

# INNOVATIVE BUILDING DESIGN REMOVES BARRIERS, FOSTERS COLLABORATION

## Balgrist University Hospital R&D facility challenges convention and encourages collaboration

**B**algrist University Hospital in Zurich, Switzerland, is a global center of excellence in the assessment, treatment, and care of people with musculoskeletal injuries. In 2011, led by Medical Director and Head of Surgery Prof. Dr. Christian Gerber, the hospital broke ground on a new research facility that would strengthen its ability to develop new treatment methods.

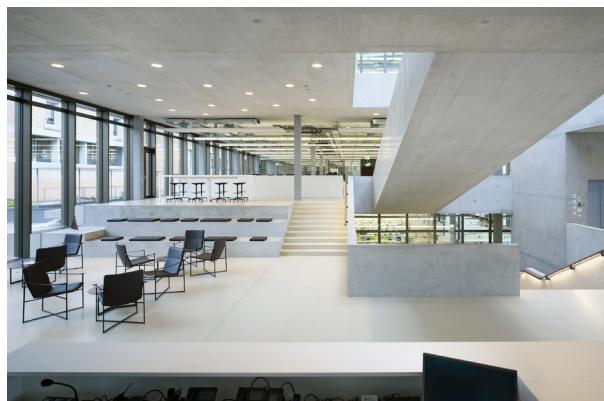
Prof. Gerber’s vision was to establish Balgrist Campus, as the building is now known, with the goal of becoming Europe’s premier R&D facility for musculoskeletal issues by 2020. Swiss-based architectural firm Nissen Wentzlaff Architekten (NWA) was selected from among 50 other firms to design and manage construction of the new facility.

### A RADICAL APPROACH

With construction completed in late 2015, the building is now fully occupied. The hospital uses approximately half the space; technical university ETH Zurich, the University of Zurich, and several industrial firms use the rest. According to Daniel Wentzlaff, NWA’s Head Architect and Cofounder, the building’s unique open-concept design fosters collaboration between researchers, doctors, industry, students, and patients. “In the initial brief, it was strongly emphasized that barriers between disciplines should be dissolved so that the cancer group, for instance, could work more closely with the group for bone fractures,” explains Wentzlaff. “After giving the request a lot of thought, we proposed a radical approach.”

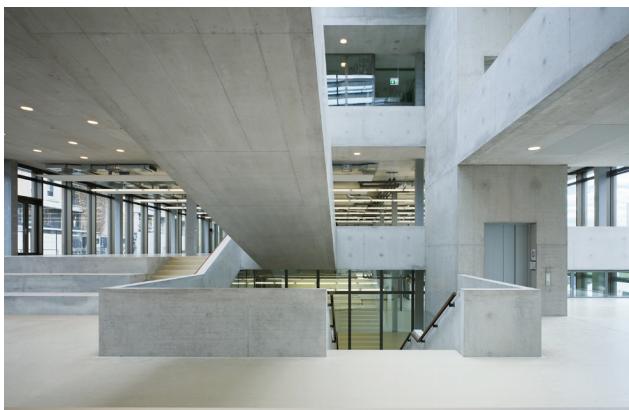
In a typical setting the building would be divided by territory. A research professor, for example, would typically negotiate a certain amount of space for research equipment, offices, and staff. At Balgrist Campus, however, NWA proposed that floor space should be allocated by activities, not personal territory.

This means that wet labs are on the lower levels, open-environment offices are on the center levels, and dry labs are on the top levels. Professors and students of all disciplines work desk-by-desk in the open office and move through the building depending on their current needs and activities. “I don’t think there are any other research institutions in Switzerland with a comparable space allocation,” says Daniel.





CONCEPTUALLY, WE TRIED TO ESTABLISH A GRADUAL INCREASE OF TRANSPARENCY FROM THE PERIPHERY TO THE CENTER



This approach, he explains, provides several advantages. “The first is that researchers can have better equipment. Instead of three microscopes, each assigned to a chair, researchers can share one microscope with a higher standard. The second advantage is that the occupants of the building have a better awareness of what their colleagues are doing and therefore—hopefully—can discover new ways of working together.”

### UNIQUE DESIGN

Another unique aspect of NWA’s approach was to increase interaction and communication through an open floor concept. “Usually in research buildings, the floor slabs are the biggest separation,” says Daniel. “You could compare it to housing—when you live in a building, usually you know the neighbors on the same floor but very rarely the ones above or below you.”

NWA proposed a split-level design with the floor slabs cut in the middle, so that two additional floors are always visible from each point of view. To create the greatest possible transparency in the central area, installation cores with adjoining rooms and staircases were placed at the ends of the building.

“That was both a conceptual and technical challenge,” says Daniel. “Usually in a lab building the core is placed in the center to house vertical installation ducts for air, gas, electricity, etc. But because of the split level and the open central area, we moved the cores to the periphery. As a result, the horizontal ducts do not traverse the whole building, but are fed from its two ends.”

Office floors are arranged from the outside in as well. “Conceptually, we tried to establish a gradual increase of transparency from the periphery to the center,” says Daniel. “At the very periphery we placed the washrooms and the vertical installation ducts, followed by closed rooms, then the glassed-in meeting rooms, then the open work areas, and finally the open center for informal breaks, encounters, and vertical circulation. So space appears more and more open and fluid as you get to the center.”

By using geothermal energy for heating and cooling, Balgrist Campus has earned the Swiss Minergie label, a low-energy-use standard created for residential buildings that is rarely achieved by laboratories. The building is made of concrete with water pipes running throughout. These pipes are connected to 200-300-meter-deep drill holes below ground that store heat during warmer months and release it in winter. “Cooling and heating is provided by radiant heat transmission, using the concrete structure,” says Daniel. This optimizes air exchange to meet hygienic requirements, further reducing the building’s overall energy consumption.



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### A CLEAR VISION

Daniel credits Prof. Gerber's vision, enthusiasm, and perseverance for the successful project. "This building is all about the motion of the human body. Christian Gerber saw a lack of research facilities in this field and wanted to establish one of the best hubs in the world for musculoskeletal research," he says. "Our ideas for the project were triggered and fueled by this unusual client. He is a visionary man, and we did our best to develop building solutions that fit his vision."

Balgrist Campus was funded by donations and a contribution from the lottery fund of the Canton of Zurich. [◆](#)

—Mike McGrath

Photos by Ruedi Walti, Basel

INSTEAD  
OF THREE  
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EACH ASSIGNED  
TO A CHAIR,  
RESEARCHERS  
CAN SHARE ONE  
MICROSCOPE  
WITH A HIGHER  
STANDARD

**Project:** Research and Development Building: Balgrist Campus

**Location:** Zurich, Switzerland

**Project vision:** By 2020, Balgrist Campus will be Europe's leading research and development center in human musculoskeletal challenges