

THE LEFT ATRIUM

Lifeworks

Designed for discovery

The Terrence Donnelly Centre for Cellular and Biomolecular Research
University of Toronto
Toronto, Ont.

The new Terrence Donnelly Centre for Cellular and Biomolecular Research has created an international buzz in the architectural community after receiving a prestigious Royal Institute of British Architects' International Award, recognizing high architectural standards and contribution to the local environment.¹ Located at the heart of the medical and health sciences district in the city of Toronto, this 2005 addition to the University of Toronto, was designed by Behnisch, Behnisch and Partner of Stuttgart, Germany, in collaboration with architectsAlliance of Toronto.²

It has been documented that 80% of scientific breakthroughs occur outside the laboratory environment in social settings.² With this in mind, the university asked the architects to incorporate the themes of interaction, flexibility and openness into the design for this research centre.

The result is a 12-story sustainable building with a transparent skin that allows the outside world a view into the scientific domain. It contains both laboratory spaces and offices, and is set back from the street, thus creating a new public plaza and green space as well as commodious entrances for 2 of the university's heritage buildings.

According to Walter Bettio and Deni Papetti of architectsAlliance, "each of the building's 4 facades speaks to its orientation in terms of its design, materials and function of the

interior space." The west facade is perhaps the most striking, incorporating a dot matrix design of ceramic frit on glass, representing the double-stranded DNA helix. Up close the pat-

tern appears abstract, but seen from a distance the dots create an unmistakable helical pattern. The east facade also references the DNA molecule with coloured glass panels arranged in a



Courtesy of Ben Rahn, A-Frame Inc. and architectsAlliance.

Exterior view of the Terrence Donnelly Centre illustrating the structure's transparency, proximity to other campus buildings and importance of indoor gardens during Canadian winters!

pattern inspired by the DNA bar code sequence.²

The centre focuses on 3 main research *themes*, rather than disciplines: bioengineering and functional imaging, integrative biology, and models of disease. These themes dictate which scientists co-exist in the building. For example, a researcher who studies transcription factors and transcript localization in the *Drosophila* model³ has a laboratory in the same building as a scientist whose work focuses on designing a nerve regeneration system utilizing polymer synthesis.⁴ Previously, such researchers were unlikely to be found in the same department, let alone the same working environment. Physically bringing together researchers from diverse but complementary specialties may stimulate a synthesis of ideas and allow them to forge new research directions that they otherwise may not have had the opportunity to explore.

To promote chance encounters and this possibility of interdisciplinary exchange, the architects incorporated a variety of interactive social spaces, including coffee bars on every floor, as well as several winter gardens, resplendent with trees, on the building's south corners. The ground floor includes a large open staircase leading through a 6-story high atrium, densely planted with 25–30 foot high bamboo. This impressive space invites contemplation and reflection.

Incorporating social spaces into a laboratory setting with the goal of fostering scientific creativity recalls the Salk Institute for Biological Studies in La Jolla, California, which was designed by Louis I. Kahn, one of the most recognized architects of the 20th century. The Salk Institute was established in the 1960s by Dr. Jonas Salk, developer of the first polio vaccine. His goal was to establish an institute that would make it possible for biologists and others to work together in a collaborative environment, encouraging them to consider the wider implications of their discoveries for the future of humanity.

“Architecture is used here. Some people pursue science for human use, in contrast to science for the sake of

One thousand words



Dam de Nogales

“The sculpture attempts to capture not only the activity of the research centre, but the very spirit behind this research. There is in medicine and in art a unique connectivity of subject and subject matter ... this work attempts to capture this ... the figure is in unison with the protein structure, mimicking its every twist and turn ... there in his reach is anticipation, hope and a sought objective ... discovery within grasp.” — Veronica and Edwin Dam de Nogales, commenting on their bronze sculpture *Spirit of Discovery*, located in the forecourt of the Terrence Donnelly Centre for Cellular and Biomolecular Research, University of Toronto, Toronto, Ont.

science. This architecture is for human use, to serve a purpose.”⁵ In planning the design of the Salk Institute, Kahn recognized the importance of informal and social spaces by separating the studies from the laboratory spaces and creating green areas: “The gardens became outdoor spaces where one can

talk. Now one need not spend all the time in the laboratories.”⁶ Salk’s vision of research is experienced within this new Toronto facility.

The Terrence Donnelly Centre for Cellular and Biomolecular Research sets a standard for the future of research facility design, and perhaps



Courtesy of Ben Rahn, A-Frame Inc. and architectsAlliance.

Interior view of the Terrence Donnelly Centre showing the social spaces: a coffee bar located outside the laboratories and one of the winter gardens inviting contemplation and discussion.

other medical buildings as well, as medical treatments involving multidisciplinary associations become increasingly important, both in research and clinically. The future of hospital design could also be inspired to incorporate architectural elements promoting discussion and forward-thinking.

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Annotations

Environment as catalyst

In his classic book, *The Double Helix*, Dr. James Watson relates the circumstances surrounding the pivotal discovery in 1953 of the molecular structure of the DNA molecule — the double helix. As a young researcher at Cambridge University, he revelled in life at the famous university and, in the excerpt below, acknowledges the importance of environment, both social and physical, to the successful fusion of ideas in research.

The following morning I felt marvelously alive when I awoke. On my way to the Whim I slowly walked toward the Clare Bridge, staring up at the gothic pinnacles of

the King’s College Chapel that stood out sharply against the spring sky. I briefly stopped and looked over the perfect Georgian features of the recently cleaned Gibbs Building, thinking that much of our success was due to the long uneventful periods when we walked among the colleges or unobtrusively read the new books that came into Heffer’s Bookstore.¹

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