

# Enabling Omics Data Analysis at Scale

Bioinformatics Support to Understand Human Immunology



Want to  
see it for  
yourself?

[BOOK A LIVE DEMO](#)

[CASE STUDY](#)

# CASE STUDY

## ENABLING OMICS DATA ANALYSIS AT SCALE

### Bioinformatics Support to Understand Human Immunology

**Field:** Research in Biomedicine

**Headquarters:** Bellinzona, Switzerland

## GOAL

The Institute for Research in Biomedicine (IRB) in Bellinzona stands out as an exceptional institution with an expert team of more than 150 people dedicated to groundbreaking biomedical research to solve the greatest humanitarian challenges. As a university, it has made a name for itself by fostering an environment of innovation and academic excellence dedicated to nurturing the next generation of scientific minds.

The IRB was founded in 2000 with the goal of advancing the study of human immunology, with emphasis on the mechanisms of host defense. It houses 13 research groups working on challenges in immunology and other areas such as DNA repair, rare diseases, structural and cell biology. The studies into human biology in health and disease aim at a better understanding of pathophysiology and the development of new therapeutic approaches for infectious, inflammatory, degenerative and tumor diseases.

**The IRB maintains a broad international network of collaborations and offers teaching and training programs for doctoral students from Swiss and foreign universities. The institute's success to date can be measured by over 850 scientific publications and more than 120 completed dissertations by doctoral students from all over the world.**

## CHALLENGES

- One bioinformatician must provide bioinformatics services to a large number of researchers across the IRB.
- The ability to re-analyze data in a timely manner must be ensured.
- To support the scientists in understanding data analysis.

# SOLUTION

To implement Omics Playground so scientists working with omics data benefit from it.

# RESULTS

- Using Omics Playground has increased the number of analysis requests processed by more than 300% in a shorter period of time.
- Additional bespoke/in-depth analyses of the same data sets can be performed flexibly and without the involvement of the bioinformatics team.
- Scientists are equipped with the right tools to understand their data analysis without the need for programming skills.
- They can process increasing amounts of data more efficiently and gain the holistic and comprehensive understanding needed from the data to advance their science.



« Omics Playground enables me to provide bioinformatics services to a large number of researchers. »



**SIMONE MORO**  
MSC, BIOINFORMATICIAN

**Simone Moro is a molecular biologist and bioinformatician, responsible for the bioinformatics facility at the Institute for Research in Biomedicine. His professional background is in RNA sequencing, working on single cell RNA-Seq. Since taking his position at the IRB about a year ago, Simone has used Omics Playground extensively to provide bioinformatics analysis services to a wider range of colleagues.**

**What is your biggest challenge when it comes to data analysis?**

My biggest challenge is time. To handle all the requests, I have to save time. I use Omics Playground to help our biologists with data analysis. For me, the platform is very valuable because I get a lot of requests. There are more than 100 people working at the institute, we have 13 research groups, and half of them use the platform frequently, which is about 15 people, all biologists.

« If I had to do all the analyses manually, I would have a long queue and people would have to wait a long time. In that respect, Omics Playground is perfect for everyone. »

**How do you use Omics Playground in your daily work?**

I receive the raw data from the sequencing facility and process it to get the tables needed to run with Omics Playground. I perform the steps to enter the data into the platform and show our biologists where to find it. The researchers analyze their data themselves, but often ask me to help them with the analysis. Sometimes we discuss the results together, sometimes they do their own analysis using the platform.

One aspect that is vitally important: ensuring that the data is available so that anyone can access and analyze it at any time.

**What benefits and workload reductions have you received from Omics Playground?**

Before using Omics Playground, I was doing the analysis myself in R, and I wanted to have more time to respond to more requests. When you do the analysis in R, you provide a report and graphs, but researchers often want an additional, different type of analysis and graphs later, and then you have to follow up.

The advantage of Omics Playground is not only that it speeds up the analysis of the data, but it also shows up later when additional requests for analysis on the same data set come from the researchers. Without the software, this would cost me a lot of time again, but with the platform I can do it easily and quickly.

**Have you learned anything new with the help of Omics Playground?**

Periodically, I am asked to recreate a plot. Being able to visualize the data and play with the parameters really helps a lot with understanding.

« I keep learning things with the platform that I didn't know before. Now that I'm working with Omics Playground, I wouldn't want to miss it! »

# BIGOMICS SOLUTIONS

## CENTRALIZED, COST-EFFECTIVE DATA ANALYSIS STREAMLINES SCALING AND IMPROVES PRODUCTIVITY

- ✓ RNA-Seq data are analyzed through peer reviewed algorithms, so scientists can quickly identify the most promising therapeutic targets without requiring any coding knowledge.
- ✓ As more experiments are performed, the newly added data sets can be compared to previous results and more than 6,000 public data sets, providing the necessary context for scientific breakthroughs.
- ✓ Moreover, more than 50,000 public gene sets and pathways such as GO, REactome, Hallmark, and Msigs can be accessed, as well as drug connectivity and drug sensitivity databases with more than 30,000 drug expression profiles.
- ✓ Since all omics data is in one place, scientists spend 62% less time on rerunning.

## INTERACTIVE VISUALIZATIONS GIVE LEADERS A 360-DEGREE VIEW OF R&D

- ✓ Omics Playground helps managers and executives have an eye on day-to-day progress while also providing a cohesive overview of all different research projects.
- ✓ Across the numerous projects, many decisions have to be made rapidly yet confidently. With the full history of their experiments at their fingertips, executives can make prompt, data-driven decisions.
- ✓ Since Omics Playground has improved the reproducibility of data, it's much easier for leaders to forecast and set informed timelines.

## A UNIFIED DATA ANALYTICS SYSTEM ALLOWS FOR INTERDISCIPLINARY COLLABORATION

- ✓ Repetitive and time-consuming data analysis iterations can be avoided since biologists are able to gain insights from their data directly from the platform.
- ✓ Everyone can easily access the same version of data and share results in team meetings as scientists can present directly from the Omics Playground.
- ✓ Bioinformatics resources are conserved, allowing them to process requests faster.



« My biggest challenge is time. To handle all the requests, I have to save time. I use Omics Playground to help our biologists with data analysis. For me, the platform is very valuable because I get a lot of requests. »

**SIMONE MORO**  
MSC, BIOINFORMATICIAN



Want to see it for yourself?

[BOOK A LIVE DEMO](#)

LinkedIn



[bigomics.ch](https://bigomics.ch)  
[hello@bigomics.ch](mailto:hello@bigomics.ch)

 **BigOmics**<sup>®</sup>  
Analytics