clarkston
CONSULTING

2023
LABORATORY
TRENDS

In recent years, many factors have contributed to the need for innovation in the laboratory space, most notably the COVID-19 pandemic. Streamlining laboratory processes has become essential, and technological advancements have made these types of upgrades a reality.

As we move into 2023, we expect to see the five following trends make a significant impact on progress in the laboratory industry sector: mobile LIMS adoption, data and analytics investment, real estate expansion, Artificial Intelligence (AI) automation, and supply chain disruption.

Below, we outline five laboratory trends that companies and consumers should be aware of in 2023:

1 MOBILE LIMS ALLOWS FOR CURATION OUT IN THE FIELD

2 DATA AND ANALYTICS CREATE KEY INSIGHTS INTO CLIENTELE BASE

3 REAL ESTATE INVESTORS INCREASE LABORATORY METRO SPACE

4 AI AUTOMATES PARTS OF THE LABORATORY EXPERIENCE

5 TECHNOLOGICAL INVESTMENTS PREVENT FURTHER SUPPLY CHAIN DELAYS

MOBILE LIMS ALLOWS FOR CURATION OUT IN THE FIELD

Many companies use LIMS (laboratory information management systems) to help maintain data electronically. Traditionally, laboratories follow the typical experience where data for every sample has to be recorded manually at the testing site and then transferred to the stationary, primary LIMS back in the office. This process is prone to error, as the data has to be transcribed from notebooks to LIMS. Recently, we've begun to see companies starting to use mobile devices, such as tablets, phones, and scanners, which allow for the real-time recording of sample data at all stages. Utilizing mobile LIMS prevents transcription errors and can also reduce profit loss due to error investigations.

Another benefit of mobile LIMS is that it makes sample tracking much more manageable. The technician can follow the sample at each stage in the experiment all the way to the finished product, right from their mobile device. It allows access to laboratory data sooner than it has ever been available before and enables faster recognition of trends and decision-making based on results.

The global LIMS market is anticipated to be worth $3.56 billion by 2030.
SOURCE

DATA AND ANALYTICS CREATE KEY INSIGHTS INTO CLIENTELE BASE

It's estimated that laboratories perform and interpret an average of 27 million tests per day — a significant amount of data. Data and analytics teams are essential for any company to provide key insights for better decision-making, more efficient processes, and faster innovation cycles. For the laboratory industry, that data can provide insight into how to innovate or adjust to meet the needs of the consumer, ultimately leading to quicker innovation cycles, which is key in such a competitive sector.

Data and analytics software investments will ensure laboratories are able to analyze test results quickly and compare data references in easy-to-synthesize formats. Strong data and analytics capabilities also enable laboratory teams to produce more efficient research and development. Researchers can use clinical results as a baseline that can then be compared to the different demographics of patients who eventually will use a product. Analytics tools make it easier to identify if something reacts in a patient differently depending on various circumstances that can be presented to the researcher all at once. This allows the researcher to know if having a pre-existing condition, for example, can influence the effectiveness of the therapy for the patient.

Analytic tools are also now being used to create individual treatment plans for patients. These tools can compare complex genomes and molecular structures to reference content sites in a matter of minutes. This information can then be placed in a report from which it is easier to draw conclusions for a more accurate diagnosis. Further, laboratories are also using analytic tools to predict staffing workloads. By using software to automate the process, laboratory managers can quickly determine staffing needs by location, time of day, types of tests performed, and/or by priority.

Laboratories and pathologists perform and interpret an average of 27 million tests per day.
SOURCE

3 REAL ESTATE INVESTORS INCREASE LABORATORY METRO SPACE

Life sciences laboratory spaces are quickly becoming highly sought-after property types in the U.S. It's expected that approximately 65 million square feet of real estate in 20 metropolitan cities could be converted into Class-A laboratory space. Historically, most laboratories have been in rural areas because of the space needed to build a laboratory effectively, as there are many regulations around ceiling height and ventilation systems because of the possible fumes from experiments.

As more builders invest in LEED (Leadership in Energy and Environmental Design) certification, it's becoming clear that urban locations can no longer be ruled out for real estate opportunities. LEED certification guarantees a building has met strict standards of high efficiency, open concept spatial design, cost saving, and environmentally conscious structural foundation. This would make these types of buildings ideal for laboratory space, as it would ensure the technicians working in the converted laboratory have optimal ventilation systems and solid building structural designs.

Class-A life sciences properties are expected to increase by 33 to 50%, representing up to 65 million square feet of space.
SOURCE

There's an intense demand for more lab space in an evolving and competitive industry that seeks out opportunities for innovation. With this in mind, we expect to continue to see increased investments in these lab spaces in the coming year.

4 AI AUTOMATES PARTS OF THE LABORATORY EXPERIENCE

Artificial Intelligence (AI) can be utilized in laboratory spaces, leveraging digital assistant capabilities. Technicians typically read SOPS (standard operating procedures) while conducting experiments simultaneously. With the aid of a digital laboratory assistant, they can focus strictly on the kinesthetic portions of the experiment while the AI system reads the requirements aloud. This collaboration minimizes the technician's effort to complete the same task. Less effort will increase the technician's efficiency overall and foster a more engaging work environment for the technician, who could be creating thousands of test samples each week.

Another benefit of using AI systems in the laboratory space is the ability to reproduce results. At times, technicians encounter errors between their transcription in the field and what is worked on at the laboratory bench. Using AI in a Siri style and syncing the system for voice recognition reduces the margin of error from a typo or illegible handwriting. This is beneficial in the authorization process as well. When recreating someone else's experiment for verification, the AI-automated data collection reduces misspellings or unidentifiable entries.

In addition, the system's ability to be programmed to be multilingual can aide with translations. For the growing number of global organizations, this allows AI to be an emerging asset in the laboratory space.

AI is currently used in 15.6% of laboratory organizations, while 66.4% feel that they might use it in the future.
SOURCE

5 TECHNOLOGICAL INVESTMENTS PREVENT FURTHER SUPPLY CHAIN DELAYS

Supply chain disruptions during the COVID-19 pandemic affected many laboratories' experimentation processes due to material shortages. One survey reported that 42.3% of respondents said laboratories planned to fix this disruption by stockpiling supplies and reagents. This forced many laboratories to pivot to a more forward-thinking experiment mapping so that they would know exactly what supplies ranked in priority over a period of time and could order those supplies in bulk and in advance.

The shortages also caused disruption to many innovation cycles, which were drastically interrupted and had an immense impact on the creation of new clinical and medicinal

developments. This meant that laboratories were spending more time searching for supplies to stock their labs rather than creating experiments that could be the next lifesaving treatment.

Moving forward in 2023, laboratories will need to invest in resources and technology to provide better supply chain management and improved visibility in the event of future disruptions or delays.

CONCLUSION

Laboratories are utilizing technology perhaps now more than ever before, and the innovation in this space continues to create a more efficient and productive working environment and optimize innovation cycles. A laboratory that is aware of and investing in the trends above is more likely to keep a competitive edge in the industry. Beyond the substantial time, efficiency, and financial gains, each trend provides a way to keep experimentation cycles in motion and prevent interruptions to innovation cycles. These trends will be essential to laboratories looking to excel in 2023 and beyond.

ABOUT CLARKSTON CONSULTING

Businesses across life sciences industries partner with Clarkston Consulting to enhance strategic decision-making, improve operational efficiencies, implement new technologies, and promote business growth and market diversification. Leveraging deep functional and industry expertise, our people discover, design, and deliver solutions that fit your business, your goals, and your future. At Clarkston, your purpose is our purpose.

For more information about how we can help your company, please contact us.