UNIVERSITY OF CALIFORNIA SAN FRANCISCO

RAY AND DAGMAR DOLBY REGENERATION MEDICINE BUILDING

RAFAEL VIÑOLY ARCHITECTS WITH SMITHGROUP & DPR CONSTRUCTION

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INTRODUCTION

The University of California San Francisco's (UCSF) building committee established a powerful vision for the Ray and Dagmar Dolby Regeneration Medicine Building (RMB) in support of specific functional and regulatory stem cell research criteria. Federal funding restrictions dictate clear separation between registered/non-registered Human Embryonic Stem Cells (HESC) research. Constructed from non-federal funds, RMB "compartmentalizes" HESC work on campus while connecting to the existing campus research core; creating a rich environment for translational researchers to pursue new Stem Cell discoveries while fostering a collegial relationship with the broader Parnassus research community. The split level open lab configuration highlights connectivity and flexibility creating strategic clusters of activity and communication at the juncture between research and office levels.

In 2005, UCSF issued an RFP for an 80,000 square-foot stem cell and developmental biology research center, one that would put the institution at the forefront of the promising, yet controversial, field of HESC research. Rafael Viñoly Architects PC was selected as design architect. The project was completed in collaboration with the design-build team of DPR Construction and SmithGroup, as architect-of-record.

The RMB facilitates the transition between the urban Parnassus campus and the wooded nature preserve to the south with a design that embraces both contexts. Green roofs and roof terraces extend the natural context over the building from the south where the building profile is small against the steep grade. Open laboratories and Principal Investigators' (PI) offices look toward the woods on Mount Sutro which, combined with the roof terraces, fosters a feel of an intellectual retreat. To the north, the building profile is taller and scaled to the urban medical center campus. A combination of the space truss and seismic base isolation systems allows the RMB to tread lightly on the steeply sloped site, minimizing site disruption and facilitating construction. The design gives the RMB a presence and identity on Saunders Court, knitting the building into a cohesive campus fabric while transforming a back-of-house site into part of the campus.

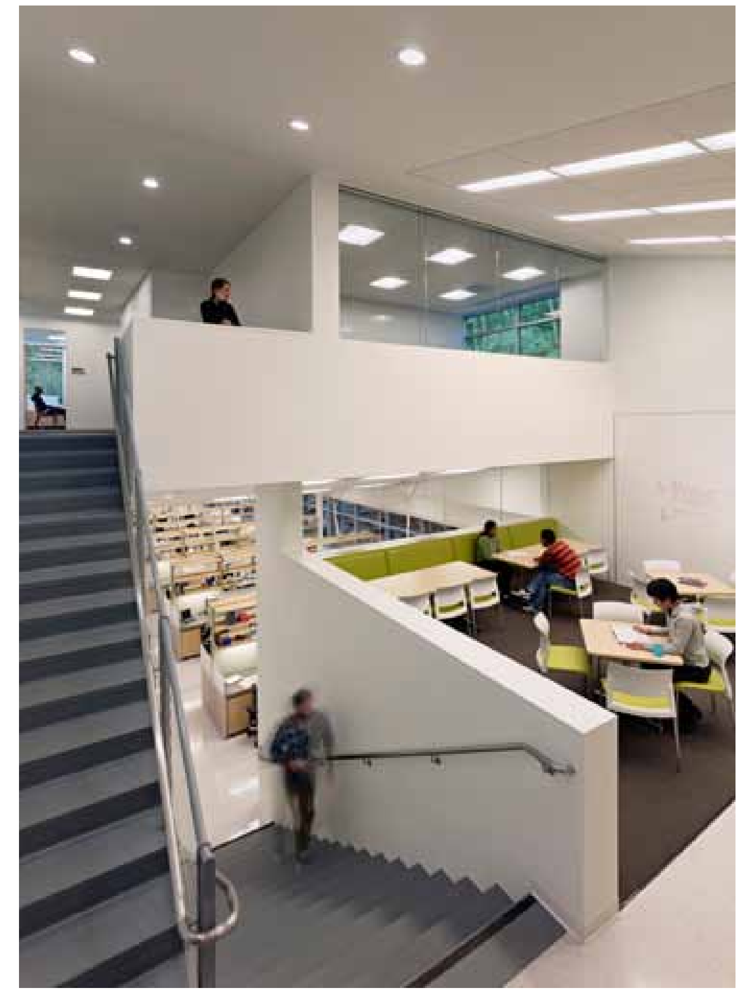
The RMB is constructed on a narrow, irregularly-shaped steep slope between the dense UCSF campus and the Eucalyptus forest of Mount Sutro. An ingenious combination of steel space truss and seismic base isolators supports the horizontally-organized facility on the undulating grade and protects the occupants and research from seismic forces.

Connected by a bridge to the ninth floor of the UCSF Medical Center, the RMB maximizes the campus' research capacity in the last developable site in the Parnassus campus. An extensive system of exterior walkways and ramps provide easy access to the laboratories and roof terraces.

HIGHLIGHTS

The horizontally-organized laboratory plan is achieved within unique and formidable site challenges - extremely narrow, steep in one direction and sloped in another. Four open laboratory modules are linked together with visual connectivity and ease of access between them so that the combined laboratory has the feel of one continuous space.

Green roof terraces impart environmental benefits and an outdoor amenity for building occupants and campus community. Visible from surrounding campus buildings' upper floors, the terraces create a welcoming transitional space where the dense campus meets the forest.



Split-level laboratory design follows the site's mountain slope. Laboratory entrances, break rooms, offices, and conference rooms are strategically clustered around the level changes in such a way that it maximizes visibility and connectivity between programs and promotes researcher interaction.

Steel space truss system reduces the amount of site excavation by both minimizing the number of foundation supports and adapting to the sloping grade. Seismic base isolators decouple the RMB's unique structure from the ground, protecting the facility from the effects of earthquake forces.

MISSION

Stem cell research is the 21st century's transformative enterprise in medicine. Its research success depends on the effectiveness of collaboration between research pipelines focused on different organs and tissue systems. UCSF needed a new home for its stem cell research, one that would unite their stem cell researchers and laboratories, formerly located in disparate locations across campus. Architectural design of the RMB responded to this need for collaboration with a unique solution that addresses both the programmatic requirements and the extreme site constraints.

The following text is provided by Dr. Arnold Kriegstein, Director of the Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research at UCSF:

Regenerating injured tissues and organs might sound like science fiction. But as we gain a greater understanding of how stem cells in our body change from their undifferentiated states to become specialized tissues, UCSF's program in regeneration medicine is at the threshold of developing cell-based approaches and therapies for various diseases that result from tissue injury or degeneration.

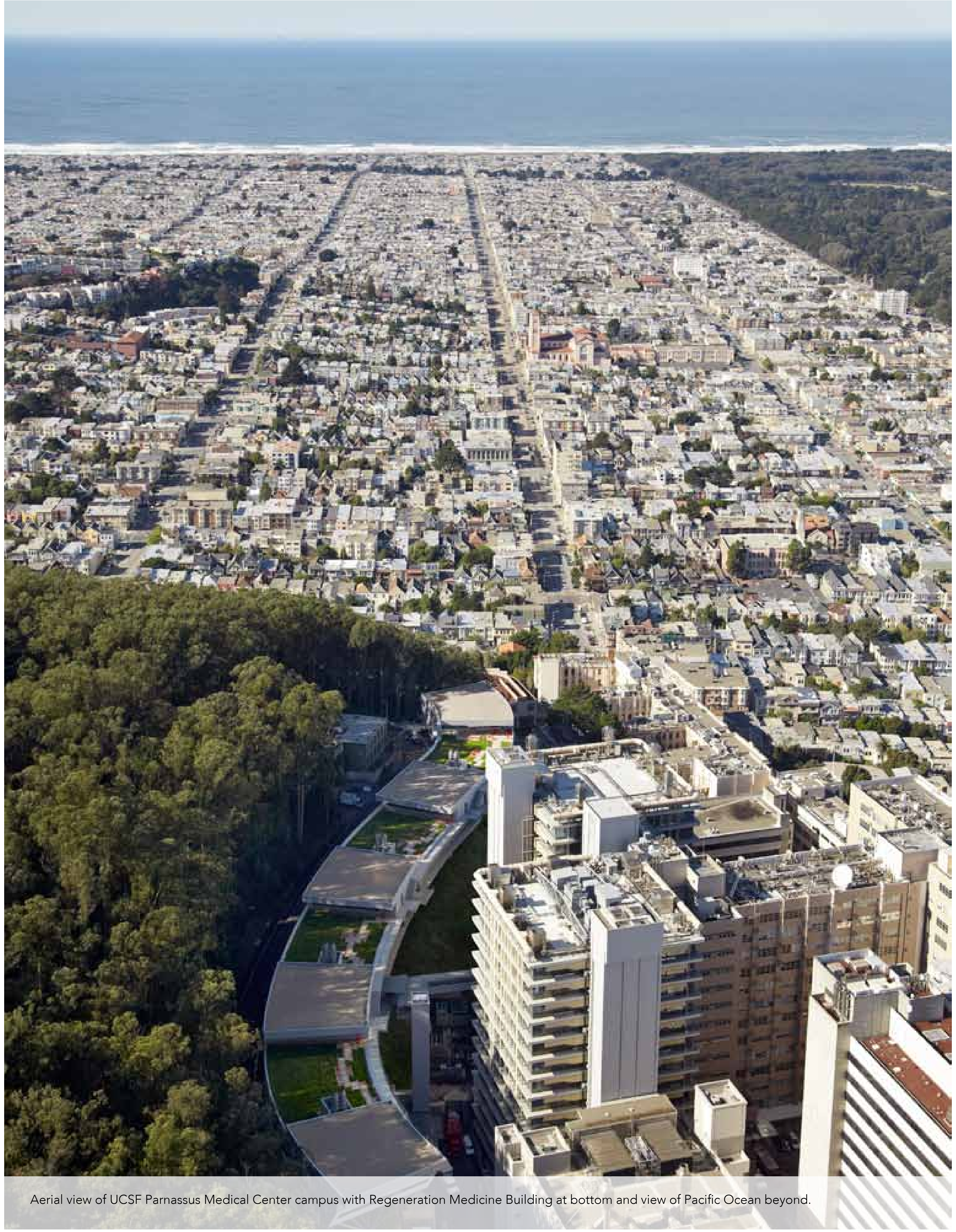
The Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research at UCSF combines the talents of molecular biologists, developmental and cell biologists, neurobiologists, immunologists and cancer researchers. Their efforts, organized around research areas, are aimed at gaining a better understanding of how defined types of tissues develop, and are directed toward cell-based approaches to the treatment of disease. These insights will shape and direct potential therapies, which will be tested and refined in UCSF-based clinical trials.

The Center's organization is designed to foster collaborations derived from work on different organs and tissue systems. Accordingly, the laboratories and research efforts are organized along a series of pipelines, each focusing on a particular tissue or organ system, and including basic research as well as translational research directed toward clinical applications. A basic researcher and a clinician direct each pipeline.

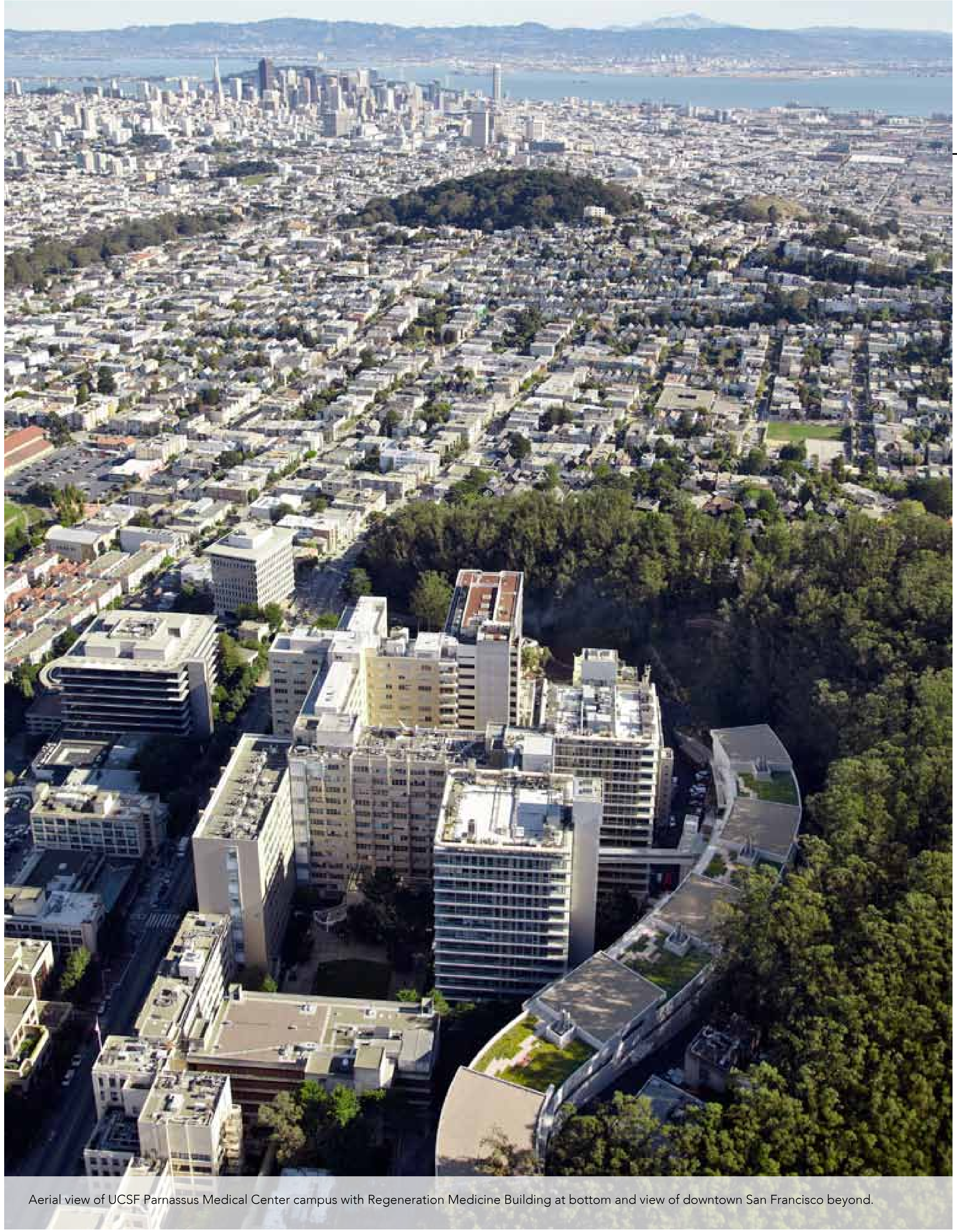
Seven different pipelines, based on extensive research and clinical strength, have been developed: Hematopoiesis, Musculoskeletal, Neural, Cardiovascular, Pancreas/Diabetes and Liver, Epithelial, and Reproductive.

The Center is also the home of UCSF's Human Embryonic Stem Cell Research Center and Program in Craniofacial and Mesenchymal Biology. The Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research at UCSF is supervised by Dr. Arnold Kriegstein, Director, and Dr. Rik Derynck, Co-Director.

Radially organized labs mirror the curves of the site and offer excellent visibility within the labs as well as to the forest outside. Flexible laboratory casework access utilities via plugs and quick-disconnects at the ceiling.



Aerial view of UCSF Parnassus Medical Center campus with Regeneration Medicine Building at bottom and view of Pacific Ocean beyond.



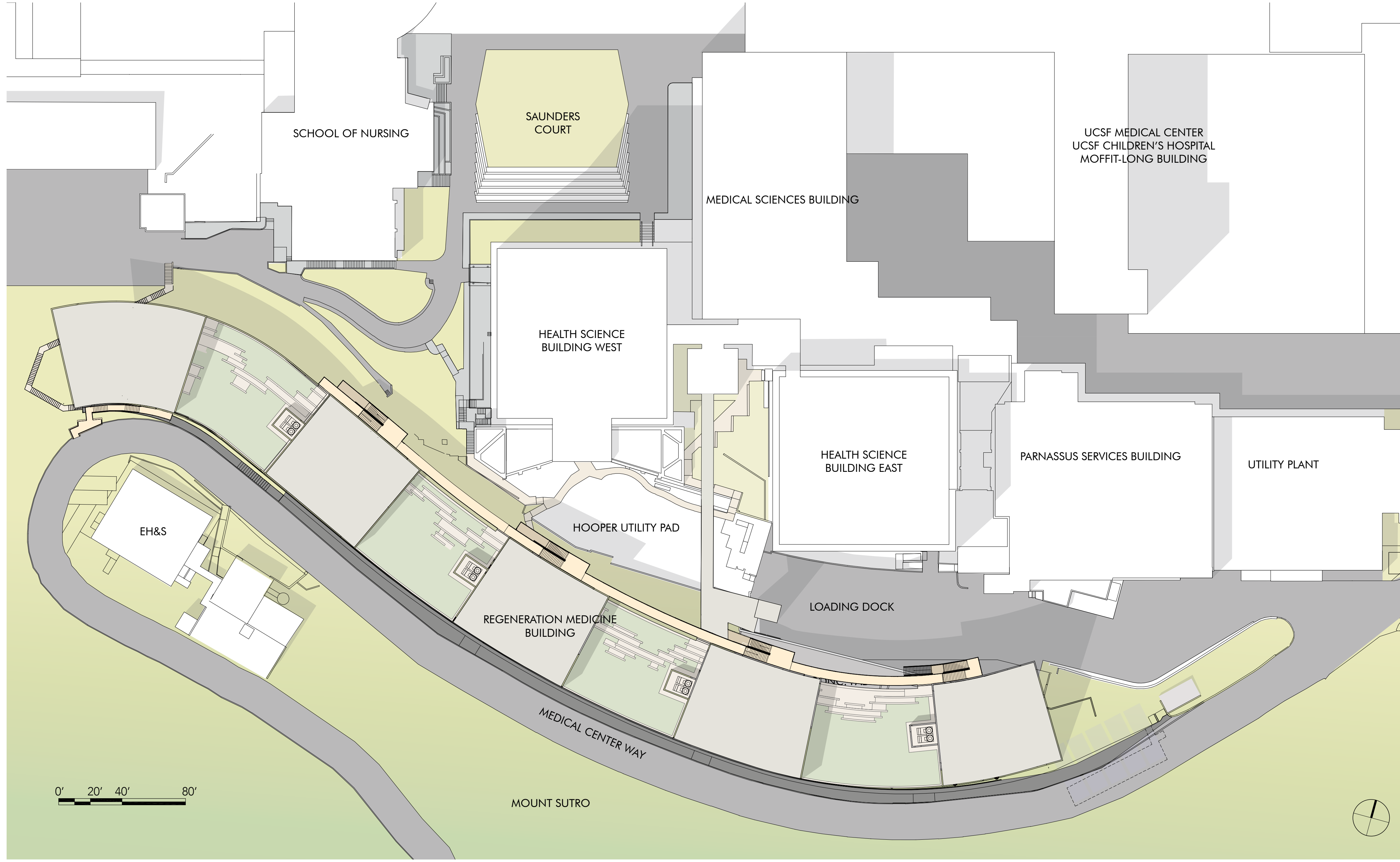
Aerial view of UCSF Parnassus Medical Center campus with Regeneration Medicine Building at bottom and view of downtown San Francisco beyond.

SITE

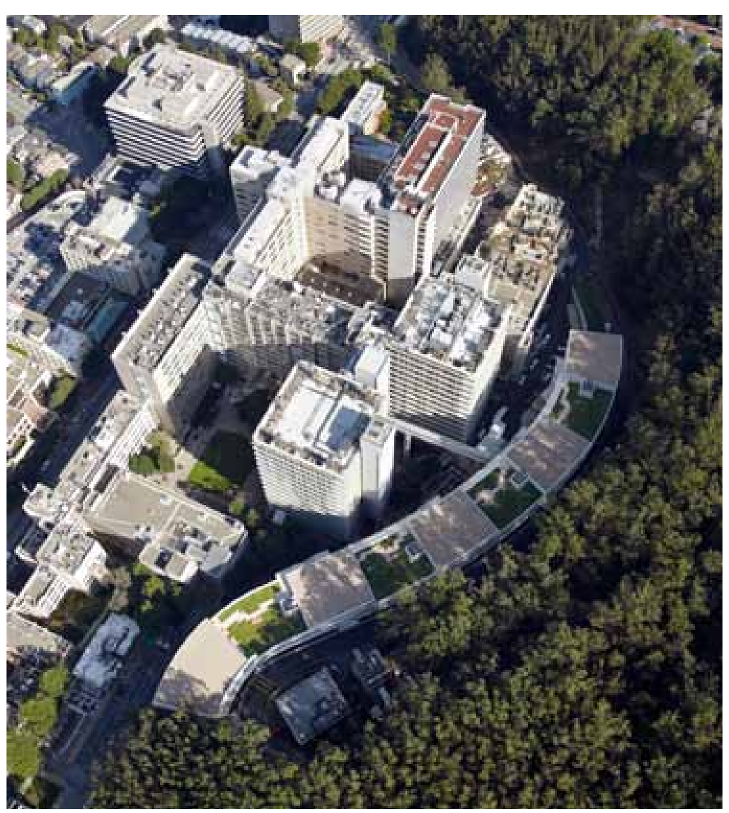
Narrow Site

The UCSF Parnassus Medical Center occupies an urban campus located at the northern foot of Mount Sutro in the center of San Francisco. Surrounded by residential neighborhoods on its other three sides, the research and medical campus is densely developed, with little space available for expansion.

The design of the RMB overcomes this limitation by building on the steep slope of Mount Sutro, which was once thought to be unbuildable. The RMB helps brings the outlying Environmental Health and Safety Building within the greater campus composition by spanning between it and the Health Sciences Buildings. Loading docks and utility plants that service a large portion of the campus are located on the hillside beneath the RMB. This location for the RMB transforms a back-of-house area into part of the campus.



Site Plan.



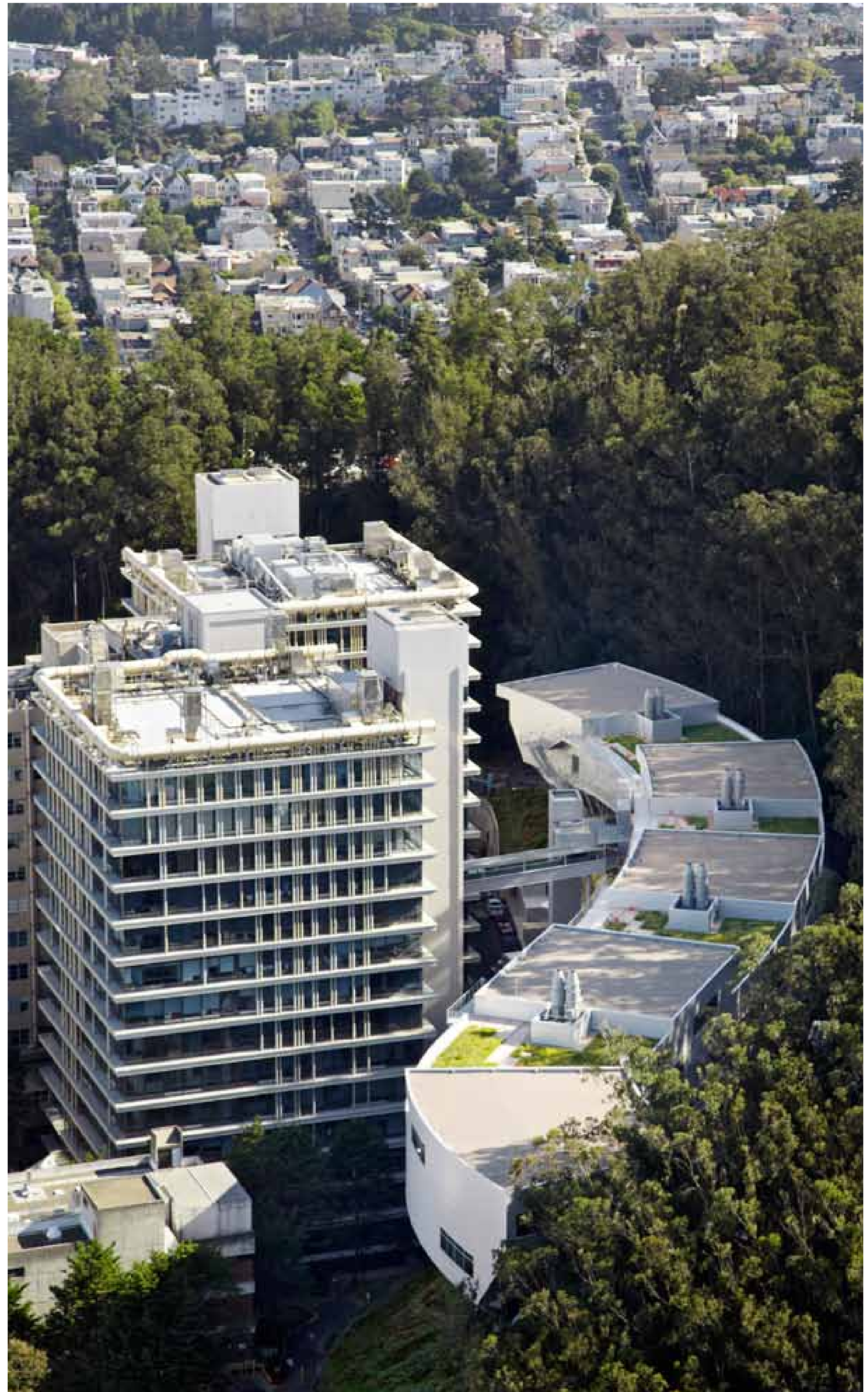
The RMB is nestled in the "back" of the UCSF Medical Center, creating a transition between the dense urban campus and the Eucalyptus forest of Mount Sutro.

Original condition of the RMB site showing the steep grade drop.

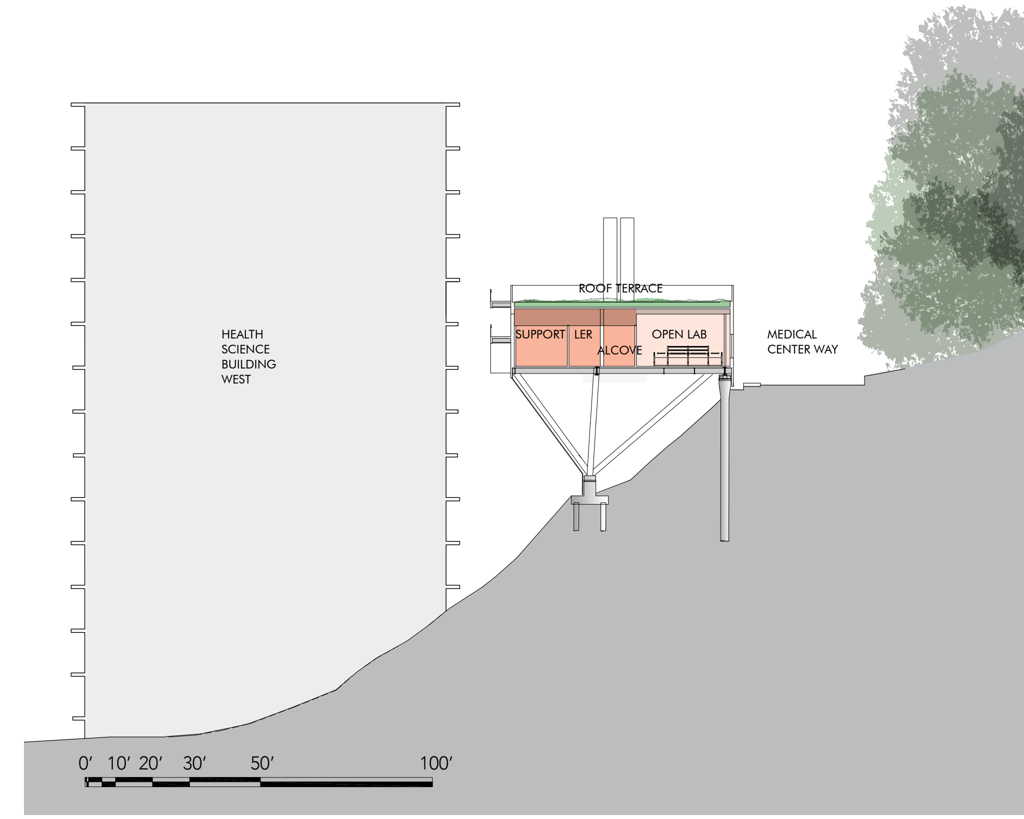
Steep Site

Given that the building was to be located on a steeply sloping site at the foot of Mount Sutro, Rafael Viñoly Architects proposed to elevate laboratory floors on a series of terraces suspended above the slope. A design based on terraced floors developed over a long length was chosen over a more conventional stacked configuration because of the horizontal relationships between floors and programs that it would create.

The horizontal laboratory profile yields a number of functional advantages over a vertically organized building: it promotes greater interaction across departments (as studies have shown that people are more likely to walk ten times the horizontal distance than travel up one floor), it helps unify the campus by reaching toward the Environmental Health and Safety Building that had formerly been isolated partway up the mountain, and it creates the opportunity for abundant terraces and green roofs as amenities for building occupants.



The new laboratory connects to the ninth floor of the existing Health Sciences Buildings by a new pedestrian bridge. The 700-ft long building snakes through the back of the UCSF Parnassus campus along an existing winding road.



Transverse Section

The RMB is built on a steep slope using a steel space truss system that minimizes number of support points to reduce construction costs.

View from Saunders Court below. Its horizontally-extended length allows the RMB to be visible from many surprising vantage points, allowing this building in the back of the campus to be visually integrated in to the UCSF Medical Center campus.

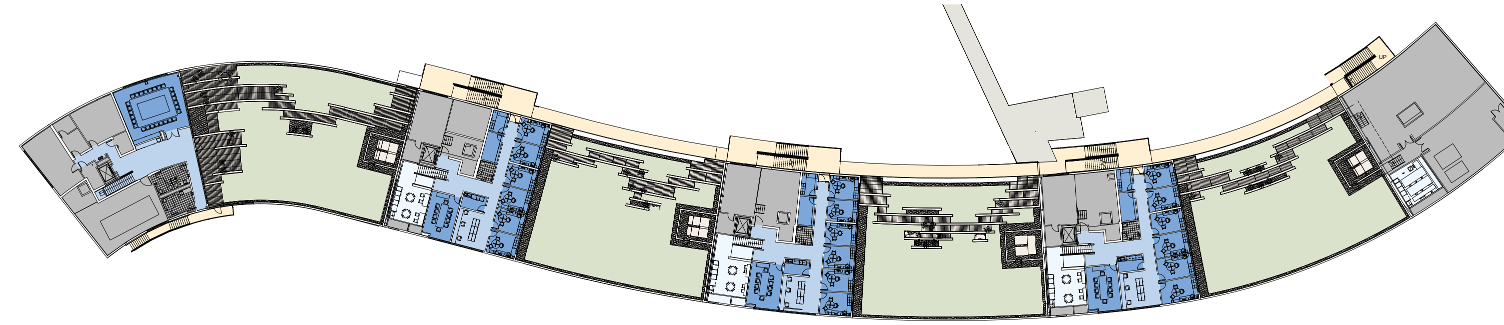
Sloped Site

The building comprises four segments, each stepping down a half-story, following the descent of Mount Sutro and Medical Center Way. The main floor of the building functions as one continuous laboratory, punctuated by three communal split-level transitions areas, each of which provides access to the exterior ramp, break room, and offices. Exterior ramps and stairs, which take advantage of the temperate climate and expansive views, provide continuous circulation between all levels. The facility connects to three nearby research and clinical buildings via a new pedestrian bridge.

The narrow, steep site also slopes in its long direction, following Medical Center Way that winds up Mount Sutro. A maintenance roadway below the building provides access to the underside of the building.

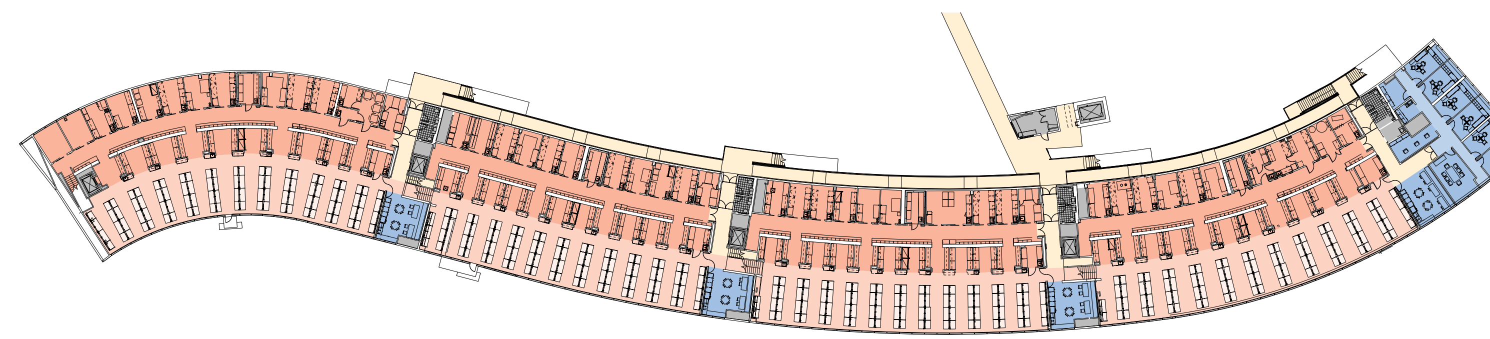
Roof Level Plan

Green roof terraces are accessible from exterior ramps and walkways. P.I. office suites, conference rooms and boardroom are located on this level.



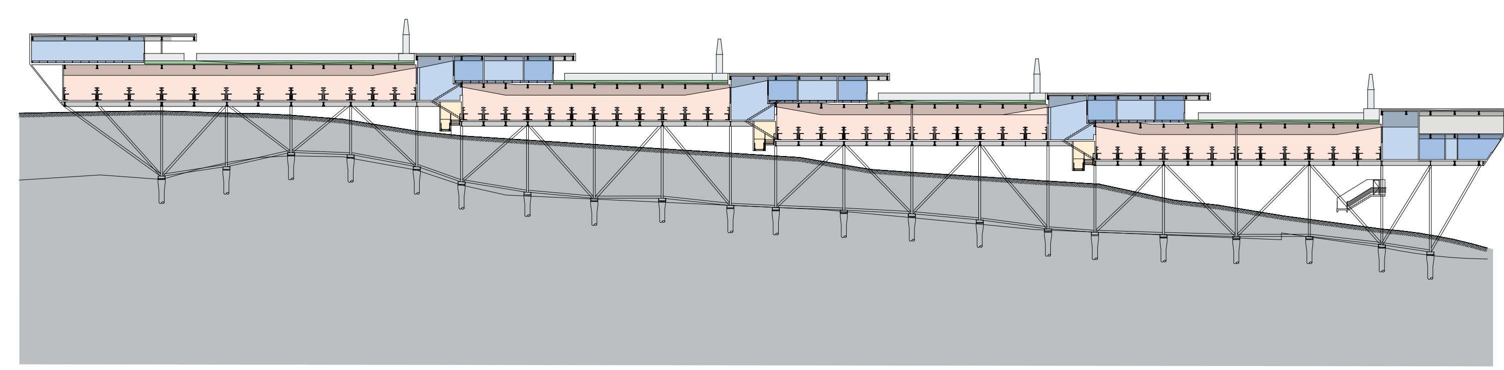
Laboratory Level Plan

One continuous open laboratory with 48 bays maximizes connectivity and flexibility.



Longitudinal Section

The building forms terraces at both laboratory level and at the green roof level. Split-level transitions at laboratory entrances connect the laboratory and roof levels.



DESIGN

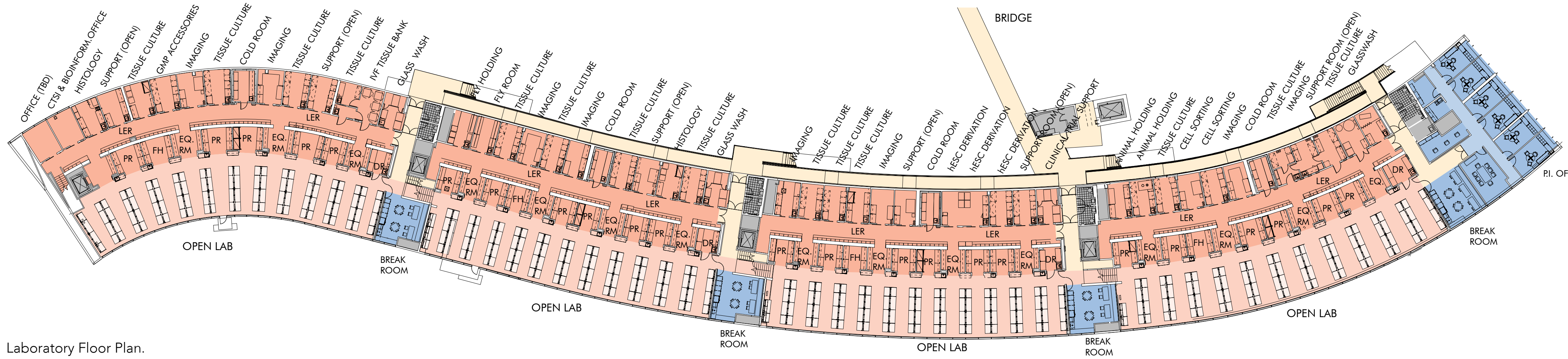
Continuous Laboratory

The open floor plan of the laboratories face southward to a ribbon of windows opening up views to the eucalyptus trees of Mount Sutro and allowing ample daylight to enter. Shared support alcoves and core support rooms on the north wall are organized along linear equipment rooms that extend the length of the laboratories.

Continuous and open laboratories allow for flexibility in space allocation and assignment. Changes in the sizes of research groups can be easily accommodated in large, continuous, and open laboratories as opposed to ones that are divided in smaller finite units.

Additionally, highly flexible laboratory casework systems with quick-disconnect utilities enable the rapid reconfiguration of the research program. The casework system can be easily demounted and rearranged to accommodate new research needs.

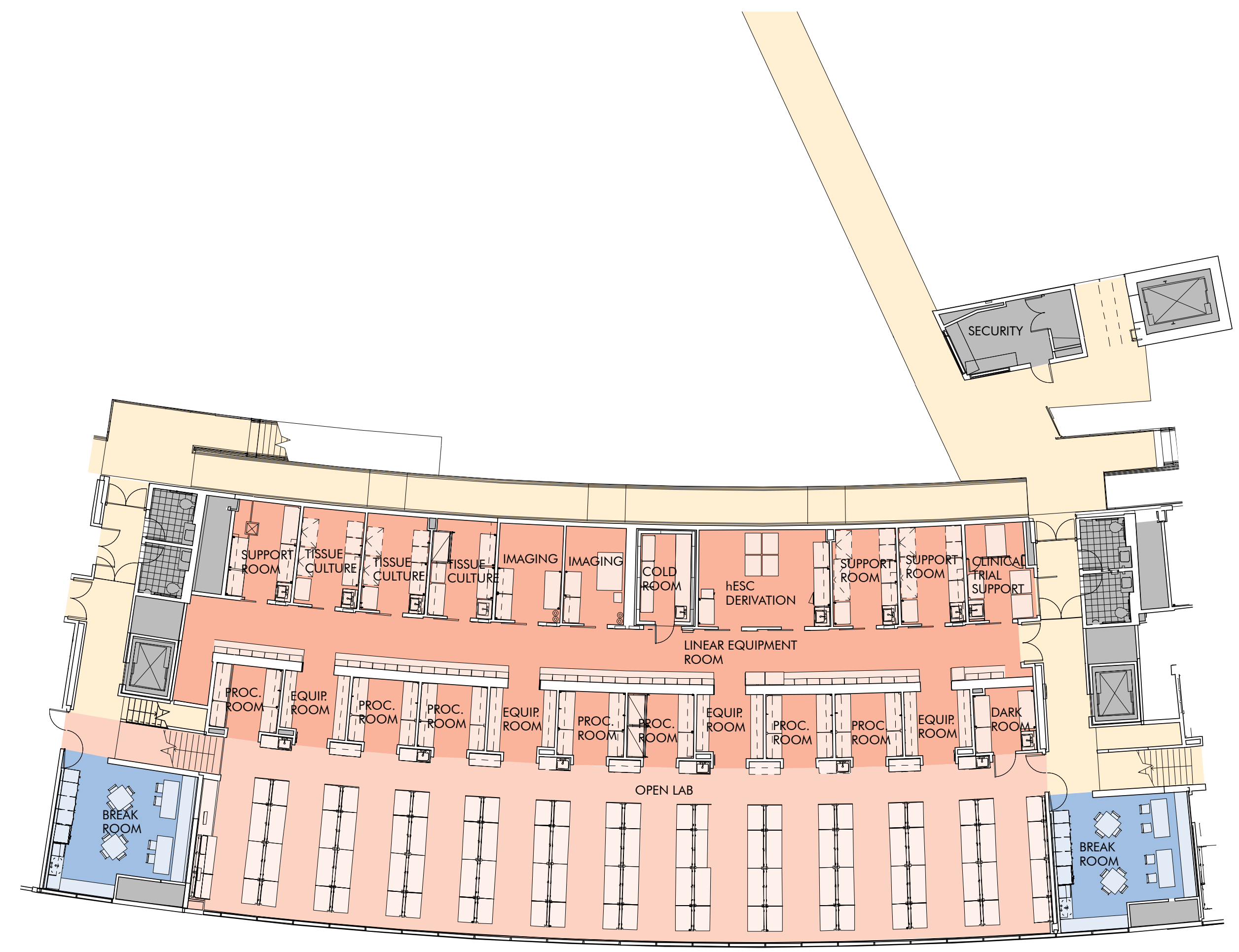
Laboratory safety features are duly observed with design features such as multiple exits opening on to Medical Center way, eyewash and shower stations located logically around circulation nodes, and a complete monitoring system.



Laboratory Floor Plan.

Open Laboratory

Open laboratory areas with flexible laboratory casework open to the views and light. The benches in the open areas contain a vacuum, natural gas, power, and tel/data services. Wet services and common support areas are organized on the "support" side of the laboratory.



Detail Plan.

Key:

- Open Lab
- Lab Support
- Office/Conference/Break Area
- Administration Support
- Circulation
- Mechanical

Lab Support:
Procedure Room (PR)
Tissue Culture Room
Linear Equipment (LER)
Fume Hood (FH)
Dark Room (DR)
Cold Room
Glasswash Room
Fly Room
Fly Holding Room
Imaging
Support Room
Equipment Room (EQ RM)
Spill Room (SP RM)

Core Support:
Animal Barrier Room
Animal Surgery
Cell Sorting
Imaging (Confocal)
hESC Derivation
IVF Tissue Bank
Histology
CTSI & Bioinformatics
GMP Accessories
Clinical Trials Support
Sequencing

Linear Equipment Room (LER)

Shared equipment and refrigerated storage line the LER. This linear space also organizes access to core support and procedure areas of the laboratory where more services and controlled environment are required.

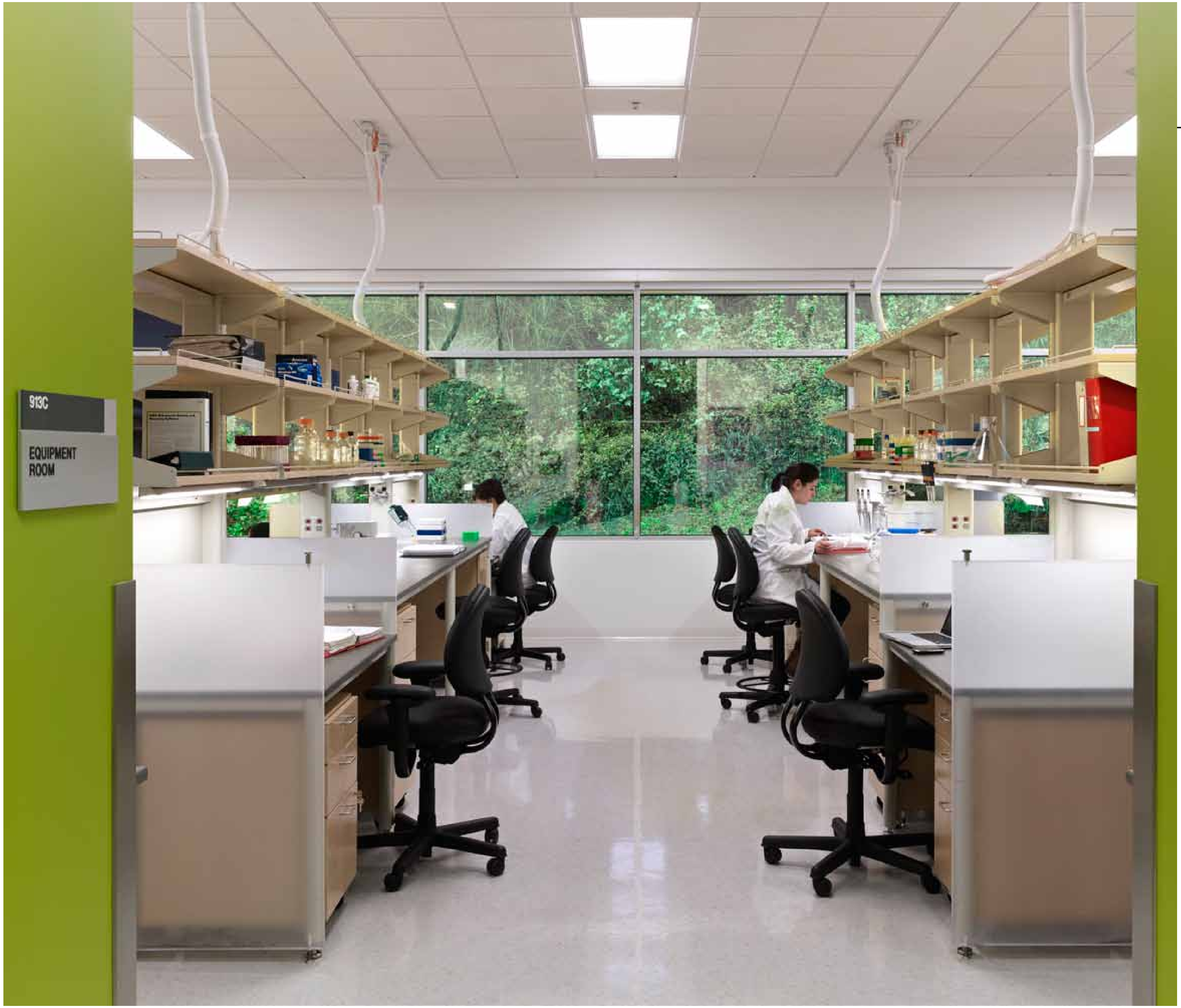
The research and office spaces are marked by light. Having a lot of light in the workspace is absolutely essential for me (and presumably for others as well) to create happiness, creativity and productivity.

- Dr. Rik Derynck
Professor and Vice Chair
Department of Cell and Tissue Biology,
Co-Director of the UCSF Eli and Edythe Broad
Center of Regeneration Medicine
and Stem Cell Research

Typical Open Laboratory Bay

Continuous windows open the laboratory toward the Eucalyptus forest of Mount Sutro.

Utilities are provided from the ceiling through a flexible, user-friendly system of plugs and disconnects.

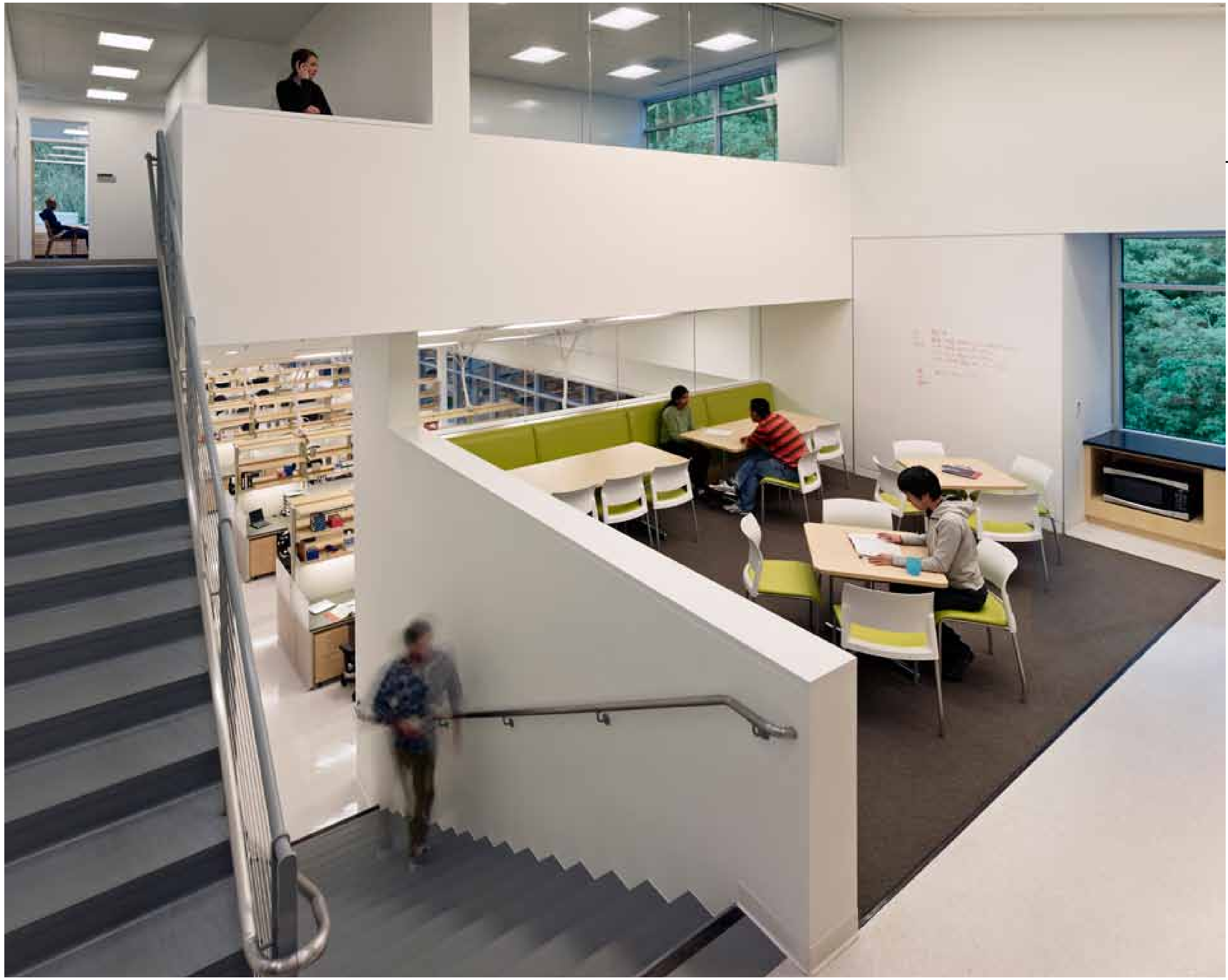


View from Entry

The unique split-level relationships between adjacent levels developed around a break room promote informal and social interactions between scientists who might otherwise not meet. View from this vantage point also make clear to the user the organization of the facility and its relationship to the landscape.

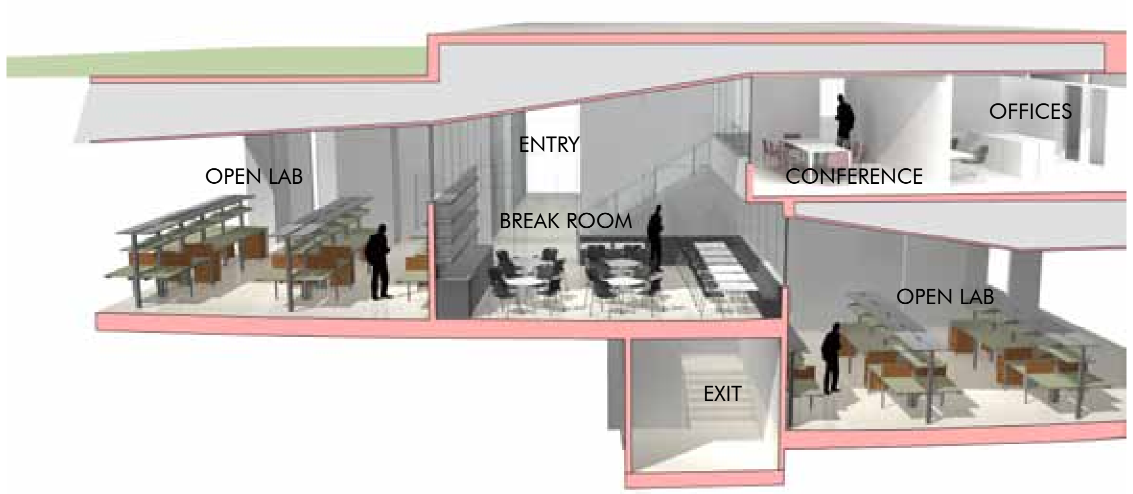
Split-Level Transitions

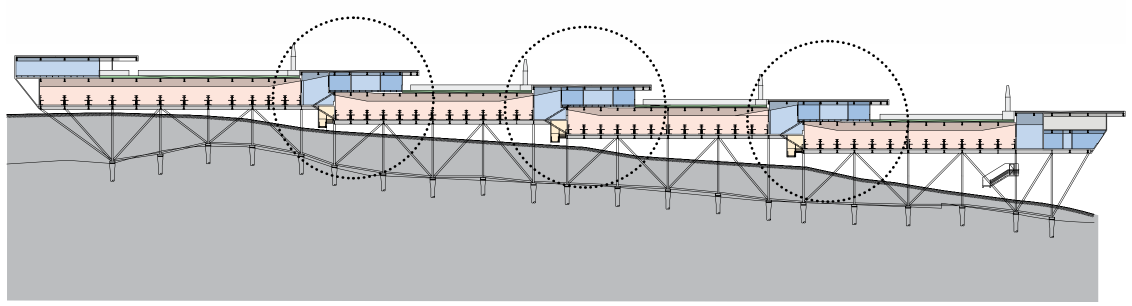
Inside the building, entry nodes are located between laboratory segments and designed as a hub of interaction: a half-level stair connects two adjacent laboratories, and another extends up to the offices and conference rooms above. Break rooms, immediately adjacent to the entry, are located at the intersection of a circulation network, creating a set of split-level transitions between three tightly-interconnected levels with strong sense of physical and visual connectivity.



Section Perspective

Split-level transitions and extensive use of glass maximize physical and visual connectivity between levels at each lab entry node.





Longitudinal Section

With three split-level transitions between, four laboratory segments form one continuous research space, where every laboratory group is within an easy walk away from another.

The way adjacent laboratory floors connect visually and physically does indeed invite easy interaction, and the placement of the break room areas at the junction of adjacent floors is already promoting informal social interactions between scientists who might otherwise not meet. In stem cell research, we are always looking for ways to promote collaboration and the building is making our job easier.

- Dr. Arnold Kriegstein
Director of the UCSF Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research

Connectivity between Floors

Adjacent laboratories are visible at the end of each floor. Developed along an existing winding road, each laboratory floor also has a different curvature that offers different views and character from the other floors. Accent color unique to each lab floor is applied to access points into the support areas to the right.

The essential concept of a collaborative atmosphere is beautifully developed in a unique way from any of our other research buildings. Open interaction spaces, where researchers naturally gather throughout the day, provide visual connectivity from one lab floor to another through the "split-level" design as well as to office/conference suites.

- Bonnie Maler
Associate Dean for
Research Facilities Planning
UCSF School of Medicine

Break Room

Break Rooms are the hub of interaction located at each split-level transition, and each is identified with an accent color associated with each floor. A large expanse of glass opens views of the adjacent open laboratory floor and the landscape below.

Board Room

Located at the highest and western-most point of the new facility, the Board Room commands the view of Golden Gate Park, San Francisco Bay, and the Marin Headlands.

Principal Investigator's Office

P.I. offices look out to the tranquil green roof terrace and the Eucalyptus forest beyond.

Exterior Connectivity

One of the hallmarks of RMB is the landscaped green roof terrace. This multi-level green terrace provides an outdoor amenity for building occupants and the broader UCSF Medical Center community. Each one of the four roof neighborhoods associates with, and is directly adjacent to, the RMB faculty offices. The quality and yield of space achieves program requirements, while creating new and enjoyable places for university researchers to congregate, thereby ensuring a more social, more collaborative, and effective set of research suites.

Access to the building occurs via a 9th floor pedestrian bridge, connected directly into the existing Health Science Center circulation and research core, at the nexus between the Medical Science Building, Health Science Building West, and Health Science Building East. The bridge also stretches to the new service elevator tower which is positioned to meet the loading dock below. Walking across the bridge is a deliberate and engaging event; pedestrians encounter long views of the community, and the nearer views of the pristine Eucalyptus forest on Mt. Sutro.

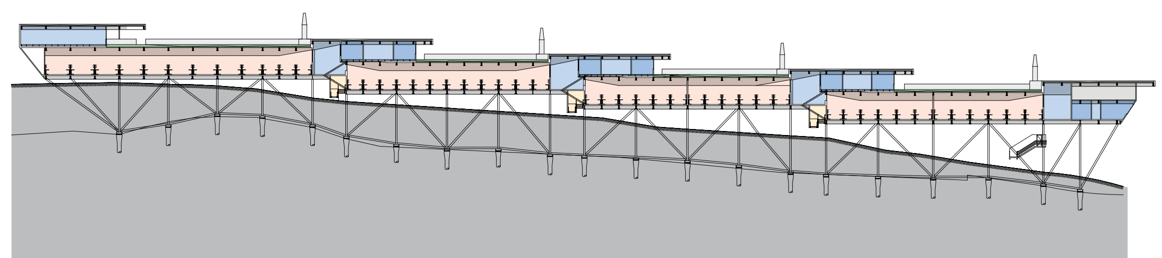
RMB's primary longitudinal circulation occurs via a system of exterior ramps, stairs, and walkways along the north side of the building. The ramps follow the east-west slope of the site, providing easy access to four laboratory floor entrances and green roof terraces. Card readers at entry points, along with the bridge level security desk, ensures controlled access. Combined, this solution of inviting exterior spaces accessed by a channeled and controlled path, balances the invitation for collaboration with the need for security. It is seamless and transparent, creating a promenade with ever-changing breathtaking views. It offers occupants and the UCSF community places of respite and contemplation connected to both the city and nature in what used to be a forgotten place in the back of the Medical Center.

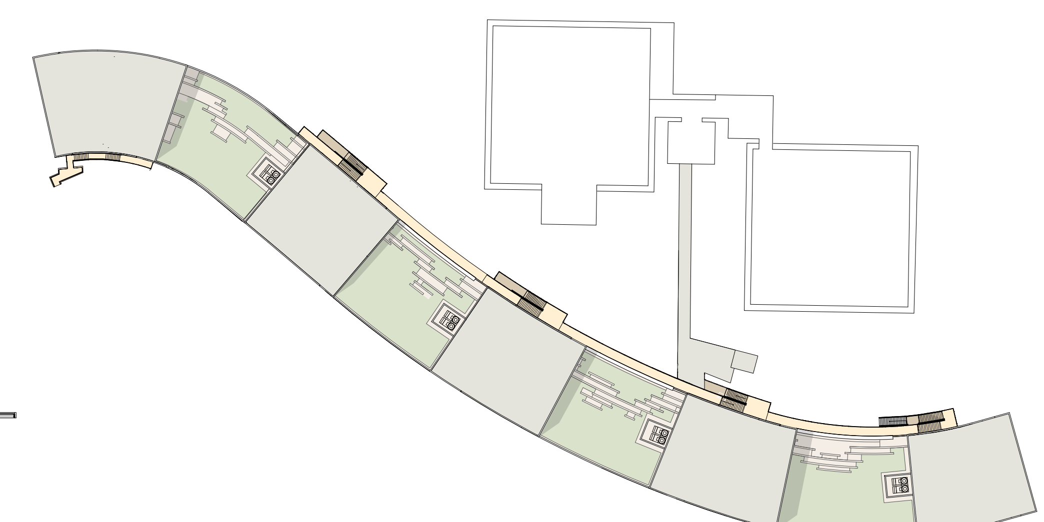
The RMB is reached by a pedestrian bridge from the ninth floor of the existing Medical Center complex.

Green roof terraces are suspended above the ravine-like space, stepping up with the slope of Mount Sutro, creating tranquil places of respite at the edge of the forest.

Longitudinal Section

The building steps down to follow the east-west slope of the site and Medical Center Way.





Roof Plan

Curving building creates green roof terraces with ranging character and a wide variety of views.

Bridge

A bridge serves as the main entry to the RMB, providing connections from existing research and clinical buildings, facilitating the new building's significant role in the context of the Parnassus Campus.

Exterior Ramps and Walkways

An extensive system of exterior ramps, walkways and stairs connect the cascading laboratory floors and green roof terraces. Walkways also provide cover to the ramps below.

Walkways and ramps culminate in a spectacular lookout at the westernmost and highest point of the building. The building and green roof terraces are lifted high above the adjacent trees and buildings by the steel space truss structure.

At its highest point, the RMB rises from the valley to take unexpected and full advantage of the expansive views of San Francisco Bay and the Marin headlands. Traveling along its roof-top gardens and suspended exterior walkways is breathtaking.

- Bonnie Maler
Associate Dean for Research Facilities Planning, UCSF School of Medicine

STRUCTURAL DESIGN & SEISMIC ISOLATION

Upon seeing the initial design from the RMB by Rafael Viñoly Architects, structural engineers of Nabih Youssef Associates identified the RMB as an ideal candidate for base isolation. A base isolated building rests on a system of special bearings that are very stiff vertically yet very flexible laterally, allowing the building to "float" sideways in any direction when an earthquake occurs. This behavior uncouples the building from ground shaking and focuses the earthquake's energy into the isolation system to be dissipated through damping in the isolators. The results translate into a significant and simultaneous reduction in earthquake forces and drifts in the building. The reduced seismic force levels achieved through base isolation allowed the use of a light and unconventional space truss system that would not have been possible in a fixed-base building.

Additionally, two costly elements typically required for a base isolated building - an additional floor level to create a crawl space for the isolators, and a perimeter isolation moat to allow the isolators to freely displace relative to the ground - were not required in the RMB because of its floating nature. As a result of these attributes, initial studies showed the cost of the isolated building to be comparable to traditional fixed based alternatives but with substantially enhanced seismic performance. UCSF's desire for increased seismic performance combined with its ability to look forward at reduced life cycle costs associated with a base isolated building further justified the decision to isolate the RMB.

Double Pendulum base isolators were selected for the RMB because of their unique behavior that adapts to different levels of earthquake intensities. Isolators are located below each node of the space frame on the downhill side and below columns on the uphill side.

Above

Seismic base isolator is placed between cast-in-place concrete foundation (caisson cap) and the base node of the space truss structure where five members in different orientations converge.

To eliminate possibility of overturning during earthquakes, custom tension tie-down isolators were developed to work in conjunction with the base isolators.

Top Right

Steel space truss that supports the RMB changes its height to follow the variable grade elevation. A large cantilevered corner at the northwest corner of the building was supported with temporary columns which were removed upon completion of the structure.

Bottom Right

Suspended above the ravine-like site, the new building curves around the existing research buildings of the UCSF Medical Center.

DESIGN-BUILD CONSTRUCTION

The DPR/SmithGroup Design-Build team was selected by competition. The project was awarded on a series of quantitative and qualitative metrics, which weighed adherence to the original design intent, cost/budget alignment, innovation, and methodology. Lean practices were encouraged and performance incentives established in order to meet the 24 month design and construction window stipulated by funding.

The design-build process was integrated and collaborative. UCSF, Rafael Viñoly Architects, SmithGroup, Forell/Elsesser (Structural Engineer of Record), DPR Construction and subcontractors were invested in the process and outcome. The Rafael Viñoly Architects design team acted as the peer review group. Systems were analyzed by the entire team for performance, cost, and constructability. Innovations included:

- The mechanical understory was broken into four clean segments and embedded in the office level to independently serve each floor. This strategy allowed the elimination of every fire and smoke damper within the building and increased the net to gross square footage ratio.
- Custom tension isolators were designed by Forell/Elsesser to counter the tendency of the building to overturn (uplift) in a seismic event.
- A paradigm shift in code logic was adopted; applying the newly adopted code, and reclassifying RMB from an "H" occupancy to a "B" occupancy.
- The skin of the building was modified to a rain-screen system to enhance technical performance and substantially shorten the construction schedule.
- Lab planning assumptions were confirmed and adjustments made in room location and detailing.

Schedule challenges were overcome by:

- Eschewing traditional University review processes for a continuous review and feedback loop.
- Revamping the traditional permitting process, by applying for incremental conditional permits from the Authority Having Jurisdiction followed by Division of the State Architect Review (DSA) review of the consolidated set of drawings.
- Running design resolution concurrent with construction.
- Revising the site preparation and slide zone stabilization strategy by development of a series of soil retention walls, deep piers, and balanced cut and fill.

Additionally, technology was utilized to assist with the speed of delivery and enhance coordination between disciplines. Rafael Viñoly Architects, SmithGroup and Forell/Elsesser utilized Revit to construct models. The structural fabricator developed a Tekla model concurrent with the structural Revit model, and the design-build mechanical and electrical contractors utilized CAD Mech (a 3-D modeling program). Models were uploaded regularly, were integrated, and clash detection was run weekly. Information related to best construction practices, or to solve construction logistics was fed back into the design loop for resolution. Fabrication of mechanical components was done directly from the model and many components were prefabricated off-site, delivered just in time, and dropped into place. The process was effective as proven by the minimal number of system "clashes" encountered during construction, which was only two.

Continuous improvement was an expectation and a challenge to every team member. The building moved from LEED Silver to LEED Gold range and design decisions were re-conceptualized for improvement, even well into construction.

In conclusion, RMB reflects personal investment and collective gain. Solutions and ideas from all participating parties are seamlessly intertwined in the building. There is no trail for any solution that leads to a single individual.

Constituents feel positive about the experience, and this process has brought out the best in every member, not only overcoming and resolving design and technical issues, but making the project possible. This process has achieved UCSF's goals, resulting in a building design that generates interest, capital contributions, and provides a new home for world-class stem cell research. It will act as a fertile research environment for medical innovation in support of humankind. As stated by the Chancellor:

"At UCSF, discovery isn't just a high priority. It's a way of life."*

* Source: http://www.ucsf.edu/chancellor/priorities/about-discovery-priority-0

At its highest point, the terraced roof of the RMB rises from the valley to take full advantage of the expansive views of Golden Gate Park, San Francisco Bay and Marin Headlands.

The project was constructed by a team working collaboratively and skillfully to craft design solutions to issues that came up in an accelerated implementation schedule. The building was finished on time and on budget, which is a testament to the discipline, skill, and commitment of all who participated. The UCSF community is extremely excited about this new building, and the reception since it opened has been enthusiastic.

- Michael Bade
Assistant Vice Chancellor
UCSF Capital Programs and Campus Architect

SUSTAINABILITY

The project received LEED Gold certification and follows Labs21 environmental performance criteria. The performance goal was initially identified as LEED Silver, but over the course of the project, the stretch for Gold and the implementation of sustainable measures became a rallying point for the project team. The team noted early that not all of the sustainable measures would be recognized by LEED, but they were implemented for the long-term environmental value and because they were the "right thing to do".

Understanding that most of the water use in a lab is process water, UCSF had already implemented lab practices to reduce flow, but had not yet addressed the faucets themselves. The team proposed low-flow lab water fittings and met with lab managers to determine viability and build support. With the full backing of building occupants, low flow faucets are installed at every sink in the labs and lab support spaces (with the exception of the Glasswash rooms). And, waterless urinals are utilized throughout the building.

Green roofs reduce the heat-island effect, minimize storm-water run-off, and enhance the environment. Native planting contribute to reduced irrigation requirements and have become a personal point of pride for some of the researchers who have a biology background.

Submitted innovation and design points include green cleaning, sustainable landscape maintenance, and consideration for the efficient structural system. The base isolated design provides substantial material savings over a traditional moment frame, significantly reduces the carbon footprint of the building, and enhances the life-span of the building. Submitted points are outlined in the accompanying table to the right.

Summary of LEED Gold Features:

1. Sustainable site selection
2. Development density and community connectivity
3. Public transportation
4. Bicycle storage and changing rooms
5. No parking capacity added
6. Protection and restoration of habitat
7. Maximization of open space
8. Light pollution reduction
9. Water efficient landscaping through the utilization of native planting
10. Water use reduction through the use of low flow fixtures, waterless urinals, and low flow laboratory fittings
11. Optimized energy performance
12. Enhanced commissioning
13. Enhanced refrigerant management
14. Green power
15. Construction waste management
16. Outdoor air delivery monitoring
17. Increased ventilation
18. IAQ plan
19. Low emitting materials
20. Chemical and pollutant source control
21. Controllability of systems, lighting and perhaps mechanical
22. Thermal comfort
23. Green cleaning
24. Toxic material reduction
25. Reduction of materials due to base isolation system

Medical Center Way at Dusk

On the south side, RMB follows both the curve and slope of Medical Center Way to maximize site usage and minimize construction cost. Split-level relationships between floors are reflected in the ribbon windows.

The program for the building is of critical importance for both basic and clinical research programs at UCSF. The architects have crafted a unique building design that successfully overcomes the challenges of the hillside site while providing a laboratory that is designed in close accordance with the scientific and programmatic goals of its program.

- Michael Bade
Assistant Vice Chancellor
UCSF Capital Programs and Campus Architect

CREDITS & STATISTICS

Statistics

Project Name	University of California San Francisco Ray and Dagmar Dolby Regeneration Medicine Building
Location	San Francisco, California
Owner	Regents of the University of California, UCSF (University of California, San Francisco)
Date of Completion	October 2010
Total Gross Size (sf/m²)	68,500 sf (6,364 m²)
Net to Gross Ratio	67.4%
Owner Contact Info.	UCSF Michael Bade, Assistant Vice Chancellor--UCSF Capital Programs and Campus Architect 654 Minnesota Street, 2nd Floor San Francisco, CA 94107 (415) 502 6460 michael.bade@ucsf.edu

Project Team

Design Architect	Rafael Viñoly Architects Rafael Viñoly FAIA JIA SCA IntFRIBA Principal 50 Vandam Street New York, NY 10013 (212) 924 5060 rvinoly@rvapc.com
Architect of Record	SmithGroup William L. Diefenbach FAIA LEED AP Senior Vice President 301 Battery Street, 7th Floor San Francisco, CA 94111 (415) 365 3454 bill.diefenbach@smithgroup.com Marianne O'Brien AIA LEED AP Principal (415) 365 3565 Marianne.O'Brien@smithgroupjjr.com
Design Build Contractor	DPR Construction Michael Saks, Project Executive 1450 Veterans Boulevard Redwood City, CA 94063 (650) 474 1450 michaels@dpr.com
Laboratory Planner	GPR Planners Collaborative, Inc. Josh Meyer, Managing Principal 420 Stevens Avenue, Suite 150 Solana Beach, CA 92075 (914) 253 6744 josh.meyer@jacobs.com
Interior Designer	Rafael Viñoly Architects and SmithGroup
Mechanical, Plumbing, and Fire Engineer (of Record)	ACCO Engineered Systems, Inc. Leroy Ginn, Project Executive 1133 Aladdin Avenue San Leandro, CA 94577 (510) 346 4436 lginn@accoes.com
Mechanical, Plumbing, and Fire Engineer (Design)	Gayner Engineers Shuen Yuh Lo, Sr. Mech. Engineer 1133 Post Street San Francisco, CA 94109 (415) 474 9500 shuen@gaynerengineers.com
Electrical Engineer (of Record)	Cupertino Electric, Inc. Adam Spillane, Project Manager 1740 Cesar Chavez San Francisco, CA 94124 (415) 970 3489 Adam_Spillane@cei.com
Electrical Engineer (Design)	Cammisa and Wipf George Puffett, Principal 32 Page Street San Francisco, CA 94102 (415) 863 5740 gpuffett@cammisawipf.com
Structural Engineer (of Record)	Forell/Elsesser Engineers, Inc. Simin Naaseh, President & CEO 160 Pine Street, Sixth Floor San Francisco, CA 94111 (415) 837 0700 simin@forell.com
Structural Engineer (Design)	Nabih Youssef Associates Michael Gemmill, Vice President 50 California Street, 31st Floor Suite 3150 San Francisco, CA 94111 (415) 392 9637 mgemmill@nyase.com
Civil Engineer (of Record)	Creegan & D'Angelo Trevor Greco 2420 Martin Road, Suite 380 Fairfield, CA 94534 (707) 429 5300 tgreco@cdengineers.com
Civil Engineer (Design)	Sandis Cahd Browning, Project Manager 605 Castro Street Mountain View, CA 94041 (650) 969 6900 cbrowning@sandis.net
Landscape Architect (of Record)	Carducci & Associates, Inc. Wesley Bexton 555 Beach Street, 4th Floor San Francisco, CA 94133 (415) 447 5224 wesley@carducciassociates.com
Landscape Architect (Design)	CMG Landscape Architecture Chris Guillard, Principal 500 Third Street, Suite 215 San Francisco, CA 94107 (415) 495 3070 cguillard@cmgsite.com
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Commissioning Agent	Glumac Holt Condon 150 California Street, 3rd Floor San Francisco, CA 94111 (415) 398 7667 hcondon@glumac.com
Owner's Representative	UCSF Michael Toporkoff, Owner's Representative and Project Manager George Hastings Field Construction Manager

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Vendors

Lab Casework Manufacturer	Fisher Hamilton 1316 18th Street Two Rivers, WI 54241 (920) 793 1121
Lab Fume Hoods Manufacturer	Thermo Fisher Scientific 1316 18th Street Two Rivers, WI 54241 (920) 793 1121
Cold Room Manufacturer	Cold Room Solutions, Inc. Brad Bidwell 3942 Valley Avenue, Suite L Pleasanton, CA 94566 (925) 462 2500 brad@coldroomsolutions.com
Flooring Manufacturer	Mannington Commercial PO Box 12281 (30703-7004) 1844 U.S. Highway 41 S.E. Calhoun, GA 30701 (800) 241 2262

Vivarium equipment, biosafety cabinets, and water polishers were provided by the occupants.

Program Space Use Data

	Area	Area %
Open Laboratories	15,849 sf	23%
Laboratory Support	17,978 sf	26%
Office	10,477 sf	15%
Building Support	1,863 sf	2%
Building ASF	46,167 sf	
Circulation	5,258 sf	7%
Mechanical	9,985 sf	15%
Walls & Open Space	8,475 sf	12%
Building NASF	23,718 sf	
Building GSF	69,885 sf	
Minus Open to Below	1,385 sf	
Building GSF	68,500 sf	100%
Net to Gross Ratio	67.4%	

	Area	Area %
Open Laboratories	1,473 m^2	23%
Laboratory Support	1,670 m^2	26%
Office	973 m^2	15%
Building Support	173 m^2	2%
Building ASF	4,289 m^2	
Circulation	489 m^2	7%
Mechanical	928 m^2	15%
Walls & Open Space	787 m^2	12%
Building NASF	2,204 m^2	
Building GSF	6,493 m^2	
Minus Open to Below	129 m^2	
Building GSF	6,364 m^2	100%
Net to Gross Ratio	67.4%	

Photography Credit

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