

The Life Science Workplace: Designing for People



KEY POINTS

- Innovation drives the need for flexible work environments.
- Space planning has evolved because of the way we work and learn.
- A top factor in driving human performance is social cohesion.

Technology is rapidly changing how people work and move throughout the lab. From pharmacology and biotechnology to artificial intelligence—our new technologies drive innovation, discovery and collaboration. Technology expedites the way we handle and analyze data. With highly specialized material work zones many procedures, once done by hand, are automated by specialized equipment. At a blood processing center, a technician logs information into a computer at a lab bench while a virtual doctor logs on to diagnose it. At home, the patient receives an alert to access a private portal for test results while physicians wirelessly collaborate with scientists across the country.

OPEN PLAN DESIGN

Technology's role in business has changed the lab design model from facility managed requirements to production schedules and human performance

metrics. In the 1970s, each employee had their own desk with (quickly outdated) equipment; and reconfiguration was difficult and time-consuming. Then, the “open office” trend brought designs with shared equipment and community spaces—all housed in one large room. Open environments, in certain settings, improve communication and create a sense of sharing, leading to breakthroughs. But, it is harder to concentrate for long periods of time if the space is cluttered and distracting. It can also be difficult for sensitive tasks that must be isolated. However, spaces can be separated by a glass partition or sliding glass door. Acoustics can be softened by moving loud or rarely used equipment to a separate room. In any case, a lab does not need to be a static, closed-off and enigmatic space. It can be full of light and color with less clutter and include collaborative areas.

LINKING LAB DESIGN TO CULTURE

Sherry Turkle, researcher and psychologist, has spent several decades researching peoples’ relationships with technology. She contends the “always on, connected” state affects our ability to think, be creative and innovate. Not surprisingly, the paradigm in lab design is trending back to layouts that include more quiet areas. At Memorial Sloan Kettering Cancer Center touchdown workstations allow for close collaboration between physicians and scientists to discover more effective strategies. This is an important part of the company’s culture and



Memorial Sloan Kettering Cancer Center makes the best use of a floor plan with Symbiote touchdown workstations within the lab.

mission, and should be discussed in the early planning phase of every project.

Scientists at a genetics lab, for example, are typically introverts who need time to explore while technicians at a decentralized pharmacy are actively engaged with support personnel. Lab professors at universities structure their curriculum with a blend of lecture, student presentations, computational work and group participation. A university, looking to increase enrollment, must look at how healthcare and medical students view the culture. If they tour an old-fashioned lab with no flexibility they are going to be less inclined to attend school there.

At Arizona State University a traditional classroom with rows of desks has become a dual-purpose lecture/lab. Movable, height adjustable tables offer different seating configurations that meet ADA requirements. There is more space in the aisle for the professor to walk and interact with students and for breakout sessions. Utilities are provided from ceiling-mounted structures or limited fixed-bench locations. Like this higher education facility, which needed to increase classroom utilization, the mission of a lab changes frequently—sometimes annually. The way we work and learn has changed; and incorporating a variety of multi-functional, modular furniture into a facility is key. What works today may need to change tomorrow, and with minimum capital and time to do it.

At a Michigan nutritional lab, the organization is driven by high-end technology. With equipment becoming more efficient and shrinking in size, the lab needs to accommodate constant change. A flexible design allows for reconfiguration of the space; and, cross-functional teams and scientists can work in groups near each other. Overhead service panels with utility access give technicians the ability to move their benches at will. All of the stations are height adjustable

and have chemical resistant surfaces. There is a mixture of bench styles; some include a tall Riser Frame to allow for movable, overhead storage that lifts up/down with the worker. Some workers need a larger worksurface area that is extra durable for heavy equipment. In this application, the open environment has reduced the feelings of isolation. Taller equipment is placed along perimeter walls



A nutrition lab uses a mixture of fixed casegoods with mobile workstations while louder equipment is moved to a separate, glass-enclosed space.

to help techs working at their benches feel more integrated into the department as a whole. Because the workstations are on casters it's easy to roll tables around to reconfigure teams or form work groups for efficiency.

Outside the lab there is a large, multi-purpose work room to enjoy refreshments, hold meetings or complete tasks. A conference table with large marker boards aids in brainstorming sessions and there are designated areas where people can sit and work alone. The proximity to the lab is important so the support staff can stay in contact with the researchers.

HUMAN PERFORMANCE IN THE LAB

Advanced Workplace Associates (AWA) is a group of people from different disciplines who study the way work should be done. They define knowledge workers as researchers, development staff, designers, engineers and creative experts. Because the output of knowledge work is often intangible, it's hard to define a goal of measurement; rather it's more important to understand the factors that drive

human performance and job satisfaction. One of the top factors is social cohesion. The more people can develop friendships and cooperate with each other, the easier it is to challenge ideas without fear and share knowledge for the good of the company.

Imagine you are a pharmaceutical scientist assigned to develop a drug to reduce hypertension. Your team explores related research and carries out lab experiments. At the end of clinical trials a drug is not produced; therefore, it fails based on conventional "cost per unit" measurements. Following this logic, management reassigns your team, calling the project a failure. However, in the context of shared knowledge work, your team later discovers a new drug in a different field. In the 1990s, Pfizer held clinical trials on sildenafil citrate as a heart disease treatment. While unsuccessful, future studies led to erectile dysfunction experiments—eventually producing the drug Viagra.

While the AWA research applies to people who are being paid to think, in many respects, we are all knowledge workers contributing in some way to the creation of something else. Designing a more supportive culture that is welcoming, comfortable and interactive can improve human performance. The environment can also support its workers with furniture that adjusts easily for its function; provides comfort (i.e. sit-to-stand and ergonomic adjustment); manages utilities and technology; addresses work processes; and organizes work well.