
TDCCBR
TERRENCE
DONNELLY
CENTRE FOR
CELLULAR
AND
BIOMOLECULAR
RESEARCH

TDCCBR
The Terrence Donnelly
Centre for Cellular and Biomolecular Research
for the University of Toronto, Canada

BEHNISCH ARCHITEKTEN **architectsAlliance**


Medical Science Building
Fitzgerald Building
Rosebrugh Building
Mining Building

This project has been designed, planned and realized through a collaboration between Behnisch Architekten, Stuttgart, Germany and architectsAlliance, Toronto, Canada.

The University of Toronto and its affiliated institutions are world leaders in the quest to link genes to disease. Envisioned by its founders as a collaborative, interdisciplinary research facility, the CCBR allows some 400 diverse specialists, including biologists, computer scientists, physicians, pharmacists and engineers, to build on the University's strengths in bio-molecular research. The programme encourages cooperation and interaction between disciplines and amongst researchers, and largely consists of functional, highly flexible and technically advanced research laboratories.

Situated on the southern edge of the historic city center campus between Kings College Circle, Queens Park (site of the Provincial Parliament Buildings), and one of the largest hospital precincts in North America, the CCBR is seen as the fulcrum between leading edge research and medical application. The CCBR is located on College Street, an important city thoroughfare, between two historic buildings on a previously neglected cul-de-sac that served as a parking and service area.

left
Plan Ground Floor

GENERAL ORGANIZATION


VANBOTS

General Organization

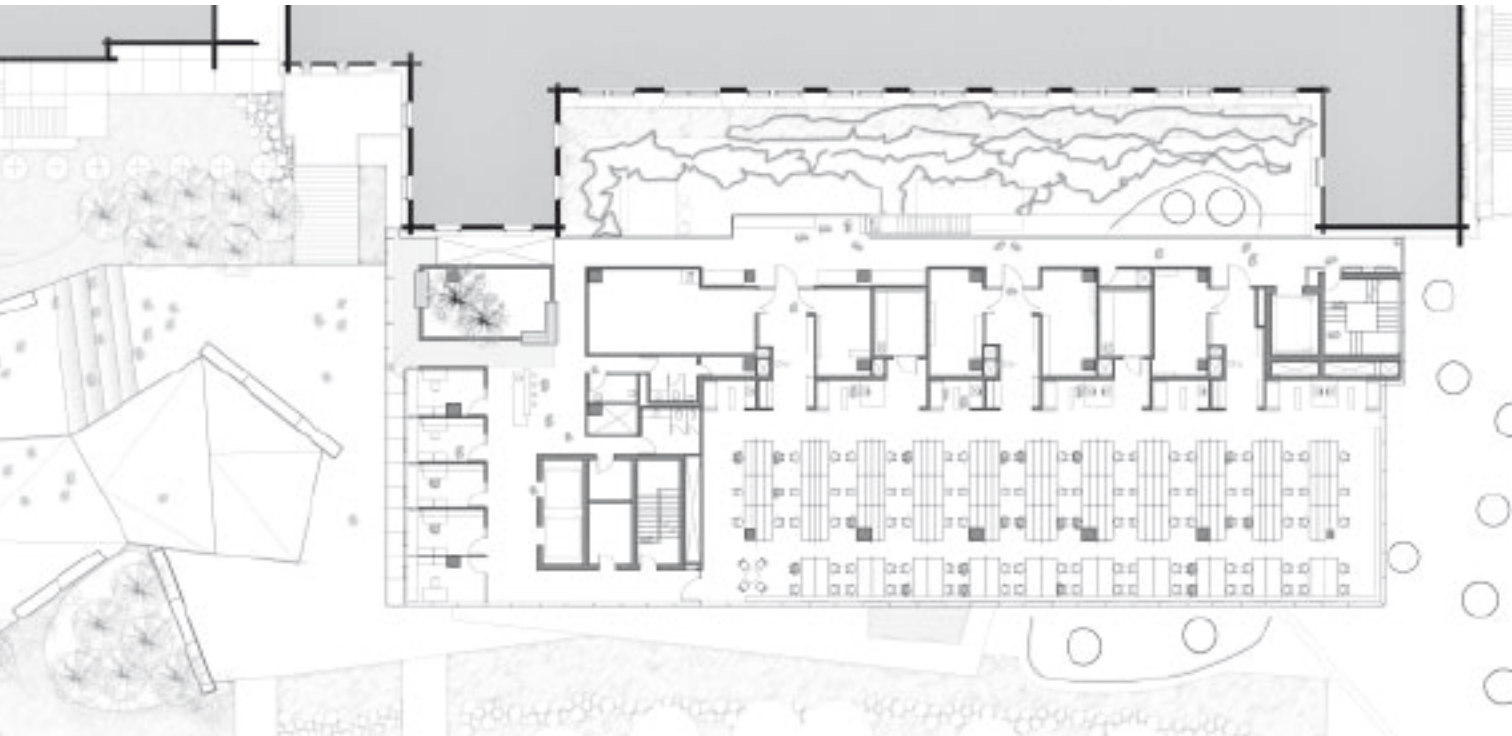
The new facility transforms the site's condition and makes a positive contribution to the university infrastructure, promoting cross campus pedestrian links. Its prominent appearance and presence on College Street underscore the University's status as a leader in genomic research. The facility is to serve as a recruitment aid in attracting top rate researchers from around the world, function, flexibility, amenity and interaction inform all aspects of the progressive design.

The laboratories are housed in a 12-story transparent box which is elevated above a new public thoroughfare connecting the city to the south with historic campus centre, Kings College Circle. Consisting of a new landscaped forecourt, main building entrance and a public concourse leading through to the adjacent Medical Sciences Complex, this route is punctuated by gardens, lounge areas, administrative offices, seminar rooms and a cafeteria. The architectural language employed deliberately contrasts that of the overlying box unfolding as a modulated landscape. The positioning of the new building close up against its historic neighbour creates a dynamic multi-storey atrium characterized by the contrast between adjacent brickwork façades and the new construction.

The shallow floor plates of the laboratory areas allows for maximum use of daylight and, depending upon demands of specific research requirements, operable windows allow for natural ventilation. Double and triple height gardens punctuate the southern end of the lab floors informing both layout and appearance, providing valuable communal alternatives to individual workspaces.

Each façade is treated differently in response to both programmatic and climatic imperatives. The south elevation fronting onto College Street employs a double glazed facade providing solar and acoustic control in addition to creating a richly layered transparency to the buildings primary face. The glazing of the east, west and north facades are treated with patterned ceramic frit or coloured laminated glass to provide shading, privacy or amenity as required by programme and circumstance. An intermediate mechanical floor is articulated to break down the scale of the lab block in a manner that relates to the scale of surrounding buildings.

LABORATORIES



Laboratories Each of the twelve laboratory floors houses facilities for six principal investigators (with separate cellular offices), 38 research associates (with "write-up stations" in the laboratory itself) and ancillary spaces such as lounges, cold rooms, equipment rooms, etc.

A key element in the design of the laboratory and respective support spaces is the ability to adapt the spaces to accommodate a variety of different uses. The "loft" – a robust, simple and flexible structure capable of accommodating a myriad of uses over time - was seen as an ideal response to the programmatic requirements of laboratories. A consistent structural bay respects workbench layouts and overhead services, whilst providing for future subdivision. Support spaces and utilities are organized in the form of a service spine which allows for simple conversion from wet to dry labs - wet labs can change from biology to chemistry to bio-informatics; dry labs spaces can change to wet with the addition of fume hoods and respective laboratory casework.

The omission of suspended ceilings, decentralised exposed service ductwork and exposed superstructure allows for reduced floor-to-floor heights and the selection of simple and robust materials contributes to a light, airy 'loft-type' atmosphere ensuring a high level of transparency throughout the laboratory floors.

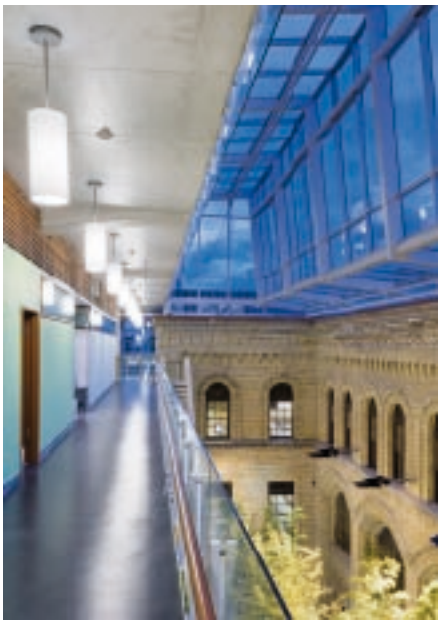
left
Plan 2nd Floor
Laboratories

Floors are organized with laboratories to the east side, separated by a 'central service spine' (minimizing horizontal ductwork) from the generous western circulation corridor. The more informal write-up spaces of the labs are located at the windows, enjoying views over Queen's Park Crescent and the city beyond. A ghost corridor separates these from the laboratory workbench areas. Proprietary workbench / shelving systems have been customized to suit the range of individual needs. Colour, lighting and materials serve to further differentiate the particular zones and lend identity to individual workstations.

Principal's offices, are located to the south overlooking the entrance forecourt, benefit from their high ceilings and an operable double façade with exterior sunshades. Interspersed among the offices are meeting rooms, coffee stations, and double and triple-height common gardens promoting communication and exchange.

below
Section / East Elevation
Laboratory Facade

The common, western corridor is treated as much more than a circulation space that provides entry into the labs. Generously dimensioned, the corridors on lower floors open directly onto the atrium garden, and are interconnected by convenient stairs. On the upper floors above the atrium, an irregular series of projections contain open stairs between floors and lounge areas and café-type bars / workstations wired with computer ports. Collectively, these spaces – the coffee stations, gardens, lounges, etc. - encourage casual interaction and discussion outside of the laboratory. Studies have demonstrated that these common spaces prove to be the most effective "places of discovery" in research environments.



LANDSCAPE AND OPEN SPACE

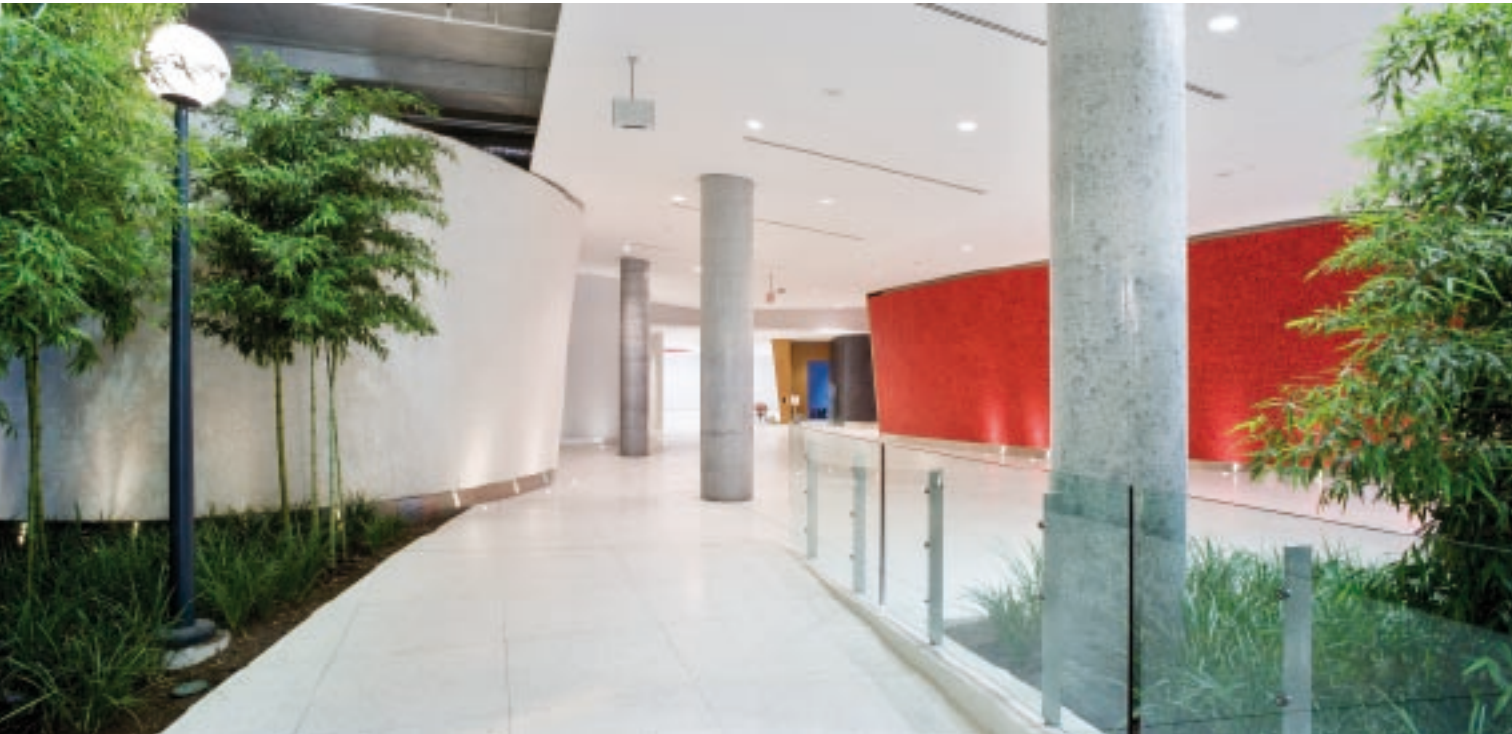
Landscape & Open Space

The landscape is an integral part of the project's architecture. The CCBR is characterized by the contrast between the simple rectilinear form of the glazed laboratory tower and the urban landscape below. The project provides a new public space in the city, the new forecourt on College Street - flanked by the historic facades of the neighbouring University buildings - creates a generous entrance to the building, providing an appropriate entree to the campus beyond.

The forecourt's granite paving continues inside the building through to the new atrium garden, which lies at the heart of the main public floor. Flooded with daylight, the naturally ventilated atrium is a new focus for the campus drawing staff, students and visitors into the center of the complex medical research buildings. The atrium garden with planting, seating and waiting areas enriches both the entrance lobby and the adjoining public spaces; cafeteria, meeting rooms, etc. Together with the full height glazed south entrance facade, deliberately blurring the traditional boundaries between inside and out. The upper corridors and convenience stairs take full advantage of this new atrium, providing direct interdepartmental connections between floor levels and allowing the garden below to be viewed and experienced from quite different perspectives.

The gardens of the upper floors play a defining role in the external appearance of the building. The combination of double / triple height volumes serve as ‘lounges’ enhancing the general working environment, providing areas for relaxation and informal workstations. Varying plant selections ensure that each garden has a distinct character. In summer the foliage provides shade, while in winter, when certain vegetation looses a proportion of its leaves, light is allowed to penetrate deeper into the building, increasing both warmth and comfort levels.

The textures, colours and scents afforded by the gardens which characterise the new indoor environment completely transform the traditional idea of a laboratory building. The use of colour in the architecture both differentiates and diffuses the building, sometimes lending particular emphasis or supporting the creation of distinct atmospheres and moods.



Project Data

Gross Floor Area	20,750 m^2
Client	University of Toronto, Toronto, Canada
Address	150 College Street, Toronto, ON M5T 1R2, Canada
Donor	Terrence Donnelly
Representatives for the Users and Initiators of the Project	James D. Friesen, Ph.D., FRSC, DScient *Co-Director (Emeritus), Professor Emeritus, University of Toronto* Cecil C. Yip, Ph.D., FRSC *Co-Director (Emeritus), Professor Emeritus, University of Toronto*
Architects	**BEHNISCH** ARCHITEKTEN Rotebühlstrasse 163A 70197 Stuttgart Germany **architectsAlliance** 205-317 Adelaide Street West Toronto, Ontario M5V 1P9 Canada
Structural Engineer	Yolles Partnership Ltd., Toronto, ON, Canada
Structural Consultant	Knippers Helbig, Stuttgart, Germany
Mechanical / Electrical	HH Angus & Associates Ltd, Don Mills, ON, Canada
Landscape	Diana Gerrard Landscape Architecture, Toronto, ON, Canada
Lab Consultant	Flad & Associates, Madison, WI, USA
Contractor	Vanbots Construction Corporation, Markham, ON, Canada
Cost Consultant	Curran McCabe Ravindran Ross, Inc., Toronto, ON, Canada
Photos	Tom Arban Stefan Behnisch David Cook A-Frame Inc. / Ben Rahn
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