

OVERALL – FACILITIES AND OTHER RESOURCES

Winthrop P. Rockefeller Cancer Institute

The Winthrop P. Rockefeller Cancer Institute (WPRCI) is a matrix cancer center at the University of Arkansas for Medical Sciences (UAMS) main campus in Little Rock, Arkansas, which generates outstanding cancer research and provides robust cancer care to patients from all 75 counties in Arkansas in addition to 50 states and 50 countries. The WPRCI opened in 1989 as the Arkansas Cancer Research Center and, in 2007, was renamed in honor of the late Winthrop P. Rockefeller, former lieutenant governor of Arkansas and WPRCI patient. WPRCI facilities have since expanded into two self-contained and dedicated towers (Winthrop P. Rockefeller Tower and Pat and Willard Walker Tower) housing cancer research and clinical operations in over 500,000 sq. ft. of space on the UAMS campus in Little Rock (**Figure 1**).

Physical Space

Research Space. The WPRCI has expanded and refined its operational enterprise to achieve rigorous standards for transdisciplinary, state-of-the-art research focused on developing new and better approaches to preventing, diagnosing, and treating cancer in Arkansas. Laboratory space is located within the co-located Rockefeller and Walker Towers (**Figure 1A**), which are designed as mixed-use environments integrating research, clinical, and collaborative space to promote translational science. The Rockefeller Tower (**Figure 1B, No. 1**) serves as the primary center for laboratory investigation, housing investigators across 33,000 square feet of research space, while the Walker Tower (**Figure 1B, No. 2**) provides an additional 26,000 square feet of research space, including a state-of-the-art vivarium. An additional 9,100 square feet is dedicated to Shared Resources, strategically positioned to maximize investigator access to core technologies. Research laboratories in Rockefeller Tower are located on the 3rd, 4th, 9th, 11th, and 12th floors.

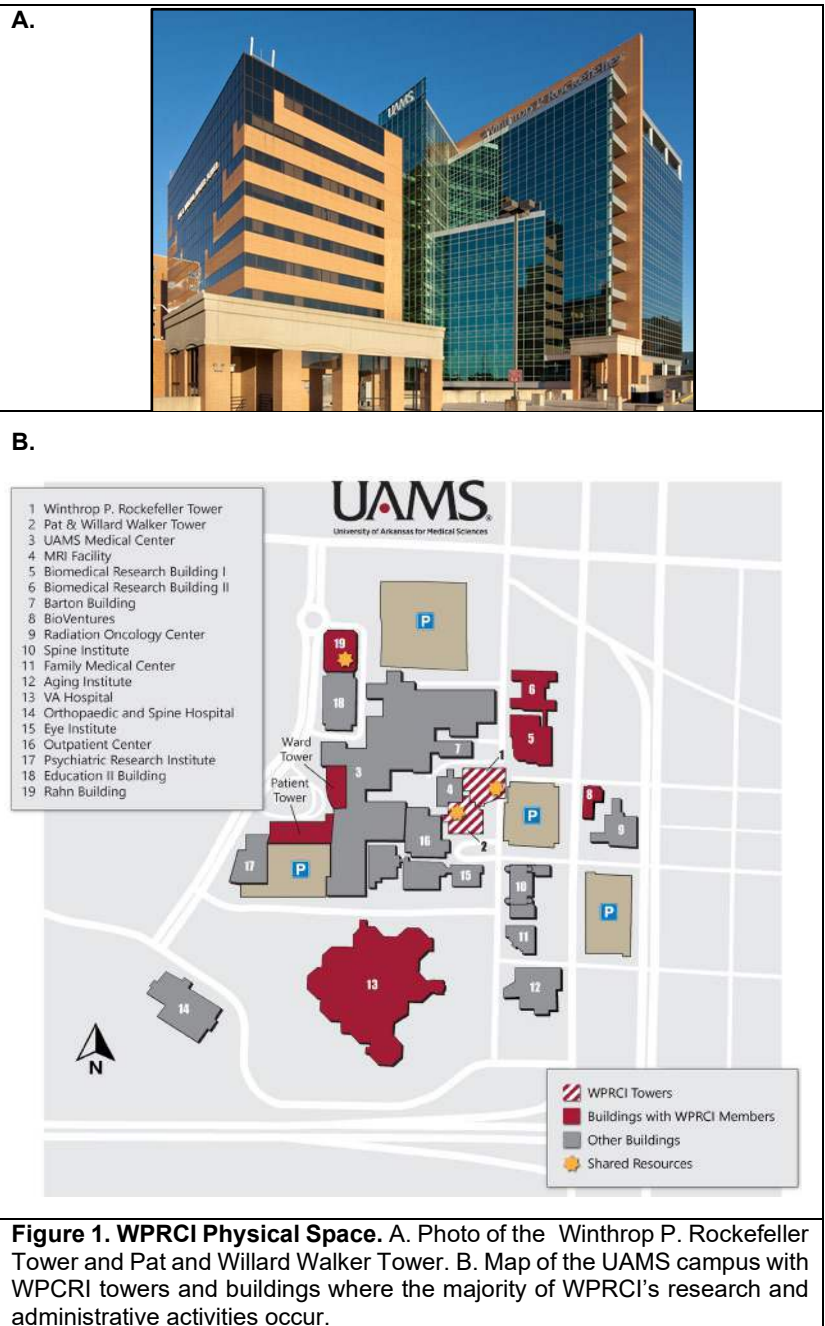


Figure 1. WPRCI Physical Space. A. Photo of the Winthrop P. Rockefeller Tower and Pat and Willard Walker Tower. B. Map of the UAMS campus with WPRCI towers and buildings where the majority of WPRCI's research and administrative activities occur.

- **Biomedical Research Centers I and II (Figure 1B, No. 5 & 6).** These buildings have a combined usable space of 255,785 sq. ft. Of this amount, WPRCI investigators use 40,750 sq. ft. of wet laboratory space and occupy approximately 7,000 sq. ft. of office space in the Biomedical Research Center buildings.
- **BioVentures (Figure 1B, No. 8).** BioVentures manages UAMS invention disclosures, patenting, and licensing activities, and engages UAMS researchers in the founding and growth of local businesses. BioVentures has a business incubator program that provides critical support to the life science start-up companies emerging from UAMS technologies. The incubator provides support services, such as business planning and market analysis, intellectual property management, funding support services, access to local business community leaders, and company formation and investments. BioVentures has

7,000 sq ft of leasable laboratory and office space. Cancer Institute members use 1,116 sq. ft. of laboratory space and 500 sq. ft. of office space in BioVentures.

	Floors	Rockefeller Tower
Walker Tower	12	Research Laboratories
Clinical Trials Office	11	Research Laboratories: Radiation Biology SR
Walton Auditorium/Conference Space	10	Cancer Institute Administration/Faculty Offices
Hematology/Stem-Cell Transplant & Cellular Therapy Palliative Medicine	9	Research Laboratories: Proteomics SR
Research Laboratories	8	Multiple Myeloma Outpatient Clinic Clinical Trials Office
Cancer Clinics (Multidisciplinary)	7	Cancer Clinics (Multidisciplinary)
Cancer Clinics (Multidisciplinary)	6	Phase I Unit Infusion Center
Faculty Offices	5	Research Pharmacy
Research Laboratories: Translational Pathology SR	4	Infusion Center
Research Laboratories: Genomics SR; Translational Pathology SR, Radiation Biology SR	3	Breast Center Bone Marrow Procurement
Women's Cancer Clinics	2	Dermatology Clinic
Faculty Offices		
Gathering Place Café	1	Lobby
Patient Support Pavilion/Social Work		Cancer Blood Draw

Figure 2. Cancer Institute Floor Map. Yellow denotes faculty office and administrative space. Blue indicates cancer clinics. Green indicates research space. Orange denotes clinical trials space. Gray indicates other space. SR-Shared Resource

Clinical Research. WPRCI's Clinical Trials Office (CTO) is important for all WPRCI clinical research. The CTO facilitates study start-up, implementation, close-out activities and navigating institutional research systems. The CTO staff members, including research nurses, clinical research coordinators, data analysts, specimen technicians, regulatory specialists, and financial analysts. CTO staff occupy 4,000 sq. ft. of space on the 8th floor of the Rockefeller Tower and 2,600 sq. ft. of office and conference room space on the 11th floor of the Walker Tower (**Figure 2**).

- **Campus-wide Clinical Trials Management.** In 2025, WPRCI purchased and launched the only campus-wide system used to manage clinical trials. This system includes three Advarra solutions.

OnCore Clinical Trials Management System. The Advarra OnCore Clinical Trials Management System, launched in July 2025, enhances trial oversight, efficiency, and patient access and directly supports subject tracking, regulatory compliance, and data management for clinical trials.

Advarra eReg. Implemented in September 2025, Advarra eReg is an electronic regulatory binder system used to manage all essential clinical trials documents (protocols, approvals, trainings, credentials, etc.). eReg is integrated with OnCore and syncs data for centralized tracking. Key capabilities of eReg include: 21 CFR Part 11 compliant, document management, workflow automation, remote monitoring access, and multisite trial management.

Advarra eSource + EDC. This system is a combined eSource plus electronic data capture system used to collect, store, and manage clinical trial data. The core purpose is to electronically capture patient-level study data. This system has the following key capabilities: 21 CFR Part 11 compliance, direct data capture at the point of care (no paper needed), electronic case report forms for structured data entry, query management and data validation for data quality, remote monitoring access for sponsors/monitors/auditors, easy data export for study analysis, and eliminates duplicate data entry via integrations with OnCore and EPIC.

- **REDCap.** The Research Electronic Data Capture suite (REDCap) is a comprehensive set of open-source software tools for electronic management of clinical research data. REDCap supports data submission, validation, annotation, filtering, and extraction, as well as study oversight, auditing, and reporting. Quality control of the data entry process is facilitated by institution range and logic checks. UAMS has completed required documentation and testing to be compliant with the 21 CFR part 11 guidelines. All components of the UAMS REDCap system are web-based, enabling sharing and integration of clinical research information for single- and multisite trials. All applications are integrated into a portal that allows single point of access

with a registered UAMS username and password. All REDCap applications reside on a cluster server with failover capability behind the UAMS firewall, and thus have the benefit of high security, fire protection, and routine backup.

- **Phase I Cancer Clinical Trials Unit.** The WPRCI Phase I Cancer Clinical Trials Unit is the only academic clinical trials unit in Arkansas focused solely on testing early phase cancer therapies. The Phase I Clinical Trial Unit opened in 2020 and is located within the infusion center on the WPRCI 6th floor in Rockefeller Tower. The Unit includes eight private rooms for drug administration, patient monitoring, blood sample collection, and electrocardiogram assessments. The infusion center is equipped with resuscitation areas, crash carts, defibrillators, and direct access to emergency care to ensure patient safety. A 320 sq. ft. research pharmacy located nearby on the 5th floor of the Rockefeller Tower features secure, temperature-monitored storage for investigational drugs, facilities for compounding and preparation, and an electronic compliance system (nCOUP) for tracking investigational product storage and administration. The Unit also includes a 420 sq. ft. sample processing lab on the 4th floor of the Walker Tower (Translational Pathology Shared Resource) for collecting, processing, and storing biological specimens (**Figure 2**).
- **Data Safety Monitoring Board.** The WPRCI Data Safety Monitoring Board (DSMB) is a formally appointed independent group assigned to conduct monitoring of accumulating data from clinical investigations to assure the continuing safety of research participants, relevance of the study question, appropriateness of the study, and data integrity. Members have expertise in the relevant field of study, statistics, and/or clinical trial design, and include physicians, clinical trialists, biostatisticians, and/or bioethicists, epidemiologists, and basic scientists.
- **Protocol Review and Monitoring Committee (PRMC).** The PRMC oversees and reviews the scientific merit and progress of all WPRCI clinical research. The PRMC is authorized to approve new protocols, approve changes to current/active protocols, and terminate protocols that lack scientific progress. All cancer studies involving human subjects must be approved by the PRMC before they can begin. This process is complementary to, but separate from, the Institutional Review Board (IRB) approval process.

Clinical Space. The WPRCI clinical facilities occupy 111,500 sq. ft. across the Rockefeller and Walker Towers and include the Dermatology Oncology Clinic (5,299 sq. ft., Rockefeller Tower 2nd Floor [**Figure 2**]), a multidisciplinary Women's Cancer Clinic (6,378 sq. ft., Walker Tower 2nd Floor [**Figure 2**]), and multidisciplinary cancer clinics that span the 6th and 7th floors of both towers (**Figure 2**).

- **WPRCI Myeloma Center.** The Myeloma Center's clinical operations are organized into four specialized areas that manage more than 45,000 outpatient visits and 10,000 inpatient days annually for national and international patients with multiple myeloma and related disorders.

Multiple Myeloma Outpatient Clinic. This clinic includes patient intake, registration, new-patient triage, and specialized insurance case management. The 12,100 sq. ft. facility on the 8th floor of the Rockefeller Tower (**Figure 2**) comprises ten exam rooms, twelve consultation rooms, physician and nurse work areas, and data management areas. Additional space is used for administrative and faculty offices for a total of 22,000 sq. ft.

Multiple Myeloma Inpatient Unit (MMIU). The MMIU is a 24,000 sq. ft. unit located in the UAMS Hospital and is a specially constructed 30-bed, double-HEPA-filtered area that includes four laminar air-flow rooms and a specialized central stem-cell preparation area. The MMIU provides infusion therapy (chemotherapy, blood products, antibiotics, and new therapeutic regimens) for 3,430 non-transplant and 35 transplant patient visits per month. The MMIU has twelve individual patient rooms and 34 chairs in a common area, with six chairs in the Express Center. The Cell Therapy Program includes a 1,200 sq. ft., 8-bed stem-cell apheresis area for cell collection, a 2,500 sq. ft. processing laboratory, and a 4,325 sq. ft. storage facility in the UAMS Hospital. The MMIU provides an average of 95 apheresis procedures per month, and a total of 1,156 products are collected, processed, and cryopreserved each year for patient therapy and research.

Multiple Myeloma Database. The Multiple Myeloma Database (MMDB) is a relational database system consisting of several databases on a single MS-SQL server. The MMDB contains a single demographics system, including records of 15,248 patients (living and deceased) with plasma cell dyscrasias, of whom 10,356 had multiple myeloma. Demographics and survival stats are imported and updated through EPIC.

The primary data server is a Dell PowerEdge R6400 server with 2 x 20 logical core processors and 128 GB of RAM running Windows Server 2012 R2 and MS-SQL 2016 Standard. Data are stored on a Dell SC-7020F connected by fiber channel and on the SAN storage with RAID array with 3.7TB of database storage.

Research data and servers are backed up locally as well as nightly and weekly externally. Research data are further protected through an archive for up to seven years. An audit trail on all major tables records the user and data on additions, changes, and deletions.

- **Test Results.** The MMDB includes more than 100,000,000 discrete results, including laboratory tests and values parsed from pathology reports and contains data on bone marrow examinations, FISH, and myeloma minimal residual disease. Information in a combination of an internal sample system and caTissue is available on over 90,000 samples. Affymetrix oligonucleotide gene-expression profiling results from over 24,000 of these samples are available.
- **Clinical Trials.** MMDB includes data on 26,482 enrollments of 11,874 patients on 410 clinical trials that are entered directly or imported from AR-CRIS through EPIC. These records include consents and adverse events (AEs). MMDB calculates hematological AEs and records non-hematological AEs, including their significance.
- **Radiation Oncology Center.** The Radiation Oncology Center treats adults and children and is the only pediatric radiation-therapy provider in Arkansas. The Radiation Oncology Center is the only cancer center in Arkansas to offer Ethos Adaptive Therapy and two linear accelerators that deliver Edge Radiosurgery. Opened in July 2023, the Radiation Oncology Center is a three-story, 58,000 sq. ft. building (**Figure 3**) that includes the first Philips Spectral Computed Tomography scanner in the U.S. The Radiation Oncology Center is ranked nationally as a Program of Excellence by the American Society of Radiation Oncology. The Radiation Oncology Center employs 75 people, including board-certified radiation oncologists, licensed medical physicists, radiation therapists, dosimetrists, nurses, and support staff who are experienced in treating children and adults with a broad range of cancers. Center director and Radiation Oncology Department Chair, **Fen Xia, MD, PhD (CT)**, is a fellow of the American Society of Radiation Oncology.

Proton Center of Arkansas. The second floor of the Radiation Oncology Center houses the Proton Center of Arkansas (**Figure 3**), a collaboration of UAMS Health, Arkansas Children's, Baptist Health, and Proton International. Opened in September 2023, the Proton Center is Arkansas's first and only proton center and one of only 46 in the U.S. The Proton Center provides advanced radiation treatments for children and adults with cancer. The Proton Center is a 9,000-square-foot structure.



Figure 3. Radiation Oncology Center.

- **Breast Center.** WPRCI's Breast Center (approximately 10,000 sq. ft.) on the 3rd floor of the Rockefeller Tower (**Figure 2**). The Breast Center houses fellowship-trained radiologists along with surgeons, oncologists, pathologists, geneticists, behavioral scientists, and plastic surgeons. The Center holds weekly breast conferences, where each case is reviewed. The Breast Center has five mammography rooms, five ultrasound rooms, image-guided biopsy capability, and dedicated patient support space. It also has the following equipment: 3D mammography (digital breast tomosynthesis), handheld and automated whole-breast ultrasound, 3T MRI magnet with a dedicated breast coil for breast MRI, contrast enhanced mammography, and SmartCurve™ comfort paddles.
- **Bone Marrow Procurement Clinic.** Located on the 3rd floor of Rockefeller Tower (**Figure 2**), this 5,700 sq. ft. facility is the largest in the state and performs more than 3,800 procedures per year.

Administrative Space. WPRCI Administration occupies 6,000 sq. ft. of office space on the 10th floor of the Rockefeller Tower (Figure 2), which includes the Cancer Service Line and Division of Hematology/Oncology. This office space houses 100 people and provides a venue for administrative, fiscal, and operational oversight of WPRCI functions, including business administration, communications, community outreach and engagement, faculty recruitment, human resources, membership management, program management, and research writing.

Shared Resources. The WPRCI's Shared Resources include advanced research equipment, services, scientific consultation, and technologies used to increase collaboration among WPRCI members. All WPRCI Shared Resources are located on the UAMS campus, near WPRCI members, and occupy 9,100 sq. ft. of space (**Figure 1B, No. 1,2,19**), and all are recharge-based operations, except for the Biostatistics Shared Resource.

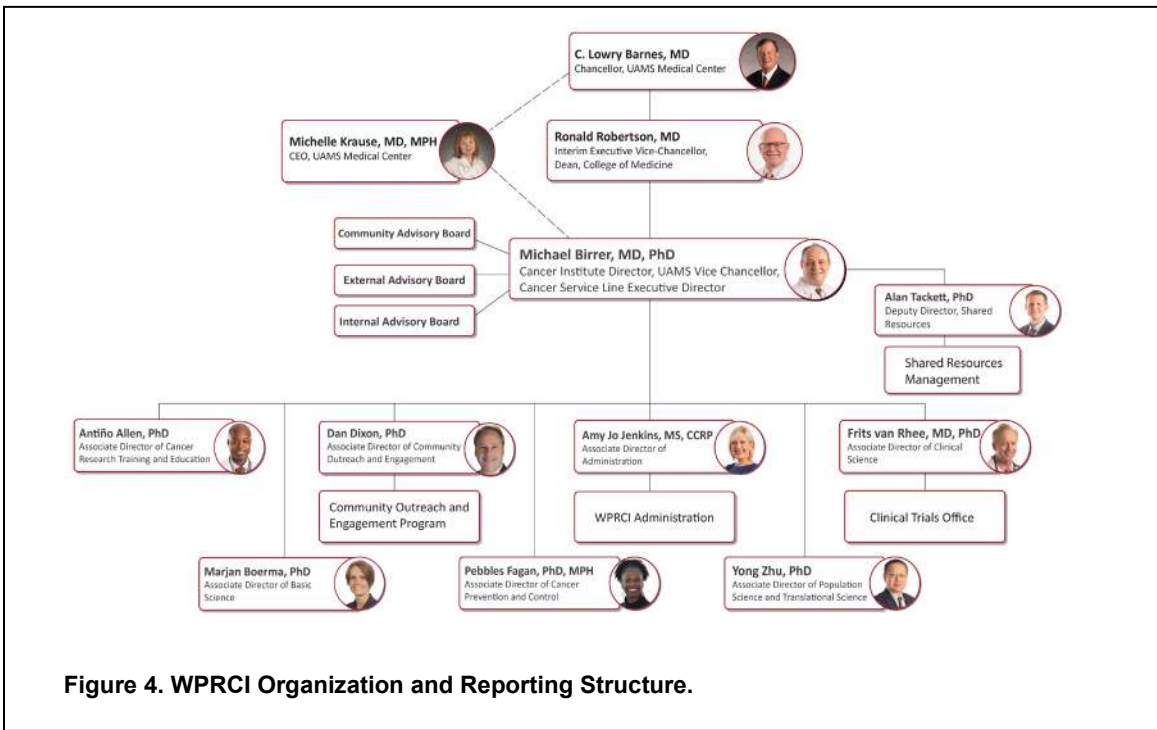
- **Biostatistics Shared Resource.** The Biostatistics Shared Resource provides WPRCI investigators with a centralized statistical resource to support cancer-related research from project development through publication. The Biostatistics Shared Resource is housed in the Department of Biostatistics on the 3rd floor of the UAMS Rahn Building (**Figure 1B, No. 19**). See *Biostatistics Shared Resource Facilities and Other Resources* for details.
- **Genomics Shared Resource.** Spanning basic, translational, and clinical domains, the Genomics Shared Resource provides WPRCI investigators with access to technologies for next generation sequencing, advanced molecular profiling, and analytical approaches to evaluate nucleic acids and other biomolecules. The Genomics Shared Resource is on the 3rd floor of Walker Tower in the WPRCI (**Figure 1B, No. 1; Figure 2**). See *Genomics Shared Resource Facilities and Other Resources* for details.
- **Proteomics Shared Resource.** The Proteomics Shared Resource provides services for protein characterization by mass spectrometry. This includes protein identification, mapping post-translational modifications, global proteomics, and quantitative comparison of proteins in biological samples. This Shared Resource also offers one-on-one consultation and bioinformatics support for experimental design and data analysis. The Proteomics Shared Resource is supported by the National Institutes of Health (NIH) as a National Resource for Quantitative Proteomics, enabling the entire United States to access advanced proteomics technologies and experienced staff. The Proteomics Shared Resource occupies approximately 1,550 sq. ft. on the 9th floor in the WPRCI Rockefeller Tower (**Figure 1B, No. 1; Figure 2**). See *Proteomics Shared Resource Facilities and Other Resources* for details.
- **Radiation Biology Shared Resource.** The Radiation Biology Shared Resource provides WPRCI members with radiation dosimetry services; assistance in design and development of new animal and cell culture radiation models, whole-body or localized irradiation of animal models, and radiation exposure of cell cultures; training in the operation and maintenance of irradiators; as well as services to facilitate the development and use of preclinical animal models and cancer-relevant radiobiological studies. This Shared Resource is located in the WPRCI basement, 11th floor of the Rockefeller Tower, and 3rd floor of the Walker Tower (**Figure 1B, No. 1**). See *Radiation Biology Shared Resource Facilities and Other Resources* for details.
- **Translational Pathology Shared Resource.** The Translational Pathology Shared Resource resides in more than 2,500 sq. ft. of laboratory and storage space on the 3rd and 4th floors of the WPRCI Walker Tower (**Figure 1B, No. 1; Figure 2**). This Shared Resource provides investigators with centralized, comprehensive histological and pathological services for biochemical, molecular, and pathological studies. The Translational Pathology Shared Resource comprises the Experimental Pathology (ExPath) Core Laboratory and the Tissue Biorepository and Procurement Service (TBAPS). ExPath processes frozen and pre-paraffin-embedded tissues and provides a variety of standard pathological stains for histochemical analysis of tissues. ExPath is fully integrated with TBAPS, an institution-wide tissue procurement facility and repository that coordinates donation, processing, storage, and dissemination of tissue specimens and related data. See *Translational Pathology Shared Resource Facilities and Other Resources* for details.

Institutional Commitment

Institutional Structure

WPRCI is led by **Michael J. Birrer, MD, PhD (CT)**. Birrer directly reports to the Executive Vice Chancellor/Dean of the College of Medicine (COM). Birrer has a dotted line reporting relationship to the UAMS Medical Center CEO, Michelle Krause, MD, MPH. The reporting structure and organization of WPRCI is shown in **Figure 4**.

Financial/Space Commitments. During the 2020-2025 period, **Birrer** and his leadership team have worked diligently with institutional leaders to grow commitment to WPRCI. WPRCI leadership has focused on being a good steward of the Arkansas taxpayers' monies generously provided by the State Legislators and Governor to the WPRCI for progress to NCI designation. The NCI trust fund was initially created based upon the receipt of proceeds from the marijuana tax levied on medical marijuana use. This yielded \$19M in year one, \$27M in year two, and \$28.5M in year three. In year four, UAMS requested a



lumpsum payment for the progress to NCI designation, which was granted and the Governor provided \$100M. UAMS arranged for all these monies to be placed in an interest-bearing account at the state treasury under the direction of the WPRCI. The total state support has been \$171M and at present this fund contains approximately \$121M. This UAMS fund generates approximately \$6M per year in interest which provides a flow of monies in perpetuity to help fund the WPRCI. These monies are distributed by a committee (**Birrer, Tackett, Jenkins, Dixon, and Zhu**), chaired by the Director, to oversee that process. Importantly, by legislative statute, the WPRCI submits a full financial disclosure of the Trust Fund developed and validated by the WPRCI Financial Director, J. Keith Gober (see Administrative Core), to UAMS leadership who in turn distributes it to the legislature and Governor every 6 months. This report details every expenditure and justification based upon the progress toward NCI designation.

Research Space under the Director's control has also rapidly expanded under **Birrer**. There has been an **420%** increase in research space under the Director's authority (50,000 sq ft in 2020 vs. 260,000 sq ft in 2025). In addition, Birrer was recruited as operational leader of the CSL and a restructuring led to him becoming the Executive Director with general oversight of the strategic direction of the service line with day-to-day operational issues handled by the UAMS health system. This means UAMS has committed to enlarging the research space for the WPRCI by **20%** over the next five years which translates into **52,000** sq ft.

Shared Resources. The current funding period has been a time of major expansion of WPRCI Shared Resources, with new technologies, equipment, and other resources. From 2020-2025, WPRCI committed over \$5 million for a total of \$10.5M (operating costs of \$5.5 and capital equipment of \$5M) to Shared Resources.

Programmatic Commitments to Cancer Research. UAMS has supported two large projects which have been critical to WPRCI's overall success. The university contributed \$8.5M (from a NIH grant) to completely overhaul and increase the size of the vivarium. This includes a state-of-the-art small animal imaging center run by **Boerma**, AD of Basic Sciences. Further, UAMS (in conjunction with Arkansas Children's Hospital, Baptist Health, and Proton International) invested \$60M to build a brand-new Radiation Oncology building with state-of-the-art linear accelerators and proton technology. This has revolutionized radiation care for cancer patients throughout the state. Prior to this, patients (especially children) had to leave the state to get proton therapy.

University of Arkansas for Medical Sciences

UAMS is the state's largest basic and applied research institution with \$144.6 million in annual research funding, grants, and contracts. UAMS is the only academic health sciences center in Arkansas and has an enrollment of

approximately 3,400 students in six academic units: The Colleges of Pharmacy, Nursing, Medicine, Health Professions, Public Health, and the Graduate School. UAMS is one of the largest public employers in the state with over 12,000 employees, including over 1,100 physicians who provide medical care to patients at UAMS and its affiliates—Arkansas Children's, Central Arkansas Veteran's Health System (CAVHS), and Regional Campuses. UAMS combines the patient care resources of a state-of-the-art hospital and outpatient centers with the WPRCI, Harvey and Bernice Jones Eye Institute, Donald W. Reynolds Institute on Aging, and the Jackson T. Stephens Spine and Neurosciences Institute. Outreach efforts include eight regional centers in Fayetteville, Pine Bluff, Batesville, Texarkana, Fort Smith, Jonesboro, Helena, Eldorado, and Magnolia; statewide networks of senior health centers and centers for young children with special health care needs; and interactive video education and medical consultation services to community hospitals around the state. Centers of Excellence include cancer treatment, ophthalmology, orthopedics, neurosurgery, pediatrics, and geriatrics.

UAMS Medical Center

The UAMS Medical Center is a teaching hospital with a Level I trauma center. It is 540,000 sq. ft. and has 535 beds, including 431 adult beds, 64 newborn bassinets, and 40 psychiatry beds (**Figure 1B, No. 3; Figure 5**). UAMS Medical Center had 62,167 emergency room visits, 26,564 hospital discharges, and 23,677 surgical cases in fiscal year 2025. The 10th floor is dedicated to the advanced care of cancer patients and includes 80 beds dedicated to adult medical oncology, including the Stem Cell/Leukemia Unit (19 private beds), and five bays for the outpatient stem-cell transplant unit. Additional beds are dedicated to the care of patients with gynecological malignancies, as well as surgical patients with cancer.



Figure 5. UAMS Medical Center.

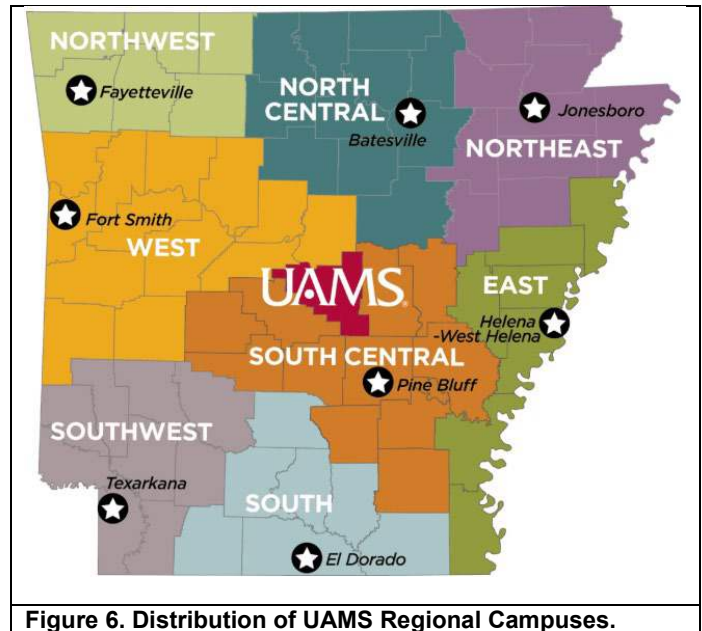
UAMS Regional Campuses

UAMS Regional Campuses were established in 1973 through the combined efforts of the governor, the state legislature, and UAMS. The initiative aimed to encourage UAMS medical school graduates to remain in Arkansas and to address the state's shortage and uneven distribution of primary care physicians. The mission of the Regional Campuses is to improve the health of Arkansans through community and academic partnerships, by training health professionals, and by delivering quality patient-centered primary care. Quality training experiences in settings away from the academic medical center expose trainees to opportunities in underserved communities, helping encourage rural practice choices. There are currently eight regional centers located in Arkansas that serve multiple county regions (**Figure 6**).

- **UAMS East Regional Campus.** The UAMS East Regional Campus (ERC) is based in Helena-West Helena, Arkansas, in offices furnished by Helena Regional Medical Center. The 31,000 sq. ft. UAMS East Family Medical Center (EFMC) provides a variety of services for patients of all ages, including acute and chronic conditions related to asthma, diabetes, hypertension, and arthritis. Providers are educated on the latest treatments available and can perform minor surgical procedures on-site and provide adult and pediatric immunizations, providing personalized care to populations in the region. The clinic uses a local diagnostic lab and other support services. The UAMS ERC and EFMC serve seven counties in Southeastern Arkansas: Phillips, Lee, Monroe, St. Francis, Crittenden, Chicot, and Desha. Additional offices are in Lake Village and West Memphis.
- **UAMS North Central Regional Campus.** The UAMS North Central Regional Campus focuses on wellness and prevention strategies for area residents and the education of health care professionals. The 14,000 sq. ft. UAMS North Central Family Medical Center (NCFMC) in Batesville, Arkansas, provides primary care to

- patients of all ages across eleven counties in the northcentral portion of the state, covering approximately 7,400 square miles. Counties served by the Center include Baxter, Cleburne, Fulton, Independence, Izard, Marion, Searcy, Sharp, Stone, Van Buren, and White. The NCFMC is affiliated with White River Medical Center and UAMS and its clinics.

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- **UAMS Northeast Regional Campus.** The UAMS Northeast Regional Campus (NRC) provides family medicine patient services, public outreach, and medical education. The NRC provides primary care to patients of all ages across ten counties in the northeastern portion of the state, covering approximately 6,725 square miles. Counties served by the Center include Clay, Craighead, Cross, Greene, Jackson, Lawrence, Mississippi, Poinsett, Randolph, and Woodruff. The 36,600 sq. ft. medical center offers treatment for acute and chronic medical conditions, pediatric and senior health care, and gynecology and obstetrics services. Additionally, the family clinic provides on-site diagnostic and support services as well as routine adult and pediatric immunizations. The NRC is affiliated with two local medical centers, St. Bernard's Medical Center and Northeast Arkansas Baptist Medical Center, as well as UAMS and its clinics. Located in Northeastern Arkansas, Jonesboro is the fifth-largest city in the state and approximately 130 miles from Little Rock.
- **UAMS Northwest Regional Campus.** In 2007, UAMS established UAMS Northwest (UAMS-NW) as a regional campus in Fayetteville. UAMS-NW extends UAMS's medical education, research, and clinical mission. The campus is in a region with a large Hispanic/Latino population and the fastest growing Pacific Islander population in the continental U.S. The campus provides more than 330,000 square feet of classroom and office space, including 23 group education rooms, two large conference rooms that accommodate more than 200 people, and a 2,200 square-foot library and computer lab staffed by two dedicated research librarians. UAMS-NW offers academic programs through 4 UAMS colleges: the College of Nursing (CON), COPH Public, COM, and COP. Both the main campus and the northwest campus have the same DUNs number, and both sites operate under a Federal Wide Assurance of the protection of human subjects and comply with 45 CFR part 46 and other NIH human subjects' related policies.
- **UAMS South Regional Campus.** The UAMS South Regional Campus (SRC) features the Family Medical Center in Magnolia provides patient care for the entire family across seven counties, covering more than 5,400 square miles. Counties served include Ashley, Bradley, Calhoun, Columbia, Dallas, Ouachita, and Union. The 21,350 sq. ft. medical center offers treatment for acute and chronic medical conditions, pediatric and senior health care, women's health services, and immunizations for all ages. The SRC also hosts rotations, providing hands-on clinical training for nursing students. Established in 1974, the Carroll Medical Library houses a core collection of textbooks, journals, and audiovisual materials. The library provides easy access to numerous resources for the SRC faculty, residents, staff, and students as well as area health care professionals. The library works in partnership with the UAMS Library and the six other Arkansas Regional Center Libraries. A variety of services are provided including mediated literature searches for health care professionals, reference services, interlibrary loan services, database training, library tours, and materials for patient education.

- **UAMS South Central Regional Campus.** The UAMS South Central Regional Campus in Pine Bluff, Arkansas, serves patients in the mid-south region of Arkansas across eleven counties, covering approximately 8,100 square miles. Counties served include Arkansas, Drew, Cleveland, Garland, Grant, Hot Spring, Jefferson, Lincoln, Lonoke, Prairie, and Saline. The South Central Family Medicine Residency Program (SCFMRP) is the oldest in the UAMS Regional Campuses System and is committed to fulfilling the need for primary care physicians trained to practice in any setting, but particularly rural communities in Arkansas. Our program is the ideal setting for residents who desire broad-based, patient-centered training in an ambulatory, inpatient, and emergency setting. The SCFMRP is ACGME-accredited. program's sponsoring institution is Jefferson Regional Medical Center, a 375-bed tertiary care facility offering a broad range of services and specialties. The campus also offers rotations through the UAMS' COM and CON to junior and senior medical students, pharmacy students, nursing, PA students, and advanced nursing students, among others. Online access is available to all journals from the UAMS Library. In addition, we have outstanding programs in pre-health recruitment, community and regional outreach, community education, and telemedicine. The 32,500 sq. ft. UAMS Health – Family Medical Center in Pine Bluff (FMCPB) provides primary care medical services to patients of all ages, including diagnostic and support services, in-house testing, and preventive care. Providers at the FMCPB are also able to perform minor, in-office surgical procedures.
- **UAMS Southwest Regional Campus.** The UAMS Southwest Regional Campus is comprised of the UAMS Health – Family Medical Center in Texarkana (FMCT) and the All for Kids Pediatric Clinic. Health care professionals provide primary medical services to patients of all ages across nine counties in southwestern portion of the state, covering more than 5,780 square miles. Counties served by the Center include Clark, Hempstead, Howard, Lafayette, Little River, Miller, Nevada, Pike, and Sevier counties. The FMCT covers all stages of life from pediatric conditions to senior health care as well as gynecology and obstetrics services. The clinic provides convenient diagnostic and support services on-site and manages routine adult and pediatric immunizations and physicals. The FMCT is affiliated with two local hospitals, CHRISTUS St. Michael Health Systems and Wadley Regional Medical Center. The clinic is also connected to the Schmieding Center for Senior Health and Education and UAMS. Texarkana is approximately 144 miles from Little Rock.
- **UAMS West Regional Campus.** The UAMS West Regional Campus, built around the Family Medical Center in Fort Smith (FMCFS), provides primary care medical services to patients of all ages across 13 counties, covering more than 9,400 square miles. Counties served include Conway, Crawford, Faulkner, Franklin, Johnson, Logan, Montgomery, Perry, Polk, Pope, Scott, Sebastian, and Yell. The 30,000 sq. ft. medical center offers treatment for acute and chronic medical conditions, pediatric and senior health care, annual physical and wellness visits, women's health and maternity care services, and immunizations for all ages. The FMCFS also provides cancer screenings from colonoscopies for colon cancer and cervical cancer. In-house laboratory and digital X-ray services are available as well. The FMCFS is affiliated with Baptist Health – Fort Smith. The 492-bed hospital offers providers who specialize in areas such as cardiology, cardiovascular and thoracic surgery, interventional radiology and stroke care, orthopedics, general and trauma surgery, labor and delivery, and pediatrics. The UAMS West Regional Campus Family Medical Residency Program provides full-scope training in a community-based, unopposed setting. Extra training is available in maternity care as well as inpatient and outpatient procedures.

NIH National Institute of General Medical Sciences-Funded Institutional Development Award Programs

The National Institute of General Medical Sciences (NIGMS) is home to the Institutional Development Award (IDeA), a congressionally mandated program that builds research capacity in states that historically have had low levels of NIH funding. It supports competitive basic, clinical, and translational research, faculty development, and infrastructure improvements. The program aims to strengthen an institution's ability to support biomedical research, enhance the competitiveness of investigators in securing research funding, and enable clinical and translational research that addresses the needs of medically underserved communities.

- **Arkansas INBRE (P20GM103429).** Led by Larry Cornett, PhD, PI, two institutions, UAMS and the University of Arkansas, Fayetteville, provide scientific leadership for the Arkansas IDeA Network for Biomedical Research Excellence (INBRE). The Arkansas INBRE builds on the successful NIH-funded Arkansas Biomedical Research Infrastructure Network program, established in 2001, that created a statewide network of Arkansas institutions of higher education and established a statewide infrastructure to support building biomedical research capacity in Arkansas. The Arkansas INBRE expands and strengthens this infrastructure

by developing the multidisciplinary research network united by the scientific theme of Cellular Signaling, Growth and Differentiation. Arkansas INBRE's goals also include: increasing the biomedical research base in Arkansas by providing research support to partner undergraduate institutions; offering mentored research opportunities for faculty and undergraduate students; enhancing the science and technology base of Arkansas's future workforce by developing a cadre of trained scientists, especially those with expertise in biomedical research and bioinformatics; and providing resources to stimulate growth of biotechnology industries in Arkansas.

- **Phase I COBRE Center for Molecular Interactions in Cancer (P20GM152281). Robert Eoff, PhD (CB),** is the PI of the Center for Molecular Interactions in Cancer (CMIC), which aims to study the molecular features and functional properties of biomolecules that drive cancer. The CMIC's unifying research theme is the coupling of structural biology and high-resolution imaging with precise, quantitative analysis of biochemical and cellular processes to understand how molecular interactions govern the initiation, progression, and treatment of cancer. The CMIC joins strengths in basic science research with clinical perspectives on important questions in cancer biology to create a multidisciplinary research environment that synergizes with the mission of the WPRCI. The CMIC's short-term objective is to create a thematic center in which researchers study cancer's biomolecular structure and function through clinically relevant disease models. Its long-term goal is to leverage faculty mentoring, strategic recruitment, and innovative core resources to develop a critical mass of investigators that support a self-sustaining center in which research advances our knowledge of cancer through precise and comprehensive analyses of molecular events that impact malignant pathogenesis.
- **Phase III COBRE Center for Studies of Host Response to Cancer Therapy (P30GM159561). Marjan Boerma, PhD (CT),** is the PI of the Center for Studies of Host Response to Cancer Therapy, which aims to examine the effects of cancer therapy on normal (non-tumor) tissues. The number of cancer survivors is increasing rapidly and currently exceeds 18 million in the U.S. Many cancer survivors are cured of their malignancy but suffer from treatment-related toxicities. While the importance of achieving cancer cure is duly recognized, comparatively little effort has been directed toward developing effective interventions to prevent them. The COBRE Center for Studies of Host Response to Cancer Therapy fills this critical gap by focusing research efforts on the biological mechanisms by which cancer therapy affects normal tissues, with the long-term goal of identifying strategies to predict and treat these side effects and make cancer therapies safer and more effective.
- **Phase II COBRE Center for Childhood Obesity Prevention (P20GM109096).** Elisabet Borsheim, PhD, is the PI of this Phase II COBRE, whose goal is to further develop an integrated, multidisciplinary, and translational Center for Childhood Obesity Prevention (CCOP) that will be sustained within the Arkansas Children's Research Institute. Childhood obesity is a national public health threat that is disproportionately worse in Arkansas. The CCOP tackles this problem by supporting emerging scientists whose collaborative work elucidates causes of obesity and tests interventions to prevent obesity and its worsening. The CCOP is a broad-based, multidisciplinary disease-prevention center, rooted in a team science approach, projects span the full translational continuum, bringing together research in complex disease origins, epidemiology, and social systems. This Phase II center further enhances the research infrastructure and faculty development program established in Phase I while ensuring long-term sustainability for the CCOP.
- **Phase II COBRE Center for Musculoskeletal Disease Research (P20GM125503). Charles O'Brien, PhD,** is the PI of the Center for Musculoskeletal Disease Research (CMDR). The CMDR was established at UAMS during Phase I to better understand the causes of conditions that negatively affect the musculoskeletal system. During Phase II, CMDR will continue to support emerging scientists by providing structured mentoring, financial resources, and collaboration with other CMDR investigators and continue to strengthen UAMS's biomedical research infrastructure by increasing the capabilities and utilization of CMDR's four research cores that provide access to rapid, high-quality services and that develop new approaches, such as CRISPR interference for in vivo loss-of-function studies.
- **Phase II COBRE Center for Translational Pediatric Research (P20GM121293). Alan Tackett, PhD,** is the PI of the Center for Translational Pediatric Research (CTPR) that was established in 2017. CTPR uses proteogenomic approaches to identify epigenomic mechanisms and therapeutic targets in diseases, including cancer, impacting or translatable to the pediatric population. The theme of research among CTPR members is utilizing systems biology approaches and sophisticated bioinformatics for studying disease mechanisms. Building on the momentum of Phase I, the overarching goal in Phase II is to further enhance

institutional research infrastructure by (1) developing the multidisciplinary, thematic research center through strategic expansion of the critical mass of investigators, (2) investing into research infrastructure, and (3) implementing a plan for long-term center sustainability. Systems biology is an integrated approach examining all events within cells, tissues, and organisms that lead to a particular outcome. By applying a systems biology approach to the study of pediatric diseases, the CTPR hopes to expand existing knowledge of pediatric disease development and contribute to new therapeutic targets.

- **Phase III COBRE Center for Microbial Pathogenesis and Host Inflammatory Responses (P30GM145393).** Mark Smeltzer, PhD, is the PI of the Center for Microbial Pathogenesis and Host Inflammatory Responses (CMPHIR) that was established at UAMS in 2012. The underlying scientific theme is that addressing existing and emerging problems in infectious disease in a clinically relevant fashion will require an understanding of both the pathogens and how they impact the host immunological and inflammatory response. This theme is based on the premise that understanding the complex interplay between diverse pathogens and their common human host is a prerequisite to maximizing opportunities to manipulate one or both sides of this equation in favor of the desired prophylactic and/or therapeutic outcome. In Phases I and II, CMPHIR assembled a critical mass of investigators around this scientific theme and provided them with the administrative and technical resources they needed to establish successful scientific careers. In Phase III, CMPHIR will refine and expand on these efforts with the overall goal of establishing a self-sustaining Center of Biomedical Research Excellence that focuses on infectious diseases in a comprehensive and clinically relevant fashion.

UAMS Research Core/Shared Facilities

UAMS supports a wide range of core facilities and shared resources designed to advance basic, clinical, and translational research. Core facilities are pay-per-use research laboratories or analytical services that provide investigators access to technologies and services not available in their own laboratories. The Division of Research and Innovation, College of Pharmacy, and COM direct the following cores and facilities.

- **Bioanalytical Core.** The Bioanalytical Core provides analytical services for the detection and quantification of small molecules, metabolites, chemical compounds, heavy metals, and trace elements in various sample matrixes. Services include project consultation, method development and protocol testing, sample preparation for data acquisition, and initial and final data processing. Core equipment includes an Agilent Ultivo triple quadrupole mass spectrometer coupled with Agilent Infinity II 1260 ultra-high-performance liquid chromatography (UHPLC); a Waters Photo Diode Array (PDA)/Quadrupole Dalton (QDa) mass selective detector (MSD) mass spectrometer coupled with Waters Acquity high-performance liquid chromatography (HPLC); a Waters Micromass Premier quadrupole – time of flight (Q-ToF) high-resolution mass spectrometer coupled with Waters Acquity HPLC; Agilent 7890A gas chromatography coupled to an Agilent 5975C inert XL single quadrupole/MSD (triple-axis detector) with Agilent 7693 autosampler; and a Thermo Fisher Scientific iCAP RQ inductively coupled plasma mass spectrometer (ICP-MS) coupled with an ESI AutoSampler 4DX for accurate and precise sampling, high sample throughput, and automated and customizable rinse configurations. In addition, the ICP-MS includes an optional Thermo Fisher Scientific Vanquish Flex UHPLC for heavy metal speciation analyses. All systems are supported by their own uninterruptible power supply and connected to either a Peak Nitrogen Generator or a liquid argon tank; and all the mass spectrometers and nitrogen generators are under annual full-service contracts. The Bioanalytical Core is also equipped with a Precellys Evo Touch and Cryolys Evolution Tissue Homogenizer; a CEM MARS6 Microwave Digestion System; a Thermo Fisher Scientific SpeedVac; a Mettler Toledo Precision Balance; a Promega Maxwell DNA extraction system; 4°C, -20°C, or -80°C fridges and freezers; and other small laboratory equipment. **Ping-Ching Hsu, PhD (CPPS)**, serves as the Director of the Bioanalytical Core.
- **Bioinformatics Collaborative Resource Center.** The Bioinformatics Collaborative Resource Center (BCRC) provides bioinformatics expertise and collaboration beyond what is offered by existing cores on campus. The BCRC offers matchmaking with bioinformatics experts for research projects, particularly for omics data analysis (assistance with genomics, transcriptomics, epigenomics, proteomics, and metabolomics pipelines) and computational biology (support for statistical modeling, machine learning, and integrative multi-omics analysis). The BCRC is led by Co-Directors Michael Bauer, PhD, and Yasir Rahmatallah, PhD.
- **Bone Imaging Core.** The Bone Imaging Core provides high-quality imaging services to support comprehensive and integrated analysis of the musculoskeletal system at the molecular, cellular, tissue, and

organismal levels. The Bone Imaging Core enables users to gather data from in vivo tissue imaging for longitudinal analysis of animal models and terminal imaging assessments of the skeleton (e.g., histomorphometry). This Core also provides services to analyze both murine and human skeletal tissue and offers additional services, such as protocol development, data analysis, and training in imaging and data analysis. Core equipment includes two Inaalyzer2 Dual X-ray Absorptiometry (DXA) scanners that enable in vivo and ex vivo quantification of bone mineral density and body composition; two vivaCT 80 microCTs and two 45CT microCTs that enable quantification of bone mass and bone microarchitecture, determination of adiposity, and muscle cross-sectional area; three computer stations that enable remote access and analysis of microCT imaging data; two IVIS Lumina XRMS which enable the quantification of fluorescence and bioluminescence from live mice or excised tissues, as well as cell and organ cultures; and two Zeiss Axiolmager M2 Motorized Upright Microscopes featuring motorized stages and integrated Olympus cameras, large monitors, and Osteometrics software systems. These systems enable the quantification of dynamic and static parameters using histological sections. **Jesús Delgado-Calle, PhD (CB)**, serves as Director of the Bone Imaging Core.

- **Brain Imaging Research Center.** The UAMS Brain Imaging Research Center (BIRC) is a dedicated human neuroimaging research resource within the Psychiatric Research Institute (PRI). The BIRC (3,764 sq. ft.) consists of three contiguous functional spaces on the ground floor of the PRI. The center is run by Andrew James, PhD.

MRI Scanner Suite. The 1,231 sq. ft. scanner space houses a scanner room, control room, equipment room, and patient changing room. The BIRC scanner room has three custom wave guides, in addition to the primary penetration panel, to permit the MR-shielded and non-ferromagnetic application of visual stimulus projection, psychophysiological monitoring, and response acquisition devices.

- *Waiting room with HEALthy Brain and Child Development Study Nursery.* The MRI Scanner also includes a small waiting room, restroom, and janitorial facilities. As a study site in the national HEALthy Brain and Child Development Study, the BIRC also offers a nursery for infant participants and their caregivers.

Image Processing and Analysis Lab. The 997 sq. ft. Image Processing and Analysis Lab (IPAL) houses three offices for faculty and senior staff, a large common room with a brainstorming area outfitted with white boards, eight workstations, a secure file-storage room, and a restroom. The IPAL extends its computational powers to cloud-based facilities to maximize numeric power for large data computations, statistics, and advanced MRI processing.

MRI Stability Program. The BIRC's Prisma Stability Program is designed to ensure excellence in MRI brain mapping research. The brain image data quality assurance (BID QA) program's main purpose is to ensure maximum data quality for quantitative magnetic resonance research in the 3T Magnetom Siemens Prisma scanner. The program encompasses daily and weekly quality checks that allows all BIRC data to meet safety, image quality, and temporal stability standards equivalent to or better than those recommended by the International Society for Magnetic Resonance in Medicine, the American Association of Physicists in Medicine, the American College of Radiology, and the special considerations cited by the Organization for Human Brain Mapping.

Child Brain Imaging Program. The new Child Brain Imaging Program employs functional near-infrared spectroscopy (fNIRS), which is a wearable, noninvasive technology ideal for children ages 3-12 years who may have difficulty tolerating an MRI scan. This 838 sq. ft. space houses an activity room allowing free play, testing, or parent-child therapy; an adjacent observation room with a one-way mirror for monitoring participant behavior; a restroom; and storage space.

- **Comprehensive Informatics Resource Core.** The Comprehensive Informatics Resource Core, operated through the Translational Research Institute (TRI), provides researchers with the tools, expertise, and procedures for clinical and translational research through partnerships with the Department of Biomedical Informatics in the UAMS COM; TRI's Biostatistics, Epidemiology and Research Design service; Arkansas Children's Hospital; the Central Arkansas Veterans Healthcare System; and the Arkansas Department of Health. The Core offers a broad range of services, including biomedical informatics consultation, survey and data collection form development, artificial intelligence consultation, Arkansas Clinical Data Repository data queries, research images and multimedia data collection and management, data management and sharing

plan support, investigator-initiated clinical trial data capture and management services, population databases access and analysis, as well as EPIC Cosmos access. This core is run by **Fred Prior, PhD (CT)**.

- **Digital Microscopy Core.** The Digital Microscopy Core (DMC) operates and maintains computer-controlled microscope workstations ranging from light to electron microscopy that allows for samples to be viewed at various scales of resolution (microns to nanometers). Equipment supports static and time-lapse imaging of living cells. The DMC also generates fluorescence imaging and multicolor images from fixed and living samples. Because the DMC is equipped with a 2-photon microscope, investigators can readily image samples of multiple hundreds of microns in thickness, e.g., organoids, an increasingly popular cancer research model. For electron microscopy, DMC often provides sample preparation advice, sectioning, and full imaging support. Additionally, a data analysis workstation is available for use. DMC's equipment includes a Zeiss AxioImager upright, light microscope that is equipped with color and black and white cameras used for imaging slides; a Zeiss AxioObserver Z1 inverted microscope used for imaging tissue culture cells; a Zeiss LSM 880 Airyscan confocal microscope for "haze busting" and improved resolution; a Zeiss ELYRA S1 super-resolution microscope that supports 3D-structured illumination microscopy and PALM/dSTORM microscopy; a Bruker 2-photon microscope for thick samples; an FEI Tecnai F20 200 keV Transmission Electron Microscope with a cryo-chamber for single particle protein work and an automated stage for tilt series electron tomography and montaging; a Leica EMPACT2/AFS2 high pressure freezer for high-quality electron microscopy sample preparation; a Leica Ultracut 7 Microtome with a Cryo-attachment for electron microscopy; and an FEI Vitrobot for plunge-freezing samples for cryo-microscopy and single particle analysis. Vladimir Lupashin, PhD, serves as Director of this Core.
- **DNA Damage and Toxicology Core.** The DNA Damage and Toxicology Core provides services and instrumentation for DNA damage and toxicology studies related to toxic or hypoxic animal/organ/tissue/cell injury in drug development, diseases, and aging. DDT offers standard assays for organ toxicity in animals (BUN, SCr, ALT, AST, etc.), tissues (TUNEL, immunohistochemistry), and cells lactate dehydrogenase (LDH) release, MTT, and Comet assays). The Core also assists investigators in measuring oxidative damage (catalytic Fe, 8OHdF, SOD1, SOD2, HO1, OGG1, etc.) and quantifying apoptosis and necrosis in cells and tissues by using quantitative cytochemistry, immunocytochemistry techniques, and 3D imaging. Slidebook 6.2 Software is used for image capturing and analysis. The Core's equipment includes a VetScan Vs2 utilizing the comprehensive diagnostic kit, an Olympus IX-81 microscope equipped with a Hamatsu ORCA-ER digital camera, and a plate reader for 96-well plates. Alexei G. Basnakian, MD, PhD, DSc, serves as Director of this Core.
- **DNA and Next Generation Sequencing Core.** The DNA Sequencing Core offers Sanger and next generation DNA sequencing support to researchers. The Core's equipment includes an Illumina 3500 xL Genetic Analyzer and associated equipment, an Agilent TapeStation 4150 for RNA and DNA quality analyses, and a Covaris ME220 for genomics and proteomics applications requiring focused-ultrasonication. Additionally, the Core has an Illumina NextSeq 2000 to provide next generation DNA/RNA sequencing capabilities that will meet both prokaryotic- and eukaryotic-based needs, as well as a Chromium iX from 10X Genomics for single-cell sorting analyses. Jon S. Blevins, PhD, serves as Director of this Core.
- **Experimental Cytogenetics Core.** The Experimental Cytogenetics Core offers a variety of conventional and cutting-edge molecular cytogenetic services, such as analysis of chromosomal aberrations by solid staining or G-banding, locus-specific fluorescence in situ hybridization, including probes for human telomeres, whole chromosome paint for individual chromosomes, and spectral karyotyping (SKY) in cells from human and research animal sources. Other services include chromosome copy number enumeration and assistance in design and development of cytogenetic assays. This Core's equipment includes a high-resolution fluorescent and light photomicroscopes, and a SKY Applied Spectral Imaging System with a GenASIS™ System. Rupak Pathak, PhD, serves as Director of this Core.
- **Flow Cytometry Core.** This Flow Cytometry Core (FCC) provides expert, high-quality flow cytometry analysis for investigators at UAMS and surrounding campuses. FCC offers analysis of samples by traditional flow cytometry, full spectrum flow cytometry, sterile cell sorting, and hematology blood analysis. The Core's equipment includes a BD LSR Fortessa cell analyzer, a BD FACS Symphony one-cell analyzer, a BD FACS Celesta cell analyzer, a BD FACS Aria III cell sorter, a Cytex Northern Lights 3000 Full Spectrum cytometer, a Cytex Aurora cell sorter, a Hematology Analyzer-VETSCAN HM5, Miltenyi autoMACs cell separator, and other general lab equipment. Jason Stumhofer, PhD serves as Director for this Core.

- **Genetic Models Core.** The Genetic Models Core offers state-of-the-art services to create genetically modified mice through the utilization of the CRISPR-Cas9 genome editing system in a dedicated lab space that houses a microinjection suit, cryopreservation lab, and isolator rack animal ward. The Core also provides maintenance services, including sperm cryopreservation, in vitro fertilization, and strain rederivation. This expansion of services establishes a Genetic Models Core that meets the needs of the COBRE Project Leaders and provides new innovative services to the research communities at UAMS, Arkansas Children's Research Institute, CAVHS, and across Arkansas. **Charles O'Brien, PhD (CB)**, serves as Director of this Core.
- **Histology, Biomechanics, and Human Tissue Core.** The goal of the Histology, Biomechanics, and Human Tissue Core (HBHT) is to provide services for the characterization of tissue and cellular changes that underline the pathological mechanisms of skeletal diseases in both mice and humans. HBHT provides high-quality and reliable histology services including plastics, paraffin, and frozen sectioning of hard tissues, comprehensive in vivo and ex vivo biomechanical testing to quantify the mechano-responsiveness, quality, and strength of the skeleton under physiological and pathological conditions, banking services, and access to human tissue samples from hip replacement surgeries and bone marrow cells with their associated clinical data from patients with various conditions. The Core's instrumentation includes paraffin embedding stations, Empredia HM355S Microtomes, Leica CM3050S Cryostats, a Precision Diamond Wire Saw, Buehler IsoMet low speed saws, and ElectroForce 5500 mechanical testing machines. Jinhu Xiong, MD, PhD, and Elena Ambrogini, MD, PhD, serve as Directors of this Core.
- **Molecular Biology Core.** The Molecular Biology Core provides technological assets required for researchers to accomplish their experimental objective. The Core's equipment includes the following instrumentation: a tissue homogenizer and associated Miltenyi Biotec autoMACS Pro Separator, which together enable antibody-based capture of specific underrepresented subpopulations of mammalian cells that contribute to the host immunological and inflammatory responses; a BMG Labtech FLUOstar Omega microtiter plate reader, which can collect data from eight channels simultaneously; a BioTek Synergy H1 Hybrid Multi-Mode plate reader; three Thermo Fisher Scientific QuantStudio6 Pro 96- and 384-well real-time PCR systems; a Bio-Rad QX700 digital droplet PCR system; four Bio-Rad ChemiDoc MP image capture and analysis systems, which in addition to increasing throughput, add specific capabilities to the Core, most notably the ability to quantitatively image alternative fluorescent substrates; and two FlowJo workstations for the analysis of flow cytometry data. Lastly, an ÄKTA pure 25 fast protein liquid chromatography purification system and dedicated support are available. Jon Blevins, PhD, is the contact person for this Core.
- **Ultrasound Imaging Core.** This Ultrasound Imaging Core provides noninvasive in vivo ultrasound imaging of organs, tissues, and tumors in small animal models. Ultrasound imaging services include noninvasive assessment (including M-mode, Doppler imaging, and strain analysis) of heart function, blood flow parameters in the vascular system, the visualization of other internal organs, as well as tumor visualization and tumor size in lightly anesthetized small animals. 2- and 3-dimension imaging can be captured. Additionally, B-mode imaging can be used for image-guided injections. Core equipment includes a Vevo 3100, a FUJIFILM Visual Sonics that incorporates solid-state array transducers designed for high-resolution and high frame rate ultrasound, and a Vevo LAB analysis software for standalone ultrasound analysis workstations. **Marjan Boerma, PhD (CT)** serves as the Director of this Core.

UAMS Research Centers

- **UAMS Center for Implementation Research.** The UAMS Center for Implementation Research (CIR) was created as a joint entity between the UAMS College of Pharmacy and the COM and in partnership with the TRI. The CIR's goals are to 1) develop and test strategies to facilitate uptake and sustained use of evidence-based practices across a wide range of healthcare contexts, 2) support integration of evidence-based practices in community settings and UAMS programs, 3) evaluate the effectiveness of promising practices while preparing for their future implementation by simultaneously documenting barriers and facilitators to implementation, and 4) nurture the development of investigators, residents, and students interested in implementation and implementation science. CIR investigators have created a nationally- and internationally recognized, extramurally funded program with a dual focus on developing generalizable knowledge from research and conducting demonstration projects in high-priority implementation areas. The CIR is grounded in the principles of community-based participatory research. Projects are developed and enacted in partnership with multiple stakeholders, e.g., patients, healthcare practitioners, healthcare managers, payers, and/or policymakers. CIR has developed a strong focus on education, training, and mentoring. In 2022, CIR

began offering a Graduate Certificate in implementation science. Additionally, the CIR supports a two-year, clinician-focused Implementation Science Scholars Program, a short course in qualitative analysis techniques, and a grant writing workshop. Geoffrey Curran, PhD, MA, serves as the Director of CIR.

- **UAMS Center for Research, Health, and Society.** The Center for Research, Health, and Society (CRHS) uses a social justice framework to conduct research, engage communities, establish partnerships, and build a diverse and competent workforce prepared to eliminate disparities in cancer and cardiovascular disease. CRHS' social justice framework helps identify interconnected patterns of systematic disadvantage in the community and in the research ecosystem to inform how the cores, research projects, advisory boards, and broad-based coalition of academic and community partners can work synergistically to accomplish the CRHS goals. The CRHS works with the NIH National Institute on Minority Health and Health Disparities' Multiple Chronic Diseases Research Coordinating Center to leverage and share resources, engage in cutting-edge cross center research, and increase networking and research opportunities for new investigators. The CRHS also leverages multiple federally funded resources, including the Clinical Translational Science Award (CTSA) program and the National Research Mentoring Network, federally funded center grants, and federal surveys to help facilitate research, training, mentoring, dissemination, and translation of research to inform public practice and policy. Linda Luster, MSHS, CGM, serves as the Project Manager.
- **UAMS Center for Study of Obesity.** The Center for Study of Obesity (CSO) in the UAMS College of Public Health performs multifaceted research with emphasis in mechanisms leading to disparities in obesity and obesity-related morbidities; environments and nutrition choices that promote healthy weight; and evidence-based programs, policies, and interventions to prevent excess weight-gain. The CSO's mission is to prevent and reduce obesity through programs that improve public health practice, inform policy, enable healthy lifestyles, and provide unparalleled professional opportunities for scholars working to improve the health of Arkansans. In addition to extramural funding, the CSO's mission is supported through the Governor Sidney S. McMath Endowment. The McMath Woods Law Firm created the CSO to foster and enhance research related to obesity and develop a plan to address Arkansas's major nutrition and diet-related problems. Center grants partially support nine faculty members at UAMS and partner institutions. The CSO is led by **Michael Thomsen, PhD (CPPS)**.
- **UAMS Center for the Study of Tobacco.** The UAMS Center for the Study of Tobacco (CST) serves as a focal point for research, training, and translational activities that aim to address tobacco use, tobacco exposure, and the tobacco-related disease burden in Arkansas communities, the nation, and beyond. The mission of the CST is to engage multiple disciplines in conducting collaborative and innovative research designed to inform public health policies and enhance interventions to reduce tobacco use of any kind. The overarching priorities of the CST are infrastructure development and sustainability; integration and innovation in research; teaching, training, and mentoring future leaders; and translation and dissemination. The CST seeks to fill significant research gaps related to tobacco use and exposure in Arkansas by building constructive collaboration among faculty, students, community partners, and other stakeholders. The CST, in coordination with the WPRCI Office of the Associate Director of Cancer Prevention and Control, oversees the Tobacco Cessation Working Group; serves as a liaison to locate, state, and national advisory boards and professional organizations; and offers courses to train the next generation of tobacco researchers and practitioners. **Pebbles Fagan, PhD, MPH (CPPS)**, serves as the Director of the CST.

UAMS Institutes

In addition to the WPRCI, UAMS is comprised of the following institutes.

- **Donald W. Reynolds Institute on Aging.** The Institute on Aging (IOA) includes state-of-the-art clinical care, innovative translational research, and top-ranked interprofessional biomedical education. The IOA comprises three major clinical programs: the Thomas & Lyon Longevity Clinic, the Walker Memory Center (WMC), and the Geriatric Palliative Care Program. The Longevity Clinic provides complete and customized primary care to patients aged 65 years and older and consists of highly skilled geriatricians, APRNs, physician assistants, pharmacists, dietitians, social workers, and physical and occupational therapists. The WMC serves to address patients' needs and concerns regarding memory, thinking, and behavior. With its state-of-the-art evaluation and intervention services, the WMC is helping patients improve or maintain cognitive and functional abilities and delay functional decline. To help geriatric patients experiencing a serious illness, the Institute's Geriatric Palliative Care Program includes an outpatient clinic and home-based palliative care service; additionally, the program offers consultative services to nursing homes that are affiliated with the

University of Arkansas. The program is the state's only palliative care program and the only entity that offers palliative care fellowships. The Institute's geriatric medicine fellowship program offers three tracks: clinical, clinician-educator, and the Reynolds Scholars fellowship, a two-year program that prepares fellows to conduct independent research in geriatrics. The Institute's outreach efforts have given rise to statewide initiatives such as the UAMS Centers on Aging (COA), a program dedicated to improving health outcomes for older Arkansans through interdisciplinary clinical care and innovative educational programs. The COA network includes eight regional centers across the state. Additionally, with significant federal support, the Institute's Arkansas Geriatric Education Collaborative provides free community and health professional training, and education programs focused on Alzheimer's disease and dementia, opioid education, and chronic pain. The Opioid Prevention for Aging and Longevity Program gives patients and their caregivers an opportunity to learn more about opioid pain medications and the dangers of over-the-counter medications. Additionally, the Longevity Clinic and WMC collaborate with the WPRCI to evaluate the memory and cognition of older adult patients undergoing chemotherapy. Jeanne Y. Wei, MD, PhD, serves as Executive Director and Chair of the IOA.

- **Institute for Community Health Innovation.** The Institute for Community Health Innovation (ICHI) exists to improve Arkansas's state of health through impactful, lasting change in health outcomes, clinical practices, education, and policy. ICHI leads the way in community-engaged research and programs, focusing on innovative approaches, community outreach, and key partnerships across the state. By strategically addressing issues like access to health services by deploying mobile health units to serve all 75 counties in the state with prenatal care and preventive health services and building a Community Health Worker (CHW) team through its CHW Training & Apprenticeship Program, the ICHI has implemented comprehensive, statewide solutions to reduce barriers to health care in the state's most rural communities. ICHI is addressing maternal and child health by bringing innovative maternal care solutions directly to Arkansans through community-based programs such as mobile prenatal care, group prenatal care (also called Centering Pregnancy), home visiting services, and more. Additionally, the ICHI is working with Ujima Maternity Network to train 200 new doulas in the state and has implemented research programs to determine the best way to reach pregnant women where they are. To address diabetes and cardiometabolic diseases, ICHI collaborates with community organizations, faith-based organizations, and communities to improve patient-centered care so all patients can better manage their condition. Through culturally adapted, family-centered approaches to diabetes management, the ICHI has helped thousands of families better manage their conditions. Partnering with community-based organizations and schools throughout Arkansas, and through programs such as the Northwest Arkansas Community of Practice and AmeriCorps VISTA, the Institute is helping families find affordable, nutritious foods through its Health, Hunger and Nutrition Program. A key arm of the ICHI is the Center for Community-Engaged Evaluation, which provides comprehensive evaluation services for community organizations, universities, government agencies, and foundations. The Institute's multidisciplinary and nationally recognized team currently has more than 100 community-engaged partners and 170 team members across the state. **Pearl McElfish, PhD (CPPS)**, serves as the Director of the ICHI.
- **Institute for Digital Health and Innovation.** The Institute for Digital Health and Innovation (IDHI) strives to eliminate health care disparities in Arkansas (AR) and abroad through technology-based innovations that improve access to quality clinical care, education, and research. The Institute's clinical programs include a Correctional Facility Telemedicine Program, HealthNow, a High-Risk Pregnancy Program, a Stroke Program, a Trauma Rehabilitation Resources Program, a Burn Consultation Telemedicine Program, a Trauma Image Repository, a Hand Trauma Telemedicine Program, and the UAMS Physician's Call Center. IDHI's education team develops innovative learning and training opportunities to meet the continuing education needs of busy health care professionals. The Institute hosts face-to-face events, online modules, teleconferences, and offers learning management systems as well as curriculum and module development and digital marketing services. The Institute oversees two educational websites tailored for health care professionals and patients: LearnOnDemand.org and PatientsLearn.org. Additionally, the Health Education for Local Providers program supports the development of integrated health care networks that address the needs and health disparities of rural Delta communities. The Delta Understanding and Preventing Substance and Opioid Abuse in Rurality Program—a partnership between UAMS, Ozarka College, and Winrock International—provides preventive education and opioid recovery resources to young adults in Arkansas's Baxter, Fulton, Izard, Sharp, and Stone counties. IDHI also sponsors public school programs, such as the School Telemedicine in Arkansas for Lessons in Trauma-Informed Education (STARLITE). The STARLITE program is a pilot study that seeks to improve the security of three school districts in Arkansas: Jasper, Lamar, and Magazine by providing

educators, parents, students, and administrators with the tools they need to recognize and respond to violent acts. The South Central Telehealth Resource Center, which is comprised of regional telehealth resource centers in AR, Mississippi, and Tennessee to assist health care organizations, networks, and providers in the implementation of cost-effective telehealth programs to serve rural and medically underserved populations. IDHI guides the development of point-of-care technologies that can aid rural, low-health resource settings and expertise for developing and evaluating these technologies in similar settings within AR and in predominantly rural states across the U.S. Joseph Sanford, MD, serves as the Director of IDHI.

- **Harvey and Bernice Jones Eye Institute.** The Harvey and Bernice Jones Eye Institute (JEI) is one of the nation's twenty free-standing comprehensive eye centers. The Institute's team of ophthalmologists, optometrists, and eye specialists provides complete eye care services. Equipped with the latest technology, the JEI treats conditions such as glaucoma, retina and cornea disorders, and eye injuries. JEI also has an and contact lens fitting specialists. Additionally, the Institute houses their own operating rooms to provide high-quality surgeries, including plastic and reconstructive eyelid surgeries. Along with state-of-the-art equipment and technology, the Institute offers an ophthalmology residency program. All residents receive extensive clinical and surgical training opportunities through partnerships with Arkansas Children's and CAVHS. Additionally, UAMS offers a two-year vitreoretinal and uveitis fellowship which provides clinical exposure at the Institute and Arkansas Children's. Paul H. Phillips, MD, serves as Chair and Director of the JEI.
- **Jackson T. Stephens Spine & Neurosciences Institute.** The Jackson T. Stephens Spine and Neurosciences Institute is the first facility of its kind in Arkansas dedicated to advancing research, education, and clinical care for disorders of the brain, spine, and central and peripheral nervous systems. The Institute is Arkansas's first and only Comprehensive Stroke Center and the state's only multidisciplinary center for movement disorders. The Institute also serves as an adult Level 4 Epilepsy Center, a recognized Partner in Multiple Sclerosis Care by the National Multiple Sclerosis Society, and a leading outpatient institute staffed by a multidisciplinary team of fellowship-trained neurosurgeons, neurologists, and interventional pain physicians. The Institute encompasses thirteen clinical subspecialties, along with the UAMS COM's Departments of Otolaryngology/Head and Neck Surgery, Physical Medicine and Rehabilitation, Neurology and Otolaryngology, and related neuroscience programs. To stay on the forefront of medicine and to produce quality care for patients, the Institute conducts extensive research. The main research arm for the Institute is the Center for Translational Neuroscience which facilitates and integrates research on the translational aspects of neuroscience across UAMS. The Department of Anesthesiology has ongoing research for pain management, drug abuse, pediatric anesthesia, and hyperglycemia while the Department of Otolaryngology's research focuses on deafness, tinnitus, thyroid cancer, allergy, vascular anomalies, and other otolaryngic diseases. T. Glenn Pait, MD, serves as the Director of the Institute.
- **Psychiatric Research Institute.** The Psychiatric Research Institute (PRI) has experience treating all mental health disorders, with a dedicated staff whose primary goal is to help members of the community reach their potential despite any mental health condition they may have. PRI is Arkansas's leader in the research and treatment of psychiatric diseases. The PRI's signature programs include the Helen L. Porter and James T. Dyke BIRC, Center for Addiction Research, Division of Child and Adolescent Psychiatry, Division of Health Services Research, Precision Medicine Program, PRI Trauma Center, and Women's Mental Health Program. Research is an integral part of the evidence-based care provided at PRI. PRI's five research divisions are the Center for Addiction Research, Center for Health Services Research, the Women's Mental Health Program, the Neurodevelopmental Risk and Resilience Program, and the BIRC. These administrative units are part of the UAMS COM. The Center for Addiction Research is at the forefront when it comes to conducting innovative research designed to improve the prevention and treatment of addictive disorders as well as inform local and national policies regarding the antecedents and consequences of addiction. The Center for Health Services Research is one of the largest and most involved centers of its kind in the country, coordinating numerous projects in and around Arkansas. Arkansas's only training center for physicians and researchers interested in reproductive mental health, the Women's Mental Health Program conducts extensive psychological and physical exams in an effort to identify those at risk for numerous medical issues. The Neurodevelopmental Risk and Resilience Program studies how family history and early life experiences influence brain and behavioral development and contribute to the risk for substance abuse and other psychopathologies. The BIRC has distinguished itself as one of the leading resources for neuroscientific study. Laura Dunn, MD, serves as the Director of PRI.

- **Translational Research Institute.** In 2009, the UAMS TRI was established under the National Center for Advancing Translational Sciences CTSA Program (UM1 TR004909; Laura James, MD; PI). UAMS is one of 63 institutions with a CTSA, and TRI serves researchers at UAMS, ACRI, and CAVHS. The overarching mission of the CTSA Consortium is to develop innovative solutions that will improve the efficiency, quality, and impact of the process for turning observations in the laboratory, clinic, and community into interventions that will improve the health of individuals and the public. TRI's mission is to develop new knowledge and approaches that will provide health improvement solutions to help address the numerous and complex health challenges of Arkansas's rural populations. TRI is comprised of integrated cores and programs that work in concert to address barriers to translational research, invest in promising translational scientists, and fund innovative translational science projects. TRI is also continually improving and expanding the research infrastructure by facilitating and promoting research education; fostering collaboration across the five UAMS colleges, the Graduate School, clinical departments, and research divisions; and by increasing the involvement of community partners and citizens. Laura James, MD, serves as the Director of TRI.
 - UAMS Rural Research Network. The UAMS Rural Research Network was established in January 2020 in response to the stark health disparities for rural populations. Forty-two percent of Arkansans live in rural areas compared to just 15% of the U.S. The network comprises rural clinics across the state and is supported by an intra-institutional partnership. TRI's partners are the UAMS Division of Community Health and Research, Regional Campuses, and the WPRCI. The network's mission is to engage rural Arkansans in extensive clinical and translational research led by UAMS researchers.

UAMS Colleges

UAMS has the following six colleges: the College of Medicine, College of Pharmacy, College of Public Health, College of Nursing, College of Health Professions, and the Graduate School.

College of Medicine (COM). As part of the state's only comprehensive academic health center, the UAMS COM comprises 27 departments, eight institutes, and a Northwest Arkansas Regional Campus. COM faculty are on staff at UAMS, ACH, the CAVHS, and Regional Campuses. In addition to its clinical programs, COM has seven basic science departments—Microbiology and Immunology, Biochemistry and Molecular Biology, Neurosciences, Physiology and Cell Biology, and Pharmacology and Toxicology. Each department has an active graduate program supporting doctoral research. COM also supports a cross-department Graduate Program in Interdisciplinary Biomedical Sciences through the Graduate School. Ronald Robertson, MD, serves as the Interim Dean of COM. WPRCI members in the COM reside in the fifteen departments described below.

- **Department of Biochemistry and Molecular Biology.** The Department of Biochemistry and Molecular Biology is a basic science department dedicated to advancing biomedical research, education, and training. The Department's primary objectives are to perform cutting-edge research that expands human health, support the next generation of scientists by providing rigorous training for graduate students and postdoctoral fellows that will allow them to compete for careers in research and teaching, and educate medical students about the relationships between molecules, cells, and human disease. The Department offers graduate degrees through the UAMS Graduate School's Graduate Program in Biomedical Sciences Biochemistry and Molecular Biology Track. It also supports student development through summer research programs, an annual departmental research symposium, a weekly seminar series featuring national and international scientists, and student-led journal clubs. **Kevin Raney, PhD (CB)**, serves as Chair of the Department.
- **Department of Biomedical Informatics.** The Department of Biomedical Informatics (DBMI) provides advanced informatics infrastructure and expertise to support biomedical, clinical, and translational research across the institution. DBMI strives to improve the health of all populations by educating professionals and clinicians in biomedical informatics, promoting, and conducting research that has global impact, and aiding clinicians to improve health care. DBMI offers a Doctor of Philosophy, Master of Science, and a Professional Master's degree and a Graduate Certificate. In 2019, the Department established an Accreditation Council for Graduate Medical Education (ACGME)-accredited Clinical Informatics Fellowship Program, which provides postgraduate training in applying informatics principles to healthcare delivery and clinical decision-making. **Fred Prior, PhD (CT)**, serves as Chair of the Department.
- **Department of Biostatistics.** The Department of Biostatistics is jointly supported by COM and the UAMS College of Public Health. The Department has experienced Master of Science-trained biostatisticians and staff members who support data coordinating activities. The Department's goal is to help improve the quality of research conducted at UAMS by providing expert statistical guidance to clinical, health services, and

biomedical scientists. Faculty and staff collaborative efforts include protocol and grant development, data analysis, and manuscript preparation. Additionally, throughout the year, the Department offers several courses through the College of Public Health and the Graduate School. The College of Public Health also offers a Council on Education for Public Health-accredited Master of Public Health degree with a concentration in biostatistics. Paula Roberson, PhD, serves as Chair of the Department.

- **Department of Family and Preventive Medicine.** The UAMS Department of Family and Preventive Medicine (DFPM) oversees Family Medicine residency programs and teaching centers in thirteen locations across Arkansas. DFPM also includes the Divisions of Community Health and Education (CHE), Medical Student Education, and Research and Evaluation (R&E), as well as the Office of Communication and Departmental Relations. The Department's residency programs have trained thousands of medical students, including through clerkships that are coordinated by the Division of Medical Student Education. The CHE supplies robust, comprehensive training to family medicine providers throughout the state and seeks to improve public health through work with Centers for Disease Control and Prevention grants and other partners. The R&E Division specializes in early childhood development and has many projects that help train childcare providers. Each division plays a valuable role in educating future physicians, current physicians, and other health care professionals in Arkansas and beyond. Shashank Kraleti, MD, FAAFP, serves as Chair of the DFPM.
- **Department of Geriatrics.** The Department of Geriatrics, located within the UAMS Donald W. Reynolds IOA, plays a leading role in advancing clinical care, education, and research dedicated to aging and older adult health. The Department is one of six designated Centers of Excellence on the UAMS campus and is housed in a state-of-the-art facility that includes basic and clinical research, educational programs, primary care and subspecialty clinics, rehabilitation services, and administration, which allows basic and clinical researchers, educators, and clinicians to engage in collaborative activities that further the science of aging through a synergy that is changing the way older Americans live. COM students are required to complete a rotation in geriatrics, and the Department also offers a Geriatrics Fellowship, which has consistently ranked in the top ten percent of programs in U.S. News & World Report's annual list of best graduate schools. Jeanne Y. Wei, MD, PhD, serves as Chair of the Department.
- **Department of Internal Medicine.** The Department of Internal Medicine is one of the largest departments in the UAMS COM. The department houses approximately 150 full-time faculty members, 83 residents, and 79 fellows serving two residency programs and thirteen fellowship programs. Postgraduate medical education includes the Internal Medicine Residency and the combined Medicine/Pediatrics Residency programs. The subspecialty fellowship programs include cardiovascular disease, cardiovascular structural imaging, interventional cardiology, cardiac electrophysiology, endocrinology, gastroenterology/hepatology, hematology/oncology, hospice and palliative medicine, infectious disease, nephrology, pulmonary/critical care, interventional pulmonology, and rheumatology. Many of the Department's faculty lead active research programs spanning from fundamental molecular biology to large-scale population studies on disease patterns. The Department's clinical, educational, and research programs are organized within its twelve academic divisions. Each of the divisions is led by a director who reports to the Department of Internal Medicine Chair. Divisions provide their services at the John L. McClellan Memorial Veterans Hospital, which is connected to UAMS Medical Center by an enclosed sky bridge. Internal Medicine's twelve divisions are: cardiovascular medicine, community health and research, endocrinology and metabolism, gastroenterology and hepatology, general internal medicine, hematology and oncology, hospital medicine, infectious diseases, nephrology, palliative medicine, pulmonary and critical care, and rheumatology and immunology. Jorge Saucedo, MD, MBA, serves as Chair of the Department. WPRCI members reside in the divisions described below.
 - Division of Community Health and Research. The Division of Community Health research focuses on community-based primary and secondary prevention of diabetes and other cardiometabolic disease. Research has included policy, systems, and environmental research that focuses on increasing physical activity and addressing nutrition and healthy food access. Our researchers are national leaders in research and are focused on diabetes prevention and management, health disparities, healthy food systems, healthy environments, and research ethics. The Division of Community Health is home to a nationally renowned Center for Pacific Islander Health, which is the first research center in the nation that focuses solely on Pacific Islander health. The Center for Pacific Islander Health works with Pacific Islander communities across the U.S. and in the U.S.

Affiliated Pacific Islands. Researchers in the Divisions of Community Health are funded by the Centers for Disease Control and Prevention, National Institutes of Health, Patient-Centered Outcomes Research Institute, and other national/international agencies and foundations. The Division is led by **McElfish**.

- Division of Endocrinology and Metabolism. The Division of Endocrinology and Metabolism houses clinical and research faculty, who address the needs of patients with a variety of endocrine and metabolic problems, provide subspecialty training for physicians interested in diabetes, endocrinology, and metabolism, and conduct research in bone and mineral metabolism, osteoporosis, diabetes, obesity, and lipids. The Division's faculty holds clinics providing comprehensive diagnostic evaluation and care for patients with diseases of the endocrine glands (e.g. diabetes, pituitary, thyroid, parathyroid) as well as several other highly specialized endocrine disorders including: metabolic bone diseases, osteoporosis, obesity, and cholesterol/lipid abnormalities; and provides consulting services to other physicians and healthcare providers from UAMS, the state, and the region. The Division of Endocrinology and Metabolism's clinical and research programs are located at both UAMS and the Central Arkansas Veterans Healthcare System. Clinical and basic research are funded through the NIH, VA, private foundations, and corporations. The Division is led by Elena Ambrogini, MD, PhD.
- Division of Hematology and Oncology. The Division of Hematology and Oncology provides diagnosis and therapy for all hematological malignancies and non-neoplastic conditions, such as anemias, coagulation disorders, and white-cell diseases, and includes the state's only stem cell, bone marrow transplant, and cellular therapy program. The Division is organized into three sections: myeloma, hematologic malignancies, and benign hematology. The Division specializes in the treatment of leukemias, lymphomas, and myelodysplastic syndromes. The Division also has multidisciplinary team meetings for stem-cell transplants and malignant hematology, and the team consists of specialists from each discipline, including diagnostic, hematology, pathology, immunology, cellular therapy, radiology, oncology nursing, supportive care, and molecular genetics. Additionally, the team provides diagnosis and therapy for sickle cell disease, hemoglobinopathies, and clotting disorders. The Division's major clinical and laboratory research focus is on B cell neoplasia, especially multiple myeloma, and related disorders. The Division jointly operates a three-year fellowship program that provides broad clinical and research training in hematology and oncology. **Rangaswamy Govindarajan, MD (CT)**, serves as the Chief of the Division of Hematology and Oncology.
- **Department of Microbiology and Immunology**. The Department of Microbiology and Immunology is dedicated to advancing research and education in the study of infectious diseases and immune responses. Faculty investigated a wide range of human pathogens and diseases, including Lyme disease, ovarian cancer, pneumonia, osteomyelitis, leishmaniasis, malaria, poxvirus, and plague. Working collaboratively with students, postdoctoral fellows, and research staff, the department is committed to expanding our understanding of pathogenic mechanisms and developing innovative approaches to combat serious human illnesses. The department supports cutting-edge research through resources such as the Center for Microbial Pathogenesis, the UAMS DNA Sequencing Core Facility, the Flow Cytometry Core Facility, and the Next Generation Sequencing Core. Graduate degrees are pursued through the Microbiology and Immunology Track of the UAMS Graduate Program in Interdisciplinary Biomedical Sciences (GPIBS). The goal of the training is to prepare students for challenging research and/or teaching careers in immunology, microbial pathogenesis, or microbial genetics. Jon Blevins, PhD, serves as Interim Chair of the Department.
- **Department of Neuroscience**. The Department of Neuroscience is a basic science department composed of three divisions: the Division of Clinical Anatomy (DCA), the Division of Translational Neuroscience (DTN), and the Division of Cellular and Molecular Neuroscience (DCMN). The DCA supports the department's educational mission, faculty mentoring, and the development of innovative teaching strategies for medical and graduate education. It also manages the Anatomical Gift Program, a body donation initiative that advances medical teaching and research. The DTN offers infrastructure and systems neuroscience expertise to support both primary and secondary faculty, particularly those involved in human subject research. For faculty focused on cellular, molecular, or combined levels of research, the DCMN provides essential infrastructure and core support. Paul Drew, PhD, serves as Chair for the department.

- **Department of Pathology.** Pathology's clinical footprint includes laboratories serving the integrated clinical enterprise at UAMS and ACH. Members of the John L. McClellan Memorial Veterans' Hospital also hold faculty appointments in the Department. The Department's clinical pathology laboratories include a state-of-the-art molecular pathology section, excellent cytogenetics and microbiology, a continually active transfusion medicine service, and a fully automated section of clinical chemistry. The Anatomic Pathology section boasts a fully subspecialized sign-out system, where each and every case is seen by an expert, specialty trained pathologist, or cytopathologist. Many department pathologists have active second opinion consultation practices, where cases are sent from all over the world for review. Additionally, the Department's Division of Experimental Pathology is a group of physicians and scientists who engage in independent and collaborative research across several areas of interest. Investigators are focused in areas of cancer biology, including tumor vaccine development and tumor-host interactions. The Department hosts two critical core facilities that serve the entire campus, the TBAPS and ExPath. The Department has four ACGME-accredited fellowship programs including hematopathology, cytopathology, forensic pathology, and dermatopathology. In addition, they accept two non-ACGME surgical pathology fellows each year who function as junior attendings with independent experiences in graduated responsibility. Jennifer Laudadio, MD, serves as Chair of the department.
- **Department of Pediatrics.** The Department of Pediatrics is the largest department in the COM and a key partner in the Arkansas Children's system, which includes ACH in Little Rock, Arkansas Children's Northwest, ACRI, and satellite clinics statewide. With over 300 primary faculty across 25 pediatric subspecialty sections, the department provides comprehensive clinical care, medical education, and research in collaboration with more than 500 pediatric specialists system wide. The Department has a unique focus on pediatric care, research, and education across Arkansas Children's and UAMS. The UAMS Pediatric Training Program is a fully accredited, general pediatrics training program located in a free-standing building at ACH. The program provides a solid foundation in general pediatrics with clinical experiences in all pediatric subspecialties, preparing residents to enter any area of pediatrics. The Department's pediatric fellowship program provides excellent educational, clinical and research opportunities for pediatric physicians and includes many specialties such as cardiology, children abuse, allergy and immunology, developmental-behavioral pediatrics, emergency medicine, hematology-oncology, and more. William Steinbach, MD, serves as the Chair of the Department.
- **Department of Pharmacology and Toxicology.** The Department of Pharmacology & Toxicology is a dynamic basic science department committed to excellence in research, education, and graduate training. It offers advanced instruction in pharmacology, toxicology, and experimental therapeutics, along with a graduate track leading to a doctoral degree in Interdisciplinary Biomedical Sciences. The Department plays a critical role in preparing future scientists and health professionals with a solid foundation in basic and translational biomedical research. The Department is nationally recognized for its magnet research areas, which include behavioral and substance abuse pharmacology, cardiovascular and renal pharmacology, drug and cancer toxicology and carcinogenesis, and research into ischemic neurological disorders and retinal injury. The Department is home to the COM's DNA Damage and Toxicology Core, which provides tailored advice, expertise, and facilities to perform DNA damage and toxicology studies. Additionally, the Department hosts a Training in Systems Pharmacology and Toxicology Program funded by NIH's NIGMS that is designed for doctoral students pursuing dissertation research projects in pharmaceutical sciences. Nancy Rusch, PhD, serves as Chair of the Department.
- **Department of Physiology and Cell Biology.** The mission of the Department of Physiology and Cell Biology is to advance scientific knowledge and education in an environment of excellence and integrity. Trainees in the Department develop a mechanistic understanding of the complexity of physiological systems at the molecular, cellular, and organ levels. Areas of research include cancer biology, cardiometabolic system, endocrinology, membrane trafficking, musculoskeletal biology, neurobiology, and platelet biology. The Cell Biology and Physiology (CBP) Track is under the UAMS Graduate School's Graduate Program in Biomedical Sciences. The CBP track provides a broad, interdisciplinary training in the fundamentals of cell function, cell signaling, molecular biology of the cell, systems biology (cell, tissue, and organismal levels), cell physiology and pathophysiology, utilizing state-of-the art OMICS tools. **Teresita Bellido, PhD (CB),** serves as Chair of the Department.
- **Department of Radiation Oncology.** The Department of Radiation Oncology delivers world-class expertise in radiation oncology treatments for cancer patients in Arkansas and surrounding areas. The Department

provides radiation-therapy services to patients at UAMS, ACH, and the John L. McClellan Memorial Veterans' Hospital. The Radiation Oncology Center is equipped with the most comprehensive radiation-therapy technologies to provide precise, personalized cancer care managed by a team of the nation's leading experts with disease specific expertise. Training programs within the Department include a residency in Medical Physics, which enables UAMS to train new scientists in the latest and most modern techniques in the fight against cancer. **Xia** serves as Chair of the Department and contributes to the WPRCI's multidisciplinary approach to cancer treatment.

- **Department of Radiology.** The Department of Radiology comprises the Divisions of Interventional Neuroradiology, Interventional Radiology, and Pediatric Radiology. Department radiologists provide the most modern diagnostic imaging and interventional therapeutic services comprehensive imaging services with the mission to improve health and patient care across Arkansas. The Department supports inpatients at UAMS, ACH, and the John L. McClellan Memorial Veterans' Hospital, while also offering extensive outpatient services. The Department supports Arkansas's only adult and pediatric Level 1 Trauma Centers. The Department offers ACGME-accredited residency programs in diagnostic radiology and nuclear medicine as well as interventional radiology. The Department also offers subspecialty fellowship training in musculoskeletal, body MRI, and cardiac imaging, breast imaging, neuroradiology, and pediatric radiology. **Sanjaya Viswamitra, MD**, serves as Chair of the Department.
- **Department of Urology.** The Department of Urology trains specialists who can successfully treat a wide range of urologic conditions, from urinary incontinence to cancer, through comprehensive residency and fellowship programs while providing expert evaluation and treatment for diseases and anomalies of the genitourinary system. Faculty specialize in urinary incontinence, male sexual dysfunction (impotency), male infertility and vasectomies, reconstructive urology, stone diseases, urinary infections, geriatric urology, cancers of the kidney, bladder, prostate, and testes, laparoscopic and endourologic surgery, and pediatric urology. The Department comprises the Urology Clinic to serve patients with common conditions and those with conditions too difficult to be treated anywhere else. and the Uro-Oncology Clinic. The UAMS Urology Residency Training Program is an ACGME-accredited five-year categorical residency program. The three training sites of the program are the UAMS Medical Center, John L. McClellan Memorial Veterans' Hospital, and ACH. Members of the teaching faculty are actively involved at each teaching site and provide omnipresent direct supervision to residents. Extensive outpatient, inpatient, and operative experiences are achieved through rotations throughout the three training sites. **Timothy Langford, MD**, serves as Chair of the Department.

College of Pharmacy. The UAMS COP comprises the Departments of Pharmacy Practice (DPP) and Pharmaceutical Sciences (DPS). The DPP includes the Division of Pharmaceutical Evaluation and Policy along with a pharmacy practice program at the Northwest Regional Campus. The DPS includes the Division of Radiation Health. COP, in collaboration with the Graduate School, offers a flexible master's and doctoral degree and Doctor of Pharmacy/Doctor of Philosophy degree program. Additionally, COP researchers partner with the NIH, American Cancer Society, Department of Defense, National Aeronautics, and Space Administration, and other national and international agencies and foundations to advance biomedical research into drug development, benefits and risks of dietary supplements, the treatment and side effects of cancer, and more. The COP received the Academia-Community Transformation Community Pharmacy Center of Excellence designation from the American Association of Colleges of Pharmacy in August 2024. This five-year designation recognizes the college's commitment to advancing community pharmacy practice through education, service, and leadership. **Cindy Stowe, PharmD, BS**, serves as Dean of the COP.

- **Department of Pharmacy Practice.** The Department of Pharmacy Practice is committed to serving as a Center of Excellence in pharmacy education, clinical practice, research, and service—advancing the profession of pharmacy while contributing meaningfully to the health and well-being of the Arkansans and society at large. To achieve this mission, the department uses innovative methods and technologies to educate and promote lifelong learning among pharmacy students, pharmacists, and other healthcare professionals. It also advances pharmacy through excellent postgraduate and graduate pharmacy education that prepares students to contribute to the improvement of health and wellness. Faculty develop, implement, and evaluate evidence-based, innovative interprofessional clinical practice to optimize patient therapy in a variety of patient care settings. The department also disseminates nationally and internationally recognized research in multiple areas, including: (1) the effective, safe, and economical use of medications with the intent of improving their rational use in patients and society; (2) the development and assessment of innovative

teaching and learning methods, and (3) the development, testing, and implementation of innovative pharmacy services. The department is home to 70 faculty members and hosts a residency program and a PharmD program, as well as a Pharmaceutical Evaluation and Policy track. The department also collaborates with the UAMS Northwest Regional Campus and the Center for Implementation Research. Amy Franks, PharmD, serves as Chair of the Department.

- **Department of Pharmaceutical Sciences.** The DPS is in a state of rapid growth and advancement. The mission of the DPS is to perform innovative research in areas of medicinal chemistry, pharmaceuticals, natural compounds, and the radiation sciences to provide outstanding graduate training leading to an MS, PhD, or PharmD/PhD, and to provide pharmacy students with the basic skills and knowledge they need to become strong and compassionate pharmacists. Departmental faculty, research and administrative staff, and graduate students contribute to research, education, service, and community engagement through a collaborative spirit. The department also houses the Division of Radiation Health. Its main mission is to understand how ionizing radiation affects normal (non-cancer) tissues and to identify new interventions that can prevent or reduce normal tissue radiation injuries. The Division of Radiation Health is also central to the COBRE Center for Studies of Host Response to Cancer Therapy that investigates biological mechanisms and interventions in side effects of cancer therapy. **John Imig, PhD (CT)**, serves as Chair of the Department.

Division of Radiation Health. The Division of Radiation Health within the COP's Department of Pharmaceutical Sciences has a mission to understand how ionizing radiation affects normal (non-cancer) tissues and identify new interventions to prevent or reduce radiation injuries to normal tissues. Faculty in the Division of Radiation Health include **Antiño Allen, PhD (CT)**, Nukhet Aykin-Burns, PhD, **Boerma**, and **Rupak Pathak, PhD (CT)**. Each faculty member has a laboratory studying particular aspects of normal tissue radiation injury. Opportunities for graduate studies are offered through the UAMS Graduate School Interdisciplinary Biomedical Sciences Program and the Pharmaceutical Sciences Program. The Division of Radiation Health is also central to the COBRE Center for Studies of Host Response to Cancer Therapy, which investigates biological mechanisms of and interventions in side effects of cancer therapy. The Center provides financial and mentoring support to Project Leaders and Pilot Project Awardees and maintains core facilities that provide specialized technical support. **Boerma** serves as the Division Director.

Fay W. Boozman College of Public Health. The Fay W. Boozman COPH was established from funding the voter-initiated Tobacco Master Settlement Proceeds Act. COPH is the state's only accredited school of public health, and their Master of Health Administration program is accredited by the Commission on Accreditation on Healthcare Management Education. COPH has established a broad complement of teaching programs as well as research and service activities directed toward meeting the college's mission of improving the health and promoting the well-being of individuals, families, and communities in Arkansas. COPH comprises the following four departments: the Departments of Environmental Health Sciences, Epidemiology, Health Behavior and Health Education, Health Policy and Management, and Biostatistics (jointly supported by the UAMS COM). Additionally, COPH offers six master's degree programs in collaboration with several University of Arkansas System universities, private liberal arts colleges, and three historically Black colleges and universities. COPH emphasizes community-based public health by collaborating with communities and organizations in all phases of health promotion and disease prevention in partnerships with health care scientists in other disciplines, public health practitioners, government agencies, and community-based organizations. Mark Williams, PhD, serves as Dean of COPH.

- **Department of Biostatistics.** The Department of Biostatistics is jointly supported by COM and the UAMS College of Public Health. The Department has experienced Master of Science-trained biostatisticians and staff members who support data coordinating activities. The Department of Biostatistics' goal is to help improve the quality of research conducted at UAMS by providing expert statistical guidance to clinical, health services, and biomedical scientists. Faculty and staff collaborative efforts include protocol and grant development, data analysis, and manuscript preparation. Additionally, throughout the year, the Department of Biostatistics offers several courses through the College of Public Health and the Graduate School. The College of Public Health also offers a Council on Education for Public Health-accredited Master of Public Health degree with a concentration in biostatistics. Paula Roberson, PhD, serves as Chair of the Department.
- **Department of Environmental Health Sciences.** The Department of Environmental Health Sciences' mission is to promote healthy living and working environments through research, teaching, and service. Department faculty has research interests in toxicology, exposure science, risk assessment, regulatory sciences, gene-environment interactions, climate and public health, and geographic information systems,

and more. The Department of Environmental Health Sciences is concerned with the aspects of public health that include assessing, understanding, and controlling the impacts of the environment on individual and population health. The Department encourages interdisciplinary work, and several faculty members work with the private sector and government agencies. The Department of Environmental Health Sciences prepares students for an exciting and rewarding career with their comprehensive and rigorous program. Students are trained to anticipate, recognize, evaluate, and control environmental factors that can influence the health of individuals and populations. In addition, the Regulatory Science Graduate Certificate fills an urgent need in educating students in understanding the impact and implementation of regulatory decisions and the science that supports those decisions. Igor Koturbash, MD, PhD, serves as Chair of Environmental Health Services.

- **Department of Epidemiology.** The Department of Epidemiology's focus is to contribute to improving the health of Arkansans and promoting their well-being as well as the global community's by applying principles and practices of epidemiology in education, research, and service. While faculty activities in research and practice address a broad range of public health issues, the Department of Epidemiology has particular strength in the areas of chronic disease, infectious disease, cancer, molecular epidemiology, and childhood obesity. The Department offers competitive doctoral research assistantships that cover tuition and fees and include a stipend of up to \$35,000 a year for up to three years. They also offer a four-year pre-doctoral scholarship program for students interested in health disparities research and advanced data analytics. A grant from the National Institute of Minority Health and Disparities funds the program. Wendy Nembhard, PhD, MPH, FACE, FAHA, serves as Chair of the Department.
- **Department of Health Behavior and Health Education.** The mission of the Department of Health Behavior and Health Education is to improve individual and population health through research, workforce training, and community-based health-promotion programs. Faculty conduct research and implement health improvement programs affecting diverse populations in a variety of clinical and community settings. These initiatives target diseases that include cancer, stroke, hypertension, obesity, and sexually transmitted diseases. The department's faculty members have research interests in adolescent/child health, cardiovascular behavioral medicine, community-based public health, community-based participatory research, community-based participatory health promotion programs, coordinated school health programs, concepts of human sexuality, faith-based health promotion, health disparities, survey research, and women's health. S. Alexandra Marshall, PhD, MPH, CPH, CHES, serves as Chair of the Department.
- **Department of Health Policy and Management.** The mission of the Department of Health Policy and Management is to improve the health and well-being of Arkansans by generating, disseminating, and applying the evidence needed for sound policy and managerial decision-making within the health system. We pursue this mission by conducting research to identify better ways of organizing, financing, and delivering health services and implementing health policies; helping students acquire the knowledge and skills needed for effective policy and managerial decision-making on health issues; and serving the health system in Arkansas and beyond by providing public officials and other decision-makers with objective, reliable information, and assistance. The department is comprised of full-time faculty and secondary and part-time faculty who have methodological and substantive expertise in many of the areas that drive health system performance, including organization and financing of medical care and public health services; access to care and safety-net health care systems; quality measurement, quality improvement, and health outcomes assessment; health disparities and cultural competence in health care; health insurance coverage, including Medicaid, Medicare, and private insurance markets; public health policy, regulation, and law; economic evaluation of medical and public health interventions; long-term care delivery and financing; rural health care delivery and financing; maternal, child and women's health; and policy and programming related to nutrition, tobacco, substance abuse, and mental health. Ann Chou, PhD, MPH, MA, serves as Chair of the Department.

UAMS College of Nursing. Located within Arkansas's only academic health science center, the CON has partnerships with magnet clinical centers in aging, cancer, neuroscience, high-risk maternity, and ophthalmology as well as UAMS' eight Regional Campuses, ACH, and CAVS. CON provides baccalaureate and master's degrees, Doctor of Nursing Practice, Nursing Anesthesia, and Nurse-Midwifery degrees, and other doctoral degree programs. CON has faculty practicing in pediatrics, primary care, gerontology, and psychiatric and mental health. Additionally, CON is one of only eight nursing programs in the country to receive funding for a Hartford Center of Geriatric Nursing. The Center's research focus areas include cardiovascular, gerontology, mental health and addiction, environment, and cancer. Sarah Rhoads, PhD, DNP, serves as Dean of the CON.

UAMS College of Health Professions. The College of Health Professions (CHP) serves as the primary arm of the University of Arkansas in delivering education, research, and service in the allied health professions. As the only college of its kind within an academic health science center in Arkansas, CHP's central mission is to educate allied health professionals to meet the state's healthcare delivery needs. The college offers a wide range of programs through ten academic departments including the Departments of Audiology and Speech Pathology, Dental Hygiene, Dietetics and Nutrition, Genetic Counseling, Imaging and Radiation Sciences, Laboratory Sciences, Occupational Therapy, Physical Therapy, Physician Assistant Studies, and Respiratory Care. The college's research mission focuses on generating and disseminating knowledge to address Arkansas's health and healthcare education needs. Susan Long, EdD, serves as Dean of the CHP.

UAMS Graduate School. The UAMS Graduate School serves as the administrative home for all Graduate Certificate, Master of Science, and Doctor of Philosophy degrees across 17 graduate programs that actively engage faculty across all UAMS colleges. The school features GPIBS, which offers Doctor of Philosophy and Master of Science degrees across seven tracks: Biochemistry and Molecular Biology, Cancer Biology, Cell Biology and Physiology, Microbiology and Immunology, Neuroscience, Pathobiology, Pharmacology-Toxicology, and Experimental Therapeutics. Additionally, standalone programs include Bioinformatics, Biomedical Informatics, Clinical and Translational Sciences, Pharmaceutical Sciences, Epidemiology, and more. The Graduate School hosts a professional development seminar series covering topics such as fellowships and grants, plagiarism, stress management, teaching skills, and job interview skills, and supports the annual Career Day for Biomedical Sciences, which invites undergraduate faculty and students from colleges and universities across the South Central United States. **Sean Taverna, PhD (CB)**, serves as Dean of the Graduate School.

UAMS Research Support Services and Infrastructure

Institutional Support. UAMS is the state's largest research institution and manages more than \$125 million in extramural research funding each year. UAMS offers the following key administrative and research support services to assist investigators:

- **UAMS Institutional Review Board.** The UAMS IRB has been fully accredited by the Association for the Accreditation of Human Research Protection Programs since 2005. Their goal is to protect human research participants' rights, safety, and welfare by ensuring compliance with laws and regulations that pertain to research as well as with the ethical standards described in IRB and institutional policies. The IRB includes committees of reviewers and a professional office staff who collaboratively review and approve human subject research.
- **UAMS Office of Continuing Education.** The Office of Continuing Education (OCE) assists healthcare professionals to improve their ability to employ strategies for patient care; quality improvement; medical knowledge; evidence-based medicine; practice-based learning and improvement; interprofessional collaborative care; interpersonal and communication skills; work in interprofessional teams; and systems-based practice. As a Jointly Accredited Provider with commendation, OCE currently offers accreditation for the Accreditation Council for Continuing Medical Education, the Accreditation Council for Pharmacy Education, and the American Nurses Credentialing Center, the American Academy of PAs, the Commission on Dietetic Registration, and the Board of Certification for the Athletic Trainer. We can also accredit Maintenance of Certification hours for the American Board of Pediatrics and the American Board of Internal Medicine.
- **UAMS Office of Research Integrity.** The Office of Research Integrity coordinates UAMS' comprehensive research compliance program and offers compliance consultations and program reviews for the entire research community. They offer tools and templates to researchers who request assistance with assessment and evaluation of their own research processes. They also offer a free 28 credit hour Certified Research Specialist program that includes CITI human subject protection training and modules on research ethics and misconduct, research protocols, record keeping and regulatory compliance, research billing and grant management, and long-distance collaboration through webinars and workshops.
- **UAMS Office of Research Regulatory Affairs.** The Office of Research Regulatory Affairs includes a team of experienced professionals who assist the UAMS research community with all stages of their projects, including regulatory analysis, planning, start-up activities, training, management, and monitoring, and close-out. Regulatory specialists and research administrators assist with regulatory submissions to federal agencies, quality assurance and monitoring, research agreements, including material and data transfer, and other research support services.

- **UAMS Office of Research and Sponsored Programs.** The Office of Research and Sponsored Programs provides comprehensive support throughout the acquisition, performance, and administration of projects funded by external sources. This office is responsible for reviewing and approving all proposals submitted to sponsors to ensure compliance with federal, state, institutional, and sponsor-specific policies.
- **UAMS Science Communication Group.** The Science Communication Group (SCG) is a scientific editing resource available to UAMS investigators at no cost. Their primary mission is to help investigators produce clear and concise writing to increase their chances of obtaining extramural research funding or publishing in peer-reviewed journals. The editors' work ranges from proofreading for grammar and usage to more substantive editing to improve the organization and presentation of writing. Working with SCG editors is a mentoring experience that can improve an investigator's skills for using language, formatting, and visuals to effectively deliver their message to the target audience. The SCG can also assist in the preparation and submission of complex and large multi-investigator funding applications.
- **UAMS Division of Academic Pathways and Workforce Partnerships.** The mission of the Division of Academic Pathways and Workforce Partnerships (APWP) is to create and strengthen academic pathways and strategic workforce partnerships across Arkansas, expanding access to UAMS academic program and growing the state's health care workforce. APWP works collaboratively with UAMS to ensure that all Arkansans have access to STEM education, with a strong focus on developing and training future health care professionals. The Division also partners with nonprofit organizations, educational institutions, and other statewide entities to design strategies and initiatives that advance UAMS' goals for academic access and workforce development. The UAMS Pathways Academy within the APWP is an innovative, comprehensive educational and community engagement program focused on preparing K-12 students for educational and career opportunities in science, technology, engineering, and mathematics and healthcare (STEM-H) disciplines. Other APWP programs include the Premedical Summer Scholars program, a nonresidential initiative designed to provide premedical students with a means of strengthening their ability and readiness to study medicine (i.e., MCAT Prep). Additionally, the Summer Research Internship provides high school juniors, seniors, and college students who are interested in pursuing careers in research and health care the opportunity to expand their knowledge and understanding by conducting science-based research.

Physical Resources

- **UAMS Library.** The UAMS Library is the largest biomedical library in the state with collections of basic and applied science and clinical materials that serve students and faculty on the UAMS main campus, the Northwest Campus in Fayetteville, Regional Campuses across the state, and Arkansas Children's. The library acquisitions include monographs, periodicals, documents, audiovisual materials, and computer software. A local database system, OVID, accesses MEDLINE, CINAHL, CANCERLIT, HEALTHSTAR (Health Planning and Administration), International Pharmaceutical Abstracts, PsychINFO, and ARHealthLINK, a consortium of 52 Arkansas colleges and academic libraries. The professional staff in the library includes 11 professional librarians, one Public Historian (Archivist), seven paraprofessionals, and technical staff.
- **UAMS Information Technology.** The UAMS Department of IT assists employees with troubleshooting computer or technology problems, maintains communication networks throughout the campus, and safeguards data to ensure the efficiency and security of UAMS information. The IT Department's mission is to employ information technology that extends human knowledge and facilitates discovery in support of the UAMS mission: to improve the health, health care, and well-being of Arkansans and of others in the region, nation, and the world.

Central Arkansas Veteran's Healthcare System

Central Arkansas Veteran's Healthcare System (CAVHS) is one of the leading health care systems serving veterans in the South Central Veteran's Affairs (VA) Health Care Network. CAVHS provides health care services at ten locations in central Arkansas. CAVHS facilities include the John L. McClellan Memorial Veterans' Hospital in Little Rock (Figure 7), Eugene J. Towbin Healthcare Center in North Little Rock, and eight community-based outpatient clinics across Arkansas. CAVHS provides comprehensive healthcare through primary, tertiary, and long-term care in areas of medicine, surgery, mental health, physical medicine and rehabilitation, neurology,

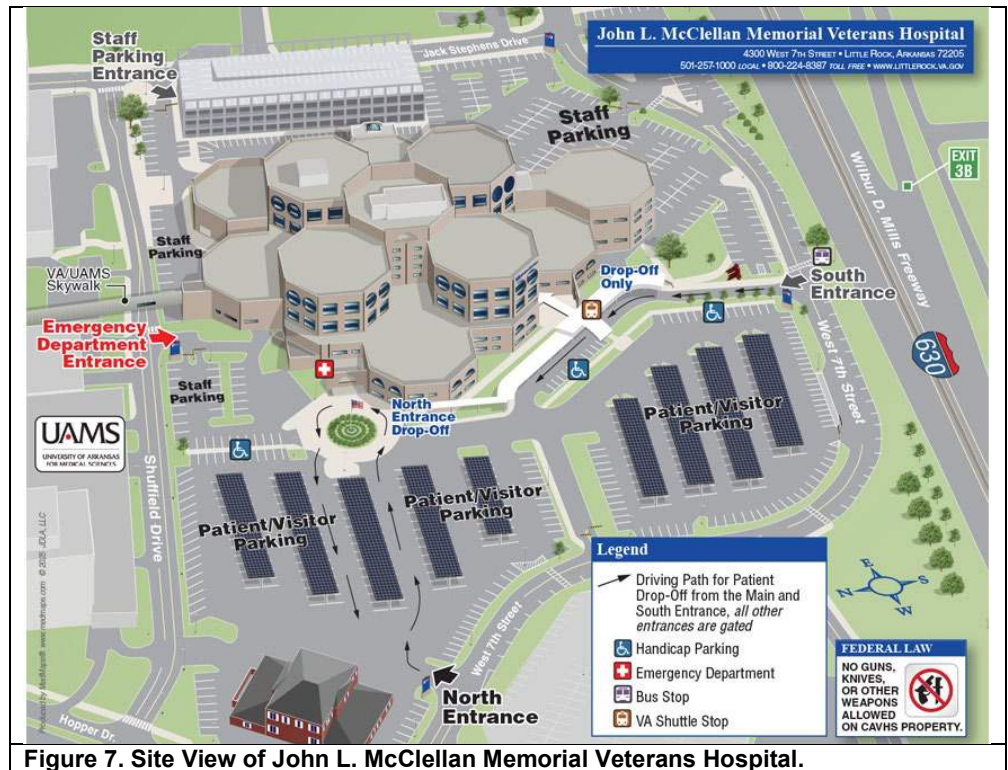


Figure 7. Site View of John L. McClellan Memorial Veterans Hospital.

dentistry, ophthalmology, geriatrics and extended care and women's health. Across its major facilities, the CAVHS has a total of 280 operating beds, a 119-bed rehabilitation unit, and a 152-bed Community Living Center. The John L. McClellan Memorial Veterans' Hospital is a teaching hospital that provides a full range of services, with state-of-the-art technology as well as education and research. They offer residency training in many major specialties and subspecialties, and they train physician assistants and nurses and provide associated training in other health professions. The North Little Rock campus is also a teaching and research facility that includes nursing home units and inpatient rehabilitation, respite, psychiatric, and Domiciliary Residential Rehabilitation beds. The facility houses multiple outpatient clinics for primary care, mental health, geriatrics, dental, and limited specialty care services. Several Centers of Excellence (Geriatric Research Education and Clinical Center, South Central Mental Illness Research, Education and Clinical Center, Center for Mental Healthcare and Outcomes Research, Behavioral Health Quality Enhancement Research Initiative (QUERI), Evidence, Policy, and Implementation Center) are located at the North Little Rock campus. CAVHS has several active research initiatives and has full accreditation through the Association for the Accreditation of Human Research Protection Programs Inc. and Association for Assessment and Accreditation of Laboratory Animal Care International to conduct research for its Human Subjects Protection Program and animal research program. CAVHS provides significant support to the research program via salary support for key research leaders, clinician-investigators, and administrative staff and provides the needed space and infrastructure for research activities. CAVHS also has medical library staff who are available to assist researchers.

CAVHS Biomedical Research Program

CAVHS conducts a wide range of biomedical research studies seeking to improve the health of veterans and provision VA healthcare. Examples of high-priority topics include toxic exposure to open burn pits during military service, suicide prevention, and the molecular basis for disease (e.g., osteoporosis, heart disease, Alzheimer's, and chronic kidney disease). These protocols are funded by the VA, NIH, DoD, and other mechanisms. Human studies are conducted in cardiology, vascular surgery, dermatology, nephrology, infectious disease, and other specialty clinics.

CAVHS Geriatric Research Education and Clinical Center

The CAVHS Geriatric Research Education and Clinical Center (GRECC) research focus areas include the biology of aging, exercise and nutrition interventions, positive changes in mental health and behavior, and advance care planning. GRECC studies use laboratory, clinical, and health services research methods. A conference room is also available for study team meetings and is equipped with teleconference equipment. Dennis Sullivan, MD, is the GRECC Director.

Center for Mental Healthcare and Outcomes Research

The CAVHS Center for Mental Healthcare and Outcomes Research (CeMHOR), a Health Services Research & Development Center of Innovation, is the only center in the country focused solely on mental health and substance abuse disorder research, particularly suicide prevention and access to care for rural veterans. Current research priorities include collaborative care interventions for mental health in primary care settings, telemedicine, adherence to treatment, interventions for PTSD and moral injury, and suicide prevention interventions. CeMHOR infrastructure includes a data group with expertise in accessing and manipulating large data sets from multiple VA data repositories, and data cleaning and analysis. Software expertise includes working with SAS, STATA, SPSS, R, Microsoft Access, and computer-assisted telephone interview software. CeMHOR has staff devoted to helping investigators ensure that they adhere to all human subjects regulations and that research is conducted while maintaining privacy and confidentiality. CeMHOR also provides staff for grants management to help researchers manage grant funds. Richard R. Owen, MD, serves as the Center Director.

The South Central (VISN 16) Mental Illness Research, Education and Clinical Center

The South Central (VISN 16) Mental Illness Research, Education and Clinical Center (MIRECC) is a multisite, regional center with a mission to improve access to evidence-based mental healthcare practices for rural and other underserved populations, especially returning war veterans, veterans experiencing natural disasters, and vulnerable elderly veterans. The MIRECC research pipeline includes observation, intervention, and implementation studies. Content areas for research include evaluating technologies to deliver care at a distance, tele-psychotherapy, partnering with communities to serve recently returning veterans, combat and disaster related trauma, and family/caregiver education and support. The South Central MIRECC operates in one of the largest and most rural VA networks in the nation, encompassing parts of eight states (Alabama, Arkansas, Florida, Louisiana, Mississippi, Missouri, Oklahoma, and Texas). The MIRECC currently has three anchor sites in VA medical centers in Houston, Little Rock, and New Orleans, and is affiliated with five medical schools: Baylor COM (Houston), UAMS (Little Rock), Tulane University School of Medicine (New Orleans), and Louisiana State University Health Sciences Center (Shreveport). The South Central MIRECC site at CAVHS hosts an advanced postdoctoral fellowship in health services research, with one or two fellows each year. Mental health services research is a strength and focus of the MIRECC, and the MIRECC works closely with the network Mental Health Product Line to improve the quality of mental health care delivered at the network's 10 VA facilities and the 30 CBOCs serving rural veterans. MIRECC is co-directed by Michael Cucciare, PhD, and Jan Lindsey, PhD.

Behavioral Health Quality Enhancement Research Initiative

The Behavioral Health QUERI is one of the seventeen funded QUERI Programs nationwide focused on improving the health and care of veterans by supporting the application of evidence into practice. By implementing a variety of evidence-based practices and using common conceptual frameworks, implementation strategies, measures, and analytic processes across activities, the Behavioral Health QUERI Program seeks to implement and evaluate best practices for mental health and suicide prevention, increase access via telehealth, and improve quality of care and life for veterans. Behavioral Health QUERI's infrastructure includes a leadership team, Methods Core, Implementation Core, Mentorship Core, Rapid Response Team, a Stakeholder Council (comprised of veterans, their family members, and VA providers), and a Technical Expert Panel (comprised of VA and non-VA operational leaders). Behavioral Health QUERI has dedicated office space, a conference room, and telephones used for meetings with personnel located at other sites as well as the capacity to meet via video connections as needed (i.e., Teams, Webex). The presence of the Behavioral Health QUERI in North Little Rock continues a long tradition of collaboration among VA and UAMS mental health services researchers, fostering a highly productive collaborative research environment that continues to benefit investigators at both institutions as well as nationally.

Pharmacogenomics Analysis Laboratory

The Pharmacogenomics Analysis Laboratory (PAL) located within the CAVHS is a fully operational state-of-the-art research laboratory created to support pharmacogenomics and clinical trials within the VA Cooperative Studies Program (CSP), VA Office of Research & Development. PAL has partnered with CSP and VA investigators to determine genetic associations in diseases prevalent in veterans such as cardiovascular disease, diabetes, oncology, PTSD, HIV, and Amyotrophic Lateral Sclerosis. PAL comprises a 1200 sq. ft. laboratory divided into pre- and post-amplification areas for a microarray core. PAL has an 800 sq. ft. sequencing and mass spectrometry laboratory. PAL also has a 400 sq. ft. Molecular Biology laboratory and a 50 sq. ft. office

for PAL servers. PAL is equipped to analyze moderate-to-large scale whole-genome methylation, genotyping, copy number variants, gene expression, and miRNA projects. The laboratory is equipped with a Life Technologies GeneStudio S5 Plus Sequencer and Ion Chef, Illumina MiSeq, Illumina Laboratory Information System, Illumina iScan microarray system with an Autoloader 2, Bio-Rad digital droplet PCR system, QuantStudio 12K Flex, Agena Bioscience MassARRAY system and NanoDispenser, three Tecan Robots, an ABI QuantStudio six Real-Time PCR Instrument, NanoDrop Spectrophotometer, Biotek Synergy Four-Plate Reader, Beckman NXP Automated Liquid Handling Workstation, Agilent 2100 Bioanalyzer, Millipore IQ 7000 Water purification system, and miscellaneous lab equipment. PAL has collaborated with CSP investigators at Durham, NC; Seattle, WA; Palo Alto, CA; and Salt Lake City, UT. Non-VA affiliated collaborations are ongoing with investigators at Mayo Clinic (Rochester, MN), Harvard Medical School (Boston, MA), University of California (San Diego, CA), UAMS (Little Rock, AR), University of Miami (Miami, FL), City of Hope (Duarte, CA), Emory University (Atlanta, GA), and Duke University School of Medicine (Durham, NC). Annjanette Stone serves as the Acting Director of PAL.

Arkansas Children's

Arkansas Children's is the only healthcare system in the state solely dedicated to caring for Arkansas' more than 700,000 children. The private, nonprofit organization includes two pediatric hospitals, a pediatric research institute and USDA nutrition center, a philanthropic foundation, regional alliances and clinics, and telemedicine and statewide outreach programs—all focused on fulfilling a promise to define and deliver unprecedented child health. Generous philanthropic and volunteer engagement has sustained Arkansas Children's since it began as an orphanage in 1912 and today ensures the state's only pediatric health system can deliver on its promise of unprecedented child health.

Arkansas Children's Hospital

Arkansas Children's Hospital (ACH; **Figure 8, No. 1**), established in 1912, is a 336-bed, private, nonprofit hospital with an active medical staff of more than 500. ACH is the state's leading health care facility dedicated exclusively to children and one of the largest pediatric hospitals in the nation. Located in Little Rock, Arkansas, in the center of the state, it serves a population base of approximately five million people in Arkansas and surrounding states. ACH is a Magnet-recognized facility operating the state's only Level I Pediatric Trauma Center; only Burn Center; only Level IV Neonatal Intensive Care Unit; only Pediatric Intensive Care Unit; only American College of Surgeons (ACS)-verified Level I Pediatric Surgery Program; only Magnetoencephalography (MEG) System for neurosurgical planning and cutting-edge research; and the state's only nationally recognized Pediatric Transport Program. Additionally, ACH is nationally ranked by *U.S. News & World Report* in seven pediatric subspecialties (2023-2024): cancer, cardiology & heart surgery, diabetes and endocrinology, nephrology, orthopedics, pulmonology, and urology. ACH is one of only five hospitals in the nation that have achieved Magnet Status, ACS Level 1 verification, and a Beacon Award from the American Association of Critical Care Nurses. ACH is dedicated to offering medical services to all children regardless of their race, ethnicity, religion, national origin, gender, or ability to pay. The campus covers 32 city blocks over 64 acres with a floor space totaling over 2,050,000 sq. ft. Inpatient specialty units include cardiovascular, newborn, and pediatric intensive care units; orthopedics; hematology/oncology; renal dialysis; extracorporeal membrane oxygenation; and many others. During fiscal year 2023, 330,951 visits were made by patients to the 100+ general and pediatric specialty clinics and the emergency room at ACH. Males and females represented approximately 50.2% and 48.5%, respectively (1.3% not specified), of the total patient population. In fiscal year 2023, Hispanics represented 16.8% of the total patient population. African Americans and Caucasians comprised approximately 33.0% and 43.0% of the total patient population, respectively. Native Americans and Asians represented approximately 0.3% and 1.1% of the patients seen annually, respectively. ACH serves as a teaching hospital for UAMS, the only medical school and health sciences university in Arkansas, and is home to the UAMS Department of Pediatrics. Medical students, residents, and other health related professionals receive their primary pediatric training at ACH. UAMS faculty composes most of the over 500 physicians on the ACH staff.

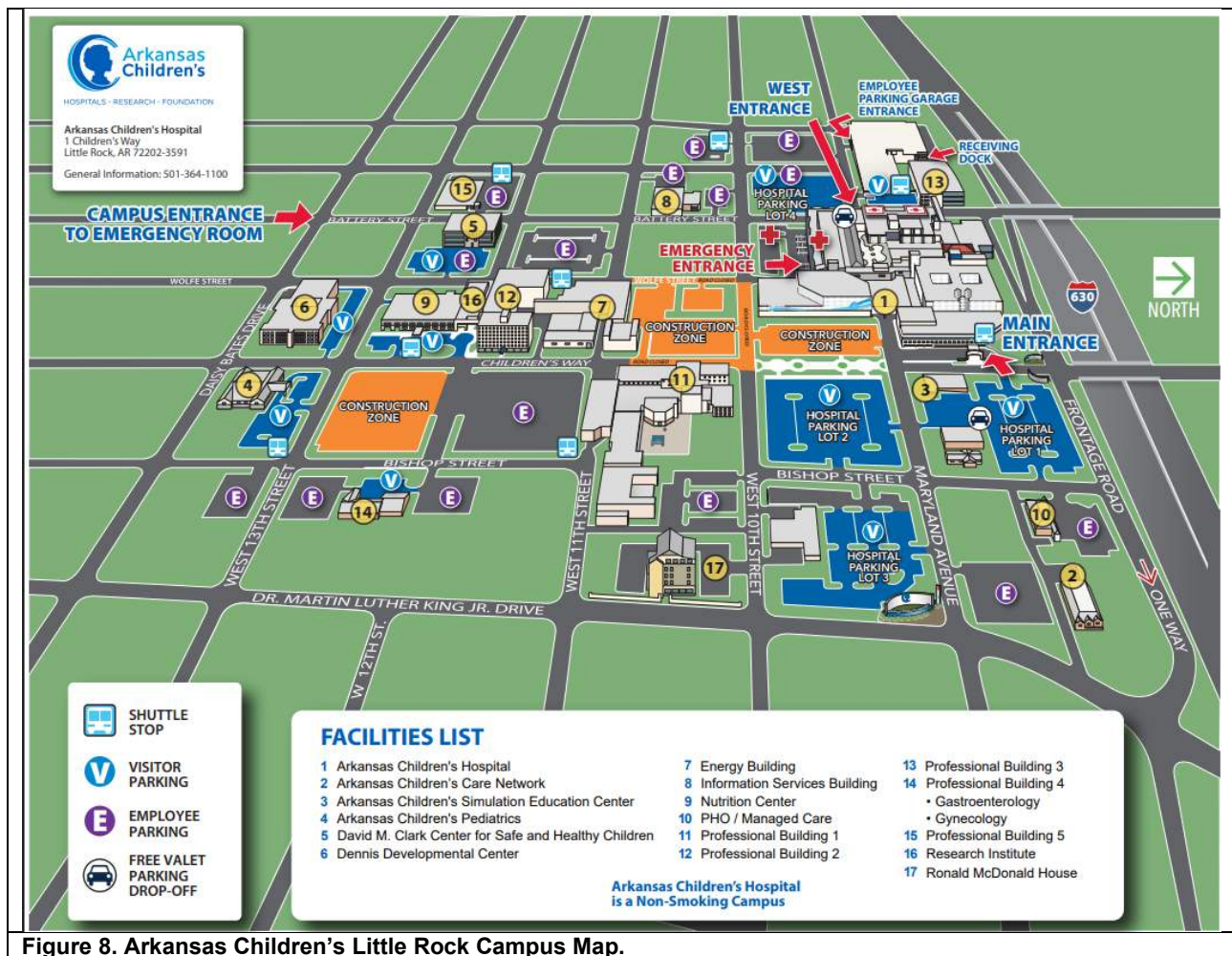


Figure 8. Arkansas Children's Little Rock Campus Map.

Arkansas Children's Northwest

Opened in 2018, Arkansas Children's Northwest (ACNW) is the first and only pediatric hospital in the Northwest Arkansas region. It is a Level IV pediatric trauma center. Located in Springdale, ACNW operates a 24-bed inpatient unit, a surgical unit with five operating rooms, outpatient clinics offering over 20 subspecialties, diagnostic services, imaging capabilities, occupational therapy services, and Northwest Arkansas' only pediatric emergency department, equipped with 30 exam rooms.

Arkansas Children's Research Institute

Arkansas Children's Research Institute (ACRI; **Figure 8, No. 16**) is a not-for-profit corporation owned by ACI. ACRI is located in Little Rock on the campus of ACH. ACH is one of two pediatric hospitals in the state (the other is Arkansas Children's Northwest in Springdale). ACH is a full-service, state-of-the-art medical facility, offering a complete array of clinical services ranging from well-baby care to the medical management of critically ill children. ACH is a teaching hospital of the UAMS, the only medical school and health sciences university in Arkansas. All physicians and scientists on the ACH campus are UAMS faculty. ACRI was established to provide an on-site research environment for UAMS faculty and scientists. ACRI officially opened on the ACH campus in 1992. Today, ACRI has over 120 pediatric researchers with expertise and experience that span the breadth of medical disciplines. ACRI's roster of investigators works to fulfill its mission to improve children's health, development, and well-being through high-quality research. In fiscal year 2023, ACRI researchers received \$37.9 million in grants and contracts from federal, state, and private agencies, industry sponsors, and philanthropic donations. Over \$18.6 million was from the NIH.

Currently, ACRI has over 196,000 sq. ft. of research space. The four-story Research Institute Building is the central location of ACRI administrative offices and houses researcher offices, conference space, laboratories, and ACRI's animal facility. The two-story Arkansas Children's Nutrition Center (ACNC) adjoins to the south of the Research Building. Opened in 1997, the ACNC houses one of six United States Department of Agriculture-

Agricultural Research Service (USDA-ARS) National Human Nutrition Centers. Remaining ACRI research space includes the Pediatric Clinical Research Unit located in the main ACH hospital building two blocks north of the Research Institute Building. In addition, ACRI maintains a research pharmacy in the hospital. ACH also affords clinic and unit space for investigators performing their research at the main hospital building. ACRI researchers have assigned, dedicated office, clinic, and laboratory space on the ACH campus in the Sturgis Building (adjoining the main hospital building and one block north of the research building), Professional Building 2 (adjoining the research building to the east), and the Dennis Developmental Center (one block south of the research building).

Animal Facilities. ACRI maintains a 35,000 sq. ft., state-of-the-art animal facility housing all animals used in research. Located in the Research Institute Building, the facility provides separate areas designed to provide housing for both large and small animals. The animal facility has surgical suites, wet laboratories, procedure rooms, and pathogen-free containment units. The Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC International) accredits the animal facility. It is registered with the USDA and has a fully approved Letter of Assurance on file with the Office of Laboratory Animal Welfare. ACRI requires animal certification of all investigative faculty and staff using the facility in the use of laboratory animals. Three veterinarians are responsible for veterinary care at ACRI's animal facility through rounds and on-call availability. The Director of Animal Research and the Manager of Animal Care and Husbandry provide consultation to ACRI investigators and staff concerning animal care and housing, surgical procedures, and Institutional Animal Care and Use Committee (IACUC) protocols. ACRI contracts its IACUC through UAMS.

Pediatric Clinical Research Unit (PCRU). ACRI researchers have been involved in pediatric clinical trials for over 30 years. These clinical studies assure medicines, vaccines, and treatments for children are safe and effective. The majority of these studies are industry sponsored, while FDA, NIH, and other grant awards supported the remaining trials. Many researchers conduct their clinical trials at ACRI's PCRU, located in ACH. Available 24 hours a day, 7 days a week, the PCRU provides a 4,000-sq. ft. facility for high-quality clinical pediatric research. ACRI offers a staff of qualified nurse research coordinators to assist investigators with pre-site visits, IRB submissions, and day-to-day operations of their clinical studies. The costs associated with these services are direct expenses to the specific clinical study and are paid for by the sponsor. The PCRU has four semi-private and two private beds as well as a full laboratory and two freezers (-20°C and -70°C) for sample processing. It also includes a kitchen, offices, equipment storage, waiting area, and small conference room. ACRI provides a nearby on-site research pharmacy for the PCRU on an adjoining corridor.

Research Pharmacy. ACRI maintains a 1,035-sq. ft. research pharmacy at ACH in support of inpatient and outpatient trials by ACRI researchers. Its staff of research pharmacists is accountable for drugs administered from the initiation through the completion of clinical trials at Arkansas Children's. They oversee the formulating, dispensing, accounting, blinding, and storing of the drugs and the documentation of these activities. Research Pharmacy staff also provide input on study design and planning. The research pharmacy has secure access and segregated storage space for drugs that require ambient temperature, refrigeration, or -20°C or -80°C storage. The Research Pharmacists also have access to laminar flow hoods as well as a dedicated viral vector hood.

National Center for Opioid Research and Clinical Effectiveness. In 2023, Arkansas Children's was awarded \$50 million of opioid settlement from the Attorney General of Arkansas to establish the National Center for Opioid Research and Clinical Effectiveness (NCOR). NCOR will be the nation's most ambitious research endeavor to address the impact of the opioid crisis on the fetus, newborn, and developing children. This research facility will provide innovative infrastructure, equipment, and technology to support the clinical, social work, and outreach teams who are tackling the opioid crisis directly. NCOR will accelerate development of effective evidence-based treatments that will profoundly improve child health and inform state and national policy efforts. NCOR will require \$70 million in funding, and Arkansas Children's will provide the funds beyond the opioid settlement proceeds to complete and operate the Center. Construction will begin in 2024 on the 45,000-sq. ft. facility on the ACH campus near ACRI.

Core Facilities at ACRI. ACRI supports the Biostatistics, Genomics, Metabolomics, and Rodent Metabolic and Behavioral Phenotyping Core facilities.

- **Biostatistics Core.** Through its Biostatistics Core, ACRI with support from Arkansas Children's provides its clinical and biomedical researchers access to statistical and database support. The Biostatistics Core provides development, planning and execution of statistical analysis supporting both preclinical and clinical research studies, including research design, grant planning, bioinformatics, and database support.

Located on the 2nd floor of the Research Institute Building, the Biostatistics Core currently has doctorate- and master's-level biostatisticians with expertise in applied statistics and biostatistics. Master's-level biostatisticians work directly with doctorate-level biostatisticians on ACRI research projects. The Core's statistical expertise includes longitudinal data analysis, time-to-event/survival analysis, generalized linear modeling with special emphasis (developing clinical prediction models and analyzing extremely skewed outcomes), long-term, "real-world" observational studies performed in a clinical setting, and categorical data analysis. The Biostatistics Program utilizes a wide range of statistical and bioinformatics software applications, including open-source R, SAS, and SPSS.

- **Genomics Resource.** The ACRI Genomics Resource supports genomics research for the Center for Translational Pediatric Research as well as for researchers on the ACH campus. The Genomics Resource provides researchers with initial consultation for study design and support. Services include DNA next generation sequencing (NGS) approaches utilizing whole-exome sequencing, whole-genome sequencing, and targeted cancer panel approaches. RNA NGS approaches for mRNA and total RNA are also offered. Genomics laboratory instrumentation includes Illumina NextSeq 500 and MiSeq sequencers, a 10x Genomics Chromium controller for single-cell multiome analysis, an Advanced Analytical Fragment Analyzer, and equipment necessary for performing NGS. With this instrumentation, the laboratory can provide fragment analysis of RNA and DNA for sizing, quantification, and quality control. The genomics laboratory can provide sample and library preparation for high-throughput sequencing of any organism using the Illumina NextSeq 500 or MiSeq sequencing platforms. Sequencing services include de novo or targeted resequencing, transcriptome analysis, small RNA discovery, and ChIP-Seqs. The Genomics Resource consists of 750 sq. ft. on the 2nd floor of the ACRI Research Building. Dedicated office space is adjacent to the laboratory, and genomics staff has access to common areas provided by ACRI. There is locked storage space for long-term record storage and locked cabinets for supplies.
- **Metabolomics Core.** The ACRI Metabolomics Core offers complex and high-quality services for metabolic assessment, metabolomics analysis, and biomarker discovery using unique and extremely sensitive high-performance liquid chromatography (HPLC) with electrochemical detection and more traditional LC-MS platforms. The Metabolomics Core has extensive collaborative experience with local, national, and international investigators and is recognized as a national and international leader on targeted metabolomics of methionine cycle products. Located on the 4th floor of the Research Institute Building, the Metabolomics Core includes three adjacent laboratories, the Core Metabolomics Laboratory (CML). Over ~2,000 sq. ft. of laboratory space is equipped with all supportive instrumentation required to successfully accomplish targeted and untargeted high-throughput metabolomics profiling and to comprehensively evaluate the overall metabolic state of biological samples as they are influenced by genes and environment. The CML maintains and operates various essential analytical instrumentation: HPLC with electrochemical detection, HPLC with UV/VIS detection, ion trap mass spectrometers, and a universally charged aerosol detector system. The CML has access to the common shared equipment and resources of ACRI including two 320-sq. ft. fully equipped tissue culture rooms with laminar flow hoods and two CO₂ incubators adjacent to the laboratories as well as two 500-sq. ft. alarm-monitored freezer rooms with a variety of freezers and refrigerators: two -80°C freezers, two -20°C freezers, and a +4°C for samples safe samples storage. The Core provides services on a fee-for-service basis.
- **Rodent Metabolic and Behavioral Phenotyping Core.** The ACRI Rodent Metabolic and Behavioral Phenotyping Core is a preclinical research facility dedicated to supporting translational research at the Arkansas Children's Nutrition Center. The Core operates within a dedicated wing of approximately 6,200 sq. ft. inside ACRI's 35,000 sq. ft. animal facility. The Core is equipped with specialized instrumentation, including two Promethion Systems for 24-hour metabolic assessments of energy expenditure, food and water intake, core temperature, and activity via indirect calorimetry. Additional equipment includes both Nuclear Magnetic Resonance (Echo MRI) and Dual X-ray Absorptiometry (DXA) for body composition assessment, as well as a Stable Isotope Analyzer that measures the oxidation of exogenous nutrients such as Carbon-13 and Oxygen-18 in exhaled breath. The AAALAC-certified vivarium is USDA-certified, holds a fully approved Letter of Assurance on file with the NIH Office of Laboratory Animal Welfare, and is accredited by the AAALAC and overseen by board-certified veterinarians.

Research Programs at ACRI. ACRI houses research programs in infectious diseases, endocrinology, osteogenesis, asthma and allergic disorders, children's nutrition, pain, health promotion, injury prevention, birth defects prevention, pediatric pharmacology, and applied research and evaluation.

- **Arkansas Children's Nutrition Center.** The ACNC is a cooperative effort of the United States Department of Agriculture-Agricultural Research Service (USDA-ARS) and Arkansas Children's in collaboration with ACRI and UAMS. Established in 1994 on the ACH campus, the ACNC is one of six National Human Nutrition Centers funded through the USDA-ARS and one of two centers to focus primarily on pediatric/maternal nutrition and metabolic health. The mission of the ACNC is to conduct cutting-edge research to understand how maternal-child nutrition and physical activity optimize health and development. The ACNC uses state-of-the-art procedures, equipment, and facilities to determine how early life exposures to specific diet, dietary factors, and physical activity, and other factors can affect physiology. The ACNC investigates a wide array of biological systems including brain development, skeletal health, adipose tissue development, gastrointestinal health, immune system development, cardiometabolic health, and whole-body metabolism. With approximately 54,000 sq. ft. of shared research space, the ACNC provides clinical research facilities, research laboratories, shared equipment, and core facilities designed for its team of over 75 scientists and support staff. ACNC investigators are also UAMS Department of Pediatrics faculty members within the section of Developmental Nutrition and receive funding beyond USDA-ARS, including NIH, non-profits, and industry partners. The ACNC also receives funding from the Arkansas Biosciences Institute, which was created as the major research component of the Tobacco Settlement Proceeds Act of 2000.
- **Arkansas ECHO ISPCTN Site (UG1OD024945).** The Arkansas ECHO ISPCTN Site (AREIS) is a member of the IDeA State Pediatric Clinical Trials Network (ISPCTN). The primary mission of AREIS is to engage rural children in Arkansas in innovative clinical trial opportunities. Its primary efforts to meet AREIS' mission include providing research expertise and leadership to the ECHO ISPCTN for the development and implementation of robust clinical trials in high-priority disease areas, increasing clinical trials competency and leadership skills among AREIS faculty and staff, and leveraging existing resources to implement state-of-the-art community engagement and community partnership approaches that will enhance the participation of rural children in clinical trials.
- **Arkansas Reproductive Health Monitoring System.** The Arkansas Reproductive Health Monitoring System (ARHMS) is a well-established public health program in birth defect tracking. ARHMS, which is administered within Arkansas Children's Hospital, tracks birth defect trends, responds to inquiries from the public, provides the data infrastructure for scientific research, and performs prevention activities aimed at reducing the occurrence of birth defects. ARHMS seeks to identify and to describe patterns of birth defects in Arkansas to support scientific research to prevent birth defects among state and global populations.
- **Asthma and Respiratory Disorders Research Program.** The Asthma and Respiratory Disorders Research Program was established to address the growing problem of asthma morbidity among children. In addition to strong clinical services in asthma and allergic disease, this program provides novel research approaches to addressing pathogenesis of the disease, exploring new treatment modalities through clinical trials and translational research, and improving education and healthcare delivery through community-based health outcomes research. The Lung Cell Biology Laboratory, through its collaborative NIH funding and multidisciplinary investigative team, employs novel human model systems to investigate disease pathogenesis and to explore potential targets for novel therapies. The rural health asthma program, RADAR (Reducing Asthma Disparities in Arkansas), uses state-of-the-art technology including telehealth and mobile application systems to target high-risk, underserved populations through its innovative rural healthcare delivery research. The program is currently testing the effectiveness of an mHealth Asthma Action Plan smartphone-based application for adolescents that provides real-time, personalized feedback, asthma education, and data logging/tracking capabilities with and without primary care physician data sharing.