Facility Solutions to Support Public Health //
enabling pandemic preparedness and response

Flad

table of contents

Developing Solutions to Support Public Health //

Flad's mission is to create environments that enhance human potential. Our unwavering dedication to this mission guides us to deliberately pursue planning and design work in spaces that improve health and advance life science research.

Flad is committed to improving lives with a focus on supporting our clients' groundbreaking efforts in public health diagnostics, treatment, and discovery of new therapies that change the world. It is a true honor to do this work.

It is said that how we respond in times of adversity reveals our true nature. We are inspired by how the recent public health crisis has brought us together as a global community and prompted unprecedented collaboration and innovation in testing, patient care, research, and treatment.

Flad has had the privilege of being at the forefront of COVID-19-related planning. The case studies that follow demonstrate our team's ingenuity and resourcefulness in accelerated responses to helping diagnose, treat, and care for people in need. They offer a glimpse into how we are continuously integrating our collective expertise in research, medicine, and healthcare to respond to the immediate needs of organizations today, while always keeping a keen eye on preventing and preparing for future public health events.

These solutions include high consequence research facilities, vaccine production and biopharmaceutical manufacturing facilities, translational research facilities, and adaptable isolation spaces in healthcare environments. This experience demonstrates our robust understanding of the specific demands of these technically-intense facilities, resulting in streamlined workflows and inclusion of the calming, human-centered elements that are sometimes overlooked.

Partnered with our clients, we are a powerful force in developing solutions and ideas, across the spectrum of public health needs today and in the future.

DIAGNOSTIC AND TESTING RESPONSIVENESS DURING SURGE CONDITIONS

Under normal operations, clinical diagnostic and testing facilities process a steady flow of samples, with a clear expectation of the volume of requisitions and tests processed each day to maintain efficient and effective operations. As evidenced by the COVID-19 pandemic, triaging and responding to a surge in demand for conducting a new test assay for a novel pathogen presents many challenges to existing clinical testing lab operations.

With a long history of supporting public health through the design of complex, technical facilities for clinical testing and diagnostics, several Flad clients are now better prepared to respond to pandemics. These facilities are operating at enhanced levels, playing a key role in the effort to keep people safe by facilitating the need for time-sensitive patient test results.

During a diagnostic and testing facility's design, it is important to explore how a regulated clinical testing facility will incorporate adaptability into its operations. Change is inevitable. Whether it is a rapid response to a pandemic or the long-term adjustment to the progression of high-throughput analytical instruments, a design team needs a thorough understanding of how a facility will adapt to new technical platforms and different test assays.

Serving the New York area, Northwell Health's core laboratory programs were formerly located on various sites. In order to enhance performance while lowering costs, Northwell Health selected Flad to assist them in consolidating their current laboratory functions. The new Core Lab New York consolidates their biological testing functions into a single, efficient location with the ability to test 20 million samples per year and the ability to adjust to changing public need. As a result, Northwell Health is playing a major role in New York State's COVID-19 response.

A thorough understanding of an organization's operations model and procedures can lead to the application of Lean principles to address sample and waste flow inefficiencies, increase equipment utilization, and define spaces that enhance operational flows. For the Mayo Clinic, the Flad design team focused on organizing programmatic components to optimize adjacencies of an open and flexible lab concept in their Clinical Diagnostic Testing Laboratory. This 60,000-square-foot, two-story expansion of their existing facility supports implementation of Lean operations, increasing efficiency and productivity.

By addressing a wide range of practical considerations, the design team can enable multiple strategies to respond to testing surges, while also ensuring the facility conforms to CDC and WHO regulatory guidelines.

NORTHWELL HEALTH

Core Testing Facilities

DOUGLASTON AND LAKE SUCCESS, NEW YORK

Northwell Health made the decision to invest in an expanded core lab during a period of intense growth (still ongoing) which included three hospital mergers and numerous physician practice acquisitions. The now 21-hospital system, which has nearly doubled the number of physicians it employs to 3,000, has acquired both redundant lab spaces and a ledger carrying large expenditures for outsourced lab services.

Northwell's existing 60,000-square-foot core lab in Lake Success, New York was replaced by two automated facilities. The first, the Core Lab New York, is a new, 36,000-square-foot building that is devoted to biological testing and functions as the hospital system's immediate connection to New York City.

The second is 120,000 renovated square feet, devoted to chemistry-related testing, within a one-million-square-foot building that houses Northwell's Center for Advanced Medicine located six miles away. Together, these two facilities provide increased testing capacity, timely throughput, and cost efficiencies.

Given that Northwell anticipated its testing growth at between 250 and 400 percent, a fully automated workflow and testing system was created by several different collaborating manufacturers in response to Northwell's enterprise needs. One of the nation's largest private health institutions, and New York State's largest health system, Northwell Health will now be able to process up to 20 million tests annually, around the clock, utilizing the platform's various analyzer modules.

MAYO CLINIC LABORATORIES

Core Mass Spectrometry Laboratory

ROCHESTER, MINNESOTA

Mayo Clinic Laboratories expanded clinical testing functions at its existing 225,000-square-foot support facility where current operations include specimen receipt, processing, and accessioning. Positioned on the south side of the existing facility, this 60,000-square-foot, two-story expansion houses clinical testing reference and development laboratories, laboratory support functions, offices, and building amenity and ancillary support.

Programmatic components are organized to optimize adjacencies of an open and flexible lab concept, with each space located to support Lean operations. Material, sample, and personnel flows were carefully considered for seamless and efficient integration with a Lean operational framework.

To optimize analytical instrumentation, The Core Mass Spectrometry Laboratory collocates three laboratories—Endocrine, Toxicology, and Drug Monitoring with the Proteomics Core Mass Spectrometry Development Lab (CMSL)—into a singular core mass spectrometry laboratory.

Access to daylight and views can be a challenge in lab facilities; therefore, the building was designed to capitalize on a long, south-facing exposure. Open offices and collaboration spaces line the southern exterior wall, allowing light to penetrate through to the adjacent open laboratories. The lab support functions are positioned along the north side to minimize lab technician travel distances and enhance sample and material flows. This support spine becomes crucial to the success of the functional organization.

The linear organization promotes a clear separation of functional flow, with sample and material entry from the loading dock at the west and the personnel entrance on the addition's east side. Samples processed in the accessioning area move directly into the new addition via a clear and direct path of travel that does not interfere with primary personnel flows. The new entry and intersection create an informal collaboration space while efficiently circulating personnel to both floors of the addition, the existing lab building, and a possible future addition.

Mayo Clinic Laboratories has one of the largest clinical laboratories in the world, performing more than 25 million tests a year.

RAPID LAUNCH TO PROVIDE ISOLATION BEDS

Isolation beds for confirmed COVID-19 patients are in extreme demand, and novel ways to increase capacity are being implemented daily in locations across the world. Planning of these beds requires biocontainment strategy and just-in-time clinical care scenarios for protecting patients and staff.

This is a time for all of us to do things differently, reinvent process, and step up to think creatively not only for today's extreme needs, but economies of scale for future facilities investment.

Flad Architects // Flad.com

CONFIDENTIAL CLIENT

Emergency Preparedness and Response

GEORGIA

We understand the value in pushing ourselves beyond the typical ways of working and beyond the typical solutions, especially in extenuating circumstances such as emergency preparedness and response.

During the COVID-19 pandemic, Flad was commissioned to rapidly develop options for creating overflow isolation spaces for COVID-19 positive patients on a previously unoccupied healthcare campus, with the goal of having isolation beds ready to use within two weeks. This was part of a larger effort to evaluate options for creating up to 2,000 beds, through use of existing state-owned underutilized facilities, private facilities, and temporary structures.

Collaboration, teamwork, and quick mobilization were key to this project. Flad leveraged its unique expertise in both life sciences and healthcare, assembling internal experts from our high-containment and healthcare practices. Furthermore, the integrated approach used with our engineering partner, contractors, and client was critical for the nature and time sensitivity of this project.

Assembled with the right expertise from the start, the team was able to rapidly understand the clinical, facility, infrastructure and permanency needs, identify applicable code requirements, and plot a feasible timeline.

Within three days, the team conducted a thorough on-site assessment of the campus and submitted a report outlining methods to convert existing spaces into temporary isolation beds. The report provided options for activating the site using a phased implementation approach, as well as estimated renovation costs. The study addressed all aspects of emergency preparedness and response, from site and engineering infrastructure (air handling, electrical, and telecommunications) requirements, to patient care must-haves and staff safety, to flows and circulation, to essential security services and technology.

For example, it accounted for negative pressure renovations, separation of clean and contaminated transport of people and materials, PPE accommodations, and staff support areas. It addressed unique requirements of the patient rooms, such as direct restroom access, while designing for flexibility to account for changing needs as the public health crisis subsided. Given the site was unoccupied, the assessment also had to consider the sourcing of essential services such as laundry, food service, materials management, and environmental services, as well as furniture and equipment.

Emergency preparedness planning requires clear identification of the critical requirements and development of strategies to quickly incorporate this criterion. This includes using a combination of traditional planning strategies with accelerated means to meet the requirements. The key is to first understand the risks and then mitigate these risks appropriately. Facilities used for emergency preparedness are vastly different from facilities intended to support a given program need, and these “temporary” facilities and planning thereof should address both the immediate need and transitional nature of this need.

This project was one of many COVID-19 response efforts, that embodied the inspiring ways in which we can rapidly come together, collaborate, and think differently to contribute to the healing and health of our communities.

DESIGNING FLEXIBILITY FOR PANDEMIC RESPONSE

Local surges in the need for medical care worldwide are creating a demand for isolation units where patients with COVID-19 can remain during their isolation period. New, innovative ways to increase isolation unit capacity are being developed and implemented out of necessity daily throughout the ever-changing conditions of the pandemic.

Never has it been clearer that built-in flexibility for rapid response to emergencies is a necessity in healthcare facility design. Considering this, the Flad team has immediately begun augmenting our approach to flexibility in healthcare design. As one example, our team has been working with an academic health system, renovating an upper level floor to create adult intensive care unit (ICU) rooms. The project recently went out for bid, with construction slated to begin this fall. Due to lessons learned from the novel coronavirus pandemic, we began discussing adjusting the ICU plans prior to the start of construction to increase facility flexibility for potential future pandemic conditions.

Because this project is on the upper level of the hospital with new air handling units (AHUs) planned in the renovation, we proposed a means to switch the AHUs from their normal operation with return air systems to an emergency mode that alters the airflow to exhaust to dedicated fans on the roof. This solution would temporarily set the ICU area into a negative “purge” mode to address pandemic needs.

In addition to the potential AHU modifications, we are investigating the current ICU plans to ascertain where any temporary architectural features (i.e., walls and doors), may need to be added to provide accommodations for staff gowning at the entrances to the provisional isolation units created by rebalancing the AHUs.

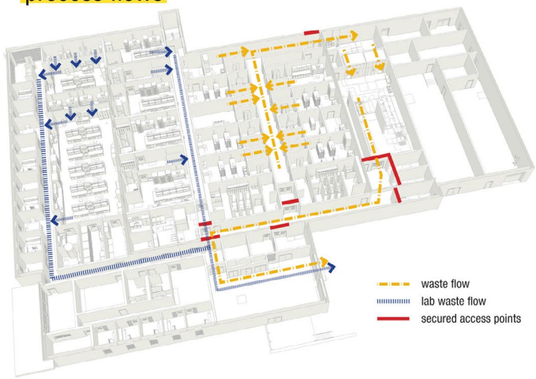
Now is the time to reconsider how we can balance designing healthcare facilities to be open and accessible to the public, while also implementing controls to reduce the spread of infectious diseases and allow for rapid pivots during emerging situations through a calm, confident, and designed-in plan.

HIGH-CONSEQUENCE RESEARCH FACILITIES

As highly infectious pathogens emerge, scientists must assess the disease in a way that protects both the health of the researcher and the public. The 2006 Pandemic and All Hazards Preparedness Act established the Biomedical Advanced Research and Development Authority as the focal point within Health and Human Services. They were tasked with the advanced development and acquisition of medical countermeasures to protect the American civilian population against chemical, biological, radiological, and nuclear threats to public health. Enabling support of both human and animal health, the United States has several national and regional biocontainment laboratories and other specialty research facilities throughout the country.

personnel / material flows

process flows



National High-Containment Laboratories

Flad is currently working with the Centers for Disease Control and Prevention (CDC) on the design of their new High-Containment Continuity Laboratory, a purpose-built containment facility specifically intended to investigate existing and emerging-high consequence pathogens. The design for this facility is centered around the containment of high-consequence pathogens so that researchers may advance the diagnosis of pathogenic diseases, effectively and safely.

The United States Army Medical Research Institute of Chemical Defense is the nation's leading science and technology laboratory in the area of medical chemical countermeasures research and development. With sophisticated laboratories, the 520,000-square-foot facility supports a diversified portfolio of research projects for the Department of Defense and other Federal agencies.

Regional Biocontainment Laboratories (RBLs)

The RBL at Tufts University is a 42,000-square-foot integrated laboratory and bio-defense research center and the University of Chicago's Howard T. Ricketts Regional Biocontainment Laboratory is a 56,000-square-foot regional center of excellence, offering robust BSL-3 and aerobiology suites. Flad's design for both facilities provided CDC-certified, state-of-the-art laboratories that offer biocontainment space to investigators in academia, non-profit organizations, industry, and the government.

The Intersection of Animal and Human Health

As recently demonstrated by the coronavirus outbreak, high consequence pathogens are often identified as spreading from animals to humans, necessitating similar facilities to study animal-borne pathogens.

The Ohio State University's Plant and Animal Agrosecurity Research facility provides for the safe and secure study of emerging select agents and pathogenic diseases. The facility contains BSL-3 Ag and BSL-3 enhanced laboratories to support research in production livestock, zoonotic, and insect-borne diseases.

With construction complete in 2020, the Department of Homeland Security's National Bio and Agro-Defense Facility will provide integrated zoonotic disease research, development, and testing that enables enhanced agricultural and public health. The facility's program includes a collection of ancillary support buildings on one campus supporting the main, 700,000-square-foot laboratory – all working together for both safety in operations and bio-surety. These high-consequence facilities enable the critical research, development, and advance manufacture of medical countermeasures associated with emerging infectious diseases and other threats to public health – a critical role in pandemic surveillance, preparedness, and response. Along with the nationwide network of similar facilities, they offer distinct resources to research communities, enabling the critical understanding of the intersection of human and animal health.

US ARMY

Medical Research Institute of Chemical Defense

ABERDEEN PROVING GROUND, MARYLAND

The United States Army Medical Research Institute of Chemical Defense is the nation's leading science and technology laboratory in the area of medical chemical countermeasures research and development. With sophisticated laboratories, the 520,000-square-foot facility supports a diversified portfolio of research projects for the Department of Defense and other Federal agencies.

A dramatic design reflects the highly technical investigations conducted within. The state-of-the-art facility supports research, training, and education, while promoting staff collaboration. Together, the US Army Medical Institute of Chemical Defense and US Army Medical Research Institute of Infectious Diseases (USAMRIID) in Fort Detrick, Maryland are two of six subordinate commands under the U.S. Army Medical Research and Development Command with primary mission responsibility for medical research and development that is solely focused on medical chemical and biological defense.

DEPARTMENT OF HOMELAND SECURITY

National Bio and Agro-Defense Facility

MANHATTAN, KANSAS

With today's potential bio- and agro-terrorism threats, the Department of Homeland Security (DHS) identified the need to establish an integrated research, development, test, and evaluation countermeasure program. To meet these needs, as well as naturally occurring foreign and animal diseases, the National Bio and Agro-Defense Facility (NBAF) was developed as an integrated foreign animal and zoonotic disease research facility. Enhancing agricultural and public health, NBAF also fulfills the mission of detecting, preventing, protecting against, and responding to bioterrorist attacks within the United States.

The new building provides modern, safe, and secure biocontainment laboratories of sufficient capacity for operations that include the licensure of animal disease vaccines; defending against high-consequence foreign animal diseases in livestock; and providing the essential infrastructure requirements for threat characterization, forensics, and detection. The agricultural bio-defense efforts will create an integrated and comprehensive system to rapidly recognize and characterize biological agents in animal populations, food, water, agriculture, and the environment.

An international peer review team from some of the most significant high containment research institutions around the world ensured the highest degree of safety as the design was being established. Even with this stringent design criteria, and considering the types of bio-safety levels (BSL-2 through BSL-4), the entire campus was designed to meet sustainable goals and energy efficiency not often realized in high containment programs.

Joint Venture partners Flad Architects and Perkins & Will share leadership of the project.

ENABLING RAPID MANUFACTURING FOR PANDEMIC RESPONSE

The necessity for a facility to develop, test, and manufacture medical countermeasures (MCMs) in response to a public health emergency has never been more evident than in the COVID-19 pandemic. Once researchers have developed an early drug product and/or vaccine target candidate, the rapid delivery of clinical trial material requires agile manufacturing capabilities to ensure that the efficacy and effectiveness of a candidate is validated rapidly.

Further investments in new or retrofitted facilities utilizing state-of-the-art flexible manufacturing capabilities will likely need to be brought on-line to produce, stockpile, and deploy the quantities of MCMs that will be required to prepare for and respond to emergent public health threats and pandemics. To support manufacturing surges driven by these types of events, it is unlikely an entirely new facility could be built within a time frame to have a significant impact on a pandemic. There has been ongoing commitment and measured interest by the contract manufacturing and biopharmaceutical industry to pre-invest and anticipate the need for manufacture process improvements along with nimble piloting facilities to address and deliver MCMs. The current pandemic reaffirms the need for these critical assets.

Through a public/private partnership with the Biomedical Advanced Research and Development Authority (BARDA) within the Office of the Assistant Secretary for Preparedness and Response in the US Department of Health and Human Services (HHS), Novartis constructed and established a new, state-of-the art vaccine manufacturing site in Holly Springs, North Carolina.

Now owned and operated by Seqirus, the United States Flu Cell Culture facility was specifically built for the dual purpose of manufacturing both the annual influenza vaccine during normal operations and the option to expand to support enhanced manufacturing in the event of an influenza pandemic.

To optimize timely and safe-for-human-use vaccine manufacture, the design of the facility's quality control laboratory enables the facility to rapidly change from standard operations in BSL-2 labs to enhanced operations with BSL-3 containment capabilities by installing necessary equipment that will allow production in a contained pandemic environment. In addition, the access sequence into and out of the testing space was designed

confidential client

to match the high containment requirements; however, additional entry doors were created to accommodate easier, less time-consuming passage when functioning in moderate containment mode.

Under normal operations, the facility produces approximately 50 million doses of seasonal flu vaccine, but with the rapid changeover to pandemic mode, the facility can provide 150 million doses of vaccine within six months of a declared pandemic.

confidential client

SEQIRUS

USFCC QA QC Testing & Administration Facility

HOLLY SPRINGS, NORTH CAROLINA

The United States Flu Cell Culture (USFCC) facility was specifically designed for the dual purpose of manufacturing both the annual influenza vaccine during normal operations and the option to expand to enhanced manufacturing in the case of an influenza pandemic. Originally designed and constructed through a public/private partnership between the Biomedical Advanced Research and Development Authority (BARDA) and Novartis, and subsequently purchased by Seqirus, the facility has the capability to produce cell-based seasonal flu vaccine, pre-pandemic vaccine, and 150 million doses of vaccine within six months of the declaration of a pandemic.

Responding to health crises of such proportions requires facilities that are both highly efficient and flexible. Flad designed the new quality control, testing, and administration building with BSL-2 labs that could be quickly and easily transformed to BSL-3 containment spaces. The facility includes common spaces such as shared entrance, dining, conference, and training areas in order to encourage communication, camaraderie, and cohesion between the quality control and quality assurance departments. These features not only expedite vaccine production, but they also create an atmosphere of cooperation in pursuit of a vital goal.

CONFIDENTIAL CLIENT

Biotech Manufacturing Facility

SOCIAL CIRCLE, GEORGIA

This state-of-the-art, 1.1 million-square-foot biotech manufacturing campus integrates the technical requirements of both upstream and downstream manufacturing, while providing a work environment focused on the well-being and efficiency of a diverse and highly dedicated workforce with a shared mission: to deliver plasma-based therapies for people affected by rare diseases and other highly specialized conditions.

Flad's design includes cGMP manufacturing units, warehouse and freezer storage, two testing laboratories, a 300-person administration building, and a central commons with a cafeteria, gym, and training rooms.

The manufacturing units include plasma fractionation and the production of immunoglobulin and albumin therapies. Licensing and regulatory requirements for the FDA, European Union, and other countries were considered and implemented. These spaces are organized in a linear fashion along a two-level spine, which runs the length of the facility, carrying people and materials above and main utility runs below. The arrangement facilitates flows of personnel, material, samples, and waste while minimizing conflicts with maintenance operations. The warehouse and freezer storage are centrally located along the spine to provide immediate adjacencies to the primary users of raw materials as well as to the producers of the finished goods that will be shipped for distribution. The entire campus is designed with the flexibility needed to allow for future expansion of each of its components.

A series of skylights along the length of the spine and windows into the manufacturing suites – including the clean environments – ensure that all employees have access to natural light and views, providing a sense of well-being and boosting productivity. The cafeteria, strategically located at the crossroads of the campus, opens its curved façade to allow for magnificent views of the surrounding landscape, views that are also shared by the administrative wing and the plasma testing laboratory. With a raised, under-floor air distribution system, the transparent and 90 percent open office environment of the administrative wing has been sustainably planned for comfort and designed to maximize collaboration.

MULTIPLE STRATEGIES FOR PROTECTING PUBLIC HEALTH

In the past decade, there has been an unprecedented demand on scientific facilities and human efforts supporting the detection, diagnosis, and research related to environmental and human health threats. As a front-line defense, public health laboratories safeguard the health and welfare of our population by providing safe, efficient, and effective environments to conduct research, develop responses, and support healthy communities. Rarely has this need been as evident as during the current COVID-19 response, placing unprecedented demand on scientific facilities and staff efforts to detect, diagnose, and respond to health threats.

To address a wide variety of disease surveillance and testing activities, public health laboratories require a diverse range of technically complex spaces, including clinical testing, esoteric testing, high-containment labs, and advanced development and manufacturing. Programming, planning, and designing highly technical research facilities such as these requires a careful balance of space types to best enable the needs of the public health lab's mission and the communities it serves.

The State of Connecticut's Public Health Laboratory conducts studies in epidemiology, salmonellosis, group A streptococcal infection, rucellosis, rabies, lyme disease, HIV/AIDS, and many other health issues – requiring flexible laboratory space to meet the need for this diverse testing. The design of the 110,000-square-foot laboratory balances technologically advanced building systems and equipment with an inviting human scale.

The State of Wisconsin chose an alternate path to provide additional space and resources to their Department of Agriculture, Trade, and Consumer Protection (DATCP) and the Wisconsin State Lab of Hygiene (WSLH). An 82,000-square-foot addition has enabled the two organizations to adopt a "shared space" model to jointly utilize shared facilities while maintaining their individual identities as state agencies. Each of these facilities were planned to balance a variety of space types to support the specific mission of the lab – protecting the public. By balancing how multiple lab types within a single facility work in conjunction with each other, Flad was able to give each public health laboratory the best possible chance to fulfill that mission.

Both the Connecticut and Wisconsin laboratories were planned to balance a variety of space types to support the specific mission of the lab – safeguarding public health. These organizations support healthy communities through outreach programs and developing methods to detect microbes and genetic disorders, in addition to investigating suspicious clusters of illness – essential services in today's healthcare environment.

CONNECTICUT DEPARTMENT OF PUBLIC HEALTH LABORATORY

ROCKY HILL, CONNECTICUT

To accommodate new programs and an expansion of services, the State of Connecticut Department of Public Health built a new Public Health Laboratory. The design provides a collaborative environment for the medical center, the department of public health, and many other groups, creating a cohesive public health community. The end result provides an environment that balances technologically advanced building systems and equipment with an inviting human scale.

The laboratory conducts studies in epidemiology, salmonellosis, group A streptococcal infection, rucellosis, rabies, lyme disease, ehrlichia and West Nile virus, childhood lead poisoning prevention, maternal and child health, HIV/AIDS, tuberculosis control, environmental health and pollutant control, and safe food and drinking water programs.

The 110,000-square-foot laboratory is outfitted for both environmental and occupational chemistry. In addition to testing diseases and acting as a reference point for healthcare providers, the state lab can also function as a rapid-response bioterrorism laboratory. Molecular diagnostics can be expanded to other infectious disease areas such as virology and reference bacteriology, and new services will be offered for diagnostic and preventive healthcare for chronic diseases.

SELECT CLIENT LIST

Abbott Laboratories

Adaptive Biotechnologies

Advent Health (formerly Florida Hospital)

Affinity Health System

Allergan

Auburn University

Baptist Health

Battelle Memorial Institute

Bayer

Beckman Coulter

BioMed Realty Trust

Catalent

Centers for Disease Control and Prevention

City University of New York

Cleveland Clinic

Columbia University Medical Center

Connecticut Department of Public Health

Department of Energy | Office of Science, National Laboratories

Donald Danforth Plant Science Center

Duke University

Eisai Inc.

Emory University

Exact Sciences

Froedtert Health System

Fujifilm Cellular Dynamics, Inc.

Genentech

Genesis Health System

Georgia Institute of Technology

Gilead Sciences, Inc.

GlaxoSmithKline

H. Lee Moffitt Cancer Center & Research Institute

Healthpeak Properties

Howard T. Ricketts Regional Biocontainment Laboratory

Indiana University

Influenza Research Institute

Johns Hopkins All Children's Hospital

Johns Hopkins University

Johnson & Johnson

Juno Therapeutics, A Bristol Myers Squibb company

Lee Health

Mayo Clinic

Medical College of Wisconsin

Merritt College

MilliporeSigma

Momentive

Mount Sinai Hospital

National Institute of Environmental Health

National Institutes of Health

National Renewable Energy Laboratory

Nektar Therapeutics

New York University

North Carolina State University

Northwell Health

Northwestern University

Novartis

Penn State Health

Princeton Plasma Physics Laboratory

Purdue University

Regeneron

Research Institute

Saint Francis Medical Center

Samsung Biologics

Sarasota Memorial Health Care System

Seattle Children's Research Institute

Seattle Genetics

SSM Health Care

Stanford University

State University of New York

SUNY Stony Brook

Tampa General

Texas A&M University

The Ohio State University

Trinity Health System

Tufts University

UF Health

University of Alberta

University of Idaho

University of Kentucky

University of Mississippi Medical Center

University of North Carolina at Chapel Hill

University of San Francisco

University of Saskatchewan

University of Toronto

University of Washington

University of Wisconsin

UW Health

Veteran's Administration Medical Centers

Wake Forest Baptist Medical Center

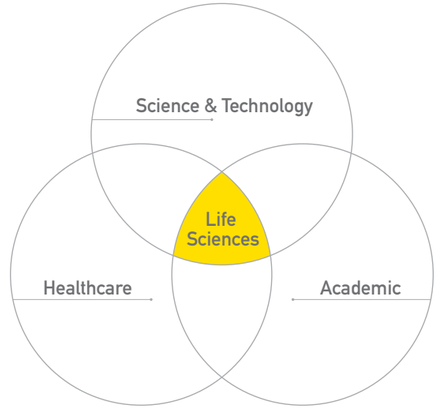
Washington State University

Western University of Health Sciences

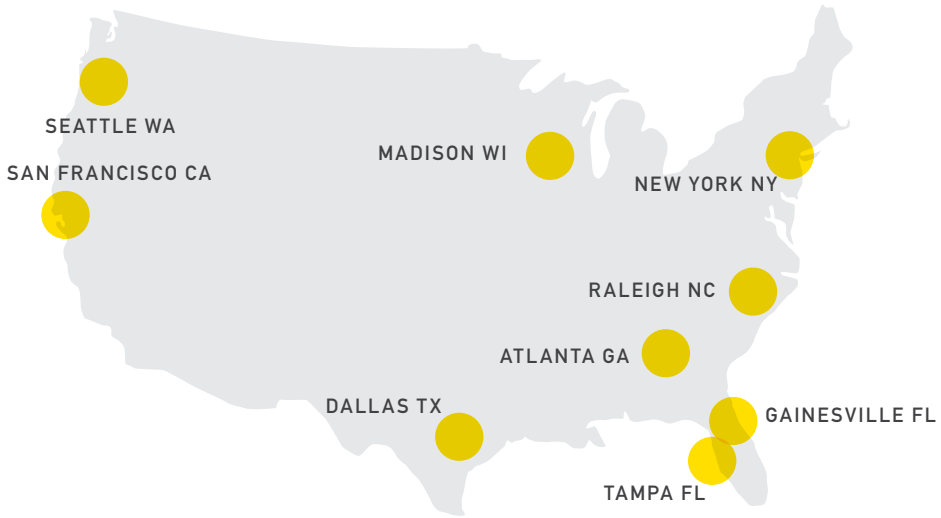
We recognize that the best ideas stem from close integration with our extraordinary clients. As a strategic planning and design firm, Flad's approach is highly collaborative and rooted in our culture of dedicated client service.

Our team's solutions reflect a deep understanding of how people work and interact, helping organizations devoted to discovery, healing, and learning do what they do best. Designing facilities that support health improvement differentiates us on a national level, and this expertise has given us the privilege of making valuable contributions to life science and healthcare projects across the world.

Flad's legacy of repeat clients and extensive portfolio of specialized experience exemplify our values and core mission to create environments that enhance human potential.



The intersection of our expertise defines our focus on the life sciences.



Flad

Jodi Mulcahy

Principal, National Director of Marketing and Strategy
jmulcahy@flad.com
o: 608.232.1284
c: 513.604.0232

Sarah Peterson

Marketing Manager
speterson@flad.com
o: 608.232.4317
c: 608.239.9945