chairs utilizing Optima MX2 high speed/low speed handpiece adapters and high/low volume evacuators and air/water syringes; two Isolite Illuminated Dental Isolation systems; four Dentsply Cavitron Plus units; Gendex Expert x-ray machine; Air Technologies Scan X Digital Imaging System; Scotsman Touch Free ice machine; -80° Thermo Scientific freezer; M11 Ultraclave; the Print Smart Xerox WorkCentre 3655 Copier, Fax, Scanner and Printer and a Xerox Colorcube 8880 Printer; dental instruments (restorative kits, prophylaxis kits, surgical kits); and clinical supplies (cover gowns, gloves, mask, safety goggles, dental unit barrier covers).

- **UF Health Jacksonville Aging Studies Center (JAX-ASCENT).** Serves as a hub for behavioral, nutritional and pharmacologic clinical trials targeting older adults, particularly racial minorities and people of low socioeconomic status who have been underrepresented in clinical research, making it more difficult to develop the best prevention and treatment approaches to assist them. Jacksonville is an ideal location for such a center because of the high concentration of residents who fall into those demographic groups. Researchers will also study social determinants of health that contribute to chronic diseases and functional decline within those demographic groups. The center opened May 11, 2018 in the Professional Office Building on the UF Health Jacksonville campus.
- **OneFlorida collaborators.** UF serves as the OneFlorida Coordinating Center. Collaborators include:

- **FSU, Tallahassee Memorial HealthCare and Capital Health Plan:** FSU, its clinical partner Tallahassee Memorial HealthCare, and its data partner Capital Health Plan have a long history of collaboration with UF and helped develop OneFlorida. Tallahassee Memorial HealthCare has a predominantly rural catchment area with among the highest percentages of individuals living in poverty in the state. North Florida is also characterized by some of the highest rates of death from heart disease and stroke among African-Americans and non-Hispanic Whites, and by high rates of smoking, obesity, older adults, and late stage cancer diagnoses. Inclusion of the populations in this region of Florida provide unique opportunities for observational and interventional studies with rural cohorts. Tallahassee Memorial HealthCare contributes EHR data for 230,000 individuals in the PCORnet CDM format annually. Capital Health Plan contributes commercial and Medicare claims data for 8,000 unique patients annually who were also seen as inpatients at Tallahassee Memorial HealthCare, thereby allowing OneFlorida to have a more complete record for those individuals.
- **The University of Miami (UM) and University of Miami Health System – UHealth:** A key academic and health system partner within OneFlorida. The primary catchment area for UM and UHealth is Miami-Dade, which is a majority-minority area, where 64% of the population is Hispanic and 19% are black. In addition, Miami's minority communities are quite diverse. For example, while Cubans once made up over 75% of Hispanics in Miami, they now make up about half the Hispanic population and no other Hispanic groups accounts for over 10% of the Hispanics in the county. About 31% of blacks in Miami are foreign born, predominantly from Haiti and other Caribbean countries. UHealth has more than 1,500 physicians and mid-level providers representing more than 100 specialties. UHealth's comprehensive network includes three hospitals, more than 30 outpatient facilities in Miami-Dade, Broward, Palm Beach and Collier counties as their primary catchment areas. However, they treat patients from urban and rural areas throughout South Florida and internationally.
- **Florida Hospital:** Part of the Adventist system, Florida Hospital is one of the country's largest not-for-profit health care providers with 22 campuses serving communities throughout Florida. The primary site for OneFlorida is Florida Hospital, a children's hospital, a women's hospital, and affiliated physician practices. Located in Orlando, Florida Hospital is a 2,247-bed acute-care medical facility, with multiple affiliated outpatient practices. The health system provides services in cancer, orthopedics, gynecology, cardiac, rehab, and pediatric medicine. Florida Hospital for Children has 26 locations throughout central Florida with over 130 pediatric subspecialists to provide for children with complex conditions. Florida Hospital has a long-standing partnership with Disney, and the Walt Disney Pavilion for Children is the only hospital to carry the Walt Disney name. The Florida Hospital for Women provides dedicated service including pregnancy care, well care and specialty services including a heart program for women. They also offer a mobile wellness van to promote screening and prevention for women including mammography, in central Florida.
- **Nicklaus Children's Health System:** Includes a primary hospital site and a network of 16 physician practices primarily located in Miami-Dade, Collier, Broward, and Palm Beach counties. Nicklaus Children's Hospital is South Florida's only licensed specialty hospital exclusively for children, with nearly 800 attending physicians and more than 475 pediatric subspecialists. The 289-bed hospital, known as Miami Children's Hospital from 1983 through 2014, is renowned for excellence in all aspects of pediatric medicine, with many programs routinely ranked among the nation's best by U.S. News & World Report. The hospital is also home to the largest pediatric teaching program in the southeastern United States and has been designated an American Nurses Credentialing Center Magnet facility, the nursing profession's most prestigious institutional honor.
- **Orlando Health:** An important partner for OneFlorida, Orlando Health provides data for over 300,000 patients annually. In addition, Orlando Health collaborated with OneFlorida to provide tumor registry data for inclusion in the Data Trust. Orlando Health is a not-for-profit healthcare organization with more than 3,300 beds serving Central Florida. Consisting of nine wholly-owned or affiliated hospitals and rehabilitation centers, Orlando Health has the area's only Level One Trauma Centers for adults and children, and is a statutory teaching hospital system that offers both specialty and community hospitals. Orlando Health also includes Arnold Palmer Hospital for Children and Winnie Palmer Hospital for Women and Babies. Areas of clinical excellence are heart and vascular, cancer care, neurosciences, surgery, pediatric specialties, neonatology and women's health. The organization includes the Orlando Health Physician Group, Orlando Health Physician Associates

and Lakeland Regional Health Physician Group, three of the region's largest multi-specialty practices; and the Orlando Health UF Health Cancer Center, which operated in collaboration with the UF Health Cancer Center. The Orlando Health coverage area includes central Florida communities which are majority-minority areas where 54% of the population is non-Hispanic White. With over 850,000 Puerto Ricans, Florida has the second largest number of Puerto Ricans in the US, and most reside in central Florida.

- **Health Choice Network (HCN), Bond Community Health Center (CHC) and CommunityHealth IT:** These facilities are grouped together because they represent networks of Federally Qualified Health Centers (FQHCs), CHCs, and rural health clinics (RHCs) that are key sources of health care for Medicaid, dual eligible (Medicare and Medicaid), uninsured, and underinsured individuals. These settings present unique opportunities for studies focused on underserved populations and those residing in rural areas. In addition, for health systems that serve rural areas, the inclusion of their data is critical to capture a more comprehensive picture of individuals' health care. For example, UF Health serves a large rural area where some individuals receive acute and tertiary care at UF Health but receive primary care at one of the local FQHCs or RHCs. Including EHR data from these sites provides valuable information about their overall care.

PRECISION HEALTH

Personalized Medicine Program. This program is part of the CTSI, and partners with health professionals and patients at UF Health and across the state to develop, implement, study, and refine methods that allow genetic information to be used routinely as part of patient care. The program's initial focus is on pharmacogenetics, given the significant research contribution of UF faculty in this area. Led by faculty from the UF College of Pharmacy, it brings together a large and multidisciplinary team that provides complementary clinical, informatics, laboratory medicine, and administrative expertise required to implement genomic medicine. The program has launched six drug-gene implementations and performed clinical pharmacogenetic tests for more than 5,000 patients. The Personalized Medicine Program is focused on expanding evidence-based genomic medicine to other inpatient and outpatient settings throughout Florida, leveraging existing OneFlorida partnerships.

UF Center for Pharmacogenomics (UFCPGx) has 1,843 square feet of renovated laboratory space (four laboratories) in the UF Health Science Center. The laboratories are divided based on workflow and for reasons of quality control. The **Pre-PCR laboratory** contains three Laminar flow hoods, a refrigerator, a -20°C freezer and a computer. The **PCR laboratory** contains one Labconco Purifier Filtered PCR Enclosure, four Applied Biosystems (ABI) Verti fast Thermal Cyclers and one ABI GeneAmp 9700 PCR System Thermal Cycler, which can accept single tubes, 96-well plates or 384-well plates. It also contains QIAGEN QIAcube Automated RNA, DNA and Protein isolation instrument, a 96 and 384-well plate centrifuge, and two Eppendorf liquid handling/sample processing robots (Eppendorf epMotion 5070, and Eppendorf epMotion 5070 PC 96 qPCR system large robot). The **clinical sample processing and DNA isolation laboratory** has a 96 and 384-well plate reader (Bio-TEK Synergy HT), Li-COR ODYSSEY CLx Infrared Imaging System, NanoDrop (ND-1000) Spectrophotometer, NanoDrop (ND-2000) Spectrophotometer BioRad Criterion™ Protein Gel System and Blotter, BioRad large Protein Gel System, BioRad Gel Documentation System (Bio-Rad Gel Doc XR System PC), digital camera, Micro hybridization oven, UV lightbox, and Gel dryer. Another laboratory is an analytical laboratory which contains extensive analytical equipment including 2 Transilluminators, 3 Vertical Gel Electrophoresis Systems, 10 Horizontal Electrophoresis Systems, 2 autosamplers, 6 Multichannel Pipettors, and a pH Meter. General equipment shared between the labs includes a variable speed refrigerated centrifuge, variable and fixed speed Microcentrifuges, 2 variable speed non-refrigerated centrifuges, one 96 and 384-well plate centrifuge, a liquid nitrogen system, a controlled water bath, microwave oven, and three computers. **The analytical and genotyping laboratory** is the largest laboratory and contains the major genotyping systems, including 2 LifeTechnologies QuantStudio TaqMan-Based OpenArray Multiplex Genotyping Systems and Pyrosequencing high-throughput genotyping system (PSQ HS 96). Another lab provides work space with three computers and an office for the laboratory manager. Labs are equipped with refrigerators, centrifuges (Eppendorf Microcentrifuge 5418 R, 5415 R, and Eppendorf Benchtop 5810 R centrifuge, and DAMON-IEC CRU-500 centrifuge), and standard lab equipment such as pipettors, glassware, etc. Departmental shared space includes a freezer room, which contains additional freezers including five -80°C freezer and five -20°C freezers. The labs have 15 personal computers and four printers. The lab system is comprised of Enterprise class Linux RHEL 6.5 and Microsoft Window server 2008. User level files are stored on two Dell R710 servers

running Windows Server 2008 R2 Enterprise utilizing Distributed File System for redundancy. The labs' web-based Information services are running on Linux based Apache 2.4 servers running in a VMWare ESXi cluster utilizing six Dell R710s. The backend database is running on a Dell R620 using a Linux based MySQL. All differential backups are performed to disk storage nightly Monday through Thursday with a full backup running on Friday. Differentials and full backups are kept on disk storage for 90 days with a copy of the latest full backup put on tape monthly and moved to offsite storage.

UF Health Precision Cancer Care Program. Established in early 2014 to facilitate the translation of cancer genomics research into clinical care. The program comprises researchers and physicians in the UF Health Cancer Center and UF Health Pathology Laboratories. The program offers molecular profiling of clinically relevant and therapeutically actionable mutations in all patients with lung and colorectal malignancies. This marks the first example of next generation sequencing to tailor treatment of common solid tumors in the state of Florida, with ongoing expansion to ad hoc sequencing in other types of cancer, including ovarian, melanoma, pancreatic, endometrial and immune system cancers. Molecular profiling includes a comprehensive assessment of clinically actionable somatic activating mutations, amplifications, and fusion genes. This clinical approach seeks to identify genetic mutations contributing to cancer progression, and the novel therapies to target these mutations.

Precision Public Health LibGuide. The UF Health Science Center Library maintains this online LibGuide, which has federal, state, and local-level data resources with the geospatial level for each source and type of data, the population and location specified, and type of data (agricultural, clinical data, demographic, environmental, health statistics, health services statistics, community health resources, housing, and legal/law enforcement and crime data identified. A primary use of these data is the identification and characterization of a high-risk population segment through data linkage and layering. ([http://guides.uflib.ufl.edu/precision public health](http://guides.uflib.ufl.edu/precision-public-health)).

In addition to BERD departments listed in that section, Precision Public Health works closely with the College of Journalism and Communications (see description in UF Colleges section of this document).

Southeast Center for Integrated Metabolomics. Offers services in mass spectrometry (MS) and nuclear magnetic resonance (NMR) -based metabolomics and is developing a fully integrated platform for analytical measurements and statistical analysis. SECIM offers untargeted global metabolomics using NMR and liquid chromatography-mass spectrometry (LC-MS) and targeted assays using LC-MS on amino acids, organic acids, acyl-carnitines, acyl-CoAs, and NAD metabolites through partners at Sanford Burnham Prebys Medical Discovery Institute in Orlando. Biomarkers are identified by state-of-the-art NMR and MS. SECIM users are able to conduct isotopic ratio outlier analysis (IROA) experiments to measure global metabolomic changes in response to external perturbations or mutations using LC-MS through a partnership with IROA Technologies. SECIM technical cores include: Mass Spectrometry Services for global and targeted metabolomics Nuclear Magnetic Resonance for global metabolomics and biomarker identification; High Resolution-Magic Angle Spinning for tissue analysis and ¹³C Isotopomer Fluxomics analysis; Advanced Mass Spectrometry for biomarker identification, imaging mass spectrometry and IROA; and Bioinformatics for SECIM pipeline development and analysis. Additionally, the Promotion & Outreach Core unifies the technical cores' activity by expanding the user base and providing education and training in SECIM capabilities.

National High Magnetic Field Laboratory. Headquartered at FSU in a 370,000-square-foot complex, the Mag Lab is the largest and highest-powered magnet laboratory in the world and the only facility of its kind in the United States. The lab holds the most world records for the most powerful magnets on Earth, including a new world record for the strongest resistive magnet, as of August, 2017. The lab also includes sites at the Los Alamos National Laboratory in New Mexico and UF in Gainesville. Together these three institutions operate the lab, collaborating in a unique, interdisciplinary way to advance basic science, engineering and technology in the 21st century. Established in 1990, the Mag Lab holds 14 World Records and each year supports the research of more than 1,100 visiting scientists and engineers worldwide. In fact, in 2016 (the most recent year for which statistics are available), the Mag Lab hosted 1,778 users representing 174 universities, government labs, and private companies in the US and a total of 321 worldwide. Its state-of-the-art magnets produce fields more than a million times stronger than the Earth's magnetic field. Experiments under such conditions give scientists important insights that pave the way for advances in physics, biology, bioengineering, chemistry, geochemistry, biochemistry, materials science, and engineering. The FSU site is home to four of the lab's seven user programs and more than a dozen high-field magnets, spectrometers, and other instruments.

- **Advanced Magnetic Resonance Imaging and Spectroscopy (AMRIS).** A state-of-the-art nuclear

magnetic resonance facility in the McKnight Brain Institute at UF. AMRIS was developed in part through a grant from the Department of Defense. The National High Magnetic Field Laboratory supports an External Users Program in AMRIS through funds from the National Science Foundation. All AMRIS systems are available to UF researchers and external academic and industrial scientists. AMRIS offers users nine nuclear magnetic resonance spectrometer systems with different magnetic fields and configurations for a full spectrum of magnetic resonance experiments including high-resolution solution nuclear magnetic resonance, solid-state nuclear magnetic resonance, microimaging of biomolecular systems and tissues, animal imaging, and human imaging. AMRIS has nine professional staff members to assist users, maintain instrumentation, build new coils and probes, and help with administration. Several of the AMRIS instruments offer users unique capabilities: the 750 MHz wide-bore provides outstanding high-field microimaging for excised tissues and small animals; the 11.1 T horizontal MRI is the largest field strength magnet in the world with a 400 mm bore; the 600 MHz 1.0 and 1.5 mm HTS cryoprobes are the most mass-sensitive nuclear magnetic resonance probes in the world for ¹H and ¹³C detection, respectively, and are ideal for natural products research; and the 3T human whole body has 32 channels for rapid parallel imaging and is the only whole body instrument in the state of Florida dedicated to research. Most recently (2013) AMRIS added a 5T Dynamic Nuclear Polarization DNP polarizer with helium cryostat. These systems support a broad range of users with tasks from natural product identification to solid-state membrane protein structure determination to cardiac studies in animals and humans to tracking stem cells and gene therapy in vivo to functional MRI in humans.

UF Health Pathology Laboratories. An independent laboratory and leading provider of surgical pathology and diagnostic laboratory services for the southeastern United States. Headquartered in Gainesville, the UF Health Pathology Laboratories have offered pathology services, clinical testing of a variety of types, pathology second opinion services and autopsy services for more than 20 years. It serves all major markets across the state of Florida and provide services to more than 600 clients. The laboratory also provides full-service customer support, billing, and courier services. It also functions as a R&D laboratory for lab-developed tests in support of clinical translational research projects. In the past six years, the laboratory has supported new technologies, developed informatics resources, and built clinical support capabilities. It has closely aligned with the CTSA and supported NIH-funded translational projects in the College of Pharmacy, and departments of Pathology and Surgery as well as for individual investigators in support of translational research activities. It is both a basic science and clinical department and home to more than 80 faculty including nationally recognized pathologists who are knowledgeable in all subspecialties of pathology. In addition, the department ranks in the top 10 of public universities for NIH funding and is an international leader in autoimmune diseases. Clinical faculty have the experience, expertise and resources to diagnose a variety of patient's conditions quickly and accurately providing clinicians with critical diagnostic and theranostic information. Importantly, the laboratory strives to provide the highest level of support for patient care by utilizing established technologies and developing new cutting-edge ones. Because of these leading-edge innovations, contributions to the field of medical research are highlighted by numerous publications and research awards. UF Health Pathology Laboratories also function as a part of clinical teaching facilities where medical students, residents, fellows receive focused instruction from seasoned pathologist coupled with intensive hands-on training. The laboratory's commitment to education is underscored by the numerous teaching awards granted to faculty.

- **UF Health Pathology Laboratories Genetic Laboratories, Molecular Pathology.** The major goal of the Molecular Pathology Laboratory is to develop and provide exceptional clinical services to patients and physicians. It offers detection of pharmacogenomic variants by quantitative PCR and are currently validating a next-generation sequencing-based approach. In addition to pharmacogenomic testing capabilities, the Molecular Pathology Laboratory is, as a full-scale reference laboratory, also equipped to offer solid tumor screening and diagnosis, as well as testing for lymphoid malignancies and infectious diseases. The laboratory serves hospitals, physicians, public health centers and reference laboratories, as well as supporting clinical trial and other translational projects. The laboratory is committed to contributing to the advancement of the field of molecular pathology and genomic medicine and to the education of tomorrow's pathologists and molecular geneticists. It utilizes a multidisciplinary approach to diagnose genetic diseases in collaboration with anatomical pathologists, hematopathologists, microbiologists and cytogeneticists. The laboratory is taking a major leadership role within the UF Health Personalized Medicine Program through development of genetic test offerings to support this program as well as in a variety of other clinical translational programs at UF.

ADDITIONAL HUB FACILITIES

Clinical and Translational Research Building (CTRB). Serves as the headquarters for clinical and translational science at UF and in the state. The CTRB houses patient-oriented research venues for the Institute on Aging and the CTSI. The 120,000-square-foot facility features two main wings. Units in the building include: CTSI, Institute on Aging, Department of Biostatistics, Department of Epidemiology, Department of Health Outcomes and Biomedical Informatics.

Biorepositories.

- **CTSI Biorepository.** One of only five CTSI-affiliated biorepositories accredited by the College of American Pathologists. The services provided by the CTSI Biorepository include retrospective and prospective procurement of high quality biospecimens for research (fresh, fresh-frozen, formalin-fixed, paraffin-embedded tissue, DNA, RNA, plasma, serum, buffy coat, etc.); a centralized, secure, and monitored biospecimen storage facility; biospecimen processing services; nucleic acid extraction and quality assessment services; comprehensive clinical trial specimen management services including kit creation, sample receipt/ reconciliation, storage and distribution; regulatory assistance, including Institutional Review Board documentation when applying for Biorepository services; and comprehensive pathology services, including diagnosis confirmation by board certified pathologists. The total sample storage capacity is approximately 500K samples stored in nine -80°C freezers and one liquid nitrogen freezer. The current storage inventory exceeds 230K samples including approximately 31K biorepository “library” specimens which are available to researchers and nearly 198K samples collected by investigator-directed research projects including multi-center clinical trials. Examples of large scale clinical trials utilizing CTSI Biorepository services include the “Lifestyle Interventions and Independence for Elders Study” (*The LIFE Study*), the “Hepatitis C Therapeutic Registry and Research Network” Study (*HCV-TARGET*), the UF’s “Sepsis and Critical Illness Research Center” (P50 grant, departments of Surgery, Anesthesiology, Medicine, Physical Therapy, Aging and Geriatric Research), and the UF Health/Orlando Health Joint Oncology Program. The CTSI Biorepository also serves as the official UF Health Cancer Center’s biospecimen procurement and storage facility for Cancer Center Members.

Imaging.

- **CTSI Human Imaging Core.** Provides infrastructure and support to facilitate research and educational activities using Magnetic Resonance Imaging and Spectroscopy (MRI/S) technology, with particular emphasis on translational MRI/S research in humans. Located in the McKnight Brain Institute, the centerpieces of the Core are two research-dedicated 3.0 Tesla whole-body human MRI/S scanners, including a state-of-the-art Siemens Prisma scanner (installed in December 2016), and a Philips Achieva scanner. The Siemens Prisma scanner is equipped with simultaneous multi-slice (SMS) technology for functional MRI (fMRI) and diffusion imaging (dMRI) as outlined in the Human Connectome Project, as well as Magnetic Resonance Elastography (MRE) and other advanced MR technology. Whole-body scanning capabilities enable correlative measurements in obesity, diabetes, osteoarthritis, aging and dystrophy studies. Both scanners are equipped with a series of coils and pulse sequence packages for advanced MR imaging and spectroscopy research of human neuro, body, and musculoskeletal (MSK) system, e.g., a 64-channel head/neck coil on the Siemens scanner, a 32-channel head coil and a 16-channel neuro-vascular coil on the Philips scanner, respectively, for neuroimaging applications, and phased array coils for other organs (e.g., heart, liver, and MSK). Both scanners are equipped with devices for presenting video and audio signals, including functional MRI task paradigms to the subjects during scanning, and for recording the subject’s button responses. The Core is a resource, on a fee-for-service basis, open to UF and UF Health researchers, as well as researchers from outside UF through collaborations with UF and UF Health researchers including those in the Core. In conjunction with three higher magnetic field magnets (Agilent 4.7T, Agilent 11.1T, Bruker 17.6T) for imaging animals and/or tissue samples in the Advanced Magnetic Resonance Imaging and Spectroscopy (AMRIS) Facility, which is housed on the same floor in the MBI and is the biological arm of the federally-funded National High Magnetic Field Laboratory, the CTSI Human Imaging Core is a state-of-the-art facility for cutting-edge translational MRI/S research in human health and diseases.

Florida Cyberinfrastructure. UF and FSU are members of the Sunshine State Education and Research Computing Alliance (SSERCA), which was created in 2010 to bring together Florida’s geographically distributed educational institutions in a way that maximizes their collective impact on research and education. SSERCA provides the management and technology framework to share and access resources distributed

across the state of Florida. The alliance currently supports several projects with sophisticated workflows and complicated data and compute requirements. Current member organizations include Florida Agricultural and Mechanical University, Florida Institute of Technology, Florida International University, FSU, the University of Central Florida, UF, the University of Miami, the University of North Florida, and the University of South Florida. The Florida LambdaRail provides connectivity to all institutions in the alliance.

ONEFLORIDA AND OTHER AFFILIATED COLLABORATORS AND NETWORKS

OneFlorida Clinical Research Consortium. Founded by UF in 2011, the combined network includes health systems that provide care for approximately 15M or 75% of all Floridians through 4,100 physician providers, 1,240 clinic/practice settings with a catchment area covering all 67 Florida counties. OneFlorida aims to unite its stakeholders to address some of the nation's biggest health challenges and serve as a resource for the state in improving health, health care and health policy. To support research aimed at addressing these challenges, the OneFlorida Data Trust and OneFlorida Practice-based Research Network allow investigators to identify cohorts and conduct observational research using aggregate and de-identified patient-level health data from diverse partners across the state; identify and intervene with patients at the point-of-care; and conduct pragmatic clinical trials and other interventional studies, including implementation science and comparative effectiveness research, in eligible, research-ready clinics. The OneFlorida coordinating center is housed at the UF CTSI and facilitates streamlined support for network-wide research through a centralized IRB process, integrated programs, budgeting, contracting and stakeholder engagement, and a front-door process to assist investigators. The strength of the consortium is in the diversity of its patients, partners and clinical settings. The consortium actively participates in two national networks dedicated to translational research: the National Institutes of Health Clinical and Translational Science Awards Program, with CTSA hubs at UF and the University of Miami, and the Patient-Centered Outcomes Research Institute's PCORnet, as one of 13 clinical data networks nationwide.

Association for Clinical and Translational Science. UF has an institutional membership in this association for individuals engaged in or supportive of clinical and translational science, which focuses on research, education, advocacy and mentoring. ACTS supports investigations that continually improve team science, integrating multiple disciplines across the full translational science spectrum: from population based and policy research, through patient oriented and human subject clinical research, to basic discovery. Its goal is to improve the efficiency with which health needs inform research and new therapies reach the public. ACTS is the academic home for the disciplines of research education, training, and career development for the full spectrum of translational scientists. Through meetings, publications, and collaborative efforts, ACTS will provide a forum for members to develop, implement, and evaluate the impact of research education programs. ACTS provides a strong voice to advocate for translational science, clinical research, patient oriented research, and research education support. ACTS will engage at the local, state, and federal levels and coordinate efforts with other professional organizations. ACTS will promote investigations and dissemination of effective models for mentoring future generations of translational scientists. Through collaborative efforts, ACTS will provide a forum for members to share studies, promote best practices, and optimize professional relationships among trainees and mentors.

University of Miami Clinical and Translational Science Institute. Created in 2012, the Miami CTSI drives research translation into evidence-based clinical and community practices that improve the health of South Florida's diverse population. In a community comprised of 85 percent racial and ethnic minorities, the Miami CTSI makes significant contributions in minority health and health disparities and in training underrepresented minorities in clinical, translational, and community-engaged research. The Miami CTSI educates, connects, and supports research teams by building the distinct science of clinical translational research, fostering collaboration, and managing the resources needed to sustain success in these areas.

University of Kentucky LINKS Center for Social Network Analysis. Devoted to the study and optimization of social networks in organizations, the center is housed in the Gatton College of Business and Economics. Principal activities consist of 1) Research: Conduct and publish cutting-edge research in the rapidly expanding field of social network analysis; 2) Training: Offer seminars, workshops and extensive training materials to enable others to analyze social networks 3) Consulting: Help organizations to understand and optimize their intra- and inter- organizational networks 4) Conferences: Host the ION conference that brings together scholars to present the latest research on social networks and management.

Florida Neonatal Neurologic Network. A long-term collaboration between Level III facilities in North and Central Florida designed to improve the outcome of babies with hypoxic-ischemic encephalopathy. A single care center cannot perform this research due to the small number of patients treated per year. Therefore, a collaborative network has been developed to impact outcomes. UF Health Shands Hospital serves as the hub. Florida Neonatal Neurologic Network has a standardized hypothermia protocol with the same entry criteria,

standardized systemic supportive care protocols, a centralized data repository for capturing patient demographics (REDCap), standardized MRI result reporting, a standardized developmental follow-up time line, and a serum sample repository located at UF Health. The network is reducing confounding variables for studying babies with hypoxic-ischemic encephalopathy and improve outcomes by standardizing practices among the centers. Florida Neonatal Neurologic Network consists of nine Level III NICUs in North and Central Florida including Gainesville (UF Health Shands), Tampa (Tampa General Hospital-USF, St. Joseph's Hospital), Jacksonville (UF Health Shands – Jacksonville and Baptist-Wolfson Children's Hospital), Orlando (Florida Hospital), Tallahassee (Tallahassee Memorial), Gulf Coast (Panama City), and Sacred Heart (Pensacola). The network has active online teaching, one annual meeting, and quarterly conference calls.

HCV-TARGET. Recognizing the issues and risks associated with the rapidly evolving HCV treatment landscape, in 2011 investigators at UF and University of North Carolina jointly established a large, real-world treatment registry, HCV-TARGET. HCV-TARGET is rooted in the infrastructure and collaborative network of the NIH Clinical and Translational Science Award (CTSA) and includes 30 CTSA-supported institutions among its participating academic (43 sites) and community (17 sites) centers in the US, Canada, and Europe. The network has grown into extensive partnership between academic and community centers, multiple pharmaceutical industry collaborators, HCV community advocate representatives and the FDA, all of whom share in common aims for data use and analysis. The HCV-TARGET Clinical Coordinating Center (CCC) is housed at UF (PI: David R. Nelson, M.D.) and Data Coordinating Center (DCC) at the University of North Carolina at Chapel Hill. UF has devoted staff resources, separate work space in the Clinical and Translational Research Building, and equipment to support HCV-TARGET CCC operations for managerial, contractual, fiscal, data entry, regulatory, protocol, and administrative oversight. This includes a full-time project director and part-time regulatory director, both experienced in HCV treatment and clinical trial administration, a single contract negotiator from the UF Contracts and Grants office to negotiate all funding, collaborative, and sub-site agreements, and a 12-member team of data abstractors. DCC resources include a full-time assistant director, three full-time data monitors, a data manager and three statistical computation specialists, and weekly statistical and epidemiological consultation from two senior faculty members. Through these collaborative teams, HCV-TARGET developed standardized, centralized chart data abstraction methods coupled with risk-based data monitoring to increase the efficiency and quality of an observational registry cohort study while also minimizing costs typically associated with performing post-marketing clinical research. The network hosts CFR 21 Part 11 compliant REDCap databases with MEDRA adverse event and WHO drug dictionary coding standardization. The database is also CDISC compliant, allowing the data to be shared directly with the FDA for analyses around safety and efficacy as part of a formal MOU (#225-13-0012) executed in 2013. The network also collects and stores samples in the UF CTSI Biorepository that can be used for future research. This efficient infrastructure has enrolled more than 10K patients, and has been utilized by industry partners to conduct early/ expanded drug access studies, non-IND phase 4 studies and to fulfill post-marketing commitments related to HCV.

North Florida/South Georgia Veterans Health System. Consists of two medical centers, three large multi-specialty outpatient clinics and eight small community-based primary care outpatient clinics. The Malcom Randall VA Medical Center in Gainesville is a tertiary care facility that is also an active teaching hospital, with an extensive array of specialty services. The Malcom Randall VA Medical Center hospital combines a full range of patient-care services with state-of-the-art technology that is enhanced and supported through education and research. The health system has a strong and meaningful affiliation with UF and is connected both physically and functionally to the university. More than 180 UF medical school residents, interns, and students are trained at the Gainesville and Lake City VA Medical Center each year. Programs are also in place with UF for dentistry, nursing, physical therapy, health services administration, and pharmacy.

Through sharing agreements, there is collaboration in the areas of radiation therapy, professional radiology services, sleep lab, electron microscopy, and cardiac catheterization. North Florida/South Georgia Veterans Health System has more than 300 active projects and is the home to four VA research centers: the Brain Rehabilitation Research Center of Excellence, which seeks to improve current treatments or discover new forms of treatment to improve neurorehabilitation for impairments caused by stroke, incomplete spinal cord injury and other neurological problems; the Center of Innovation on Disability and Rehabilitation Research which conducts interdisciplinary research to improve the health, function and community reintegration of post-deployed veterans and veterans with neurological impairment; the Geriatric Research, Education and Clinical Center which finds ways to improve health care and enhance quality of life for older veterans and their caregivers; and the National Center for Occupational Health and Infection Control which seeks to solve

important problems that arise at the intersection of occupational health, infection control, industrial hygiene and bio-safety.

- **VA Geriatric, Research, Education and Clinical Center** consists of six full-time and four part-time staff who are engaged in translational research with an emphasis on improved patient care for older veterans. The center collaborates with UF's Department of Aging and Geriatric Research to address major themes including function, prevention, healthcare quality, and safety.

International Mentoring Association. A non-profit (501(c)(3)) association of mentoring professionals in the education, business and government sectors. Offers the most current information in the constantly evolving field of mentoring best practices in an organized, accessible, and easy-to-use format. IMA advances personal and organizational development by promoting the use of mentoring best practices in all settings. This diverse worldwide organization unites a broad cross-section of hundreds of people who have interest in the theory and practice of effective mentoring. Members bring unique experiences and a fresh perspective from their various fields of mentoring and share a commitment to increasing 1) The impact of mentoring, 2) performance of mentoring participants 3) effectiveness of the organizations those programs serve. The association offers a wealth of free information, including monthly webinars covering a range of mentoring and coaching topics and articles written by experts in the field.

Sentinel Network. A collaborative effort across two community-focused national organizations and six CTSA sites, including Washington University in St. Louis, University of California-Davis, University of Michigan, Albert Einstein College of Medicine, University of Rochester, and UF. The Sentinel Network develops procedures to increase community participation in research, build the capacity of Community Health Workers to expand their role in research by increasing the rigor of health evaluation metrics in the field, and establish a sustainable network, the Sentinel Network, to provide ongoing, real-time assessments of top health and neighborhood needs, concerns and research perceptions. The data can then be shared with researchers and local communities to increase the representativeness and relevance of research by facilitating community participation. In addition to continuing to collect health data, the Sentinel Network includes the provision of medical, social service, and research referrals appropriate to the assessed health needs and concerns of community members.

UF COLLEGES AND ADDITIONAL FACILITIES AND RESOURCES AFFILIATED WITH THE CTSI

UF COLLEGES

College of Agricultural and Life Sciences. Administers the academic degree programs of the UF Institute of Food and Agricultural Sciences (UF/IFAS). With 23 undergraduate majors, more than 50 areas of specialization, and 23 graduate majors, the college is an educational leader in the areas of food, agriculture, natural resources, and life sciences. Its mission is to deliver unsurpassed educational programs that prepare students to address the world's critical challenges related to agriculture, food systems, human well-being, natural resources and sustainable communities. The College of Agricultural and Life Sciences is one of the largest colleges of its kind in the nation, serving nearly 5,000 students in programs ranging from horticultural sciences to geomatics and resource economics. It has 597 state-funded faculty and 313 county-funded faculty in extension offices throughout Florida.

College of Dentistry. One of six UF health colleges, and home to 369 DMD students and 144 advanced education residents, fellows and interns, the College of Dentistry is dedicated to high-quality programs of education, research, patient care and public service, the college ranks ninth among 65 US dental schools in a comparison of dental schools based on mean GPA of admitted students, DAT scores and acceptance rates. The school of Advanced Dental Sciences facilitates integration of advanced study in endodontics, oral and maxillofacial pathology, oral and maxillofacial radiology, orthodontics, pediatric dentistry, periodontology and prosthodontics. The college is continually expanding interdisciplinary educational opportunities in the predoctoral and advanced education arenas.

The college is nationally recognized for its oral health research enterprise, emphasizing infectious diseases in dentistry, bone biology, pain and neurosciences, and translational research to improve oral health care and patient outcomes. The Department of Oral Biology is one of the top-ranked in the U.S. based on National Institutes of Health, or NIH, research funding among similar departments. The college is ranked fifth out of 65

US dental schools for NIH funding. The oral biology faculty includes national leaders in oral infectious diseases and immunology research. The Comprehensive Training Program in Oral Biology (T90/R90) builds on 20 years of successful training of basic/clinical scientists and was selected for a national excellence award by the American Dental Education Association.

The 173,179-square-foot dental tower includes dental clinics, teaching facilities, offices, laboratories, and classrooms. Approximately 35K square feet of the dental tower is dedicated to research, with much of this space classified as wet laboratory space. More than 90 percent of preclinical instruction is delivered in the simulation laboratory with 98 patient simulators. The college has 269 dental operator chairs at its Gainesville location and more than 52,452 square feet dedicated to clinical operations. DMD clinical instruction also occurs in the nine-chair Oral & Maxillofacial Surgery Center, in the Pediatric Dental Center with six DMD student chairs, in the Endodontic Center, with six DMD student chairs, and in the Graduate Orthodontics Center where there are 15 DMD student chairs available. College-owned clinics in Naples, Hialeah and St. Petersburg have 20, 23, and 17 chairs, respectively. The college is home to the UF Health Periodontology and Prosthodontics Dental Center. This center, which houses 25 dental chairs and state-of-the-art surgical suites, represents the final step in consolidating all specialty clinics on the first floor, facilitating ease of patient access, and streamlining interdisciplinary care between dental specialties. In addition, students participate in clinical rotations in the department clinics of Oral & Maxillofacial Surgery, Orthodontics, and Pediatric Dentistry.

The College of Dentistry's **Dental Clinical Research Unit** (described in the Hub and Network Capacity section of this document) performs state-of-the-art clinical research in the field of oral care as well as collaborative research in all other areas of health care. The Dental Clinical Research Unit also assists with in vitro studies of antimicrobial compounds and susceptibility studies and test diagnostic methods and procedures.

College of Design, Construction & Planning. Engaged in a wide array of applied research, focus areas include sustainable design and construction, including green infrastructure; evolving design and construction technologies; health and the built environment; transportation planning; planning for a balance in human and natural systems; and the creation, application, and dissemination of geospatial information.

The college is well equipped for the study and research needs of its faculty and students with facilities dedicated to their individual research requirement. In addition, multiple research centers across the nation provide support and convenience for students to conduct high quality research.

Much of the college's research is conducted under the umbrella of 10 established research centers, the oldest of which is the Geoplan Center. Geoplan works with the Florida Department of Transportation to help streamline long-range transportation planning. Using an online tool for geospatial evaluation, Geoplan staff are able to evaluate alternative transportation corridors for environmental, fiscal, and cultural factors that would render an alternative unfeasible. For example, Geoplan works with Florida Department of Transportation to examine the potential impacts on the state's highway infrastructure from sea level rise. Geoplan's Florida Geographic Data Library is a comprehensive collection of Florida geospatial data that is used by state agencies, academic institutions, and private consultants.

Other centers in the College of Design, Construction & Planning with robust project portfolios include the Center for Landscape Conservation, which focuses on ecological networks and reserve design; the Center for World Heritage Research and Stewardship, which is dedicated to the protection of significant structures, monuments, and landscapes; the Center for Advanced Construction Information Modeling, which promotes the use of 3-D modeling technologies in the construction industry; the Powell Center for Construction Environment, which focuses on sustainable construction, including net zero energy; and the Shimberg Center for Housing Studies, which maintains data on Florida's housing stock and supports efforts to address the challenge of affordable housing in communities across the state.

College of Education. UF continues to stake claim as the top-ranked college of education in Florida and among public institutions in the Southeast. The College of Education jumped five spots this year to No. 14 among the nation's public education colleges in U.S. News & World Report's 2019 annual rankings of America's Best Graduate Education Schools. UF also placed five spots higher overall at No. 24 among both public and private graduate education programs. The college ranking has improved better than three places per year, on average, over the past eight years. No other education school in the country has improved more over this time span.

Faculty and graduate students pursue vital, interdisciplinary research that impacts teaching and learning,

education policy and leadership in all education disciplines. By partnering with multiple stakeholders, education faculty engage in novel scholarship and research activities that enhance “whole school” improvement, human development, student achievement, early-childhood readiness, assessment and program evaluation, teacher preparation and retention, and classroom technology advances.

The college consists of three schools, six research centers, and the P.K. Yonge Developmental Research School. Enrolling nearly 1,700 students on campus in 32 bachelor’s and advanced degree programs within nine academic specialties, and nearly 4,000 students in 161 online courses, 14 online degree programs, and six online certification programs, the college’s educator preparation programs have been accredited by the National Council for the Accreditation of Teacher Education since 1954. The college faculty members engage in innovative research and public scholarship that enhance student readiness and achievement, whole school improvement, and leadership development in all education professions.

The college’s Education Library is a branch library within the UF library system, which forms the largest information resource system in the state of Florida. The Education Library houses approximately 130,000 books and more than 11,000 journals, and maintains current subscriptions to more than 700 journals. An online computer catalog and interlibrary loan system allow access to materials from libraries around the state, as well as to ERIC and other databases. The college’s Office of E-learning, Technology, and Creative Services has full-time staff available to assist faculty with their research projects, including programmers, instructional designers, and graphic artists who can quickly and efficiently collaborate with project personnel to meet technology needs. The College of Education has ample space to support research projects and staff. These spaces are equipped with state-of-the-art computer equipment and are suitable for meetings and group work.

College of Engineering. The Herbert Wertheim College of Engineering houses one of the largest and most dynamic engineering programs in the nation. Curriculum offered across nine departments, 15 degree programs, and more than 20 centers and institutes produces leaders and problem-solvers who take a multidisciplinary approach to innovative and human-centered solutions. Students, faculty and alumni are hailed as *New Engineers* who aim to transform the way we live, work and play. The college produces inventions at twice the national average — and startups at five times the national average — for every research dollar spent. Engineering is the largest professional school, the second-largest college, and one of the top three research units at UF. Established in 1910, the college was named after Distinguished Alumnus Dr. Herbert Wertheim in 2015. The Major Analytical Instrumentation Center, the Particle Analysis Instrumentation Center, and the Nanoscale Research Facility comprise the Research Service Centers in the College of Engineering. These are multiuser materials characterization, fabrication, and analysis facilities that provide service to all faculty and students at UF, research universities, and the industrial and commercial community. These facilities have provided teaching, training, and services for more than 30 years together and continue to be the largest and most successful hands-on, multiuser facilities at UF.

College of Health & Human Performance. Research and teaching in Health & Human Performance has an impact on almost every aspect of the human condition. The college’s three centers; the Center for Digital Health and Wellness, Center for Exercise Science, and the Eric Friedheim Tourism Institute; as well as its three primary departments , Applied Physiology and Kinesiology, Health Education and Behavior, and Tourism Recreation and Sport Management, place the college firmly in a position to influence and improve an array of societal problems and challenges. Its mission is to provide recognized programs of excellence in teaching, research and service that focus on assisting individuals, families and communities to promote health and prevent disease while enhancing quality of life across the lifespan. Areas of research include addictive behavior and substance abuse, examining beneficial therapy techniques for Parkinson's Disease and other physiological and cardiovascular disorders, America's obesity epidemic from all perspectives, to help guide prevention and policy, and discovering the role and impact of leisure activities, tourism and sport on individuals and the environment.

College of Journalism and Communications. Ranked in the top 10 for all communication disciplines taught at the college — advertising, journalism, public relations and telecommunications, as well as the Science/Health graduate track. It enrolls approximately 2,300 undergraduates in these fields and offers master’s degrees and doctorate degrees in mass communication enrolling approximately 200 students at the graduate level. The college excels in providing hands-on experience for journalism and telecommunication students, working alongside professionals, in the Innovation News Center and with seven media properties, including the local PBS, NPR and ESPN affiliates. Advertising and public relations students get experience working with national and regional clients through The Agency, a strategic communication agency led by

professionals and run by students. The college is home to several research programs focused on message dissemination, persuasion and translation and has several state-of-the-art facilities that support communication research. The College of Journalism and Communications is home to the STEM Translational Communication Research Center, which was established as a strategic university-wide pre-eminence initiative. In 2018, the college established the second center, the Center for Public Interest Communications, which is the first of its kind in the nation. The center's goals are to build and test both undergraduate and graduate curricula for adoption by other universities; nurture, generate and promote scholarship that can advance the practice of public interest communications; and support a vibrant community among those who practice or study public interest communications. Since 1977, the college has also been home to the Brechner Center for Freedom of Information. The center exists to advance understanding, appreciation and support for freedom of information in the state of Florida, the nation and the world. Through education and promotion of freedom of information laws and policies, the Center seeks to foster open government and a participatory democracy.

College of Liberal Arts and Sciences. One of the largest and among the first of the 16 colleges to be established at UF, the College of Liberal Arts and Sciences forms the intellectual core of the university and is home to the humanities, the social and behavioral sciences, and the natural sciences and mathematics. The college's 700 faculty members are responsible for teaching the university's core curriculum to more than 35,000 students each year. Liberal Arts and Sciences has more than 11,000 undergraduate students pursuing a variety of disciplines through its 42 majors and minors. Additionally, close to 1,800 graduate students pursue advanced degrees in the college and work with faculty to advance the frontiers of knowledge.

Faculty in Liberal Arts and Sciences rank among the best in the nation and have received a variety of national and international awards, including Guggenheim Fellowships, Senior Fulbright Awards, National Science Foundation Fellowships, Presidential Young Investigator Awards, and National Endowment for the Humanities Fellowships. They hold memberships in the National Academy of Science, the Nobel Prize Committees, the Swedish Royal Academy of Sciences, and the Royal Societies of London and Edinburgh.

Scientists in the college are engaged in a wide array of world-class research efforts spanning diverse topics and fields. For example, Liberal Arts and Sciences physicists participated in the discovery of the Higgs particle using the Large Hadron Collider at CERN, created the algorithm that allowed the detection of gravitational waves at LIGO, and maintain a high-profile involvement with the National High Magnetic Field Laboratory. Liberal Arts and Sciences chemists are developing methods for the nanofabrication of the next generation of electronic devices, smart polymers, and more sensitive techniques for diagnosing and treating cancer. Liberal Arts and Sciences biologists have worked on epidemiological projects to prevent deadly outbreaks and developed conservation guidance to protect endangered species. Astronomers search for earth-like planets outside our solar system using UF's share of the Gran Telescopio Canarias, the world's largest telescope, and the Keck Foundation Exoplanet Tracker at the Sloan Digital Sky Survey. Liberal Arts and Sciences mathematicians apply their modeling skills to solutions such as reducing the wait times in hospital emergency rooms and controlling the effects of citrus greening on Florida's agricultural industry. Liberal Arts and Sciences geologists study the changes that have occurred over the past 4.6 billion years in order to meet the challenges the earth is experiencing today. Liberal Arts and Sciences psychologists are applying cognitive and social psychological inquiry to address issues of bias, discrimination, and bullying. Faculty in the humanities publish books with leading presses and in leading journals and have garnered grants from a number of prestigious foundations, as noted above. All of these examples provide ample evidence for the breadth and depth of the research enterprise in the College of Liberal Arts and Sciences.

College of Medicine. Faculty are national leaders in fundamental, translational and clinical research in areas pertaining to diseases of the nervous system, human aging, cancer, diabetes, infectious disease, immunology and inflammation, genetics and gene therapy. 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.

College of Medicine faculty and collaborative research teams continue to receive awards and honors that reflect their exceptional distinctions and contributions. The college's steady increase in NIH funding over the last nine years is reflected in the impressive rise in national rankings in recent years to No. 16 among public medical schools, joining the upper third of US colleges of medicine, according to U.S. News & World Report.

With lab spaces across UF in Gainesville and at the UF Research and Academic Center in Lake Nona, the college is home to more than 380,000 square feet of research space.

College faculty members practice at UF Health Shands Hospital, the UF Health Shands Children's Hospital, the UF Health Shands Cancer Hospital, the UF Health Heart & Vascular Hospital, the UF Health Neuromedicine Hospital, the North Florida/South Georgia Veterans Health System, the Florida Recovery Center, the UF Health Shands Rehab Hospital and the UF Health Shands Psychiatric Hospital. In addition, physicians practice throughout North Central Florida at more than 50 UF Health Physicians practices. College of Medicine physicians accounted for nearly 937,000 physician visits in North Central Florida at UF Health Physicians practices in Fiscal Year 2017. Within UF Health Shands Hospital, College of Medicine physicians accounted for more than 51,000 patient discharges in Fiscal Year 2017.

Clinical strengths of UF physicians include cancer, heart and vascular, neuromedicine, aging, psychiatry and addiction medicine, diabetes, orthopaedics and children's health services.

College of Nursing. Driven to transform health through innovative practice, preeminent research and exceptional academic programs, the college is a major provider of baccalaureate-prepared (BSN) nurses in the state, and its mission is to provide excellent personalized nursing care, generate research and scholarship that have an impact on practice, and prepare graduates who care, lead and inspire

As part of the academic health center, the College of Nursing collaborates with other health colleges, the UF Health family of hospitals and clinical affiliates across the state. The College of Nursing has a strong collaborative relationship with the UF Health nursing division to support the college's missions of education, research and patient care. Strategic goals and activities focus on efforts to ensure nurses are best prepared to meet today's health care needs. New joint faculty appointments have been forged between the college and the teaching hospital, and the college has an innovative model of clinical education where a cohort of BSN students is assigned to Academic Partnership Units at UF Health Shands and UF Health Jacksonville. The College of Nursing is located within the 173,133-square-foot Health Professions, Nursing, and Pharmacy complex, which provides educational, administrative, and research space for the College of Nursing, the College of Public Health and Health Professions, and the College of Pharmacy.

The College of Nursing's research funding ranks in the top 25 of public universities, and its NIH research funding improved 20 places in 2017. The College of Nursing research portfolio is diverse and includes projects focused on three areas of excellence: management of symptoms associated with aging and chronic illnesses; disparities in health and health services; and translational research for families. Faculty members receive funding from a number of sources, including the NIH, the National Science Foundation and private foundations. This research has resulted in improvements in health promotion, disease prevention and symptom management for young and old alike. Students are actively involved with faculty members in research, helping the students understand and value clinical research. Renowned faculty researchers and experts are leading the efforts to build robust research teams within the college and across campus and the nation. The college has an established Florida Blue Center for Health Care Quality and a Center for Palliative Care Research and Education. In addition, the college boasts two faculty members who hold joint appointments with UF Health Shands Hospital, one of whom directs clinical research on nursing and patient care services.

College of Pharmacy. Founded in 1923, the College of Pharmacy consists of five clinical and basic science departments (Medicinal Chemistry, Pharmaceutics, Pharmacodynamics, Pharmaceutical Outcomes and Policy, and Pharmacotherapy and Translational Research) staffed by 105 faculty. The college is ranked ninth nationally (public and private) according to U.S. News & World Report. The college's research programs reside on two campuses in Gainesville and Orlando. The largest pharmacy educator in the state of Florida, the college is nationally and internationally recognized for its professional and graduate programs. As a UF Health college, the College of Pharmacy clinical faculty serve as a part of interprofessional teams in community health care clinics and at UF Health Shands Hospital for residents of Florida who travel to Gainesville and Jacksonville for specialized care. The college's Center for Quality Medication Management operates a call center that serves more than 150,000 Medicare and other patients nationwide. The college is the home to one of only two accredited PGY2 residencies in pharmacogenetics, the only one based at a university.

More than 1,600 students receive professional degree education and training leading to the doctor of pharmacy (PharmD) degree. The college offers graduate programs to more than 100 students leading to a PhD or an MS degree in one of five areas: medicinal chemistry; pharmaceutics/ pharmacometrics; pharmacoepidemiology/

pharmacoeconomics; pharmacodynamics; and clinical pharmaceutical sciences/pharmacogenomics. The college also provides MS training in one of 11 online programs in specialized areas of pharmaceutical science to more than 800 students worldwide. Students in the online MS programs usually work in a clinical or applied science field while gaining their advanced education. The college also offers numerous continuing education programs for pharmacists, residents, and fellows.

Patient care occurs at UF Health Shands hospitals in Gainesville and Jacksonville and other clinical pharmacy locations around the state of Florida. Clinical strengths are in ambulatory care, diabetes, infectious disease, patient safety, and medication therapy management.

The college has 109,000 square feet of space for education, administration, and research in the UF Health Science Center in Gainesville and at the UF Research and Academic Center at the Lake Nona medical community in Orlando. Both the specialized and the multidisciplinary research space at these sites support nationally and internationally recognized research programs in drug discovery, drug development, pharmacokinetics/pharmacometrics, pharmacoepidemiology, and pharmacogenomics/personalized medicine.

Faculty from across campus conduct research within one of three active interdisciplinary research centers in the college, the Center for Pharmacogenomics; the Center for Natural Products, Drug Discovery and Development; and the Center for Pharmacometrics and Systems Pharmacology. The Center for Pharmacogenomics, is recognized for its translational research, teaching, and service focused on genetically guided drug therapy decision-making. The Center for Pharmacogenomics also houses the UF Health genotyping core laboratory. The Center for Natural Products, Drug Discovery and Development provides both drug discovery expertise and the infrastructure to screen for novel therapeutic targets and chemical entities that modulate target activity. The Center for Pharmacometrics and Systems Pharmacology uses a systems biology approach to study drug activities, their targets, and clinical effects to support and advance translational research and improve the process of bringing new drugs to market for improved patient therapies, including personalized medicines.

College of Public Health & 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 is ranked thirteenth in NIH funding among the 59 accredited US schools of public health. 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.

Public Health & Health Professions has 452 affiliation agreements that allow students to participate in site visits and to be placed at various organizations to complete internships, clinical rotations, supervised research, and other practical experiences. The agreements include 147 with health departments, hospitals, health centers, and Veteran's Administration facilities, 275 with clinics and private practitioners, and 30 with other universities/educational institutions.

The college is located within the 173,133-square-foot Health Professions, Nursing, and Pharmacy complex, which provides educational, administrative, and research space for the colleges of Nursing and Pharmacy as well.

College of the Arts. Previously known as the College of Fine Arts, evolved from the School of Architecture, which was established in 1925. In 1975 the previous College of Architecture and Fine Arts was divided into two colleges, the College of Architecture and the College of Fine Arts. Many programs, however, have flourished since the university's earliest days. The UF Band Program got its start in 1913, and the Men's Glee Club was founded in 1907. The painting and drawing programs began in 1929 and became the basis for the School of Art and Art History. In May 2014, the college changed its name to the College of the Arts. In 2015 the college

celebrated its 40th anniversary.

The College of the Arts offers baccalaureate, master's and PhD degree programs in its three schools, the School of Art and Art History, School of Music, and School of Theatre and Dance. The college is home to the Center for Arts in Medicine, Center for World Arts, Digital Worlds Institute, University Galleries, and the college program of the New World School of the Arts in Miami. More than 100 faculty members and approximately 1,200 students work together daily to engage, inspire, and create. The college achieves the university's mission by training professionals and educating students as artists and scholars, while developing their critical thinking and inspiring a culture of curiosity and imagination. The college hosts more than 300 performances, exhibitions, and events each year. Faculty and students also exhibit and perform at other local, national, and international venues.

College of the Arts faculty members are active and productive researchers, scholars, and creative artists who engage in basic and applied research within the arts and across disciplines. Faculty research focuses on and occurs within the specific arts discipline and across sub-disciplines within their respective fields. Interdisciplinary and multidisciplinary research brings arts researchers together with colleagues in other fields to create new areas of study that bring the complementary strengths of the arts to those fields. In each of these processes, both traditional and unique arts methodologies inform and enhance research across disciplines, and the results of this work contribute significantly to strengthening the human condition and improving quality of life. Faculty researchers disseminate their work in multiple ways — books, articles, conference presentations, recitals, exhibitions and productions — both in print and electronically. This combination of traditional and unique arts delivery systems is a dynamic component of arts research, allowing all individuals multiple access points to the results of research activity in the college.

College of Veterinary Medicine. One of six UF Health colleges, the College of Veterinary Medicine is committed to excellence in teaching, research and patient care and is home to 445 DVM students, 59 residents, 12 interns, 58 MS/PhD students and 708 distance education/online MS students. From 2000 to 2017, DVM graduates have consistently ranked above the national average on the North American Veterinary Licensing Examination. Many continue their education through internships at accredited veterinary institutions or private practices, and many go on to pursue residencies as well. Last year the college received 908 applications for 112 openings in the freshman class. The college offer special interest certificate programs in Aquatic Animal Health, Veterinary Business Management, Food Animal Veterinary Medicine, International Veterinary Medicine and Shelter Medicine. A new state-of-the-art clinical skills laboratory opened in 2015, providing dedicated space for veterinary students to enhance their training in clinical and technical skills. The college also offers a dual DVM/MPH degree program.

Faculty, who are housed in four academic departments, pursue both clinical and basic science research interests. Both clinical and research collaborations exist between the College of Veterinary Medicine and other health-related colleges through the UF Emerging Pathogens Institute and the UF Center for Environmental and Human Toxicology, as well as with governmental agencies. A strong extension outreach program allows the college to work closely with a variety of agricultural industry groups.

A major leader in neuro-respiration, toxicology, immunology and infectious diseases research, this program investigates emerging and exotic infectious diseases of livestock, pets and wildlife. The college's Aquatic Animal Health program remains one of the most broadly based of any veterinary college worldwide and conducts extensive research on the health, management and conservation of free-living, captive and farmed aquatic animals, from shellfish to marine mammals. In addition, the college's Center for Environmental and Human Toxicology is a leader in aquatic toxicology, with a major strength in nanotoxicology. The college is also internationally recognized for its world-class basic science research in mucosal immunology, traumatic neural injury, vaccine development, malarial research and neurogenesis of airway defensive behaviors, much of which is conducted in collaboration with UF Health and the Institute of Food and Agricultural Sciences. Most funding support is provided through competitive grants from the NIH, the U.S. Department of Agriculture and the Centers for Disease Control and Prevention.

Clinics, research space, offices, and teaching rooms in the college occupy a total of 331,927 square feet of space, including 73,768 of research space. The college has treated 78,797 animals, including field visits.

The Veterinary Academic Building houses a large portion of the basic science faculty in the College of Veterinary Medicine as well as a number of laboratory facilities, including BSL3 Research Laboratories. The college is organized into six functional and administrative units: College Administration; the Department of

Large Animal Clinical Sciences; the Department of Infectious Diseases & Pathology; the Department of Physiological Sciences; the Department of Small Animal Clinical Sciences; and the UF Veterinary Hospitals. The college is in the process of forming a fifth department, of comparative, diagnostic and population medicine.

Levin College of Law. Offers students a diverse range of specializations and interdisciplinary options through more than 100 JD courses. In addition to the JD, the college offers: an LLM in Taxation, an LLM in International Taxation, an SJD in Taxation, an LLM in Environmental and Land Use Law, and an LLM in Comparative Law (US Law).

The college also houses the Center for the Study of Race and Race Relations, Center for Governmental Responsibility, Center on Children and Families, Center for Criminal Justice, and the Institute for Dispute Resolution. Nearly 80 full-time faculty members teach at UF Law, in addition to dozens of adjunct and affiliate professors. Several faculty members are scholars in their field, writing chapters, articles, treatises, casebooks, and major books used by law schools and practitioners throughout the nation and world.

Warrington College of Business Administration. Has six undergraduate majors, six minors, seven specialized master's programs, five PhD programs, and two doctorate degrees. The college has more than 100 faculty members across four departments conducting vital research in the fields of finance, information systems and operations management, management, and marketing. In addition to their teaching and research duties, Warrington scholars are also extremely active in professional service. Warrington professors have served as reviewers, editors, and in leadership positions on the editorial boards of some of the world's elite academic publications.

The college's expansive research agenda also includes 11 research centers that are dedicated to producing studies and examinations that provide thought leadership to academic, business and governmental organizations globally. Warrington's research centers include entrepreneurship, international business, business communication, supply chain management, retail, ethics, human resources, accounting and auditing, real estate, economics and teaching, and learning and assessment. The studies, conferences, workshops, and academic and professional programs these centers produce make significant and tangible impacts in their respective fields.

Warrington's business education offers a blend of traditional classroom instruction with innovative experiential learning opportunities, Warrington's curriculum challenges students to think creatively and generate solutions.

ADDITIONAL FACILITIES AND RESOURCES AFFILIATED WITH THE CTSI

Office of Biomedical Research Career Development. Provides a comprehensive website and calendar that identifies available programs and resources to help health-science college predoctoral and postdoctoral trainees pursue the career pathways of their choice. These programs are provided via a collaborative effort of the CTSI, the UF Health Office of Biomedical Research Career Development, and the graduate and postdoctoral training programs of all six colleges of the UF Health Science Center and other UF partner programs related to human health.

Center for Cellular Reprogramming. Provides services and training for induced Pluripotent Stem Cell derivation and related cell reprogramming technologies. The center occupies approximately 1,600 square feet for all general laboratory activities, including storage and experiments. Major equipment includes four CO₂ incubators, three tissue culture hoods, three liquid nitrogen cell storage tanks, refrigerated high-speed centrifuges, a BioTek Synergy 2 plate reader, a shaking incubator, a spectrophotometer, two thermocyclers (for PCR), a real-time PCR machine, an inverted fluorescent microscope with a digital camera system, an upright microscope, a surgical microscope, and all equipment needed for electrophoresis.

Animal Care Services. Serves nearly 600 UF faculty and approximately 1,400 animal care and use protocols in various research and teaching programs. The UF animal care program has been continuously accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care International since 1966 and is registered with the US Department of Agriculture as a research site. Animal Care Services manages 12 animal housing facilities totaling approximately 200K square feet that include environments ranging from ABLSL3 to rodent barriers, which are essential to the development and maintenance of unHarique transgenic rodents and the conduct of experimental protocols.

The housed species range from mice and other rodent species to large animals such as pigs, sheep, horses, cattle, and nonhuman primates. The Animal Care Services has a veterinary staff that consists of eight board-

certified veterinarians and ten veterinary technicians primarily involved in providing or supervising veterinary care, protocol review, surgical services, pathology services, diagnostic laboratory services, training of investigators, and investigator staff and compliance. Animal Care Services has a total staff of approximately 130 employees who provide daily animal husbandry and veterinary care.

Biobehavioral Core. Facilitates translational research by providing research personnel trained to administer a core set of behavioral assessments; coordinating access to biobehavioral research resources across collaborating colleges; providing/facilitating training for the administration of core assessments; serving as a training site for pre- and postdoctoral trainees in the behavioral sciences; and providing consultation regarding potential assessment tools for both animal and human work. Identifying potential avenues for biobehavioral integration is a key role of the core. The core director and staff work with investigators to identify areas of potential integration. The core maintains a central library of behavioral and paper/pencil assessments often used in health-related research, including standard assessments of depressive and anxiety symptoms, reading skill (as an estimate of premorbid functioning), basic perceptual-motor, learning/memory and problem-solving tasks, and demographic information including family trees/pedigrees.

Bureau of Economic and Business Research (BEBR). Founded in 1930, and part of the UF College of Liberal Arts and Sciences, conducts research in its Population, Economic Analysis, Survey Research and Social Networks programs. The Population program produces Florida's official state and local population estimates and projections, and it conducts Geographic Information Systems and demographic research. Economic Analysis conducts research such as cost/benefit analysis, economic impact studies and employment projections for state and local governmental agencies and private industry. The Social Networks program investigates connections across personal networks: applications include fostering scientific collaboration, increasing research efficiency and improving health outcomes.

- The **UF Survey Research Center** conducts large-scale telephone, mail, web and face-to-face surveys out of a 93-station lab. Projects are particularly focused on, but not limited to, health care research.

Cardiovascular Cell Therapy Center. A collaborative effort of basic and clinical researchers from the Health Science Center who are dedicated to adult stem cell research in order to improve the outcome of patients with diseases of the heart and cardiovascular system. This collaborative team is also part of the Cardiovascular Cell Therapy Network and has been sponsored and funded by the National Heart, Lung, and Blood Institute of the NIH since 2006. This network is composed of physicians, scientists and support staff from institutes and universities across the country, including the Minneapolis Heart Institute Foundation, the University of Minnesota, the Texas Heart Institute Stem Cell Center, the University of Louisville, the Vascular and Cardiac Center for Adult Stem Cell Therapy, the University of Miami and Stanford University.

Cell & Tissue Analysis Core. The McKnight Brain Institute's Cell & Tissue Analysis Core consists of two facilities that provide the UF research community with a wide array of imaging modalities as well as basic histology equipment for tissue sample preparation. The Cell & Tissue Analysis Core Imaging facility maintains instrumentation for both in vitro and in vivo imaging experiments.

Microscopes for in vitro imaging include laser scanning and spinning disk confocal systems, an automated live-cell time-lapse and tile-mapping system, and standard wide field systems in both inverted and upright formats for fluorescent, bright field, and H&E projects. Instrumentation for in vivo experiments includes high resolution ultrasound, preclinical bioluminescent and fluorescent imaging, and an intra-vital laser scanning fluorescent microscope.

The imaging facility also has software available for image deconvolution, quantification, and 3-D rendering. The core's Histology Resource Lab provides researchers with access to cryostats, microtomes, microwave processing, paraffin embedding, laser capture micro-dissection, and other tissue-processing equipment. Skilled technical staff are available to train new users, assist, or operate each piece of equipment.

Center for Health Equity and Quality Research. An important research resource for UF Community Based Participatory Research at the Jacksonville campus, the core faculty include researchers with a background in public health, and health services research, as well as training in health education and evaluation research, health services and outcomes research, and mental health services Research. The Center for Health Equity and Quality Research also includes a PhD-level biostatistician and two master's level biostatisticians, and research coordinators. Faculty and staff are expert in the use of a wide range of research methods including community evaluation research, community-based participatory research, quality of care and outcomes research, clinical trials, and translational research.

The Center for Health Equity and Quality Research provides the research infrastructure for UF Health Jacksonville by providing research design and analysis consultation services to faculty, residents and fellows, including help with IRB preparation and submission, development of protocols, grant development, data collection, data analysis, and report generation; assisting UF faculty in the development of research teams through collaborations with investigators from UF Gainesville and other institutions; providing data management and analytic support to quality management initiatives for the enterprise; providing education to faculty, residents, and fellows on biostatistics, research design, and epidemiology through annual lecture series and online courses; and providing mentoring on research and project management support for fellows to help develop the next generation of faculty at UF Health.

Center for Movement Disorders and Neurorestoration. UF founded the center in 2002 with the vision of creating a world-class clinical research center to provide a single destination for patients, families, doctors, and leading-edge scientists. The clinical research center has 13,000 square feet of dedicated space on the fourth floor of the UF Orthopedics and Sports Medicine Institute. The space for movement disorders and neurorestoration includes 21 dedicated patient exam rooms as well as tailored space for clinical trials, research, telemedicine, and one of the world's largest movement-disorders databases with 10,200 enrolled patients. The space is also equipped with areas for full physical therapy, occupational therapy, speech therapy, and convenient in-building access to an MRI and swallow suite.

The center possesses strengths in movement disorders neurology, neurosurgery, neuropsychology, psychophysiology, imaging (MRI, fMRI and others), technology development, psychiatry, biomechanics, PT, OT, and speech/swallowing. The movement disorders group has collaborative research projects with 40 faculty from more than 10 UF departments. The deep brain stimulation program is one of the most productive and published in the country and has a track record of significant NIH funding.

The Center for Movement Disorders and Neurorestoration research laboratory houses the movement disorders database which has a full-time data manager, a scannable data entry system, and gets data from the medical record. The Data & Analysis Committee oversees all projects that use the database and works to strengthen the methods of the projects. The laboratory also houses a Linux computer networked to the Deep Brain Stimulation operating room which can be used for CT-MRI fusions, target planning and discussion, and post-operative lead location measurements. The research team also includes several dedicated clinical trial coordinators who manage 40 clinical trials. Additional research labs include a gait lab and neuropsychology lab with soundproof room to prevent outside interference.

Center for Translational Research in Neurodegenerative Disease. Supports faculty appointed in the departments of Neuroscience, Neurology, Anesthesiology, and Pharmacology that utilize wide-range of technical and conceptual expertise in research aimed towards developing new therapies for neurodegenerative disease. Strengths include animal modeling using transgenic technology and recombinant adeno-associated virus, and biotherapeutic development using monoclonal antibodies and neuroinflammatory modulators. The center uses an open lab structure that facilitates frequent interaction across labs. The laboratories are designed as a typical molecular biology and biochemistry laboratories with waist-height benches, with rooms equipped for cell culture (Forma or Baker tissue culture hoods; Forma or NuAire cell incubators; table top centrifuges, and microscopes). The center has in-house histopathology group that includes dedicated personnel and equipment, including two Leica CM-1850 cryostats, sliding and rotary microtomes, paraffin embedding station, and an automatic tissue processor. The center also has an imaging lab that includes Aperio ScanScope XT and FL systems equipped with fluorescence and stereology packages and computers. The lab is in the process of replacing the Aperio equipment with a new Zeiss scanner. Additional center equipment includes a Bruker-DatIonics Microflex LRF mass spectrometer, Bio-Rad NGC FPLC, Amersham AKTA FPLC, Amersham AKTA Prime Plus HPLC, Eppendorf EpMotion Liquid Handler, Li-Cor Odyssey IR imager, Thermofisher NanoDrop 2000, multiple spectrophotometer, and multiple gel documentation systems for both DNA and protein gels/blots. The center maintains a brain bank that has ~200 neuropathologically characterized brains with ongoing addition of ~20 brains per year. Tissue, both frozen and paraffin embedded, is available to all university investigators with proper regulatory approvals.

Child Health Research Institute. Established in 2006 to provide the environment necessary to focus on and develop a wide variety of unique research concepts and to support pilot research activities of faculty to obtain data necessary to submit research proposals to outside agencies. The institute creates support infrastructure and fosters collaboration between investigators and teams from various departmental specialty divisions, the College of Medicine departments, the health science colleges and the main campus departments. The institute

also supports pediatric and pediatric sub-specialty fellows and residents during their required research rotation. The institute was integral to establishing pre-eminent pediatric translational research programs with NIH-funded investigators, creating synergy with the Cancer Center, Brain Institute, Genetics Institute, Diabetes Research Center and Powell Gene Therapy Center. The institute fills an infrastructural gap, providing support for collaborative research across divisions of the Department of Pediatrics and Health Science Center, fostering interactions and collaborations among physicians, physician/scientists and basic scientists on campus

Data Science and Information Technology Building. The Florida legislature approved funding in 2018 toward a new building to house data science and information technology programs and resources. The new space will co-locate faculty, students and professional staff in a setting with state-of-the-art teaching classrooms, data centers to support hands-on experiences with health care data and collaboration areas for faculty, student and professional staff to interact and foster team-science. 150,000 gross square feet will be added to house new faculty and undergraduate, graduate and post doc students from Engineering, Health Sciences, Agriculture and Life Sciences. The building will house faculty and researchers from the College of Medicine, College of Engineering, and College of Agriculture who specialize in analyzing massive amounts of data to tackle complicated problems. The facility also will consolidate faculty from the Departments of Electrical and Computer Engineering, Computer and Information Science and Engineering, and Mechanical Engineering allowing for improved research and collaboration. Medical researchers working in the building will harvest millions of data streams and analyze them to better understand factors affecting health and disease. This will help medical professionals predict and prevent diseases, develop personalized treatments and create models to help control the cost of health care.

Department of Pediatrics. Serves pediatric patients and conducts both laboratory and clinical research. State-of-the-art facilities and equipment coupled with distinguished faculty foster a collaborative and multidisciplinary patient care and research environment. With approximately 150 faculty members, the Department of Pediatrics is one of the largest departments within the UF College of Medicine. Departmental research is conducted in more than 15K square feet of dedicated research space within the Academic Research Building and the Cancer and Genetic Research Complex; both buildings are located in the UF's Health Science Center. The research facilities are fully outfitted with the equipment necessary to conduct cutting-edge research.

The Department of Pediatrics is home to the Powell Gene Therapy Center.

The Department of Pediatrics is affiliated with UF Health, offering pediatric services at multiple sites in North Central Florida. Under the guidance of faculty, these sites also serve as the primary training locations for UF medical students and residents. The UF faculty physicians provide services in more than 40 satellite practices managed by Faculty Group Practice/UF Physicians throughout North Florida. Notable locations where pediatrics services are offered include UF Health Shands Children's Hospital and UF Health Pediatric Specialties Clinic.

Diabetes Institute. Includes more than 100 investigators from multiple College of Medicine departments as well as investigators from the UF colleges of Engineering, Pharmacy, and Nursing, IFAS, the Institute on Aging, and the Genetics Institute. All are active collaborators and contribute to an atmosphere conducive to and supportive of comprehensive diabetes research. UF has led multiple studies on the pathogenesis and natural history of Type 1 diabetes, which involved the analysis of tens of thousands of individuals. UF has stored serum, plasma, and/or DNA samples (as well as associated clinical laboratory data) from more than 75K individuals (i.e., Type 1 diabetes patients, their relatives, persons with other autoimmune disorders, healthy controls) throughout the US as well as developed relationships with lay organizations (i.e., ADA, JDRF, Children with Diabetes) in order to aid investigators in terms of subject recruitment. UF serves as both the lead Administrative Unit and the Organ Procurement and Processing Core for the JDRF-funded Network for Pancreatic Organ donors with Diabetes (nPOD) program. It is the world's largest repository of whole pancreatic and lymphoid tissues from subjects with Type 1 diabetes, persons at increased risk for the disease, control subjects across a variety of ages, and those with other pancreatic disorders relevant to address questions about Type 1 diabetes.

The core research facilities for Type 1 and Type 2 diabetes measure in excess of 50K square feet, including modern laboratories. More than 20K square feet of laboratory space within the Biomedical Sciences Building is dedicated to molecular biology, immunology, and pathology core facilities. Equipment operated and owned by the Diabetes Institute include thermocycler, flow cytometers, scintillation and chemiluminescence counter gamma counter, ELISA readers, cell sorter, Coulter counter, photomicroscope, biosafety cabinets, incubators, centrifuges, automated cell harvester, DNA, RNA and protein purification system, and a qPCR system. In

addition, the Diabetes Institute has access to two different confocal microscopes as well as a laser capture microscopy unit.

Electron Microscopy Core. Occupies approximately 1,800 square feet in the basement of the UF Academic Research Building. The facility is part of the Department of Medicine, but it also provides access, assistance, and services to researchers in other UF colleges as well as researchers outside of UF. The mission of the core is fourfold: to provide investigators with access to instruments necessary for ultrastructural research; to teach faculty, staff, and students methods in ultrastructural research; to provide technical services; and to consult with faculty, staff, and students on projects and advise them regarding possible approaches to their research questions involving ultrastructural research.

The core houses a transmission electron microscope and support equipment for light and electron microscopy sample preparation and image processing, plastic polymerization, cold processing, and vibratome sectioning, light microscopy sample processing, sample storage, and digital light microscopy. It also houses all necessary support equipment and technical expertise for ultrastructural morphologic, morphometric, and immunolocalization research. In addition to standard laboratory equipment and computers, the support equipment includes a Leica DM2000 microscope, a Nikon LaboPhot-2 microscope, four ultramicrotomes, a EM TP automatic tissue processor, fume hood for TEM tissue processing, microtome for sectioning polyester wax and paraffin embedded samples, two Lancer Vibratome sectioning systems for preembedding immunolocalization studies, a Pelco BiowavePro laboratory grade microwave with temperature regulated by a Pelco SteadyTempPro for microwave-assisted immunohistochemistry, antigen retrieval, and tissue processing; a cold room, and a Leica AFS automated freeze substitution unit for EM tissue processing at cold temperatures.

Emerging Pathogens Institute. Created in 2006, the institute provides a research environment to facilitate interdisciplinary studies of emergence and control of human, animal and plant pathogens. Major areas of research include vector-borne diseases, influenza, tuberculosis, enteric and foodborne illnesses, and antibiotic resistance. The Emerging Pathogens Institute is housed in an 88K square foot research building dedicated for institute use. The building includes 16 BSL3 laboratory modules as well as extensive BSL2 space and space for biomathematics; it has 50 faculty offices, 150 spaces for graduate students and post-doctoral fellows, and multiple conference rooms (including a 70-seat seminar room). The institute has over 200 affiliated faculty, from 11 different UF Colleges, with collaborations in over 34 countries.

Harrell Medical Education Building. The George T. Harrell, M.D., Medical Education Building opened in Fall 2015 and serves as a home for medical education at UF, accommodating advanced simulation training and meeting the educational needs of the next generation of UF physicians and physician assistants. The Harrell Medical Education Building is a 95K-square-foot, four-story facility that is located in close proximity to UF Health Shands Hospital. Its design facilitates the collaborative education of health sciences students at the UF College of Medicine. It features a state-of-the-art experiential learning center to teach complicated, high-risk skills, including an experiential learning theater with retractable walls and concealed grid to accommodate dozens of configurations and hundreds of health care scenarios, as well as one UF Health Shands Hospital mock operating room. It offers an expanded clinical skills learning and assessment center, with 18 standardized patient examination rooms equipped with video cameras and microphones; a control room with display screens to record student-patient encounters; spaces for review and evaluation of students' skills; and two hospital rooms modeled after UF Health Shands Hospital patient rooms. It also has two circular learning studios – each of which can accommodate up to 160 students – with six oversized video screens, ceiling-mounted projectors and sound-absorbing acoustical wood paneling.

Human Applications Laboratory Manufacturing Facility for the production of cellular therapy products recombinant viral vectors, located in the McKnight Brain Institute. The production facility occupies approximately 1,900 square feet and consists of two suites with a total of 14 separate rooms. Each suite is designed to function independently of the other and is comprised of two production rooms (Class 10,000), a staging and storage area (Class 10,000) and entrance and exit vestibules (Class 100,000). Production Suite A is designated for cell processing and cellular therapy production. No viral production occurs in this suite. The suite occupies approximately 700 square feet and has a positive differential pressure relative to the adjacent rooms. Production Suite B is approximately 1,200 square feet and has positive pressure differential relative to adjacent rooms and is used for the purification, filtration and aseptic fill of recombinant viral vectors.

The Quality Control Lab operates according to controlled, issued standard operating procedures including sample submission and tracking procedures, reagent receipt and tracking, and equipment operation, cleaning,

calibration, and maintenance. Assays are performed using controlled documents called test records. These records are numbered to ensure appropriate documentation of all assays performed on product and product intermediates. In addition, the Lab is responsible for submitting all samples to contract laboratories for testing and for reviewing and reporting these results. All in-house reagents are prepared and documented using controlled reagent preparation records.

Human Applications Laboratory Quality Management has developed appropriate quality systems to help assure the quality and safety of the clinical materials produced and tested by the Human Applications Laboratory. Additionally, all test results (both in-house and contract laboratory results), equipment records, reagent preparation records are audited by independent Quality Assurance. The Quality Assurance Unit (CTSI-QA) was established at the College of Medicine to support the Powell Gene Therapy Center in June 2001. It was transferred to the UF CTSI in 2010. CTSI-QA reports directly to the Director of CTSI Research Services.

Since commissioning in 2002, Human Applications Laboratory has manufactured GMP clinical trials materials for nine gene therapy-related Investigational New Drug projects and two cellular therapy Investigational New Drug projects. The group specializing in the development of new process and testing, deployment for use in the GMP Manufacturing Facility or QC Laboratory, execution of GMP manufacturing and testing and ongoing product stability testing.

Institute for Child Health Policy. Brings together multidisciplinary faculty from UF to conduct innovative and rigorous science to promote the health of children, adolescents, and young adults. The institute, housed within the department of Health Outcomes and Biomedical Informatics in the College of Medicine at UF, has a 25-year history of collaborating with teams of researchers across the UF campus and with scientists nationally. Within UF and nationally, there is an emphasis on early childhood interventions, child health outcomes, and a research infrastructure to support pragmatic clinical trials and implementation science studies in community settings. The Institute for Child Health Policy has had success over the past 15 years of developing innovative methods for using big data in support of examining child health outcomes. In addition, the institute is leading the development of the OneFlorida Child Health Alliance and pediatric components of the OneFlorida Data Trust, which houses linked health care claims, vital statistics, immunization, electronic health record, environmental, geographic, and parent- and child-reported outcomes data for approximately 4M children in Florida. Having served as infrastructure support in launching the OneFlorida Data Trust, the Institute for Child Health Policy is facilitating child health research that is funded by NIH, AHRQ, and the Patient-Centered Outcomes Research Institute.

Institute on Aging. Improves the health, independence, and quality of life of older adults by means of interdisciplinary teams in the areas of research, education, and health care. The overarching goal of the Institute on Aging is to develop interdisciplinary and dynamic research that spans public health, social, health services, behavioral, clinical, and basic sciences. The research focuses on mechanisms, etiology, and prevention of cognitive and physical disability. The Institute on Aging also focuses on maximizing the participation and life potential of older adults with disability and prevention of secondary disabilities.

The Institute on Aging is headquartered in the Clinical and Translational Research Building, a 120K-square-foot research complex. Clinical research facilities include office space, conference rooms, nine patient exam rooms, specimen processing area, a DEXA machine, and a GAITRite walkway.

The research program of the Institute on Aging focuses on the etiology and prevention of cognitive and physical disability. This focus is pursued using an interdisciplinary approach that traverses the entire spectrum of social and biomedical investigation, including molecular biology, in vitro and animal studies, clinical research, behavioral and social sciences, epidemiology, and health services research. The Institute on Aging initiated its major development phase in February 2005 with the creation of the new Department of Aging and Geriatric Research. The department serves as support infrastructure for the Institute on Aging and academic home for faculty members from diverse disciplines who wish to pursue a career primarily focused on research and education on aging.

Institutional Review Boards (IRBs). The UF IRBs oversee nearly 5,000 research protocols. There are three on-campus IRBs and one contracted IRB. IRB-01 reviews and oversees biomedical research conducted under UF Health Gainesville (including all of the hospitals and facilities owned by UF Health), the UF campus, and for the North Florida/South Georgia Veteran's Health System. IRB-03 reviews and oversees biomedical research on the Jacksonville, Florida campus. IRB-02 reviews and oversees social and behavioral research on the Gainesville, Florida campus. In 1999, UF contracted with the Western IRB (WIRB) to offset some of the

workload for IRB-01. UF faculty conducting multicenter drug or device protocols sponsored by industry are able to submit their protocols for review by the WIRB. Annually, WIRB reviews an average of 110 protocols a year.

Seventeen staff members at the three on-campus IRB offices provide investigator education, protocol design consultation as it relates to regulatory considerations, and compliance monitoring. No human subject protections issues have been identified during recent FDA audits, CTSI competitive grant renewal reviews, or AHCA VA licensure accreditation surveys. In conjunction with the CTSI, IRB-01 has developed a OneFlorida IRB, which serves as the single IRB for all OneFlorida Clinical Research Consortium members. The IRB also supports single and central IRB functions for multicenter studies.

All IRB-01, 02, and 03 new study submissions are made through the electronic myIRB program, which has been updated to meet AAHRPP requirements. IRB-01 and IRB -03 meet twice a month; IRB-02 meets once a month and investigators are encouraged to attend to provide clarification and answer reviewer questions during the meetings to facilitate rapid turnaround time. A robust IRB website is available for investigators, which provides them with IRB guidelines, all current forms, educational bulletins, required standard language, and links to frequently used web sites.

IRB-01 also serves as the Privacy Board for UF Gainesville Campus and the North Florida/South Georgia Veteran's Health System in accordance with the Health Insurance Portability and Accountability Act (HIPAA) and implementing its regulations. All waivers and any other HIPAA-related issues are provided as part of the IRB review.

- **Click Commerce.** UF implemented Huron's Click Commerce IRB module for processing and managing human subject research submissions. UF's implementation of this interactive web-based platform facilitates four major benefits: integration with other research units, in-line education, enhanced compliance, and improved efficiency to its human subject research enterprise. UF's Click system integrates data capture, education, and real-time parallel review for multiple research related offices (e.g. billing compliance, radiation review, etc.) beyond just the IRB. Adaptive submission forms simplify the process for researchers and serve as a research enterprise roadmap by targeting instructions for relevant requirements. Facilitating navigation of the UF research enterprise maximizes researcher efficiency and improves compliance with all applicable requirements. Robust, integrated validations improve submission quality, thereby reducing submission rejections as well as insuring compliance oversight units comply with all applicable regulatory requirements.

UF Libraries. The UF libraries form the largest information resource system in the state of Florida and serve every college and center in the university, including the Institute of Food and Agricultural Sciences and the Health Science Center. UF's libraries consist of seven libraries; six of which comprise the George A. Smathers Libraries. The Smathers Libraries actively collaborate with the Legal Information Center, which is a part of the Levin College of Law.

- **UF Health Science Center Libraries** are active partners in the education, research, training, and clinical needs of the health science colleges, centers, and institutes, UF and the state. The Health Science Center 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 and UF Health Archives.

The main Health Science Center Library in Gainesville, founded in 1956 along with the College of Medicine, is a 53K-square-foot, technology-enhanced facility whose users may access 162 publicly available computers on all three floors of the library, including 30 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 870 patrons is available across three floors, including 32 study rooms for individuals and groups. The Health Science Center Library in Gainesville is typically open 95 hours per week and averages approximately 32,000 visitors per month. Additionally, the library's second floor is accessible 24/7 to registered users from the health-science colleges. Reference assistance and search help are provided directly at the Information Desk and through referral to liaison librarians.

Since 1999, the Health Science Center Libraries have operated a liaison librarian program to facilitate partnerships with academic faculty and programs by assigning each Health Science Center college or department a dedicated librarian who works closely with its faculty, staff, and students. Library services include reference assistance, literature searching (including support of systematic reviews), course-

integrated instruction and library workshops, circulation, document delivery, interlibrary loan, photocopy services, course reserves, locker check-out, and 3D printing. Access to electronic databases, books, and journals is available onsite and remotely to the UF community.

The Health Science Center Libraries' collection is comprised of electronic and print resources including reference materials, journals, books, and audiovisuals. As of June 30, 2016 the Libraries' collection totaled 143,543 unique monograph titles (books), 14,322 serial titles (journals), and 355 databases. The libraries have 292,041 print volumes with 178,926 available for immediate access, and 113,115 housed in a remote storage facility. HSC Libraries' users also have access to the full resources of the broader George A. Smathers Libraries: over 5,000,000 print volumes, 1,000,000 e-books, 8,100,000 microfilms, 170,500 full-text print and electronic journals, nearly 1,000 electronic databases, 1,300,000 documents and 1,000,000 maps and images.

- The UF Health Science Center Library maintains the Precision Public Health LibGuide referenced in the UF CTSA Hub Facilities & Resources section of this document.

Institutional Animal Care and Use Committee. A federally mandated committee, qualified through the experience and expertise of its members, that oversees its institution's animal program, facilities, and procedures. Its mission is to protect the welfare of animals used in research, keeping the integrity of our enterprise, and providing exceptional and professional customer service.

Interdisciplinary Center for Biotechnology Research (ICBR). The major biotechnology science and instrumentation service provider at UF. Established in 1987 and leveraging strong state and university support, ICBR maintains a reputation for acquiring, housing, and providing access to state-of-the-art instrumentation and advanced biotechnology services to all researchers at UF.

ICBR is organized into core facilities offering extensive services ranging from visualizing microscopic structures to producing and analyzing small molecules and big data. ICBR also supports the education mission of the university with hands-on workshops, training, and seminars hosted by the core scientists. Most ICBR Core facilities are concentrated in 25k square feet of the Cancer and Genetics Research Complex with auxiliary laboratories in the Microbiology and Cell Science building and the McKnight Brain Institute. While highly centered on its stable of instrumentation technologies, ICBR is devoted to engaged scientific services that are provided by 22 PhD-level scientists and 25 trained staff with more than 500 combined years of experience in molecular and cellular biology science. This provides UF researchers with access to both technical expertise and advanced instrumentation as well as informed interpretation of the resulting data with a concept-to-data workflow that enables scientists to actively propose, develop, and engage in advanced technologies, extending the scope of their individual laboratories ICBR organizational structure includes a center director who receives advice on core operations and direction from UF administration, especially through established faculty advisory groups that meet annually or biennially. ICBR organizational infrastructure provides its facilities with full administrative support for human resources, billing/payables, and compliance with federal cost standards. In addition, ICBR cyber infrastructure supports the scientific cores with computational capabilities for cutting edge analysis, data security, and data delivery to and through the high speed Campus Research Network.

The laboratory infrastructure and established research support programs at ICBR are recognized for providing the theoretical knowledge and practical expertise that make the instruments run at optimal capacity and at the limit of their expected sensitivities. These facilities are universally recognized for providing equal and fair access at low cost as well as for their commitment to excellence. It is the commitment of ICBR to support and maintain current and future instrumentation for its lifetime and to ensure highest performance and availability to all interested researchers according to a well-developed usage plan while charging fees to cover disposable or consumable reagents or components.

Jacksonville Health Equity Research Organization (JaxHERO). A primary care practice-based research network that conducts community-based research in order to improve the quality of care and promote health equity for persons living in Northeast Florida and Southeast Georgia. JaxHERO is composed of 33 primary care centers from UF Health Jacksonville, 12 primary care centers from the Florida Department of Health – Duval, Mayo Clinic Jacksonville and the St. Vincent's Family Residency program. This network of primary care centers serves more than 150K patients in five counties (Duval; Baker; Clay; Charlton, Ga.; Camden, Ga.), many of whom are disproportionately minority and poor with high rates of diabetes, hypertension, cancer and other conditions. This network is fielding or developing four investigator-initiated studies. JaxHERO administration and activities is supported by faculty and staff from the Center for Health Equity and Quality

Research at the UF College of Medicine – Jacksonville. JaxHERO provides the foundation for translational and evidence-based research focused on studying and reducing health disparities while building on institutional commitments to the underserved population. The Jacksonville Health Equity Research Organization enables the conduct of translational research in a wide range of settings, thereby bringing the benefits of medical innovation to our entire community.

Major Analytical Instrumentation Center & Particle Analysis Instrumentation Center. Along with the Nanoscale Research Facility, these comprise the Research Service Centers in the Herbert Wertheim College of Engineering. These are multiuser materials characterization, fabrication, and analysis facilities that provide service to all faculty and students at UF, research universities, and the industrial and commercial community. These facilities have provided teaching, training, and services for more than 30 years together and continue to be the largest and most successful hands-on, multiuser facilities at UF.

McKnight Brain Institute at UF (MBI). One of the nation's most comprehensive and technologically advanced research and teaching centers, conducting integrated research in neuroscience, neurology, neurosurgery, psychiatry, cognitive science, and related areas. To aid research in these areas, the MBI operates several facilities that provide advanced (up to 17.5 tesla) magnetic resonance imaging and spectroscopy, cell and tissue analysis, flow cytometry, brain tissue banking, gene therapy, and more. The MBI has 300 faculty from 51 academic departments and 10 colleges, entailing research and educational programs in nearly all aspects of basic, clinical, and translational neuroscience. The College of Medicine departments of Neuroscience, Neurology, Neurosurgery, and Psychiatry along with the centers for Smell and Taste, Structural Biology, and Addiction Research and Education are housed together in the MBI to promote numerous interdisciplinary programs and projects, including facilitating more than 320 lectures and seminars each year involving the best scientists from around the globe. Many of these take place in the Loretta & John DeWeese Auditorium, which offers over 2,300 square feet of space and stadium seating for 162, including wheelchair accommodations. Featuring a 10-foot by 15-foot screen, this room offers high definition video conferencing as well as live web-streaming and archival of lectures.

The MBI develops new therapies for nervous system afflictions. Some of the research initiatives comprising the MBI are the Advanced Magnetic Resonance Imaging and Spectroscopy Facility (AMRIS), the Cell and Tissue Analysis Core (CTAC) and CTAC Histology Resource Center, the Radiosurgery/Biology Research Lab, the Movement Disorders Center, the Age-related Memory Loss (ARML) Program, the Brain and Spinal Cord Injury/Stroke Program, and the Addiction Program. With a design theme of beyond the-state-of-the-art, the conceptual mission of the 210K-square-foot MBI building is to serve as a catalyst and focal point for widely diverse but synergistic multidisciplinary research programs. Thus, in addition to an obvious emphasis on high technology, the strategic design of the MBI includes a strong emphasis on multiuser facilities within a research and clinical setting that includes highly dedicated and gifted basic science and clinical researchers.

MD-PhD Training Program. Trains clinician-scientists for a career in academic medicine with the full expectation that these students will become future leaders at academic medical centers worldwide. The MD-PhD program takes a broad view toward the development of the entire spectrum of skill sets necessary to complete the "clinical translational mission" and essential for closing the gap in health disparities. Consequently, MD-PhD students are enrolled in four different colleges (Engineering, Health Professions, Medicine, and Pharmacy) for their graduate work.

The MD-PhD Training Program office, totaling 301 square feet, is located on the first floor of the Medical Science Building (MSB) and consists of a two-room suite that includes a conference space. It is adjacent to the Medical Admissions Office and directly across from the Office of Research Affairs of the College of Medicine. The program has ready access to conference rooms in the Department of Ophthalmology and the McKnight Brain Institute. The MD-PhD Training Program's location within the College of Medicine provides scholars with access to a broad array of medical experts and allows it access to eight full-time faculty (executive committee members) to provide leadership in mentor selection, program policy assessment and MD-PhD candidate evaluations.

Medical Honors Program. An accelerated, seven-year BS/MD program offered by UF. Admission is open to all possible candidates who are US citizens or permanent residents. The program is intended for undergraduate students who have demonstrated superior scholastic ability and personal development during their first two academic years of enrollment at a four-year accredited science degree-granting institution and who are dedicated to pursuing medicine as a career. When accepted to this program, students secure places in medical school at the UF College of Medicine as long as they complete JHMP requirements and maintain

academic standards. This program has two pathways: biomedical sciences for individuals with a primary focus on pursuing academic careers in medicine; and Rural and Urban Underserved Medicine (RUUM) for individuals with a primary focus on careers serving urban, rural, and medically underserved populations.

Network for Pancreatic Organ Donors with Diabetes. UF is the primary coordinating center for the JDRF (formally known as Juvenile Diabetes Research Foundation) Network for Pancreatic Organ Donors with Diabetes (nPOD), a Type 1 diabetes research project dedicated to study of the human pancreas. JDRF-nPOD supports scientific investigators worldwide by providing, without cost, rare and difficult to obtain human tissues beneficial to their research. nPOD has been supporting more than 170 research studies at several US medical institutes and 19 countries. Projects have a broad scope including, but not limited to the immunopathology of Type 1 diabetes; beta cell physiology and dysfunction; pancreas development; beta cell regeneration; trans-differentiation and dedifferentiation; and environmental factors and imaging.

The main goals of nPOD are to obtain specimens from organ donors with Type 1 diabetes (diagnosed or subclinical), and establish a research resource of pancreas and disease-relevant tissues, i.e. pancreatic lymph nodes, spleen, thymus, blood, and other tissues, from organ donors with Type 1 diabetes obtained at any point after clinical diagnosis or during the pre-diabetes phase when islet autoimmunity leads to beta cell destruction (donors identified by screening for islet autoantibodies); to distribute specimens to JDRF-nPOD scientists anywhere in the world for comprehensive and diversified investigations of human Type 1 diabetes; and to promote collaboration by using tissue and real-time data sharing, by developing and managing synergistic project interactions, as well as focused working groups in order to facilitate a comprehensive understanding of human Type 1 diabetes.

Office of Medical Education. The College of Medicine Education Center serves several functions in the College of Medicine, including the coordination of all teaching activities as well as the selection and scheduling of the senior elective courses and clerkships for all four years of medical school. The office is responsible for the preparation of course syllabi, handouts and examinations. Information provided by course directors may be distributed during classes or through this office. Students may come to this office any time they have questions on any course materials. The office coordinates the evaluation of courses, faculty, and teaching programs within the College of Medicine. Office personnel compile and summarize data on the teaching programs including course and faculty evaluations. Course debriefings are also scheduled and conducted through this office. The debriefings are meetings held at the end of courses in which student representatives meet with course faculty and representatives of the College of Medicine Curriculum Committee and Dean's Office. The sessions provide an opportunity for students to provide feedback and influence the future planning of the course as the strengths and weaknesses of each course are discussed. The Office of Medical Education coordinates the advisor program. Advisors are assigned through the office. They are then informed of students' progress in academic course work. Any issues associated with the advisor program are also reported to this office.

Office of Research. UF accounts for about 40 percent of sponsored research performed in the State University System of Florida. During the last 20 years, annual research funding to UF has grown more than 250 percent, consistently placing UF among the top 20 public research institutions. Led by Dr. David Norton, Vice President for Research, the Office of Research is committed to being a highly valued and effective organization whose leadership and service made UF's vision of being a top 10 university a reality.

The Office of Research is committed to providing necessary institutional leadership, infrastructure and service, ensuring accountability to regulatory agencies and stakeholders, and investing toward future opportunities and challenges. The Office of Research is responsible for all proposal submissions, grant and contract negotiation and acceptances, and the execution of other research-related agreements. The Office of Research also manages and supports all research compliance obligations related to fiscal, human subject, animal use, export control, conflict of interest, responsible conduct of research, and research misconduct. The Office of Research invests in research programs by providing resources and overseeing internally funded seed programs and initiatives. The Office of Research is also responsible for financial monitoring, invoicing, reporting, and collections and provides general guidance related to award management.

Support for faculty also includes identifying external funding opportunities, facilitating industry outreach, supporting complex proposal development, and connecting researchers to funding agencies. Through the resources and infrastructure within the UF Research Foundation and Office of Technology Licensing, the Office of Research facilitates technology transfer and economic development through patenting, licensing, startups, and business incubation. In addition, the CTSI targets the translation of basic research into health

care outcomes. The Office of Research manages research-centric shared resources that include Animal Care Services, the Interdisciplinary Center for Biotechnology Research, and various interdisciplinary centers and institutes whose cross-disciplinary missions include genetics, water, climate, informatics, smell and taste, and emerging pathogens. The Office of Research Communications uses the full spectrum of traditional and emerging communications tools to share the world-class research and scholarship being conducted at UF with the widest possible audience.

- **Division of Sponsored Programs.** Facilitates institutional approval for all extramural proposal submissions, accepts and administers grant awards, and negotiates contracts and other research-related agreements on behalf of the university. The main office is located in Grinter Hall. In addition to the Main Office, the Division of Sponsored Programs has three other locations offering specific services to Gainesville and Jacksonville health researchers, and the College of Engineering. The Division of Sponsored Programs provides the following services to UF faculty and staff: Proposal Development & Submission, Award Management, Training, Forms & Templates.

Pain Research and Intervention Center of Excellence (PRICE). A multi-college center of excellence, 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 CTSI and receives strong support from the UF Institute on Aging and the UF Health Cancer Center. PRICE consists of more than 20 extramurally funded investigators pursuing a broad range of studies. PRICE provides member investigators with several resources and services in order to facilitate clinical and translational pain research at UF.

PRICE maintains a registry of more than 1K 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.

PRICE offers facilities and services to assist investigators with collection of pain assessment data in their research protocols via the Pain Clinical Research Unit. The unit's primary facility consists of four examination rooms located in the CTSI Clinical Research Center in the north wing of the CTRB. Satellite locations of the Pain Clinical Research Unit are available on the second floor of the Dental Tower at the UF Health Science Center and in the Institute on Aging Geriatric Clinical Research Facility. Altogether, the Pain Clinical Research Unit comprises nine fully equipped quantitative sensory testing units and several flexible-use examination rooms. The Pain Clinical Research Unit 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. Investigators can conduct their own studies in the Pain Clinical Research Unit or request that the unit staff collect the data for their protocol. In addition, PRICE coordinates training activities related to pain, including a T32 training grant in translational pain research, as well as journal clubs, seminar series and a monthly Pain Interest Group.

In early 2013, PRICE occupied its physical home in the new CTRB, a state-of-the-art research building that serves as the home for clinical and translational research at the UF. The CTRB provides offices for the PRICE director and program manager as well as the director of the Pain Clinical Research Unit and several PRICE research staff members.

Powell Gene Therapy Center. Provides institutional and external investigators with the expertise to support preclinical and clinical studies in gene therapy with an emphasis on the development of translatable protocols to facilitate clinical trials initiation. The center has three components; the Vector Core, the Human Applications **Laboratory and the Toxicology Core.** The Vector Core, located in the Academic Research Building and operated as an auxiliary, performs up to 400 research and GLP-grade rAAV preparations per year for individual investigators and program grants. Research-grade preparations support both in vitro and in vivo pilot phase studies for proof of principle. An important research activity is dedicated to process and development of novel production and purification methods. Working together with the Human Applications Laboratory, methods are developed as translatable platforms in compliance with cGMP.

The Human Applications Laboratory, located in the McKnight Brain Institute (MBI), manufactures and releases clinical grade rAAV products and cell vaccines with a current track record of eight manufacturing campaigns for

phase I/II trials. The production facility occupies approximately 1,900 square feet and consists of two suites designed to function independently. Production Suite A is dedicated to cell processing, cell banks and cell-based vaccines. Production Suite B is used for the purification, filtration and aseptic fill of viral vectors. The Quality Control Laboratory within the Human Applications Laboratory operates independently and conducts product release testing and environmental monitoring. An independent Quality Assurance Unit of the CTSI oversees raw material as well as in-process and final product lot release with audits and inspections of all procedures.

The Toxicology Core conducts exhaustive FDA-reviewed GLP toxicology and bio-distribution studies for IND submission as well as intermediate proof of concept studies. It often operates in coordination with the Vector Core and the Human Applications Laboratory. To date, the core has contributed to the initiation of 14 clinical trials in man.

Southeast Center for Research to Reduce Disparities in Oral Health. A multidisciplinary center at the UF College of Dentistry that aims to reduce disparities in oral health among Florida's rural populations through community-based research and intervention projects. Projects are based on community participation combined with the best science available. Local residents are involved in all phases of research projects, from designing projects to collecting data to publicizing results and influencing public policy.

UF Center for HIV/AIDS Research, Education & Service (UF CARES). The only comprehensive pediatric and family-focused HIV and AIDS program in Northeast Florida and South Georgia. At UF CARES Rainbow Center (located on the third floor of UF Health Jacksonville's Clinical Center building), clinicians provide primary, secondary, and tertiary care for HIV- exposed and infected individuals and families. In addition to basic medical care, the center provides medical case management, pharmacy services, health education, nutrition, and mental health counseling. UF CARES doctors are trained in general pediatrics and internal medicine with additional specialization in infectious diseases and women's health. UF CARES employs a full time psychologist and part time psychiatrist and gynecologist who provide specialty services. UF CARES also works to provide services through collaborations and partnerships with Children's Medical Services, a state sponsored program to provide health care to low-income children with special needs.

In the last five years, the center has conducted 23 NIH-sponsored clinical trials, 11 pharmaceutical-sponsored studies and several investigator studies, serving more than 900 research subjects. The center actively collaborates with the Department of Obstetrics and Gynecology in Jacksonville and colleges of Medicine, Public Health and Health Professions, Veterinary Medicine, and Emerging Pathogens Institute in Gainesville. UF CARES is part of the AHRQ registered Community Based Research Network and collaborates with investigators in Gainesville and Jacksonville.

UF Genetics Institute. Promotes genetics and genomics at the UF by building community, facilitating collaboration and creating opportunities for intellectual exchanges among investigators working in diverse taxonomic systems but with a common set of approaches in genetics and genomics; supporting recruitment and retention of outstanding faculty in the areas of genetics and genomics; supporting graduate education in the areas of genetics and genomics; and enhancing the ability of researchers at the UF to compete for multidisciplinary research grants in the area of genetics and genomics.

More than 240 UFGI faculty members represent seven different colleges and 49 different academic departments. Their research spans a broad array of organisms from prokaryotes to eukaryotes and a diverse collection of disciplines and approaches from strictly computational to laboratory and field studies. The UF Genetics Institute occupies one wing (approximately 60K square feet) of the Cancer & Genetics Research Complex, completed in 2006. Thirty-three faculty members are housed in UF Genetics Institute space, which provides a variety of shared equipment for molecular biology, biochemistry and genetics, as well as shared resources such as animal facilities, grow chambers for controlled environmental studies of plants, and a greenhouse facility.

UF Graduate Program in Biomedical Sciences. A predoctoral educational experience that trains experimentalists and scholars for a wide range of careers in biomedical science. The curriculum is designed to provide maximum flexibility for the training of biomedical research scientists. The educational goals are to promote biological literacy by providing core and advanced curricula covering key chemical, biological, and genetic principles using molecular, cellular, and physiological approaches; and to promote scholarship in biomedical science through mentored, original research.

UF Graduate School. Since 1964, overall responsibility for graduate education at UF has been officially

vested in the Graduate School. More than 12,000 graduate students pursue master, specialist, and doctoral degrees in more than 150 fields of study, generally under the supervision of more than 2,800 members of the University's Graduate Faculty. Graduate education at UF is accomplished in a decentralized model. Most elements of the various graduate programs and activities are designed, implemented, managed and monitored by academic units in accord with the principles and traditions of their fields. Most academic units are administratively located in a college, and almost all of the colleges identify an Associate Dean as being responsible for graduate education and closely related activities. Graduate Coordinators are faculty members charged with the key managerial responsibilities for program delivery. They are typically supported by designated staff members. In 2007, the Graduate School became a unit in the Office of the Provost. Henry T. Frierson was named Dean of the Graduate School and Associate Vice President of the University. In addition to oversight for graduate education university-wide, and standards and policies governing all graduate programs, his charge was to grow the graduate education enterprise, support quality improvement among the programs, support the programs in their efforts to improve graduate student recruitment, retention and degree completion, and increase the representation of minorities, women and other underrepresented population groups in the university's graduate programs.

- **Graduate Information Management System.** Has collected data graduate student data from 2004 and contains graduate student data as far back as 1984. This unit is led by the Associate Director of Data Management, and her team consists of four technical staff, one data analyst II, one application developer analyst 3, and two application developer analyst 2.

UF Health. The UF academic health center is closely affiliated with UF Health, part of the University of Florida Health System, with seven hospitals including two academic medical centers in Gainesville and Jacksonville, a children's hospital, three community hospitals, two specialty hospitals, and more than 80 outpatient primary and specialty care practices across North Florida, all linked through a fully integrated electronic health record system. UF Health is the state's leading healthcare referral system and one of the Southeast's most respected health-care providers with close to 80,000 hospital admissions, 155,000 emergency room visits and 930,000 outpatient visits annually. More than 1,500 UF faculty and community physicians representing more than 100 medical specialties work to provide patient care not only within UF Health Shands HealthCare but also at the Veterans Affairs Medical Center located right across the UF Health campus.

- **UF Health Shands Hospital.** 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.
- **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 34K 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 North** is the only state-of-the-art outpatient medical complex in North Jacksonville, featuring a full-service emergency room open 24/7, advanced imaging, including the area's most advanced open MRI, an outpatient surgery center and more than 27 specialty services offered by top UF and community physicians. The 92-bed inpatient hospital, 70-acre campus is located on Max Leggett Parkway close to Jacksonville International Airport, River City Marketplace and the growing commercial area on and around Duval Road. It is approximately 15 minutes from Nassau County and less than 30 minutes from Georgia. In

2016, UF Health North has a total of 37,597 total ER visits, 3,050 outpatient surgeries and almost 50,000 specialty visits.

- **UF Health Shands Children's Hospital.** UF Health Shands Children's Hospital is the premier academic children's hospital in north central Florida. As a recognized leader in pediatric medicine, it serves as a major destination for children worldwide with complex medical issues requiring specialized attention. The dynamic UF Health faculty is devoted to the best in patient care, research and education. The UF Health Shands Pediatric E.R. and UF Health Pediatrics After Hours services also provide families with a convenient, one-stop children's health center for urgent after-hours and emergency care. UF Health Shands Children's Hospital has been recognized as one of the nation's best hospitals for children in seven medical specialties, according to U.S. News & World Report rankings with over 20 pediatric specialties.
- **UF Health Shands Children's Hospital's Neonatal Intensive Care Unit:** Since 1970, neonatal physicians, nurses and caregivers have provided specialized care to thousands of tiny patients, some small enough to fit in the palm of your hand. Their clinical expertise has led to U.S. News & World Report ranking the neonatology program among the nation's best. As a result, Shands faces an ever-increasing demand for neonatal care for tiny patients born here or infants transferred from throughout the state. The unit serves as a destination for specialized medical and surgical services, such as hypoxic-ischemic encephalopathy and complex congenital heart diseases, and is nationally renowned for its physician expertise with treating congenital diaphragmatic hernia. While the neonatal program was established in the 1970s, UF Health Shands Children's Hospital's NICU was built in 1984. At the beginning of 2016, the unit underwent renovations, and by spring 2017, it had expanded to its current 68-bed capacity. The NICU is a member of the Florida Regional Perinatal Intensive Care Centers.
- The **UF Health Science Center** celebrated its 60th year in 2016. It is one of the country's few academic health centers 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, enrolling more than 6,900 students and 1,100 interns and residents each year. The UF academic health center generated over 50% of UF's total research awards in FY 16. In addition to the six colleges, there are seven major health-related research centers and institutes (CTSI, Institute on Aging, UF Shands Cancer Center, Emerging Pathogens Institute, McKnight Brain Institute, Institute for Child Health Policy, and Genetics Institute) designed to create synergistic and collaborative research opportunities.
- **UF Health Cancer Center:** Brings together more than 350 researchers and clinicians throughout UF and UF Health Shands to educate the next generation of cancer doctors and to carry out original research for the prevention, diagnosis and treatment of cancer. The UF Health Cancer Center expanded access to leading-edge cancer therapies and treatments for Floridians in 2014 through an innovative joint oncology program with Orlando Health. The center is dedicated to providing state-of-the-art cancer treatment, prevention, control, and education to individuals of diverse races and ethnicities; conducting original scientific research aimed at discovering and comparing mechanisms of cancer-causing and normal cell growth; and fostering coordination and collaboration that facilitates clinical translation of novel research findings into new therapeutic, diagnostic or preventive trials.

UF Health's cancer clinical enterprise utilizes a comprehensive care model, with 12 multidisciplinary cancer programs offering advanced treatment options, such as minimally invasive surgery, robotic surgery, radiotherapy, chemotherapy, proton beam therapy and participation in clinical trials. UF Health Centers of Excellence in cancer care include:

- The **UF Health Proton Therapy Institute**, staffed by UF department of radiation oncology doctors, is the only proton facility located in the state of Florida that has achieved accreditation by the American College of Radiology. It is also internationally recognized as a cancer care destination for pediatric radiation oncology.
- The **UF Health Blood and Marrow Transplantation Program**, a hematopoietic stem cell transplantation center that has performed more than 2,700 transplants, has grown by 40 percent in the last year — making it the fastest-growing program in the state. The program is also designated as a center of excellence for both myeloma and myelodysplastic syndromes.
- The **UF Health Breast Center** is accredited by the National Accreditation Program for Breast

Centers and is the first in the state to offer intraoperative radiation therapy using IntraBeam.

Cancer scientists at UF Health conduct original research in the areas of molecular genetics, microbiology and cell biology, among others. Research at UF Health benefits from the interdisciplinary relationships between faculty in the UF Health Cancer Center, the UF Genetics Institute, UF's Evelyn F. and William L. McKnight Brain Institute, the UF Emerging Pathogens Institute, the UF Institute on Aging and the UF CTSI. This collaborative research environment encourages the translation of basic laboratory findings to personalized curative and preventive therapies for cancer. UF Health cancer research in FY15 led to approximately 18 US patents and a new startup company.

- **UF Health Precision Cancer Care Program:** Established in early 2014 to facilitate the translation of cancer genomics research into clinical care. The program comprises researchers and physicians in the UF Health Cancer Center and UF Health Pathology Laboratories. The program offers molecular profiling of clinically relevant and therapeutically actionable mutations in all patients with lung and colorectal malignancies. This marks the first example of next generation sequencing to tailor treatment of common solid tumors in the state of Florida, with ongoing expansion to ad hoc sequencing in other types of cancer, including ovarian, melanoma, pancreatic, endometrial and immune system cancers. Molecular profiling includes a comprehensive assessment of clinically actionable somatic activating mutations, amplifications, and fusion genes. This clinical approach seeks to identify genetic mutations contributing to cancer progression, and the novel therapies to target these mutations.
- **UF Health Cancer Center Biostatistics Shared Resource:** Provides biostatistical support to enhance scientific research through collaboration with UF Health Cancer Center members. A centralized, state-of-the-art biostatistics service that supports cancer research and cancer studies across various phases, including:
 - Study design, power, and sample size calculations for grant proposals and clinical trials
 - Standard procedures for statistical programming and data quality control
 - Statistical analysis, including interim and post-study analysis
 - Review of protocols and safety monitoring of ongoing clinical trials
 - General statistical consultation and education
 - Assistance with addressing the new NIH requirements for scientific rigor and transparency
- **UF Health Information Technology.** Manages data center space in multiple facilities in both Gainesville and Jacksonville. The Gainesville data center space provides approximately 9,300 square feet to house computer systems and associated components. Additional space accommodates the mechanical, electrical, and physical infrastructure, including electrical equipment, UPSs, air handlers (cooling), security (video and access controls), and fire detection and suppression systems. All systems supporting clinical, education, and research functions utilize the data center resources. A comprehensive set of services is available to customers, including, but not limited to, provision and management of physical and virtual servers, storage, backup and disaster recovery, desktop and mobile device support, security services, database management, and consulting on IT design, support, and costs.

The **HealthNet** network engineering department operates a highly secure high-speed network that, in cooperation with Shands Hospital, supports more than 37K networked workstations, servers, communications devices, and peripherals. Connections are switched 10/100/1000 megabits per second with power over Ethernet (PoE). The HealthNet network has a redundant design at its core and monitoring commensurate with a network that enables technology in operating rooms, emergency rooms, and intensive care units. There is also wireless network coverage throughout all facilities to meet the needs of today's academic healthcare institutions. The HealthNet network service has a self-sustaining funding model that assures technology refresh and modernization at regular intervals.

The Technical Support Center, Workstation and Device Support, Projects, Asset Management, and the Contact Center comprise Customer Services. These teams provide services to students, faculty, and staff in the clinical, research, educational, and administration areas throughout the Health Science Center in Gainesville and Jacksonville. These services include a walk-up support center during business hours, 24-hour phone support, remote trouble-shooting, consultation, and workspace support, such as moves,

installations, upgrades, and repairs. The Projects team offers large-scale deployments and refresh projects to UF Health departments. The Asset Management team provides computing equipment and software quotes, asset tracking, image creation and standardization, and enterprise licensing management. The Contact Center provides 24/7 operator services, emergency and disaster dispatching, Life Quest organ offers and donor referrals processing, and after-hours answering service for clinics and departments.

UF Health IT employs 450 experienced and highly skilled IT professionals in both Gainesville and Jacksonville who provide the wide range of IT services needed to run a major academic health center that includes two hospitals and outpatient clinics.

UF Institutional Planning and Research. Envisions UF as an institution whose plans, policies, and decisions are informed by a rich core of valid institutional data and a sophisticated understanding of the meaning of those data. The national and international image of UF is enhanced by presentation and reporting of data that document accurately its excellence and performance. The mission of the Institutional Planning and Research is threefold: to 1) provide the university leadership with information and analyses that support planning, policy formation and decision making; 2) serve as a comprehensive source for information about UF; 3) administer reporting of UF data to the state of Florida, federal government, and other major organizations such as the AAU. Institutional Planning and Research serves a broad base of institutional and external clients. Three operational strategies promote excellence and efficiency in achieving its mission: Institutional Planning and Research 1) enables many clients to obtain information on a self-service basis using its web, query, and reporting tools; 2) hires highly trained, knowledgeable professionals capable of conducting sophisticated analyses and creating useful models for clients; and 3) partners with other university offices in order to leverage the best sources of data and knowledge when creating its products and services.

UF Informatics Institute. Part of the UF Rising preeminence initiative, facilitates leading-edge informatics research in all sectors of the campus. The institute jointly funded a pilot opportunity with the CTSI in January 2018, an initiative that emerged from a CTSI-hosted series of data roundtable discussions that brought campus thought leaders together in Fall 2017. The UF Informatics Institute reports to the UF Vice President for Research and consists of four interrelated thrust areas. Informatics Techniques and Technologies performs research into the hardware, software, algorithms, and mathematical approaches needed to develop the next generation techniques and technologies for Big Data. Biomedical and Life Science Informatics utilizes informatics to address the fundamental questions in genetics, genomics, biodiversity, environment, and agricultural science as well as its application for improved human health outcomes. Informatics for Engineered Systems and the Physical Sciences studies the application of intense computation and complex informatics to understanding and designing complex engineered systems, and for uncovering the fundamental nature of our physical world and universe. Informatics in Social Science, Humanities and Education addresses leveraging the explosion of data in understanding people, culture, political development, education, and human behavior.

UF IT Research Computing. Established in 2011, Research Computing has a permanent staff of 12 full-time equivalent employees who provide comprehensive support for researchers who use UF's supercomputer, HiPerGator, ranked as the 136th most powerful supercomputer in the world and third among US public universities. HiPerGator has about 50,000 cores and 3 PetaBytes of fast storage, generation and analysis for large data sets. The basic operating system is Linux and a wide variety of open source, licensed, and developmental software is available on the system. Interactive sessions for development and for running software that requires a GUI are available. Some projects make data stored on HiPerGator available to their research community over UF's 100-gigabit-per-second Internet connection. Faculty who want to use high-performance computing or data analytics in their courses can arrange access for their classes. Research Computing also operates two computing environments for research on restricted data. One system, ResShield is Federal Information Security Management Act moderate compliant. The other system, ResVault, is HIPAA compliant.

UF Research and Academic Center at Lake Nona houses multidisciplinary teams of researchers, clinicians, teachers, and students with the goal of providing effective therapies and improving health for patients. Built in 2012, the 100K-square-foot facility has two functions: academic study and research. The facility has several distinct areas. It became the permanent home of the UF College of Pharmacy Orlando Campus, expanding the UF professional PharmD Program from 200 to 280 students over four years. It houses the College of Pharmacy's Center for Pharmacometrics and Systems Pharmacology, which adapts sophisticated mathematical modeling and computer simulations to mimic clinical trials of new drugs. The Center for Pharmacometrics and Systems Pharmacology educates and trains doctoral students and post-doctoral fellows

in the discipline of drug development and regulatory science. Also housed in the facility is the College of Pharmacy's Center for Quality Medication Management. This center provides telephone-based communication service through experiential training in comprehensive medication reviews for Medicare patients and their health care providers. The facility houses the Institute for Therapeutic Innovation, which focuses on developing and testing new treatments and cures for a variety of infectious diseases caused by drug-resistant pathogens. Clinical research facilities, including equipped exam rooms, specimen processing area, interview rooms, a conference room and office space for study staff and monitors are available in the Lake Nona facility. The Center's close proximity to research facilities at Sanford Burnham and to other Orlando Healthcare entities fosters collaboration and allows Floridians from the surrounding Orlando area to take part in clinical and translational research studies.