

Agilent Case Study: The FlyORF Project

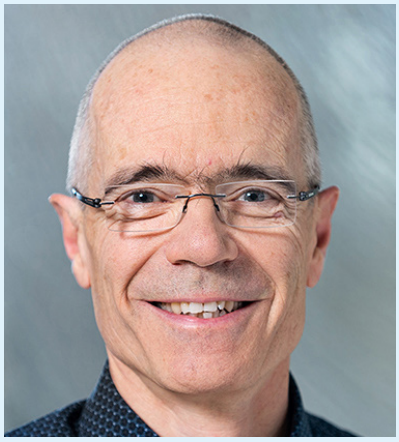
Distributing Investigational Tools

Fly collection management in a Swiss research laboratory

Technical developments have been instrumental to new discoveries in fundamental science using Drosophila fly genetics. With the breakthrough of a chromosomal position-controlled gene integration system, comparative expression experiments have been taken to a new level. Because experiments are carried out in defined chromosomal environments, over-expression of specific genes has become tremendously easy, comparable, and efficient. The technique has become a true alternative to mutational analysis for basic research projects.

The FlyORF project was initiated by the laboratories of Prof. Konrad Basler (University of Zurich) and Prof. Jussi Taipale (University of Helsinki and Karolinska Institutet Stockholm). The aim of the project is a repository of state-of-the-art gene over-expression strains of Drosophila melanogaster, the so-called "ORFeome" library. Through the enormous logistic and intellectual efforts of Dr. Johannes Bischof (University of Zurich) this library gains momentum and is growing steadily, both in quantity and in quality. It is available to the Drosophila science community through FlyORF.

To handle the large demand for these precious fly lines, the research laboratory of Prof. Konrad Basler required a solution to manage the fly collection for the science community using a professional data management system.



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FlyORF

Zurich ORFeome Project

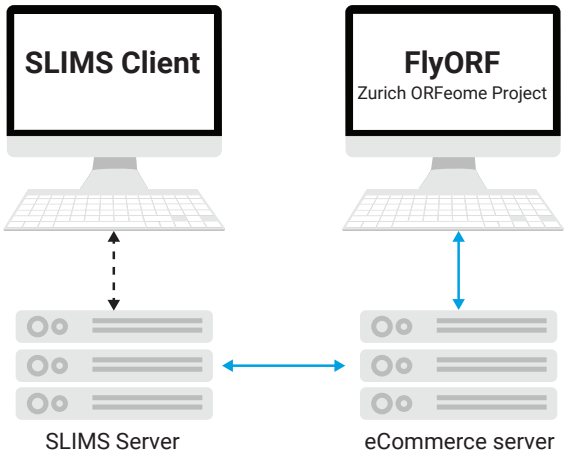
Agilent

Trusted Answers

Implementing Agilent SLIMS

Agilent SLIMS was chosen to organize the fly strain repository for several thousand fly stocks at the University of Zurich. The system was also used to establish an integrated online store, based on an e-commerce platform. The store displays a catalog of the fly strains and additional details, provides easy and advanced searching possibilities of the fly catalog. The online store also enables management of ordering, shipping, and payment procedures for fly orders/deliveries.

Now, in production, SLIMS coordinates the fly line orders with the fly stock maintenance, and manages changes in the repository composition.



Straightforward repository management

SLIMS' biobanking features are used to organize the individual fly lines (see our Biobanks page to learn more about what SLIMS offers to the biobanking community).

A systematic correlation of plasmids and fly lines was set up and organized to reflect the real location of the strains in animal rooms and the plasmids in freezer compartments. This layout also serves as an input and template for the information displayed in the online catalog.

Simplified registration of stock replicates

Due to the short life span of flies, fly line strains require regular replication. When a new generation of flies has eclosed, it is transferred to a new culture vial for the fly stock to reproduce. With some 3,000 stocks needed to be propagated per month ("fly flipping"), this is no small undertaking. The fly stock keepers are helped with fly flipping by a SLIMS scanner macro, a small program that simplifies repetitive actions by removing the need for a mouse or keyboard. Before flipping a fly stock, the stock keepers scan the fly strain barcode present on the vial, SLIMS identifies the vial and the respective strain, and triggers the printing of a new culture vial label. A built-in QC mechanism helps ensure that a particular stock is neither transferred twice, nor forgotten—otherwise, alerts inform the stock keepers of potential mistakes. The macro also promotes the old stocks and converts them to a backup status in the database.

SLIMS helps the fly facility track orders from both internal and external clients. Using SLIMS, users who are looking for a specific strain of fruit fly can browse the collection available through the FlyORF facility, select their desired strain, and place an order all in the same system. The multifaceted ability of SLIMS makes this possible from the front end while also controlling all the ordering, sample management, and billing for the lab on the back end. It also saved the FlyORF lab money and time by reducing the need to purchase multiple systems.

A fly line catalog for the fly research community

The FlyORF online store is based on an e-commerce platform and was set up to match the user expectation of an online catalog. The catalog is publicly visible; to obtain a particular fly line, a scientist must register through a login window. Like in any typical online store, the shopping cart facilitates the ordering, shipping, and billing process.

Multilevel communication between SLIMS and the online store

Only a subset of the actual fly lines (the available ORFeome lines) is displayed in the online catalog. The visible fly line information is a dynamic representation of the fly repository and its annotated data, controlled within SLIMS' status fields for individual fly stocks. When a fly line needs to be quarantined due to health issues, a simple change of status in SLIMS will be immediately reflected in the online store catalog thanks to the communication of SLIMS with the store database. In this way, potential customers can see which fly lines are presently available for shipment and which ones cannot be obtained. When new fly lines are added to the SLIMS repository, those lines are also published in the catalog as soon as their status is set to "Available".

Thus, SLIMS' integration of the online store streamlines the stock keepers' work, allowing an overview of all fly orders and control of the availability of both fly lines and the displayed catalog information, all located exclusively within SLIMS.

Learn more
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