FUTURE-FORWARD:

A Readiness Checklist to Digitally Transform *in vivo* Research

RockStep

In the era of rapid technological advancements, the modernization of *in vivo* research has become not just an option but a strategic imperative. Organizations must consider abandoning paper, spreadsheets, and outdated processes and embrace digital solutions to enhance efficiency, data accuracy, and collaboration. This Readiness Checklist serves as a planning guide for organizations looking to embark on the journey of modernizing *in vivo* research through the strategic integration of technology into study workflows and animal management processes.

Part of understanding how your organization will transform the lab is to prioritize what is important to your teams based on their needs, current pain points, and vision for the future. That vision for the future should be based on how your organization plans on leveraging the data collected during *in vivo* research and the ways in which your organization will leverage other lab technologies and innovations – such as Artificial Intelligence (AI), Electronic Lab Notebooks, IoT, or even Lab Information Management Systems – for a totally connected lab tech ecosystem.

Your Readiness Checklist:

The 5-Step Assessment

1. Define Goals

Gain clarity on research objectives

Having a clear understanding of your overarching research objectives will help inform where you focus. Modernization efforts should align with the goals of your *in vivo* studies, whether it be advancing therapeutic development, understanding disease mechanisms, or exploring new treatment modalities. Technology investments should align with these objectives.

Identify pain points

Identify specific challenges or pain points in current *in vivo* research practices and processes. Are teams experiencing data management bottlenecks, slow workflows, manual processes, or limited collaboration capabilities? Addressing pain points is integral to the modernization process and will aid in identifying the solutions that will help you to best respond.

QUESTIONS TO ASK:
Where are we experiencing workflow bottlenecks and why? Is it because our lab software and hardware are not completely integrated? Are our manually managed processes impacting us? Or are we just not set up to share data?

2. Assess the current state of processes and infrastructure

Understand the existing infrastructure

Conduct a thorough inventory of current *in vivo* research infrastructure, including equipment, software, hardware, and data management systems. Understanding the existing landscape is crucial for planning effective modernization strategies and how these solutions will work together to support your vision for the future state.

Evaluate manual processes with a focus on how you want to improve workflows

Identify and assess manual processes currently in place, such as data recording, data sharing, sample tracking, and experiment documentation. Pinpoint areas where automation could enhance efficiency and reduce the risk of errors.

QUESTIONS TO ASK:
If workflows were automated, will you need integrations or APIs? Is security a concern? How do you plan on managing access? By role? Do you need to dispel myths around cloud-based security?

Understand how animal welfare issues are handled today and the desired future state

Outline the triggers that will impact animal welfare practices. For example, do you have a way to automatically flag when animal bodyweights are out of range, ensuring potential welfare issues are identified and handled immediately? Is streamlining colony maintenance workflows a priority? Do your veterinary staff members require real-time alerts?

Additional considerations:

- Do you need to ensure compliance with IACUC protocols regarding the care and use of animals in all facilities, including all buildings, rooms, areas, enclosures, and vehicles used to confine, transport, maintain, breed or conduct experiments using animals? Evaluate how you're currently preparing for reviews and facility inspections and how technology could help streamline reporting.

- Advanced technology helps labs track, record, and compile information about the animal colony so researchers can quickly access data and prevent unnecessary replication of experiments. Outline the type of information that will require real-time notifications and alerts so vivarium staff can act immediately to address animal behavior and health changes.
- Outline how can technology help support contingency planning, as required by the USDA's Animal and Plant Health Inspection Services, to mitigate emergency situations that impact the health and safety of lab animals

3. Determine the Scope of Digital Workflows – Focus on Capabilities that Will Move the Needle

Study design, execution, and ongoing management are at the center of *in vivo* research. In planning for a transition to tech-enabled workflows, prioritize the tasks and processes that will most benefit from automation. Determine whether teams are ready to leverage technology to streamline scheduling, allocate resources, and track tasks.

QUESTIONS TO ASK:

Do you need to consider change management implications?

Is there a dedicated team available to help with the transition to automation in order to streamline scheduling, allocate resources, and track tasks?

How tech-savvy are your employees? Do you anticipate any resistance in moving to a different software system or program?

From an IT standpoint, what type of support will you need – not only from the initial implementation but in configuring the system over time?

What is your future vision for real-time collaboration to ensure a more efficient and organized approach to experimental documentation? Do you need a seamless process to ensure data integrity, traceability, and overall workflow efficiency?

4. Understand How Data is Leveraged Today and the Vision for the Future

In vivo data is inherently intricate, presenting researchers with challenges such as data complexity, variability, and sheer volume. With traditional methods of analysis, researchers and informaticists often struggle to keep pace with the demands of processing large datasets generated from live experiments.

QUESTIONS TO ASK:

What are the most important aspects of your data management practices? Is it standardization? Data security? Eliminating data silos? Or reducing time spent looking for historical data?

Do you want to reduce the support needed from IT to generate reports and extract data from your program or software solution?

Do you want to ensure you're collecting structured data for future AI integration with *in vivo* research?

5. Gain Input of Internal Stakeholders

In the highly regulated biopharma industry, security and compliance remain top priorities. These priorities become even more important as organizations combat the rising prevalence of cybersecurity risks. Determine the stakeholders who will have a role to play in the technologies that are adopted and consider their priorities around security, scalability, collaboration.

Some stakeholders may prioritize simplifying and streamlining day-to-day headaches that slow them down and create duplication of work. Others may want to ensure that systems accurately capture and record experimental data for analysis. It's a balancing act that requires planning and breaking down organizational silos.

Are You Ready to Transform Your Lab?

A majority of preclinical research and development organizations continue to rely on legacy data entry and research management systems. The benefits of automation are well-documented in other industries and other areas of the drug discovery pipeline and there has never been a better time for *in vivo* research to start reaping the same benefits.

As *in vivo* research embarks on a transformative journey into the digital age, the Readiness Checklist serves as a compass, guiding laboratories towards a future-ready state. The strategic integration of technology enhances efficiency, accuracy, and collaboration, propelling *in vivo* research into new frontiers of scientific exploration. By embracing digital workflows, advanced technologies, and a culture of continuous improvement, researchers can navigate the modern *in vivo* research landscape with confidence and innovation.

RockStep™

Are you ready to transform?

Find out more about how Climb™ can help.

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