

A Mosaic Vivarium Case Study: The Friedrich Miescher Institute for Biomedical Research

The FMI, located in Basel, Switzerland, part of the Novartis Research Foundation, employs approximately 300 staff and includes 24 research group leaders. The FMI hosts around 95 PhD students and 80 postdoctoral fellows. The majority of these groups utilize laboratory mice in their research.

Recognizing a Need

Generating transgenic mouse lines, their care, and subsequent study can cost many thousands of dollars. Cage maintenance alone ranges from \$1.00 to \$2.00 per day (\$365 to \$730 USD per cage year). The validity of scientific results often depends on accurate genotype, age, genetic background, and gender information. Simple “bookkeeping” errors can be extremely costly. Accurate holding and breeding records are essential in order to protect this investment.

“Not only is it legally required that FMI keep accurate records of their mouse breeding, it is also essential for FMI science. With Mosaic Vivarium we get a two-for-one where our scientists are using the system for the benefit of their own research, but at the same time we are able to do the reporting necessary for the legal authorities.”

**Dean Flanders,
Head of Information Technology, FMI**

Taking Action

The FMI devoted internal resources to the priority of good data management. According to Dean Flanders, Director of Information Technology at the FMI,

“In the past we had one implementation of a mouse management system for legal reporting that completely failed from the day of launch, as the scientists derived no benefit from using the system, and it was cumbersome to use. A second in-house web-based system was developed, which had broader acceptance. However, it was difficult for the local IT staff to keep up with additional feature requests and enhancements, as they did not have expertise in mouse breeding or the resources to continue to extend and support the system.”

This experience exposed two costs that organizations often fail to consider when deciding to custom build a vivarium management solution:

1. The initial feature set *seems* simple, but often fails to meet real-world user expectations, and
2. The *total cost of ownership* must include the cost of software developer time.

The Solution

Subsequently, FMI undertook an evaluation of commercially available solutions. Because FMI has extremely high turnover of students through the facility, it was important that the interface be easy to use. Several systems were evaluated, and *Mosaic Vivarium* was selected by the users for its ease of use and the direct benefits the users received.

Mosaic Vivarium has now been in use at the FMI for over two years by 15 research groups as well as laboratory animal facility personnel to track their mouse strains.

Build vs. Buy vs. Both

FMI has cultivated a productive relationship with Virtual Chemistry, the developers of *Mosaic Vivarium*. This relationship leverages Virtual Chemistry's:

- decade of experience in animal model informatics
- person-years of investment in the *Mosaic* platform
- on-going commitment to support, maintenance and new feature development

Meanwhile, FMI uses its animal facility and information technology experts to help guide new feature development in *Mosaic Vivarium*.

This relationship gives FMI the economic benefits of a commercially developed and supported solution (lower total cost of ownership), **and** the benefits of helping to prioritize *Mosaic Vivarium*'s new features roadmap.

"Mosaic Vivarium's ability to customize views and create individual search parameters enables each user to focus on what is relevant for them.

As someone responsible for breeding, overall colony management of several lines, and reports for the authorities, the power of Mosaic Vivarium allows me to perform these tasks within one system."

Debby Hynx,
In Vivo Research Associate, FMI

"The implementation of Mosaic Vivarium went extremely smoothly, and now the system has nearly 100% compliance. With confidence the animal facility can report numbers to authorities or see the utilization of the animal facility at a glance."

Dean Flanders,
Head of Information Technology, FMI

Summary

FMI's successful experience shows that *Mosaic Vivarium* does more than protect your investment in the science. *Mosaic Vivarium* brings tangible benefits to laboratory animal scientists, facility managers, and information technology staff:

“With Mosaic Vivarium’s spreadsheet like interface, which is universally familiar to scientists, users can easily determine how to use the system. Additionally, the web interface, which is accessible from any computer and cross browser compatible allows for convenient access by authorized users. The web deployment also means that IT staff need not worry about installing software on hundreds of computers.”

Leandro Hermida,
Head of Software Development, FMI

- *A significant reduction in the time burden of regulatory reporting*
Data are not scattered in multiple spreadsheets and does not need to be tediously acquired from multiple users for reporting purposes.
- *Increased confidence in records and results*
Internal consistency is part of the design and not something available with ad hoc paper or spreadsheet-based records.
- *A uniform approach for record keeping*
The familiar spreadsheet interface means new students and personnel come up to speed quickly.
- *All data in one system*
Database storage enables central backups and disaster recovery.
- *A web-based interface*
The web enables automatic deployment of updates and reduces IT staff burden.
- *Lower total cost of ownership*
Instead of devoting internal staff to on-going maintenance and development, these normal software life-cycle costs are shared with other customers.

These benefits mean facility managers have the tools to focus on operational efficiency and regulatory compliance while scientists can focus with confidence on their animal studies.

Mosaic Vivarium is the foundation of Virtual Chemistry’s animal informatics “Mosaic”. *Mosaic InVivo* logically extends *Mosaic Vivarium* with the ability to capture, analyze and present virtually any scientific results derived from laboratory animal studies. For more information, visit

<http://www.virtualchemistry.com>