

BIOVIA User Report on KIRIN

Flexibility is the key to evolve research data into collective intelligence

KIRIN's implementation of cloud-enabled Electronic Lab Notebook (ELN) and data science tool

KIRIN Central Research Institute introduced Dassault Systèmes' BIOVIA Notebook, an Electronic Lab Notebook (ELN), and BIOVIA Pipeline Pilot, a data science tool, in October of 2022, as the importance of internal consensus required as evidence for R&D continues to grow. The deciding factor that led to BIOVIA being chosen was the flexibility it provided in working with a wide range of research fields. Features such as the ability to search make accessing requisite lab data even faster, in turn helping to advance individual pieces of data to the point that they are part of collective intelligence.

Conducting Medium to Long-Term Basic and Applied Research

—First of all, please tell us about how the KIRIN Central Research Institute came about and what role it plays.

Yajima: KIRIN Central Research Institute was created after the merger of two separate institutes, the Basic Technology Research Institute and the Health Technology Research Institute. Currently, our R&D Division includes the Institute for Future Beverages, which is focused on research primarily in the consumables sector (alcoholic and non-alcoholic beverages), the Institute for Packaging Innovation, which conducts research into packaging in the food and health science sectors, and then our group, conducting research and development in the health science sector. The KIRIN Central Research Institute conducts basic and applied research primarily for innovation.

Evidence and Internal Consensus Are More Important Than Ever

—Can you tell us about what led to the introduction of digital solutions?

Yajima: In 2015, the Japanese government introduced the Foods with Function Claims system. In order to develop products that come under this system, manufacturers are required to notify the Consumer Affairs Agency of the safety and function claims that will be displayed on packaging before selling the product. In order for this system to run smoothly, it is important that internal consensus on the way research is conducted and evidence is obtained is well-defined. Efficient management and use of lab data and notes are essential for consensus building, but the key ended up being moving away from conventional analog management and moving to digital. As such, we decided to implement a solution that would expedite the digitalization process. Our researchers understood the importance of evidence and the thinking behind research fair-



▲Hiroaki Yajima, General Manager of KIRIN Central Research Institute, R&D Division, KIRIN Holdings Company, Limited Hiroyuki Shinohara, Senior Manager of KIRIN Central Research Institute, R&D Division, KIRIN Holdings Company, Limited

ness, so we began looking into different solutions while taking into account rules, work processes, and how we could still execute research without compromising the level of fairness or the speed of the research.

Responding to a Wide Range of Research Fields and Future Needs

—What made you decide to go with the BIOVIA Notebook?

Shinohara: The biggest factor was its ability to work with a wide range of research fields and the fact that it was future-proofed for any forthcoming needs. There are a lot of different types of experiments that are conducted in areas close to our field of basic research. For example, at times experiments using chemical synthesis and fermentation are conducted in the same laboratory, and other times, experiments straddle fields, such as materials informatics and bioinformatics. For cases such as these, we felt that using the template

creation and collaboration features in the BIOVIA Notebook would allow us to create a solid experimental record format and lay the groundwork for smooth collaboration between researchers in different fields. Also, we can't predict what kind of research will be conducted in the future, so it was also good that the BIOVIA Notebook is future-proofed for future research.



▲Hiroaki Yajima, General Manager of KIRIN Central Research Institute, R&D Division, KIRIN Holdings

Yajima: Immediacy, completeness, and searchability are essential for the BIOVIA Notebook and looking ahead, the flexibility to respond to a broad range of research fields and future needs will be vital. For this, the BIOVIA Notebook was the best option.

— In addition to new research, was past research also a factor in your search?

Shinohara: Yes, that is actually exactly what we are work-

where to find the information I needed when I tried to refer to them. But now that they are stored in a database, I can easily search for the lab data I need. Because of this, it also made me interested to learn how other researchers were writing their lab notes. Traditionally, you would write in a way that only those in your field could understand. But with the ability to read other people's data, I've heard from researchers that they now not only can see how people in different fields write, but they themselves have started to think about how they write their notes, knowing that people from outside their field may read them. I think this is great. It means that now individual pieces of data are beginning to enter into collective intelligence.

Getting the Most Out of the Implemented Solutions



▲Hiroiyuki Shinohara, Senior Manager of KIRIN Central Research Institute, R&D Division, KIRIN Holdings

— Tell us the prospects and challenges that the future holds.

Shinohara: Until now, most lab equipment has had little to no internet connectivity. In how we currently do things, data from equipment is sent through our intranet to the ELN just once. But we need to find a way to be able to send data from equipment directly to the ELN. Another major issue is how to promote digitalization across the

entire institute. Last October after we began using the BIOVIA Notebook, we carried out a three-month proof of concept. The results were positive, so this year, we plan to expand the use of the notebooks.

Yajima: Research is unique in that a lot of things you try do not turn out so well. We hope that researchers will be able to make maximum use of the solutions we have implemented here so that they can concentrate on their work and brainstorm more innovative ideas.

BIOVIA Notebook

A FLEXIBLE AND EASY-TO-USE ELECTRONIC LAB NOTEBOOK

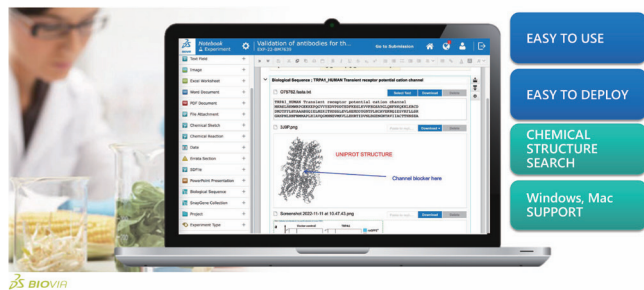


Fig.1: BIOVIA Notebook (Electronic Lab Notebook)

ing on at the moment. We are building an extension in BIOVIA Pipeline Pilot that can be adapted to our reporting format. In the future, we would like to link other systems within the company, automate any remaining manual operations and make more effective use of the company's data. If a future comes where the use of AI becomes standard practice in the field of biotech, we will need to begin recording data on even external factors such as deflection during experiments. For this, it will be incredibly important to be able to accumulate and structure daily records and export them when and in the format needed. We believe that the BIOVIA Notebook and BIOVIA Pipeline Pilot will be able to automate this data aggregation process.

Advancements in Individual Data

— Have you seen any positive effects since the implementation?

Shinohara: In the days of paper lab notebooks, I rarely looked at other people's notes because I often had no idea

BIOVIA Pipeline Pilot

Democratize In-silico "Make simulation a normal, everyday part of what an R&D Scientist does"



Fig.2: Data science tool BIOVIA Pipeline Pilot

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