



Supporting Scientific Inquiry through Informed Lab Design

A pre-occupancy study conducted to inform the design of the University of Minnesota Microbiology Research Facility explores challenges, opportunities, and key considerations when designing flexible research spaces.

Overview

Scientific research is dynamic. From funding mechanisms to technology, teams to processes, the nature of research is in a constant state of flux. To recruit and retain top talent, secure grant funding, and uphold institutional values, research institutions make considerable capital investments in providing state-of-the-art research environments. But with the mechanisms of scientific research constantly evolving, can research spaces be designed in such a way as to accommodate the changing nature of research over time? BWBR and the University of Minnesota conducted a study to explore this very question.

Methodology

To inform the design of the University of Minnesota's Microbiology Research Facility, the design team wanted to understand if flexible lab infrastructure enhanced research operations, and if the cost premium of flexible lab casework improved the functionality of research labs. Focus groups were held with research staff in a variety of roles and departments within the University's Biomedical Discovery District. A survey was also administered that solicited input from researchers working across the district.

AT A GLANCE

Project Type

Higher Education

89,000
Square Feet

Stories
4

Completion
2015

Location
Minneapolis, MN

Findings

The study provided insight on the perceived value of flexible lab casework in research environments. While approximately two-thirds of study participants had access to flexible lab casework in their spaces, only 34.2% of respondents reported reconfiguring their spaces throughout the course of a year. Only 11% reconfigured their space more than once per year. Of the respondents who had reconfigured spaces, new equipment was the most-cited reason for reconfiguration, few respondents cited new staff, changing processes, or other reasons for reconfiguration.

Additional feedback gathered provided insight into how well flexible and fixed casework supported the research process. While the ability to isolate vibration, accommodate large equipment, and maintain long-term flexibility were noted benefits of flexible lab casework, participants cited higher cost (up to 22% higher for a typical high intensity lab, when compared to fixed casework), difficulty to move or adjust, quality of construction, instability, and lack of locks and storage as attributes of flexible casework that did not support research processes. Alternatively, respondents indicated that fixed lab benches provided greater stability, storage, durability, cost efficacy, ergonomics, and higher quality of construction when compared to flexible alternatives.

	PROS	CONS
MOVEABLE BENCHES	<ul style="list-style-type: none"> Separate benches to isolate vibration Flexibility over the long term Move to accommodate large equipment 	<ul style="list-style-type: none"> Not easily moved Higher cost Perceived poor quality Do not lock in place Unstable Less storage space
FIXED BENCHES	<ul style="list-style-type: none"> Stability More storage space Durable More cost effective More ergonomic Perceived higher quality 	<ul style="list-style-type: none"> Non-adjustable height Cannot isolate vibration Lose flexibility over long term Can create tight work spaces

Impact and Insight

Findings from the study ultimately informed the decision to utilize a hybrid approach to the design of the research labs at the Microbiology Research Facility (on the University of Minnesota campus). The hybrid approach alternated between fixed lab benches and flexible lab benches. The fixed lab benches were outfitted with moveable, adjustable storage solutions, while the flexible lab benches allowed for new equipment in the future. This hybrid design accommodates changes in technology, equipment, and storage, while providing the ergonomic and quality aspects of a fixed bench.

Furthermore, findings from the study suggest that, from the researcher perspective, flexible lab casework does not offer enough additional value to justify the higher cost premium. However, institutions must consider flexibility needs for a particular researcher or team while simultaneously considering what flexibility means from a long-term, facilities management perspective. Evaluating needs for flexibility on a case-by-case basis, and implementing flexible solutions strategically, will provide much greater value to research institutions over making unilateral, facility-wide lab decisions about flexible infrastructure.

BWBR supports research across all areas of our practice to inform design decisions and build knowledge about occupant and building performance.

