



THE UNIVERSITY OF TEXAS MD ANDERSON'S
**The Sheikh Zayed Bin Sultan
Al Nahyan Building for
Personalized Cancer Care**

HDR



Making Cancer History[®]

**Designed differently from other buildings on campus,
the Sheikh Zayed Bin Sultan Al Nahyan Building for
Personalized Cancer Care fundamentally changes how
research is conducted at MD Anderson.**

In 2012, MD Anderson launched its ambitious Moon Shots Program—targeted at finding a cure for seven cancers in seven years, to ultimately “make cancer history.” MD Anderson leaders recognized that they needed a building that was equally as bold as their desire to revolutionize cancer patient care. Next-generation scientists, emerging technologies, and translational cancer research impel a design solution which reinterprets the laboratory building typology.

At the intersection of the educational, clinical and research campuses, the Zayed Building’s image, identity and materiality purposely establish a new modern image for research at MD Anderson. The glass clad tower rises from a sea of lower, brick buildings, and is composed of a central core with four tangential wings. Viewed up close or from a distance, it is clear that the Zayed Building is not research as usual. Its soaring glass towers are uplifting, inspiring and bring hope to those seeking treatment at MD Anderson, and to those Making Cancer History.[®]

Statistics

PROJECT NAME

Sheikh Zayed Bin Sultan
Al Nahyan Building for
Personalized Cancer Care

PROJECT LOCATION

6565 MD Anderson
Boulevard, Houston,
TX 77030

PROJECT OWNER

MD Anderson

DATE OF COMPLETION

12.09.2014

TOTAL GROSS SIZE

172,000 ft² | 16,000 m²

TOTAL**CONSTRUCTION COST**

\$160,872,632.00

TOTAL PROJECT COST:

N/A

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Executive Summary

In 2012, MD Anderson launched its ambitious Moon Shots Program—targeted at finding a cure for seven cancers in seven years, and ultimately “making cancer history.”

The Research

Next-generation scientists, emerging technologies, and translational cancer research impel a design solution which reinterprets the laboratory building typology. The facility embraces the trend towards multi-disciplinary collaboration in order to accelerate developing treatments and cures. Most importantly, people are at the center: the dedicated researchers from a broad range of scientific fields who ultimately will “make cancer history.”

The Building

The buildings that preceded the Zayed Building had technical support, a solid block, at the center. This building puts people at the center. Why? The essential ingredient of translational research is people; it's about exchanging ideas. The solid rectangular block has been transformed to a tower composed of four slender wings (two office and two lab) with people at the center. The pin-wheel configuration, combined with a glass enclosure, provides natural light throughout all of the components.

The Living Room

Designed as the building's “living room,” the central hub not only contains common core functions and services such as the elevators, stair towers and restrooms, it also contains various gathering spaces, comfortable seating, a variety of work-settings, and food! Infused with technology, the living rooms on different floors are equipped to support different functions and are connected by a communicating stair. The living room effortlessly fosters collaboration.

Laboratories “Texas-Style”

The lab wings are designed for efficiency (78% net to gross) and flexibility. Independent mechanical systems for each wing feed general and support lab zones—and help to create a 12,000 square-foot lab “module,” which can accommodate evolving technologies, changes in program, and easy reconfiguration. 80-feet wide, half the width of a typical lab, natural light penetrates the entire lab. Even laboratory support and specialty labs have windows.

The Intellectual Engine

Program leaders are co-located together with other program leaders, promoting multi-disciplinary collaboration at the heart of translational research. In earlier facilities, PIs were located with their labs, separated from other talented, dedicated and driven scientists involved with other research programs. With a critical mass of co-located brainpower, the design assembles an “intellectual engine” for change.



The Next-Generation Scientist

The building is designed for scientists who are now five-years old, Kindergarteners, or even younger. This next-generation scientist is likely to be innovative, entrepreneurial and accustomed to technology as an every day tool. This facility can be fit-out to accommodate as-yet-unknown programs and technologies, with fluidity between laboratory, clinical, office and support spaces.

In the Ground in Nine Months

Nine months after selecting the design team, footings were in the ground. HDR, Vaughn Construction and MD Anderson worked together to create an entirely new expedited approval process. Phased delivery and multiple bid packages allowed the building core and shell to be designed and built first. The initial interior fit-out included laboratories, laboratory clinical space, offices, conference and building support spaces.

Landmark

With its prominent location, connecting education, basic and clinical research programs, the building was intentionally designed to be memorable, and completely different from other buildings on campus. From any place on campus, the “crystal” rising from the low-slung brick buildings is visible. The Zayed Building is both an orienting landmark and a symbol of hope.

What If?

With its prominent location, connecting education, basic and clinical research programs, the building was intentionally designed to be memorable, and completely different from other buildings on campus. From any place on campus, the “crystal” rising from the low-slung brick buildings is visible. The Zayed Building is both an orienting landmark and a symbol of hope.







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What If?



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The concept of two office towers and two lab towers connected via a central hub was a significant departure from previous lab designs. That feature has done more to foster collaboration than other concepts we have tried.

David J. Bammerlin, P. E.
AVP, Research & Education Facilities
MD Anderson



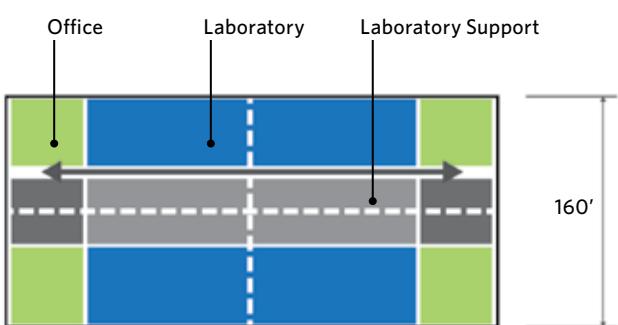
The Building

A Building as Bold as the Science

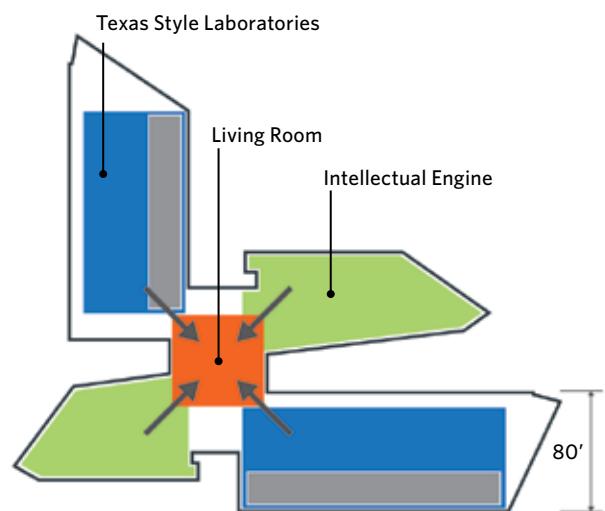
In order to reach the goal of providing personalized therapy as standard practice within five years, leaders of MD Anderson recognized that they needed a building that was equally as bold as their desire to revolutionize cancer patient care. Designed differently from other buildings on campus, the Sheikh Zayed Bin Sultan Al Nahyan Building for Personalized Cancer Care fundamentally changes how people will work.

People at the Center

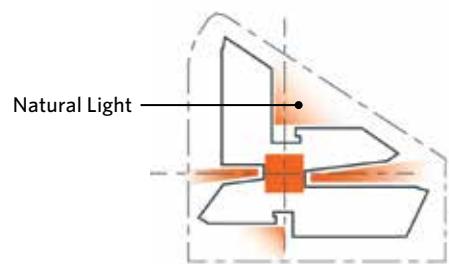
The solid rectangular block of a typical research facility has been transformed to a tower composed of four slender wings, like a pin-wheel, with people at the center, and two office wings and two lab wings. Why? The essential ingredient of translational research is people. And specifically, it's about people from different disciplines and programs exchanging ideas.



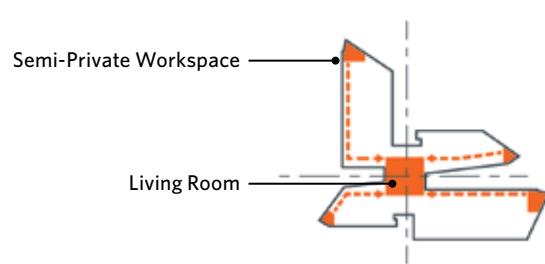
Previous Research Model



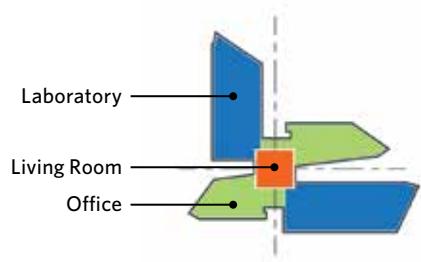
The Zayed Building - New Research Model



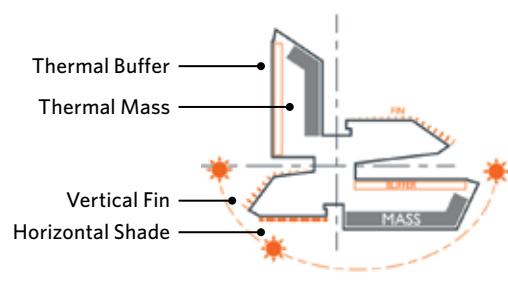
Geometry



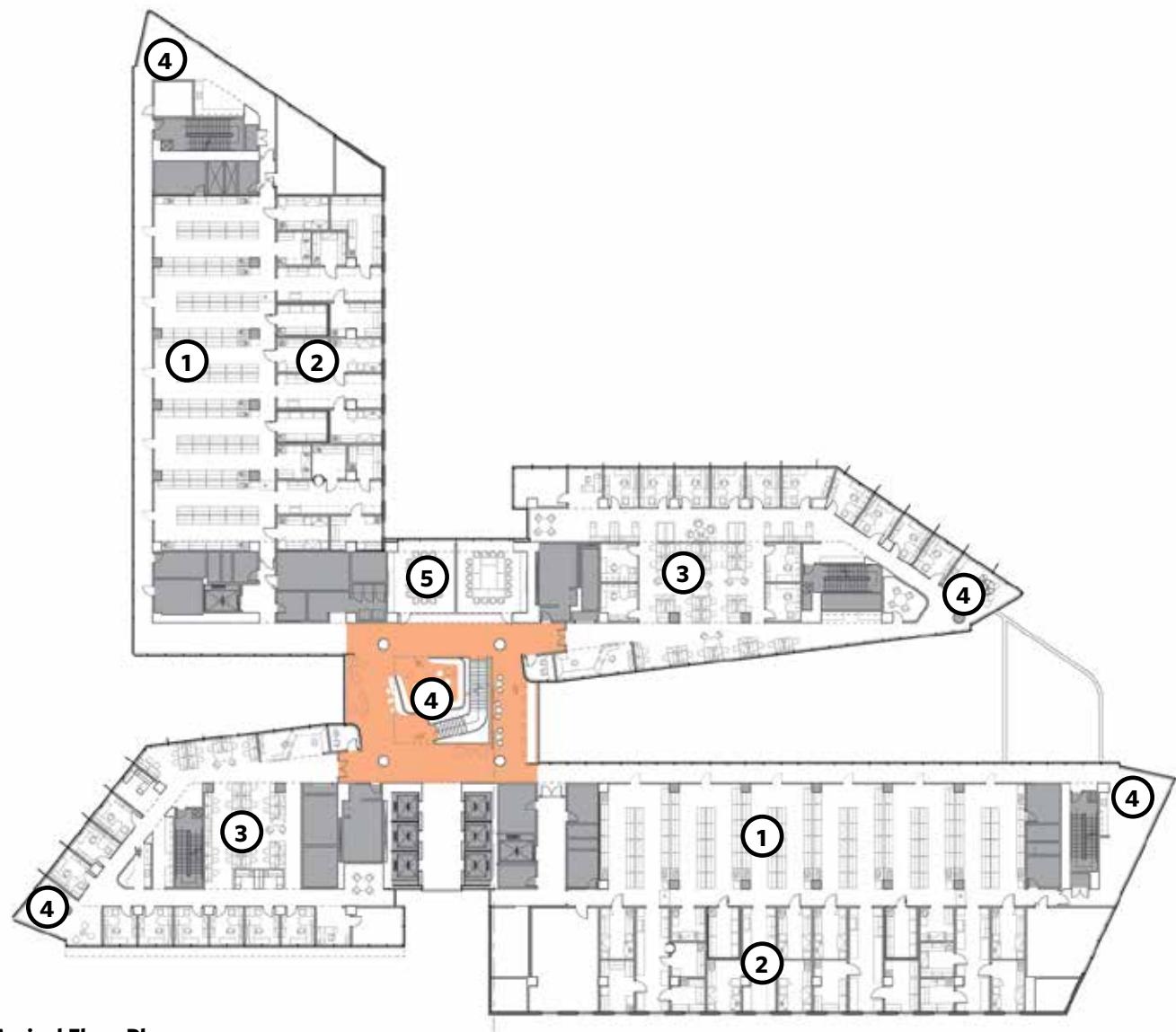
Collaboration



Program

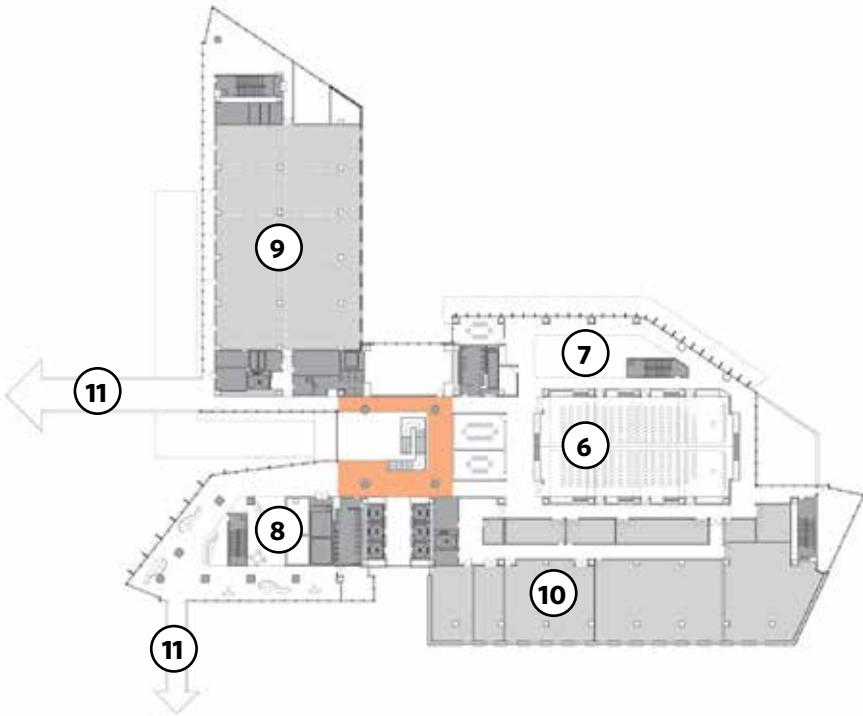


Solar



Typical Floor Plan

1. Laboratory
2. Laboratory Support
3. Office
4. Collaboration Hub
5. Conference



- 6. Conference Center
- 7. Conference Center Break-out
- 8. Grab-n-go Cafe
- 9. Shell Space
- 10. Mechanical
- 11. Bridge Connections
- 12. Lobby
- 13. Staff Lockers / Bike Storage
- 14. Facilities Management
- 15. Sterilization
- 16. Loading Docks

Second Floor Plan



Ground Floor Plan

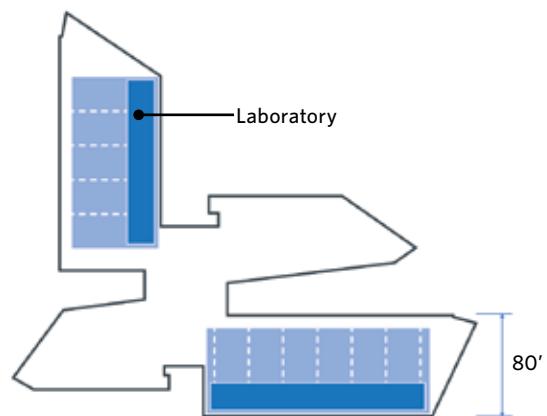




Laboratories “Texas-Style”

Laboratory wings are vast, and hugely efficient, with a 78 percent net to gross ratio. Labs are also completely flexible, with independent mechanical systems and a zone of robust utilities for specialty and support labs. In essence, the 12,000 square-foot space is, in its entirety, the lab “module.” Designed to accommodate changes in technologies, as well as changes in program, a lab wing could easily be fit out for computational labs—such as genomics or proteomics, essential to personalized medicine—or even offices.

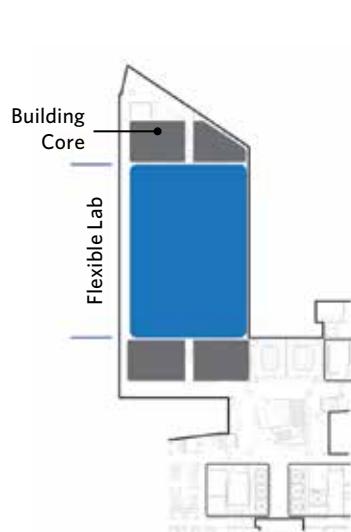
Lab wings are 80-feet wide—about half the width of a typical rectangular lab block—allowing sunlight to penetrate the entire lab. Full-height glass walls along lab-wing corridors allow researchers a casual connection to other researchers, providing plenty of opportunities for interaction and collaboration, while unobstructed views to and from the laboratories enhance safety and security. The open laboratory wings are designed with clear separation of flows, and are easily reconfigured.



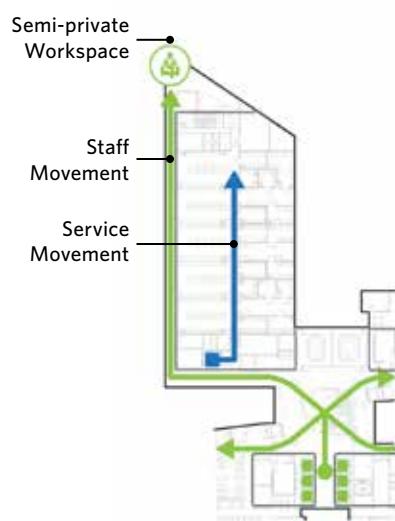
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Fully-open labs with limited fixed components support and promote the 21st century science taking place in the building. Flexibility, adaptability and mobility are key to how research will be accomplished in the future.

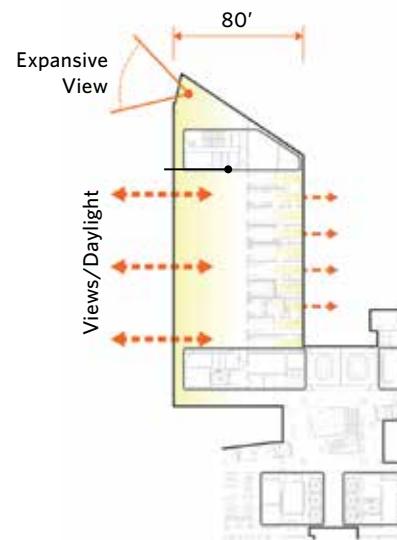
Jeff Ellard
Manager
Facilities Planning,
Design & Construction
MD Anderson



Texas Style Lab



Separated Circulation



Healthy Environment



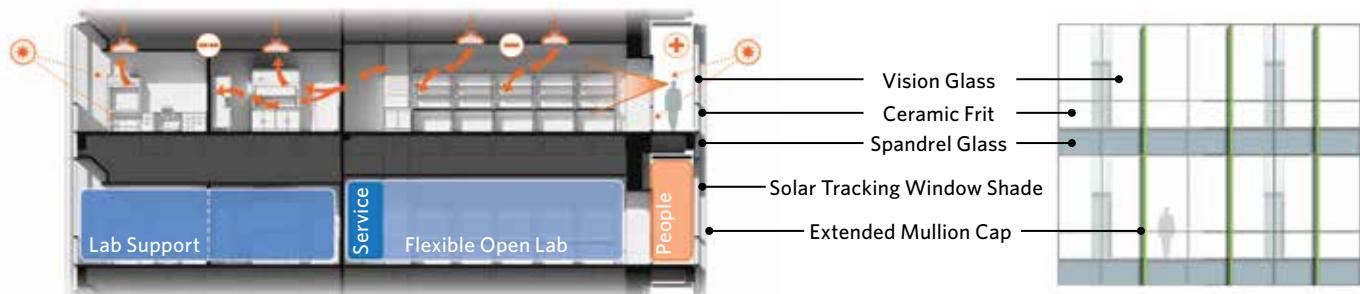
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“One professor...did not want to move as he was convinced that his assigned bench space was not adequate. Two weeks after the move, he could not have been happier. He specifically noted the ease and convenience of the lab configuration. To quote, ‘I didn’t want to move. I didn’t think it would work. I was WRONG.’

Pam Jones
Department Administrator
Experimental Radiation Oncology
MD Anderson

Specialty and Support Labs

A “ghost corridor” separates the open, general labs from the specialty and support labs, and separates people and samples flows. In response to a study evaluating the amount of time people spend in various spaces, lab support spaces are designed as comfortable destinations, and not treated as “left-over” space. Typically, with support spaces buried in the center of the lab block, these spaces were dark and isolated. In a break from convention, laboratory support spaces here were pulled out of the center and located along exterior walls, with windows providing natural light and views to the outdoors. Designed to be comfortable, accessible, and near other populated spaces, the support labs are part of the overall lab in which researchers can see and be seen. Maximizing visibility also increases safety.

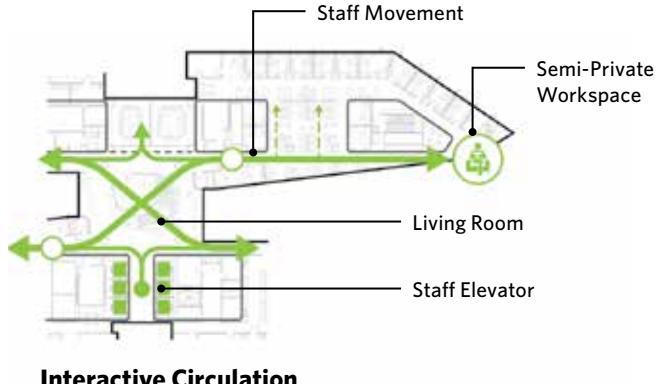
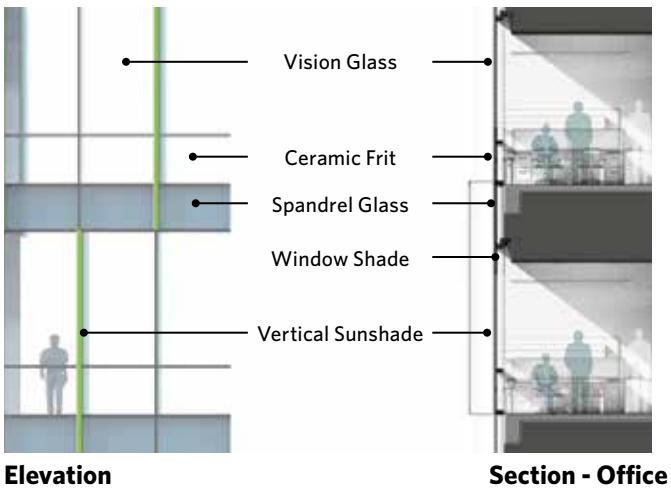




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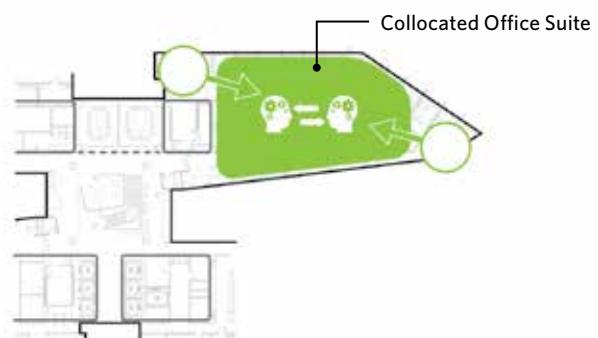
“My team has been incredibly fortunate to benefit from the innovative open floor laboratory concept...It ensures that our cancer fighting trainees have an opportunity to collaborate without impediments and walls, and fosters a welcoming spirit to newcomers in the building... Having moved from an older building within the campus, I can see the effects the new building has had on productivity and motivation...”

Anirban Maitra
Professor, Pathology
Director of Pancreatic Cancer Program
MD Anderson

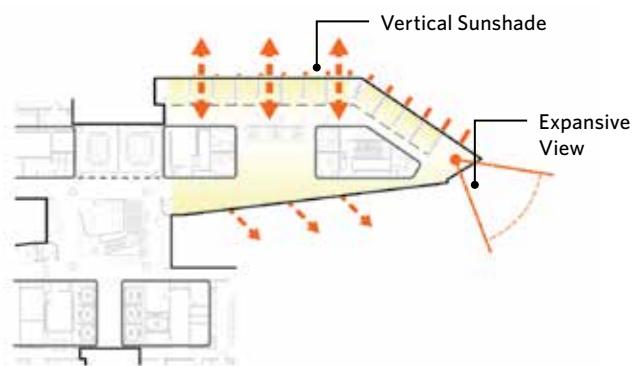


The Intellectual Engine

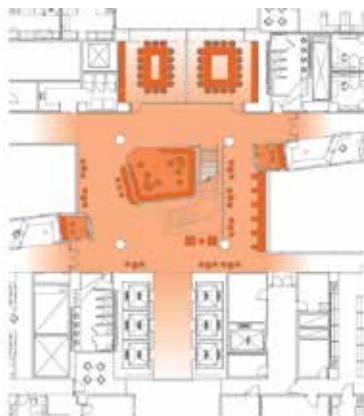
Scientists from various disciplines are co-located in office "neighborhoods," promoting interdisciplinary research, knowledge transfer and an exchange of ideas. In a departure from traditional research at MD Anderson, program leaders are co-located together with other program leaders. In the past, these leaders would have been located with their teams, away from leaders of other programs; often in separate buildings. The office neighborhoods are based on the same module as the laboratories, and are also easily reconfigured. Various types of work settings abound, from niches for solitary, concentrated work, to "war rooms" with white boards and technology hook-ups for brain-storming sessions. The intellectual engine that will drive research towards cures for cancer is comprised of smart, dedicated and driven researchers willing to reach beyond their disciplines to collaborate and find new and innovative treatments. We know that getting out of your own group is essential to innovation.



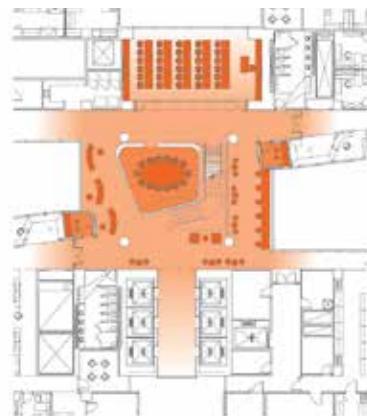
Intellectual Engine



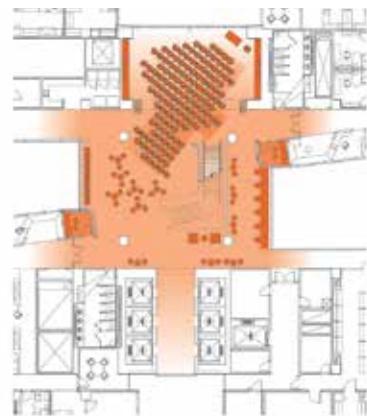
Healthy Environment



Agile Workplace



Team Hub

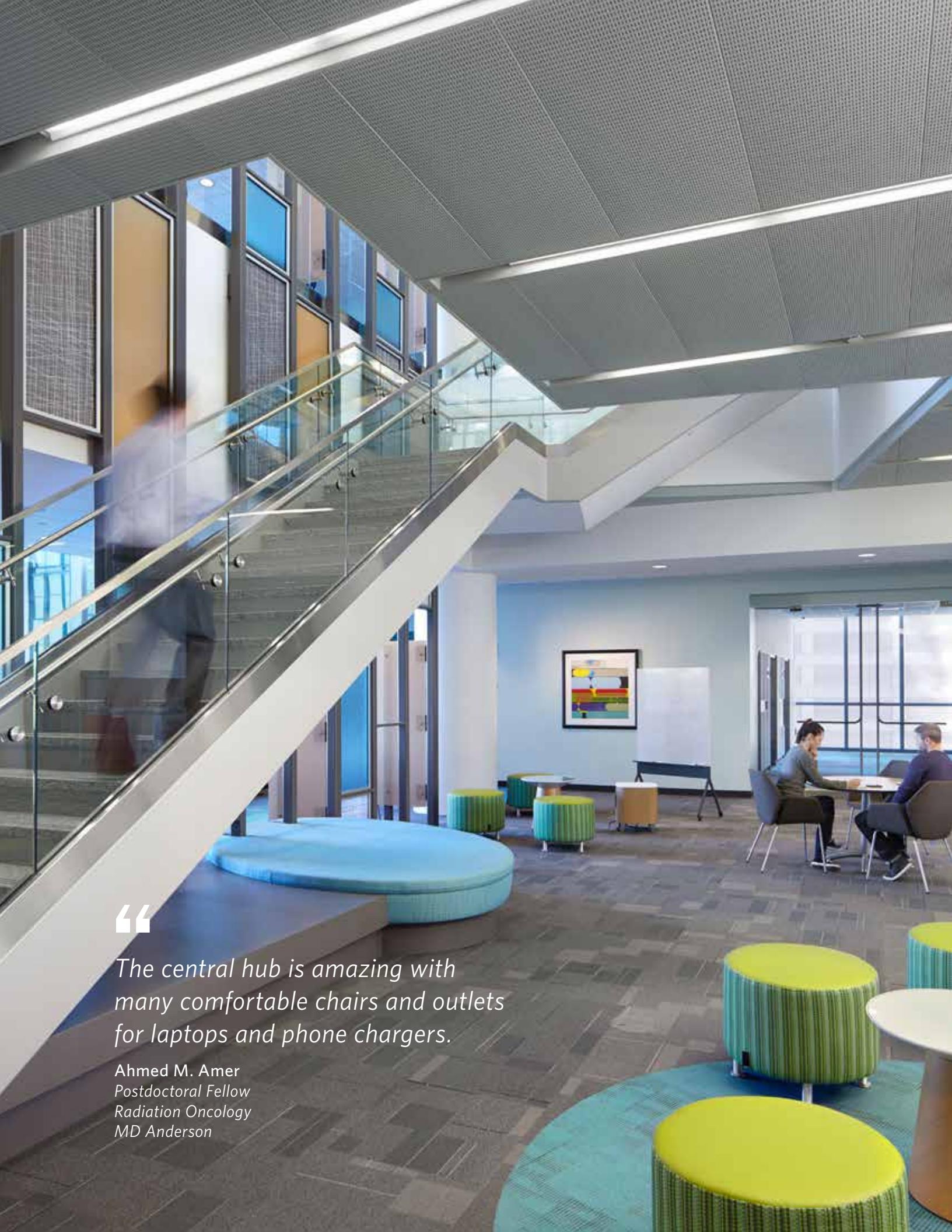


Neighborhood Meeting

The Living Room

The central hub on each floor is designed as a “living room,” containing common core functions and services such as elevators, stair towers and restrooms, as well as various gathering spaces with comfortable and moveable furniture, various work-settings, and food! Living rooms on different floors are furnished and equipped differently, to support different functions; however, all

are colorful, well-lit, and technologically robust, with views to the rest of the building and to the campus. An attractive, open communicating stair ties these vertically-distributed destinations together, and encourages scientists on different floors to interact with one another. The living room has become a new kind of destination that encourages collaboration by effortlessly bringing people together.



“

The central hub is amazing with many comfortable chairs and outlets for laptops and phone chargers.

Ahmed M. Amer
Postdoctoral Fellow
Radiation Oncology
MD Anderson

“

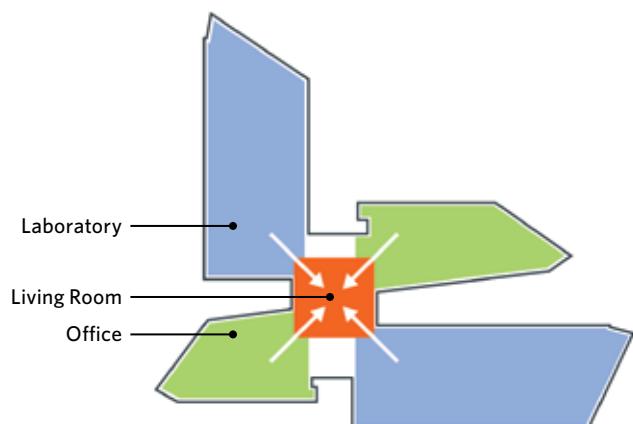
The Zayed Building creates a very calm atmosphere with an abundance of natural light and bright colors. Great for concentrated thinking and interacting with colleagues.

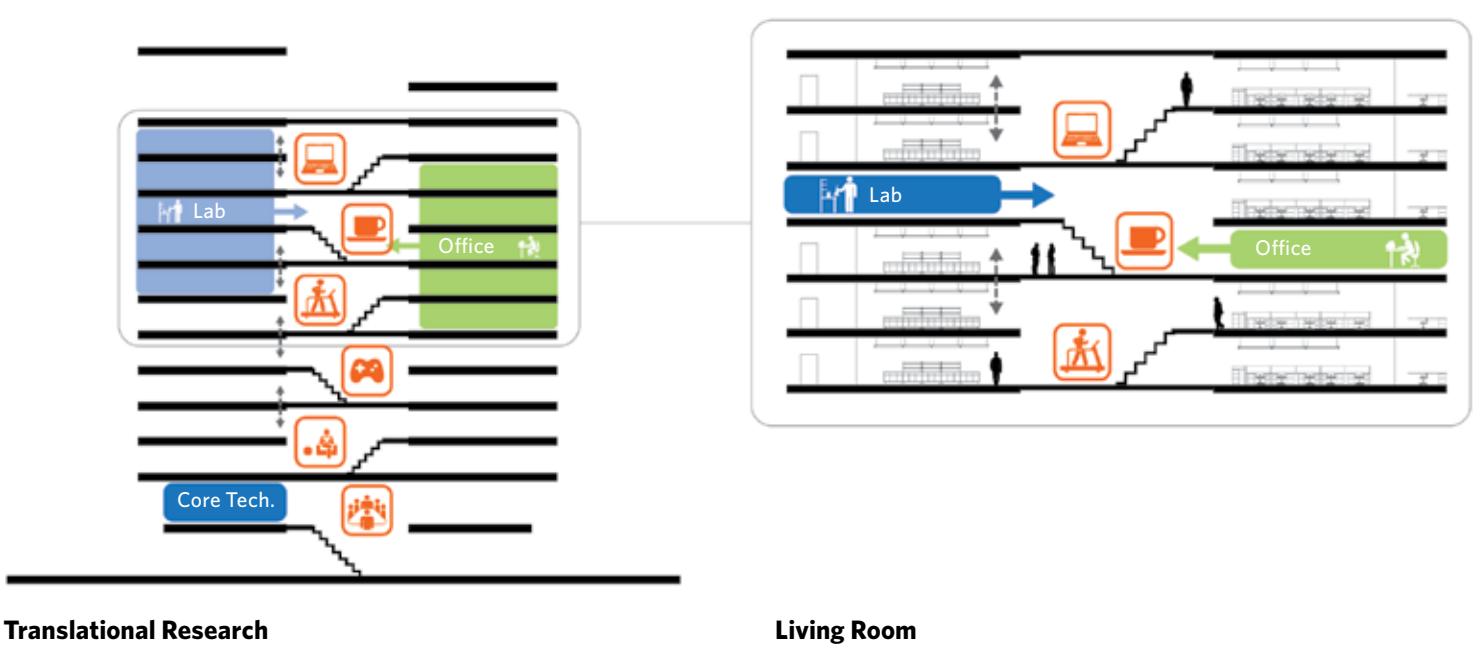
Dr. Kathy Mason
Experimental Radiation Oncology
MD Anderson



Traditional to Translational

Accelerating the transformation of science and clinical research into cures for cancer requires a program built on a multi-dimensional platform, bringing together advances in research, education and healthcare including new strategies for novel therapies using preclinical models. In order to find cures, and to benefit patients as quickly as possible, the strategic master plan addresses MD Anderson's capacity for clinical genomics, proteomics and immune profiling, as well as infrastructure for massive data analytics and big data capabilities. However, satisfying technological requirements is not enough; the comprehensive master plan focuses equally on the patient experience, which is at the heart of MD Anderson's mission to eradicate cancer. Connectivity at many scales is important to the success of the facility.



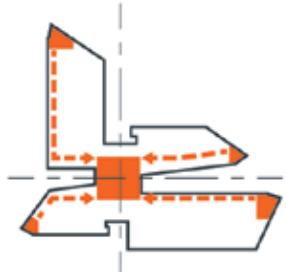


Translational Research

Living Room



Workspace



Building



Campus



Network

Team Interaction

Workspaces are designed as “work settings” to accommodate individual, concentrated work as well as collaborations with another person, a small group, or even an entire team. With flexibility inherent in the workplace, scientists and faculty engage across disciplines—a critical component to innovation.

Heart Synergy

In order to get to a laboratory or an office, a person walks through the shared core space on that floor; possibly walking up the communicating stair to another floor. By distributing different types of destination spaces on different floors to create a “vertical spine,” researchers are encouraged to interact with researchers working on entirely different floors.

Destinations

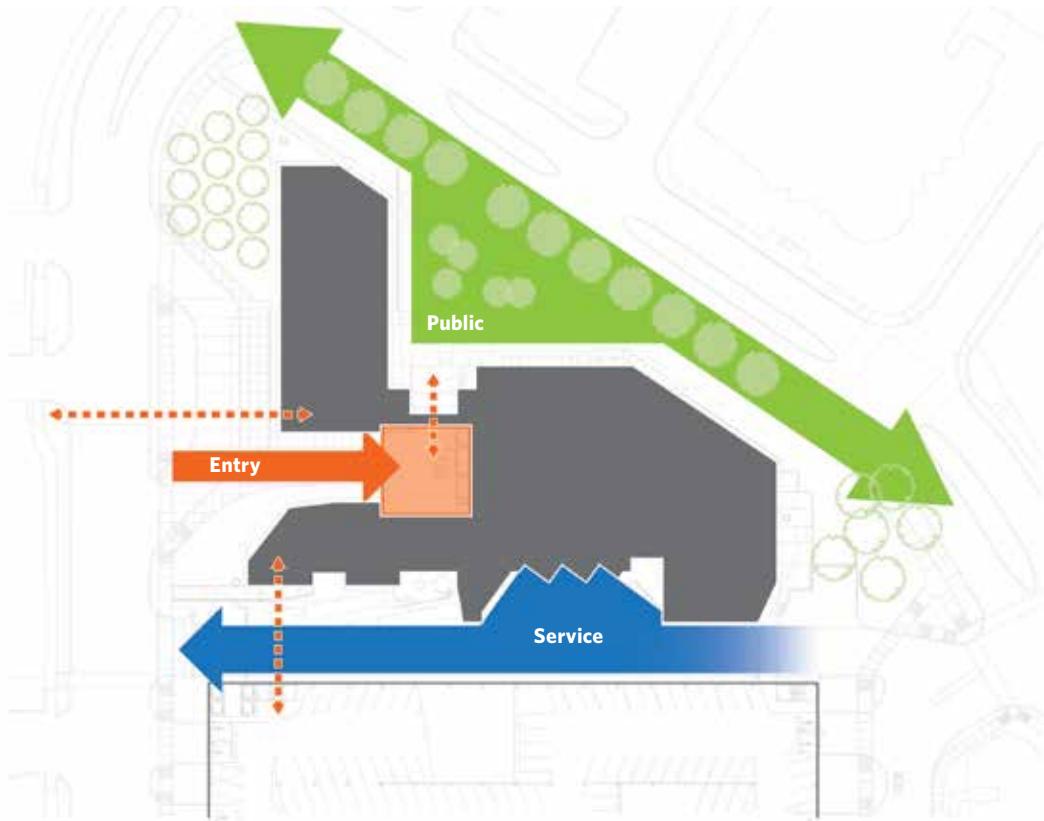
Part of the strategy to foster interaction on campus is to distribute destinations at the public “green level” along regularly-traveled paths. For example, this building does not have a large-scale cafeteria; instead, occupants walk to a different building nearby. However, the building does have conference and training facilities available to the entire campus, attracting researchers and visitors from all disciplines and programs.

Integration

This new facility is a critical part of the campus, and integral to the new master plan now being implemented. In addition, through educational outreach programming and using new communications technologies, scientists and faculty are part of a larger network—a community of scientists and faculty around the globe working to eradicate cancer.



The Site



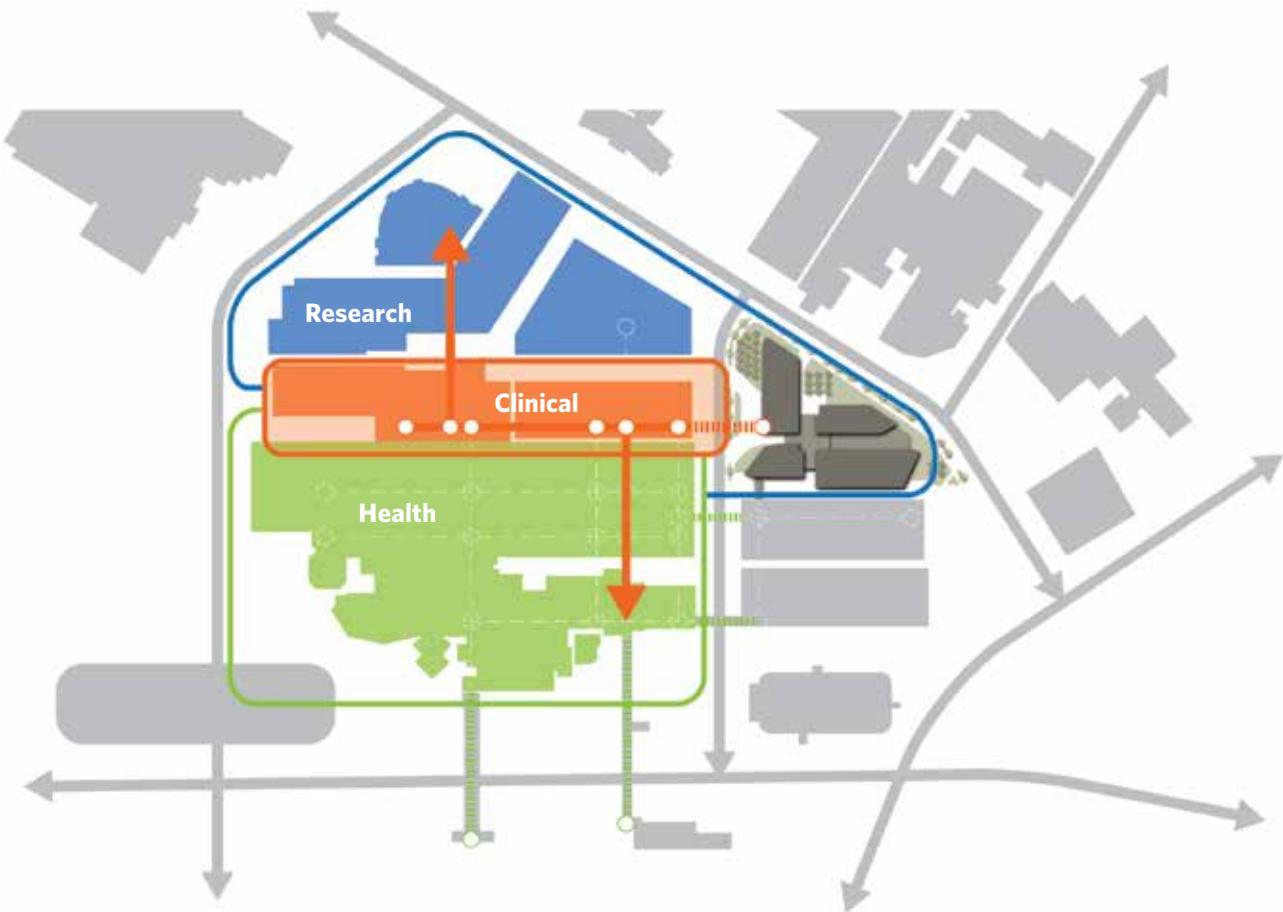
Site Plan

Context

The building form and massing fits the triangular configuration of the site as an assemblage of components, each responding to its specific relationship to the site.

Between wings, open space and pocket parks welcome the community—a public aspect of a building that is mostly, by necessity, carefully controlled. Service entrances are discretely located, with the “public” side facing the campus, creating an edge to the campus and defining a new gateway. The glass façade not only welcomes faculty and visitors to the campus but provides views to and from the building; its soaring and reflective presence a landmark on campus and to the surrounding community.





Landmark

At the intersection of the educational, clinical and research campuses, its image, identity and materiality purposely establish a new modern—and memorable—image for research at MD Anderson. Clearly a departure from the mostly brick buildings comprising MD Anderson, the “crystal” tower is visible from any place on campus—an orienting landmark. Without research, there can be no change in clinical care. With an uplifting image that not only celebrates the transition to translational medicine, but also literally and figuratively brings education, clinical and basic sciences together, the Zayed Building fundamentally changes how research is done at MD Anderson, inspires, and creates a sense of hope—all targeted to meet MD Anderson’s mission to “make cancer history.”



This aerial photograph captures the modern glass facade of the MD Anderson Cancer Center at dusk or night. The building's surface reflects the surrounding city lights, creating a vibrant blue and green glow. The words "THE UNIVERSITY OF TEXAS" and "MDAnderson Cancer Center" are prominently displayed in red and white on the upper left portion of the building. The structure is a multi-story skyscraper with a curved corner. In front of the building is a large, illuminated walkway and a parking garage. The surrounding urban environment is visible, with other buildings, roads, and streetlights in the background.

THE UNIVERSITY OF TEXAS
MDAnderson Cancer Center

“

*The outside of the building is stunning.
Visually striking. Makes me very
proud to work at MD Anderson.*

Cullen Taniguchi
Assistant Professor
Radiation Oncology
MD Anderson



Sustainability

Heat Recovery

Innovative HVAC Control Systems

Aircuity

Narrow, Naturally Lit Floorplate



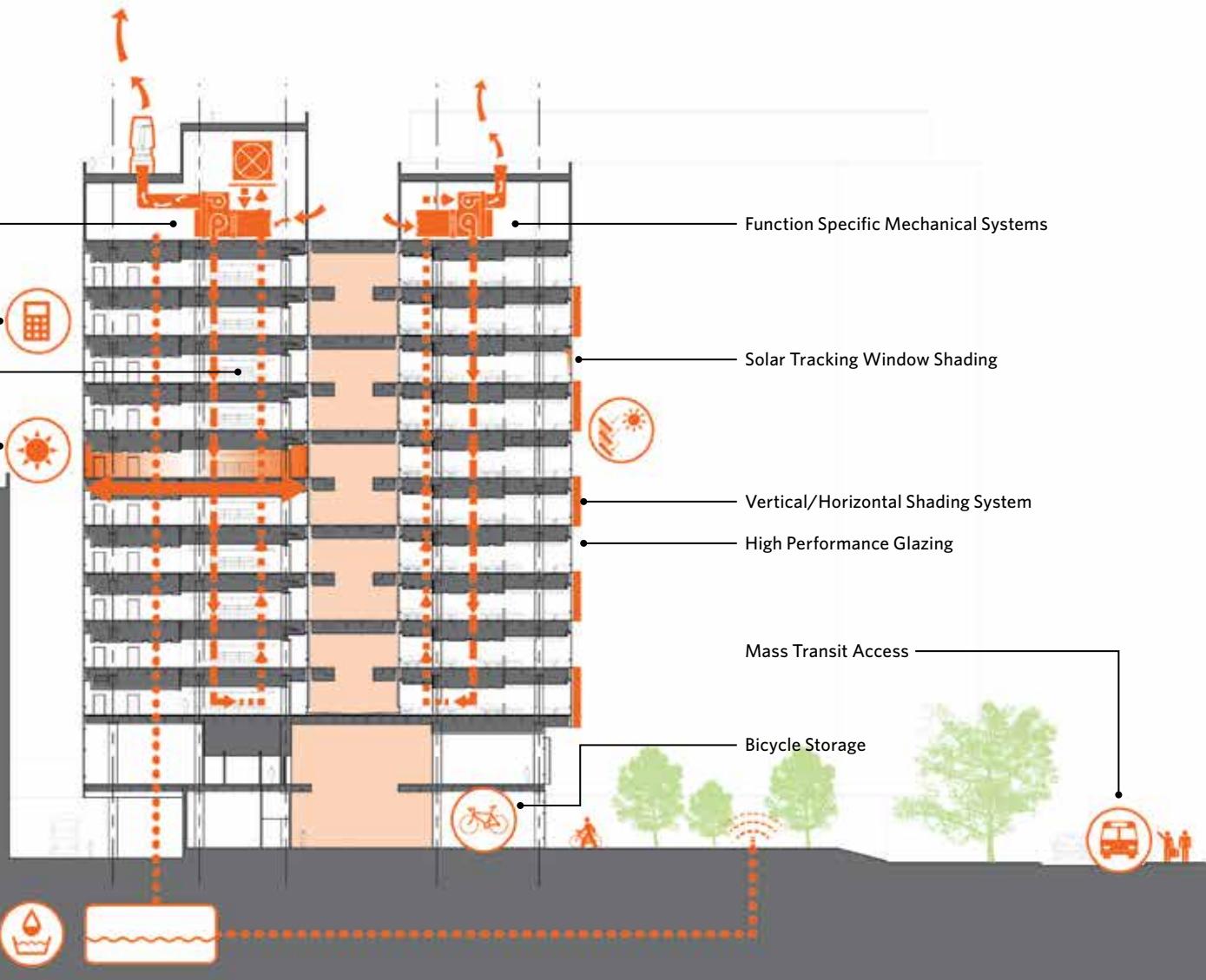
Condensate Water Reclamation



“

We are enjoying the latest technology in the video-capable phone system, the centrally controlled HVAC, and the heat-sensitive shades. It seems as if every design detail was carefully planned and executed to provide us with the optimum environment for lab-based research.

Pam Jones
Department Administrator
Experimental Radiation Oncology
MD Anderson



Building a glass tower in Houston required thoughtful planning. Each façade is “solar-tuned” in accordance with its solar orientation, including shading “fins,” the type of glass, and how it is installed. Shared spaces, such as the glass connecting corridors and destination work areas, are equipped with solar-tracking automatic shades to control heat gain. Further, by zoning open and support laboratory areas, and by separating lab and office functions into two towers, each can be designed for maximum efficiency and reduced energy consumption.

Components of the sustainability strategy include:

- Brownfield development of urban site
- Bicycle storage lockers and showers
- Alternative transportation with no additional parking
- Mass transit access
- Aircuity Beta site
- Narrow floor plates for natural light penetration
- Abundance of natural light with minimal solar heat gain
- High-performance glass facades in compliance with ASHRAE 90.1
- Vertical and horizontal solar tracking shading systems
- Separate zones for general and specialty labs for optimized independent mechanical systems
- Laboratory HVAC equipment with robust energy reduction and recovery system
- Innovative use of HVAC controls
- Low VOC building materials
- High percentage of building materials locally sourced
- Irrigation water through condensate water reclamation program



Achieving the Vision

Largest Single Donation

The Khalifa Bin Zayed Al Nahyan Foundation gave MD Anderson the largest donation in MD Anderson's history, giving it the funding to move full-speed ahead with its mission to be the world's leader in personalized cancer care. This also gave the design team the responsibility to shepherd the design to meet MD Anderson's and the Zayed family's expectations, including an accelerated schedule.

In the Ground in Nine Months

The facility was designed and constructed on a fast-track schedule. From the start, the design team included the construction manager, architect, engineers and MD Anderson. This lean core group was empowered to make decisions quickly. The singular vision unified the team and pushed them to design and build the facility using a hyper fast-track delivery model. Nine months after MD Anderson selected the design team, footings were in the ground. Delivery was phased and included multiple bid packages. The building core and shell was designed and built first, with an initial interior fit-out including two floors of laboratories, one floor of clinical laboratory space, as well as office, conference and building support spaces.



A New Accelerated Process

Accomplishing this meant that MD Anderson had to radically—completely—change their usual design and building processes. MD Anderson heeded the advice of HDR and Vaughn Construction, the CM, and fostered a collaborative approach to design by changing their interim design review process. The typical design review process for MD Anderson was a six to eight week process in which 30-50 people independently reviewed design progress documents and provided comments back to the AE team. MD Anderson understood this project could not accommodate this review process. Instead, HDR and Vaughn held design reviews for a particular discipline in which stakeholders reviewed progress and made decisions together, saving five to six weeks for each design milestone. Ultimately, the Guaranteed Maximum Price Proposal was submitted on schedule.

A New Procurement Model

The Zayed Building's exterior skin is all glass. The conventional method of designing the exterior skin and then having it bid would take too long. As a solution, Vaughn proposed a design-assist procurement model: The design team would establish general design performance criteria, glazing module sizes and aluminum mullion shapes, and Vaughn would solicit design-assist proposals from qualified glazing contractors to complete the design, fabricate and install the curtain wall system. As a result, the curtain wall design was completed and fabrication of a unitized system begun just as the structural frame was being constructed.



Next-Generation Scientists

Aiming to accommodate unforeseen change, the designers had to consider a broad spectrum of the ways that people work, and in particular, they needed to consider the next-generation scientist who would likely be innovative, entrepreneurial and accustomed to technology as an every day tool. To this end, the building promotes a “work anywhere, everywhere” work culture.



“

Having the opportunity to work in the building makes me excited to come in to work every morning. It really is a beautiful setting in which we can do our research.

Vincent Bernard Pagan
Graduate Research Assistant
Pathology Research
MD Anderson

A Vibrant Workplace

Throughout the facility, an interactive and vibrant work environment fosters collaboration, and helps scientists accomplish their goals. The design features a variety of work settings, giving people choices. These choices include the dynamic central hub as well as quiet zones, and access to advanced technologies. Creating a buzz in the workplace, where people are seen in a variety of work activities, is important now, and continues to be as the next generation enters the workforce.

Embracing Change

With people relying more and more on mobile communication technologies, they will use the workplace as a place to meet, and not so much as a place to work alone. The design encourages both formal and informal aspects of the workplace to establish a more social atmosphere in which the excitement of scientific discovery will be felt throughout. Further, groups were not assigned to the new building. Rather, it became an internal competition, in which groups who wanted to be there vied for the space. The researchers who occupy the building embrace change and are motivated to try something new.

What If?

When MD Anderson eradicates cancer, what then? The Zayed Building can be fit-out to accommodate as-yet-unknown programs. With the capacity to morph between laboratory, clinical, office and support spaces, it will support new ways of working—including multiple occupants. The Zayed Building is designed for flexibility.

It is designed for a future in which cancer is history.



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We practice increased use of sustainable
materials and reduction of material use.

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