

FACILITIES AND OTHER RESOURCES AT DARTMOUTH HEALTH

DARTMOUTH HEALTH

Dartmouth Health (DH) is a non-profit, academic health system and is comprised of the main campus, Dartmouth Hitchcock Medical Center (DHMC) in Lebanon NH, plus six community hospitals, 24 ambulatory clinics across New Hampshire and Vermont. DHMC, the primary campus, includes a 396-bed hospital with the only Level 1 – the highest-level designation – trauma center in the surrounding three states, and the only air ambulance service (DHART). The Lebanon medical center covers more than 2 million square feet. Annually across the system, DH has more than 1.3 million outpatient visits, nearly 22,000 surgeries, and 27,000 patients discharged. DH is New Hampshire's only academic medical center, and it is the state's most expansive provider of care and largest private employer. The DH system includes access to more than 1,000 primary care doctors and specialists in almost every area of medicine; the Dartmouth Cancer Center, an NCI designated Comprehensive Cancer Centers; the Children's Hospital at Dartmouth-Hitchcock; and the Visiting Nurse and Hospice for Vermont and New Hampshire, an affiliated organization.

Dartmouth Health Office of Research Operations (ORO)

The DH Office of Research Operations supports the institution's mission of advancing health through research by providing management and administration of sponsored projects through all phases of the grant and contract life cycle. The office is divided into functional areas to provide expertise at both the department and central levels throughout the lifecycle of an award:

Departmental Research Administration (DRA) assists investigators at the departmental level in managing sponsored projects from proposal development all the way through closeout. DRA are partners in research management with investigators and their teams in submitting proposals, managing awards and everything in between.

Central Research Administration (CRA) advances the research mission while maintaining required compliance around institutional, government, and sponsor regulations. CRA is the liaison between investigators and sponsors in the research administration arena.

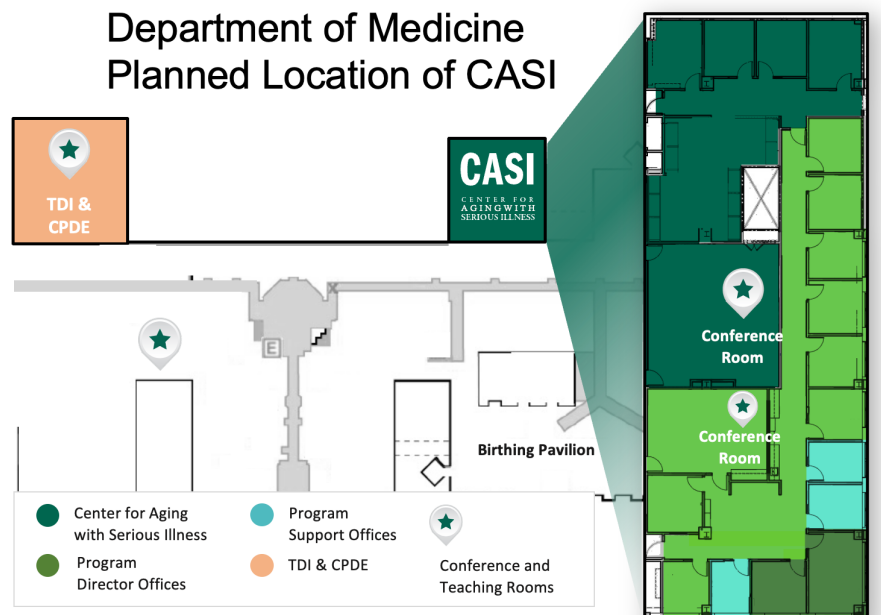
Research Finance (RF) provides fiscal oversight for DH's sponsored grant and contract portfolio. Post Award financial management services include cash management, reporting and audit support.

Clinical Trials Office (CTO) enhances the research capabilities of DH by providing a centralized infrastructure to enhance patient safety, promote quality research, ensure fiscal and regulatory compliance, and encourage clinical translation collaborations. The Clinical Trials Office is a centralized office which provides Pre-Award services (budget, contracting, development of Medicare Coverage Analysis), and Post-Award financial management services (AP, invoicing, A/R, reconciliation, and fiscal oversight) for clinical trials across the system. The CTO also provides research bill review, good clinical practice consulting/monitoring regulatory services as well as educational programs for all levels of research staff. The CTO supports on average over 200 new protocol submissions annually with a primary focus on human subjects research that require full board or expedited IRB review.

Department of Medicine (DOM) The DOM is the largest department at DH, with over 600 physician faculty and more than 400 administrative staff. The DOM is made up of 15 clinical sections. In addition, the DOM serves as the academic home for 4 centers: the Cancer Center, Occupational and Environmental Health, Weight and Wellness, and the Heart and Vascular Center. While these centers operate on their own and maintain their own administrative structure, academic issues such as promotion and career development for those with a background in medicine are handled through the DOM. Dr. Goldstein, MPD on this proposal, is the Chair of the

DOM. Dr. Volandes, MPD on this Proposal, is the Vice-Chair of Research for the Department. In terms of research infrastructure, the DOM currently has an NIH portfolio of \$46M; there is no overlap in this funding and work proposed by CASI, however.

The DOM has a full-time research director and two full-time research operations managers who oversee grants administration. Their duties include assisting with proposal development, grant submission, post-awards management, budgeting, compliance, and audits. They also assist with research personnel management. The DOM's research portfolio includes health services research, clinical trials – both investigator initiated and industry – and basic science. This produces a rich research environment within the DOM that creates a collaborative milieu where investigators work together across disciplines to improve the health and healthcare of the patients and families for whom we care. The diagram to the right shows how the space in the DOM will be reconfigured to create space to bring together the research team for CASI. These are offices that the DOM already has; they will be reallocated to make the Center.



Dartmouth Health Geriatric Center of Excellence (GCOE): Run by Dr. Ellen Flaherty, co-investigator on the BEDRoC Core, the GCOE is a structure that supports, aligns, coordinates, and provides visibility for all geriatric initiatives across the system including clinical care, education and policy. Dartmouth achieved the Level II recognition for its age-friendly health system by the Institute for Healthcare Improvement in 2017. The Aging Resource Center, one component of the clinical arm, provides free-of-charge health education classes, resource information, community outreach, and support to older adults and their families, located in Lebanon, NH. The venue and mailing list of over 1,777 individuals provide opportunities for recruitment. The Geriatric Education Center and Geriatric Workforce Enhancement Programs (GWEP), which is part of the GCOE, are funded by the Health Services Resource Administration, and has been funded at Dartmouth for over 12 years, and it also functions as a coordinating center for all GWEPs within the United States. It has provided numerous educational/training courses attended by over 16,000 professionals (physicians, nurses, health administrators, social workers, physical and occupational therapists, public health officials, resident physicians, medical and nursing students), providing over 60,000 contact hours in 500 courses. The focus of the current grant cycle is to reach out to healthcare providers in rural and medically underserved areas of New Hampshire and Vermont. The GCOE is physically located on the Dartmouth campus near Dartmouth-Hitchcock Medical Center. While the GCOE will work with CASI to implement the elements proposed in this application, the GCOE does not in and of itself have a research portfolio of its own. As such, the GCOE will facilitate the work of CASI, but there is no overlap with the work proposed in this application.

SYNERGY SYNERGY is DH's Clinical and Translational Science Institute. The goal of SYNERGY is to catalyze research and train scientists across the translational spectrum with a focus on rural healthcare delivery. Three principal investigators, one from The Dartmouth Institute at Geisel; one from Dartmouth Health – Steve Bernstein, who will be a member of the Advisory Board for CASI; and one from Thayer School of Engineering, link research across the college, medical school, and health system. A key focus of SYNERGY is enabling coproduction learning health systems to improve health and healthcare delivery to rural communities. Research resources supporting faculty, staff, and students across Dartmouth include SYNERGY Pilot Funding and Cores dedicated to Education and Training, Data and Informatics, and Community Engagement. In August 2024, SYNERGY received NIH's Clinical and Translational Science Award (CTSA). Over seven years, the \$27.7M award will fund projects that will speed the implementation of proven medical innovations as part of a

national consortium of biomedical research centers.

Biomedical Informatics Core (BIC). This core is part of the Dartmouth Clinical and Translational Science Institute, offering clinical and translational investigators support on informatics tools for cohort discovery, data integration, data management, text mining and visual analytics. In addition, the core provides consultative services on integration of data systems and on procedures for research data security. The BIC maintains and provides access to the following resources for clinical and translational research including REDCap (Research Electronic Data Capture), which gives investigators a secure environment to manage data, a tool for building online surveys and automated export procedures for data analysis. The resource also has access to eagle-i Resource Discovery which enables investigators to find biomedical resources, such as core facilities, services and model organisms at Dartmouth and participating institutions, and i2b2 (informatics for Integrating Biology and the Bedside) which provides investigators the ability to identify sets of patients from integrated data sources at DH, while maintaining patient privacy. This Core is not part of this or the existing DH COBRE, and the BIC does not assist directly with data analysis. As such there is no direct overlap with the BEDRoC Core, although it will use the facilities of the BIC as needed.

Clinical Research Unit (CRU). The CRU is a fully equipped outpatient research support unit that offers investigators a full array of services for the conduct of clinical research, including study preparation and oversight; use of study space and research personnel; study procedures (e.g., phlebotomy, drug administration, case report form completion, etc.); and sample processing laboratory services (e.g., sample preparation, packaging, shipping, and storage). In 2016, the CRU expanded to include a second unit located at Dartmouth-Hitchcock Manchester. All clinical research (ranging from investigator-initiated pilot and R01-funded studies to industry-initiated, double-blind, placebo-controlled, single and multi-center clinical trials) is appropriate for CRU usage. Experienced CRU staff facilitate study preparation and execution with emphasis on volunteer safety and data quality. The CRU support is available to any Dartmouth researcher.

Library. The Baker-Berry Library, Dartmouth College's main library, supports the collections for the Humanities and Social Sciences and the technical services of all nine libraries of the Dartmouth library system. The Dana and Matthews-Fuller Biomedical Libraries support the disciplines of health and life sciences for the Geisel School of Medicine and Dartmouth Health. The print collections of the Biomedical Libraries contain approximately 90,000 physical book volumes and 100,000 serial volumes. Digital collections are extensive. Most of the information is available on the researcher's desktop with 4,500 digital biomedical journals available via the Biomedical Libraries Web. Many databases, clinical decision support tools, full-text information resources, and digital books are also available. Some of the notable digital resources licensed by the Libraries include full-text clinical information in UpToDate, and DynaMed; indexes of the medical and scientific literatures such as PubMed, Ovid MEDLINE, CINAHL, PsycINFO, and Web of Science; evidence-based medicine resources such as Clinical Evidence and the Cochrane Database of Systematic Reviews; and full-text collections of journal literature in multiple academic disciplines such as the Elsevier Science Direct, ProQuest, and EBSCOhost research databases.

Computers All faculty are provided with both their own desktop computer as well as a DH issued laptop. All desktops and servers are connected to the DH network and are protected by the Dartmouth Hitchcock Medical Center firewall. Authentication is needed to connect to any network connection using security assertion markup language (SAML) and all network traffic is encrypted following Microsoft best security practices. Email is routed through MS Exchange Server at DHMC. Shared file servers have both physical and electronic protections to prevent unauthorized access.

All servers are backed up twice daily and provide rapid, high-resolution file recovery. Redundant server hardware and uninterrupted power supplies, in addition to full weekly offsite backups, provide protection from disasters. Restoration from backups is routinely rehearsed to ensure its effectiveness. Each investigator and staff person has a personal computer with appropriate software for word processing, budget and presentation preparation (i.e., Office Suite, Adobe, Photoshop, EndNote). Additionally, full-time computer support staff are available through the DH helpdesk to troubleshoot any technical issues. Back-up of all computers is conducted at frequent intervals over the institution's high-speed network.

Heart & Vascular Center (HVC). The Heart & Vascular Center Clinical Research group manages the planning, implementation and compliance of clinical research initiated by DH investigators across the sections of Cardiac Surgery, Vascular Surgery and Cardiovascular Medicine. The Heart & Vascular Clinical Research Office provides a professional, well-trained team of research support personnel (Research Nurses, Coordinators, Assistants and Regulatory Compliance Specialists) to ensure the success of clinical research. The HVC research office facilitates the administrative, regulatory, and business activities necessary to assist investigators in the conduction of clinical research; act as a clinical research clearinghouse and attract clinical research in all design phases from private and public sponsors; assists investigators who wish to offer novel, experimental therapeutic alternatives for our patients; acts as a resource for researchers with ideas, support, direction and opportunities related to protocol development and research funding; and assists in making heart and vascular research attractive to prospective research faculty and sponsors. The HVC works with the Clinical Trials and Office of Research Operations to ensure studies progress in a timely and efficient manner from contracting to close.

Weight and Wellness Center. The Center's focus is on population-health of weight across all ages, bringing together clinicians, researchers, and others in developing a multidisciplinary treatment center. This center consists of ~4500 sqft, off-site to the Main DHMC campus, and is fully supported by a director, exercise physiologist, nutritionist, administrator and other clinical staff members. The center assists individuals with weight concerns to develop and execute an interdisciplinary, personalized and flexible plan to achieve their health and wellness goals through evidence-based clinical expertise, community resources, innovative technology, and coordinated care. It is anticipated that the center will serve approximately 500-600 new patients yearly. The Center's vision is to improve population health through clinical and translational research.

Population Health Collaboratory. Created in 2021, this center bridges patients, communities, researchers and the regional primary care network in a real-world setting to co-create knowledge to improve the lives of patients and communities Dartmouth serves. This is a first-of-its kind center to include teams of primary care providers, patients, family members, community services and researchers to advance lifespan population health and applied healthcare delivery science. The center leverages the strengths of DH, Geisel, The Dartmouth Institute, SYNERGY and The Dartmouth Center for Healthcare Delivery Science. The center focuses on mobile health technologies, health behavior change and self-management, patient-reported outcomes both in health settings but also in communities and focus on rural healthcare across the lifespan.

DARTMOUTH CANCER CENTER

The Dartmouth Cancer Center (DCC) is currently in its fifth decade as an NCI-designated comprehensive cancer center, ranked as "Outstanding" during its most recent successful NCI renewal in winter of 2024. DCC has more than 162 members from 19 different departments across DH, the Geisel School of Medicine and Dartmouth College. Basic, translational and clinical cancer research efforts at DCC are conducted in the context of four multi-disciplinary NCI-funded Research Programs: Cancer Signaling, Genomes and Networks (SGN), Immunology and Cancer Immunotherapy (ICI), Translational Engineering in Cancer (TEC), and Cancer Population Sciences (CPS). It is this last program and its extensive portfolio of healthcare delivery research that will create especially strong synergy with CASI. Clinically, DCC is the only NCI-designated cancer center north of Boston and to the east from Buffalo. Each year DCC provides 61,000 patient visits to 18,000 unique patients and offers a portfolio of more than 100 active clinical trials.

Biostatistics and Biomedical Informatics Shared Resource (BBISR). The BBISR provides access to statistical expertise for all DCC Programs. Services include research design and sample size calculations; research proposals and protocol development; randomization, interim analyses, and statistical data management; final data analyses, publication tables, statistical graphics, and manuscript development; and specialized analyses for geospatial and genomic studies. All initial consultations are free. More extensive efforts may require additional funding depending on how much time is required. Bioinformatics provides a wide range of different services including applied bioinformatics and data mining, computer programming and software engineering, database development and programming, and high-performance computing and systems administration.

Office of Clinical Research. The Office of Clinical Research within the Dartmouth Cancer Center assists with the planning, conduct, and compliance of clinical trials involving cancer treatment medications and devices. Studies include investigator-initiated, cooperative group, working group and industry-supported clinical trials. Services include regulatory work, clinical research coordination and research nursing.

FACILITIES AND OTHER RESOURCES AT THE GEISEL SCHOOL OF MEDICINE AT DARTMOUTH

The Geisel School of Medicine at Dartmouth (formerly Dartmouth Medical School), founded in 1797, is the fourth-oldest medical school in the U.S. Geisel School of Medicine has a rich history of scholarship, innovation, commitment to education and training, providing an extraordinarily collaborative environment that includes robust partnerships with clinicians and researchers in our hospitals and clinics and with researchers at Thayer School of Engineering, Tuck School of Business, and Dartmouth Arts and Sciences. Geisel conducts outstanding research in health services and outcomes, cancer and cancer chemoprevention, immunology, cardiovascular disease, control of respiration and lung biology, genomic medicine, addictive and psychiatric disorders, epidemiology and in the study of environmental, behavioral, and social determinants of health. It has outstanding foundational science departments with nationally recognized strengths in biochemistry, pharmacology and toxicology, microbiology and immunology, physiology, genetics, health policy, epidemiology, and informatics. In addition to the MD program, Geisel offers advanced degree programs in biomedical sciences, data science, healthcare delivery science, and public health.

Each year, over 7,300 applicants compete for 92 spots in the entering MD class; there are currently 395 MD students enrolled in the Geisel School of Medicine. Geisel also offers graduate education, with nearly 150 students enrolled in the biomedical sciences, public health, and healthcare delivery sciences, a degree program which Geisel pioneered. Since 1973, Geisel has partnered with DH for achieving coordinated medical education, healthcare delivery, and clinical research. DH employs the clinical faculty at Geisel along with other physicians participating from throughout the region.

Geisel has been enhanced by the 2011 completion of a \$93 million Life Sciences Building that houses faculty from Dartmouth College, Geisel (Molecular and Cell Biology or MCB), Psychological and Brain Sciences (PBS), as well as faculty affiliated with a National Science Foundation program to educate undergraduates in Science, Technology, Engineering and Math (STEM). In 2015, Geisel opened the \$116.7 million state-of-the-art Williamson Translational Research Building (WTRB) at DH's Lebanon, NH, campus, and adjacent to the Dartmouth Cancer Center. Williamson is now home to research programs from across Geisel and Dartmouth College, including The Dartmouth Institute for Health Policy & Clinical Practice, the Departments of Epidemiology and Biomedical Data Science, and Thayer School of Engineering, along with other interdisciplinary teams of bench scientists and physician-researchers. The Williamson Translational Research Building is designed to facilitate collaboration between biomedical scientists and clinicians to ultimately accelerate the movement of discoveries from research labs into patient care.

THE DARTMOUTH INSTITUTE

The Dartmouth Institute (TDI). TDI is a foundational department of Geisel and a cross-campus convener of interdisciplinary research focused on improving health and health care for everyone through research on the organization, financing, and delivery of healthcare and the federal, state, and local policies that influence healthcare delivery. For much of its history, TDI has been a locus for interdisciplinary research involving productive collaborations among clinical and social scientists who have elucidated how health care is provided across the United States through the Dartmouth Atlas of Health Care. Pioneering work by Jack Wennberg, TDI's founder, revealed that where a person lives often has more to do with the care they receive than their underlying disease. Today, TDI researchers are studying the efficiency of the health system, new approaches to health care financing, and new models of patient-centered care delivery—with a growing focus on persistently underserved populations, including dual Medicare-Medicaid eligible populations, persons with physical and cognitive disability, unmet social needs, and co-morbid substance use disorders. The care of older adults with serious illness – many of whom experience disability, isolation, and unmet social needs – are a vulnerable population in need of improvement in the clinical and social services provided to them. While TDI frequently collaborates with DH, it is a part of the GSM and not DH; relationships between DH and TDI are handled as subcontracts run through the GSM.

At TDI, twenty core research faculty, 35 instructional faculty, ~70 employed staff and Research Scientists, and ~100 affiliated faculty contribute expertise in (1) the use of administrative databases for measuring medical

care, (2) health policy and health economics, (3) comparative effectiveness research, (4) technology assessment and decision analysis, (5) health equity, (6) learning health systems and quality improvement science, (7) shared decision making, and (8) implementation science. Disciplines represented among our core faculty include clinical medicine, medical social work, health economics, health policy, health services research, public health, sociology, anthropology, biostatistics, and systems engineering. TDI's faculty are responsible for overseeing and delivering the curriculum in several Geisel degree programs, including a Master of Science in Healthcare Research, Master of Public Health, Master of Health Care Delivery Science, Master of Healthcare Administration, and Ph.D. in Health Policy and Clinical Practice.

The Center for Program Design and Evaluation at Dartmouth (CPDE). The Center for Program Design and Evaluation at Dartmouth operates out of TDI at the Geisel School of Medicine. The Center provides in-depth mixed methods research and evaluation design, implementation, program improvement, and needs assessment to local, national, and international organizations, programs, and research grants. The Center's work spans the areas of public health and healthcare, infrastructure and capacity building, education and training, clinical quality improvement, implementation and translational science, and community-based programs. The 14-person team is comprised of research scientists, and research associates with training in medical anthropology, business, medicine, psychology, and public health, providing expertise in mixed-methods research, instrument development, qualitative and quantitative data collection and analysis, including advanced statistical and mixed methods for multi-site and multi-level evaluation and implementation research. CPDE conducts program design and evaluation for a wide range of initiatives, including grant and non-grant funded programs at Dartmouth, Dartmouth-Health, the Department of Veterans Affairs, the State of NH, and several national foundations.