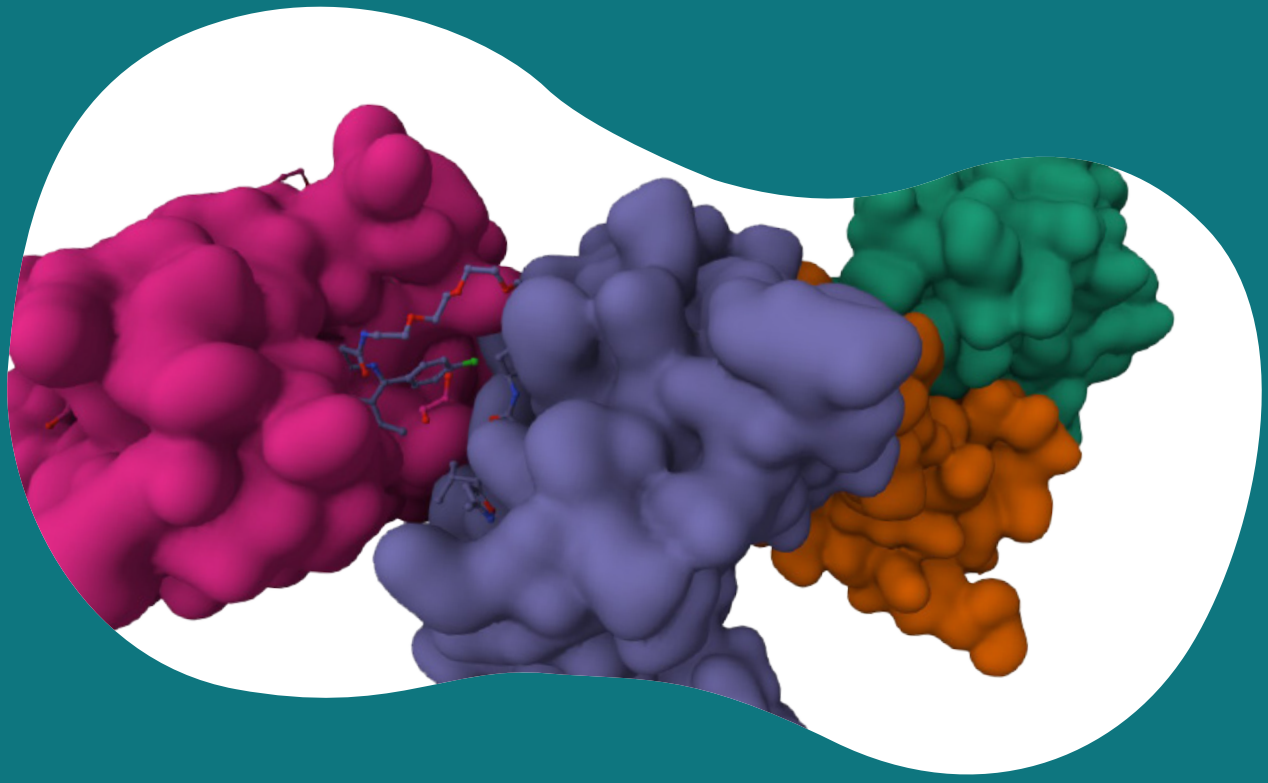
SOLUTION BROCHURE

Biology Informatics Solutions From Assay Development Through Large Molecule Development

Comprehensive Control of Laboratory Workflows across Key Assay Techniques, Modalities, and Data Types



revvity signals

New modalities are changing the drug discovery landscape

For decades, small molecules have dominated drug discovery. But with many traditional drug discovery workflows becoming unfeasible, and some targets considered ‘undruggable’ with small molecules, the landscape is changing. New modalities such as protein degraders, RNA therapeutics, antibody-drug conjugates (ADCs), next-generation peptides, and gene therapies promise to improve patient outcomes by providing more targeted treatments and are already demonstrating considerable clinical success. However, the inherent complexity of biological systems makes developing any new drug extremely challenging. Overcoming the countless hurdles involved in bringing a drug to market demands closer collaboration between multidisciplinary project teams.

More integrated informatics promotes collaboration

Irrespective of the type of drug being developed, vast amounts of results and associated information are soon accumulated. Spanning everything from target identification, assay development, and screening, through to cell and molecular biology, drug metabolism and pharmacokinetics (DMPK), and pre-clinical toxicology, even the smallest detail could have a significant impact on the outcome of a drug discovery program. Historically, such information has been captured in siloed informatics systems, using software solutions targeted to individual groups. However, this way of working presents major tactical challenges:

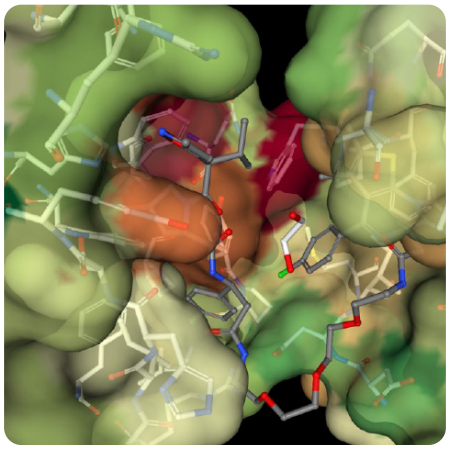
- Too few new and promising drug candidates or targets are found
- Phenotypic screening early in a project is often complicated, slow, and expensive
- Automation and high throughput are not possible for all assays
- Inconsistent repeatability in assay development leading to questionable quality of results

To address these issues and enable better interaction between biologists and chemists, we have developed a more integrated approach to informatics: Signals Research Suite from Revvity Signals. This represents the only collaboration platform that gives biologists complete control of their workflows across every assay technique, modality, and data type, while being able to collaborate with their peers in chemistry and pharmacology.

The Signals Research Suite solution is the only collaboration platform that gives biologists complete control of their workflows across every assay technique, modality, and data type, whether working in a small biotech company or big pharma.

Never miss a Signal with the Revvity Signals Research Suite solution

The Signals Research Suite is the first unified, cloud-native SaaS R&D platform that streamlines scientific complexity and promotes collaboration. By combining ChemDraw® (our gold standard chemical drawing tool) with Spotfire® (our best-in-class data analysis and visualization software), the Revvity Signals Research Suite provides a combination of functionalities that is unavailable to biologists elsewhere. These include a vast array of features associated with common biological assays, as well as the new ChemDraw® HELM notation for drawing even complex biomolecules, therapeutic monoclonal antibodies (mAbs), and ADCs. With the Revvity Signals Research Suite, project teams have complete control of laboratory workflows across key assay techniques, modalities, and data types. This allows for capturing and mining of data from disparate disciplines without any information being lost. By improving connections between biologists and chemists, the Revvity Signals Research Suite accelerates drug discovery to bring urgently needed drugs and treatments to patients sooner.



Founded on excellence

The Signals Research Suite delivers best-in-class analysis and data visualization for the Make-Test-Decide R&D life cycle, fostering rapid innovation in the development and optimization of candidate therapeutics to expedite their journey to market (Figure 1).

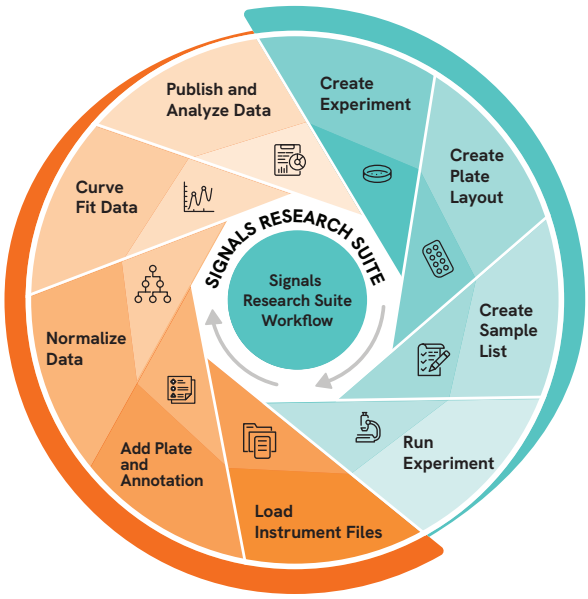


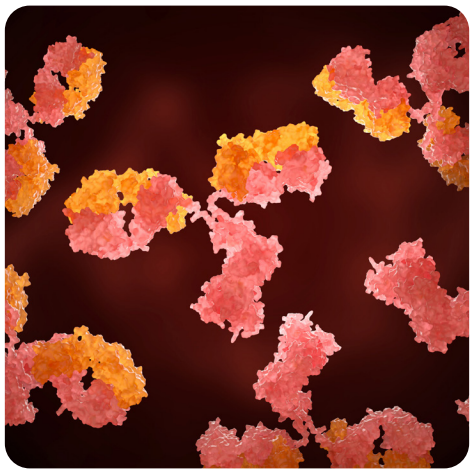
Figure 1. *An illustration of the assay workflow in Signals Research Suite.*

The roundtrip workflow is the combination of experiment planning, execution, analysis, and collaboration. One platform that publishes data into a single central repository containing entire workflows and encompassing normalization, statistical analysis (Z, curve fitting, IC/EC50, and outlier detection. Best practices can be saved and re-applied to new assay runs and experiment types including further analysis without having to copy and paste between tools.

Data capture and collaboration

Signals Notebook, our leading cloud native electronic lab notebook, is the hub of the Revvity Signals Research Suite. Featuring a broad array of biologically relevant functionalities, Signals Notebook is ideally suited to biology workflows and the types of results and associated information these provide. For example, using Signals Notebook, it is possible to record and access information pertaining to key processes and parameters including:

- Assay development and optimization – e.g., reagents evaluated, cell lines assessed, standard operating procedures (SOPs) decided upon
- Samples tested – e.g., a large compound library or smaller subset (including concentrations), a DNA library, animal/ samples such as blood or tissue material
- Experimental conditions – e.g., operative, timing, temperature, instrumentation used
- Reagents and consumables – e.g., reagent concentrations, lot numbers, preparation dates, cell passage number
- Plate layout – including well positions for positive controls, negative controls, test compounds, and standards, showing concentrations and numbers of replicates for each



Using application program interfaces (APIs) for structured data capture, Signals Notebook is readily integrated with instruments, in-house systems, and databases, meaning it can support almost any wet lab use. And, by simplifying recording, reusing, and sharing of scientific experiments, Signals Notebook enables searching across disconnected data sources to quickly find anything you need.

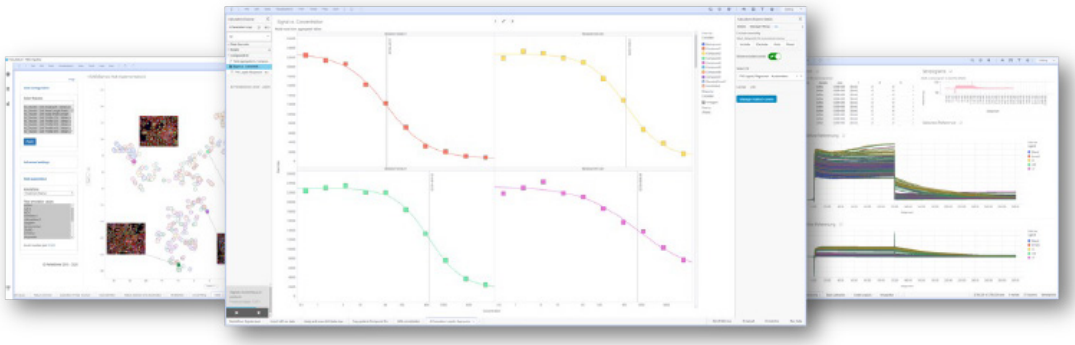
Data Processing

The in vitro functionality enables researchers to manage and analyze data from in vitro assays including high throughput screens, common biochemical assays, protein-protein interaction assays such as Alpha assays or homogeneous time-resolved fluorescence (HTRF), and phenotypic cell-based assays for measuring proliferation, viability, and cytotoxicity.

As well as serving to load and normalize experimental results, the in vitro functionality offers state-of-the-art curve fitting with global or local fits, a centralized curve fit equation library, and both interactive and automated point exclusion. Because these actions are packaged within repeatable and sharable guided workflows, users can transition smoothly from data import to reporting in minutes.

In contrast, the in vivo functionality handles experiments involving living organisms, including DMPK, toxicology, and efficacy studies. Data from these types of experiments can often be multifaceted, encompassing different animal groups, dosing regimens, and biomarkers. By ensuring that all this information is captured in one place the Signals Research Suite in vivo capability provides streamlined analysis and reporting.

Whether you are working with small molecules or new modalities, within a small biotech company or big pharma, accelerate your drug discovery program with the Revvity Signals Research Suite.



Key capabilities address tactical challenges

Building a comprehensive understanding of disease-relevant targets and biological pathways is fundamental to bringing new drugs to market. However, without close collaboration between multidisciplinary project teams, critical insights could be missed, leading to costly delays. By providing a more integrated approach to informatics, the Revvity Signals Research Suite empowers drug discovery organizations to overcome tactical drug discovery challenges. This is achieved through four key capabilities:

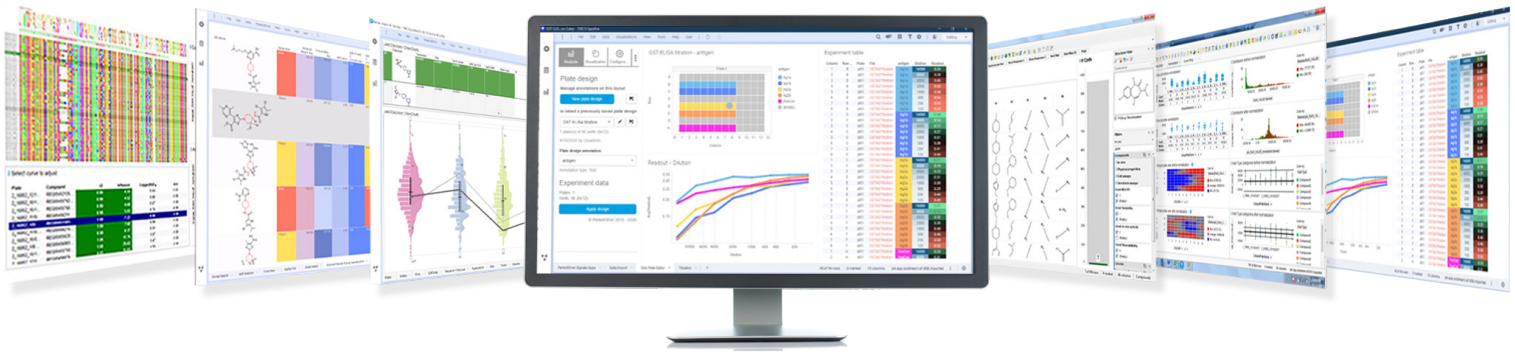
#1 | Comprehensive experiment management with integrated data analytics

- Find new and promising drug candidates more quickly
- Improve experimental repeatability for greater confidence in results

The Revvity Signals Research Suite already provides the broadest coverage of in vitro and in vivo bioassays in one software platform. But, because our software is built to be future proof, new assay types, instruments, and data analytics are easily added and configured, either directly by the end user or by leveraging our suite of professional services for integration and training. This means that whichever assay type will be run, the Revvity Signals Research Suite supports it.

All results and metadata are collected, organized, analyzed, and stored in a single system, accessible to biologists and chemists alike. Collaboration is further encouraged by allowing workflows to incorporate task requests, chat, and even signing off on experiments, which can save valuable time. In addition, every aspect of the data is FAIR: Findable, Accessible, Interoperable, Re-useable. This allows for data to be searched, reused, and even tapped into by machine learning and artificial intelligence (AI) approaches as required.

- Broadest coverage of in vitro and in vivo bioassays in one software platform
- Repeatable workflows in a user-friendly interface
- Biologists and chemists can collaborate and discuss results
- Every aspect of the data is FAIR: Findable, Accessible, Interoperable, Re-useable



#2 | Self-service discovery

- Streamline phenotypic screening
- Increase throughput with greater use of automation

With the Revvity Signals Research Suite solution, biologists can be self-sufficient in planning and organizing experiments and analyzing assay results. This is because there is less need to rely on data scientists, database administrators, or statisticians for creating workflows or running analyses - biologists can do this for themselves.

The Revvity Signals Research Suite also provides the flexibility to accommodate ad-hoc changes in any experiment as they happen. These can be recorded in real-time and are easily brought through into calculations.

- Easy to create, configure, consume, and collaborate in the lab
- Ad-hoc changes in the experiment can be accommodated

#3 | Fastest to actionable insight

- Experience faster, easier, more cost-effective working

The Revvity Signals Research Suite is the most modern and scalable platform of its kind. Built on state-of-the-art software tools, it calculates millions of data points in seconds instead of hours, meaning scientists can learn from sophisticated results in the shortest amount of time. Underlying these capabilities are the repeatable data analysis workflows at the core of the system. These can be run interactively or fully automated and reduce human error by removing the need for copy-and-paste actions.

- Speeds up the entire research process and minimizes the time between experiments
- Reduces human error by eliminating the need for copy-and-paste actions

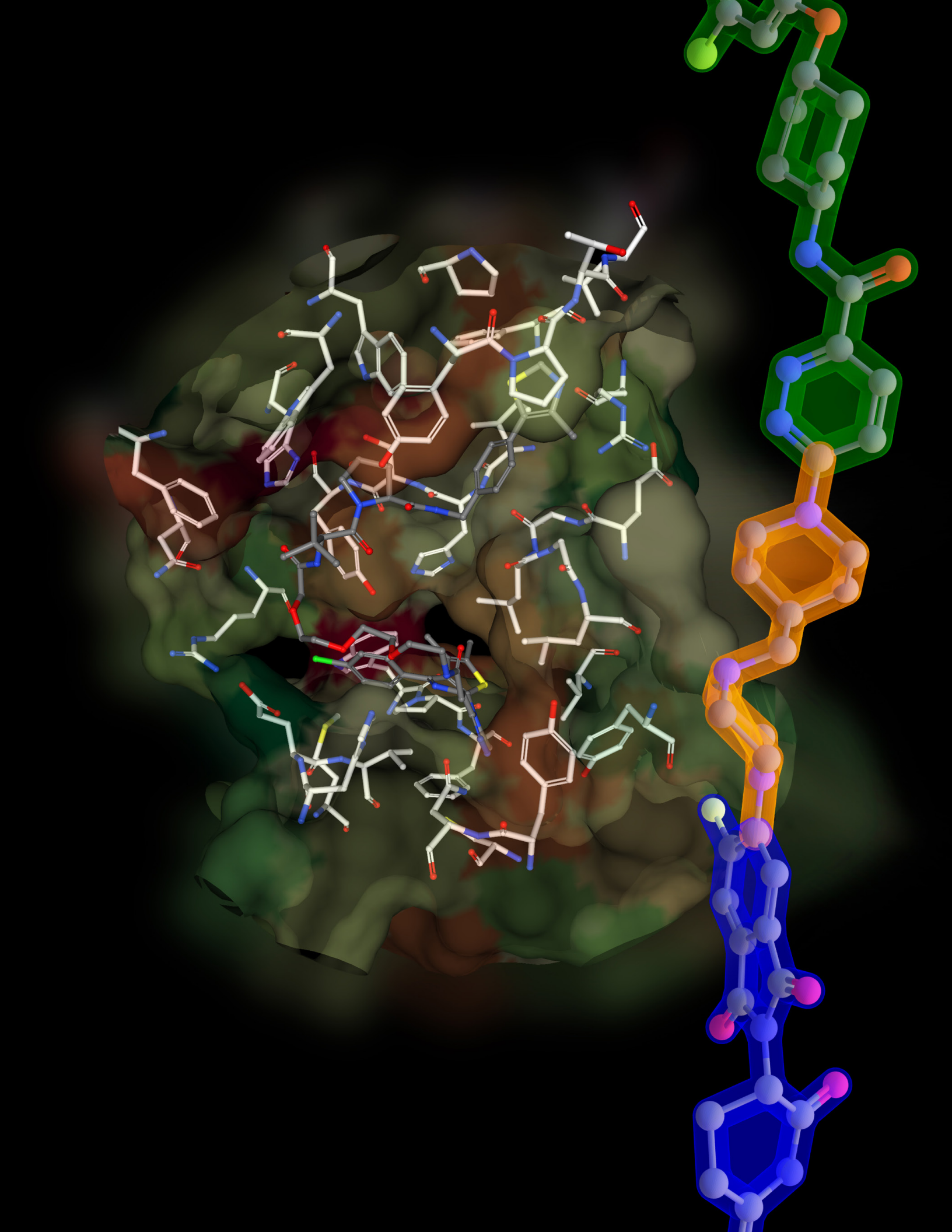
#4 | Visibility into the unknown

- Improve the likelihood of finding new and promising drug candidates

By enabling visualization of all data and metadata in one place, the Revvity Signals Research Suite makes it easy to spot any signal – whether good or bad – without overwhelming the user. Most notably, the depth and breadth of biology functionality mean that more data equates to more insights rather than more confusion. In turn, seeing data in context boosts confidence in results by making it easy to understand how each data point was generated and how it relates to other experiments, including historic ones.

- See the entire data and metadata in one place
- Never miss a signal in your experiments
- More data means more insights instead of more confusion

The Revvity Signals Research Suite empowers multidisciplinary project teams to build critical knowledge of disease-relevant targets and treatments to bring scientific breakthroughs to market faster.



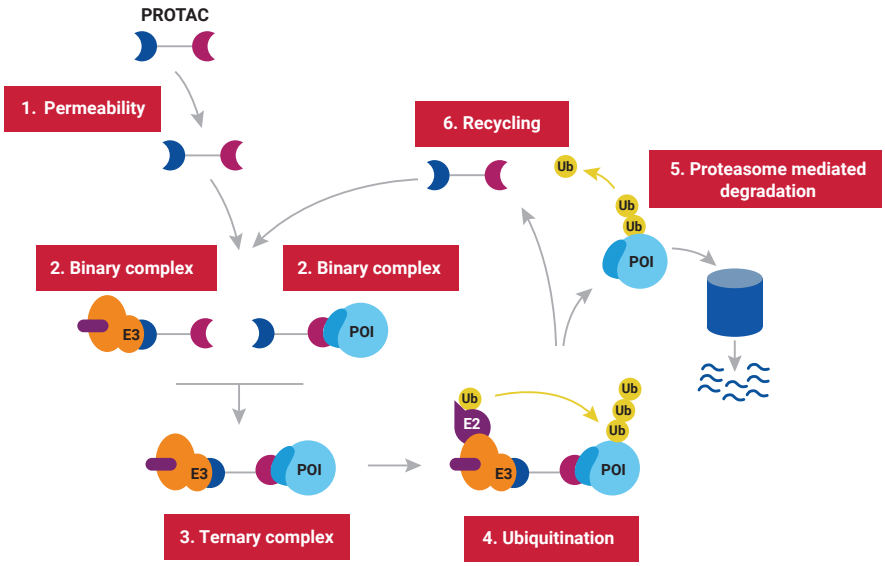
Empowering PROTAC® discovery

Proteolysis targeting chimeras, often referred to as PROTACs, are currently the most advanced type of protein degrading drug. They function by degrading unwanted proteins (e.g., oncogenic proteins) immediately after production, preventing them from causing harm.

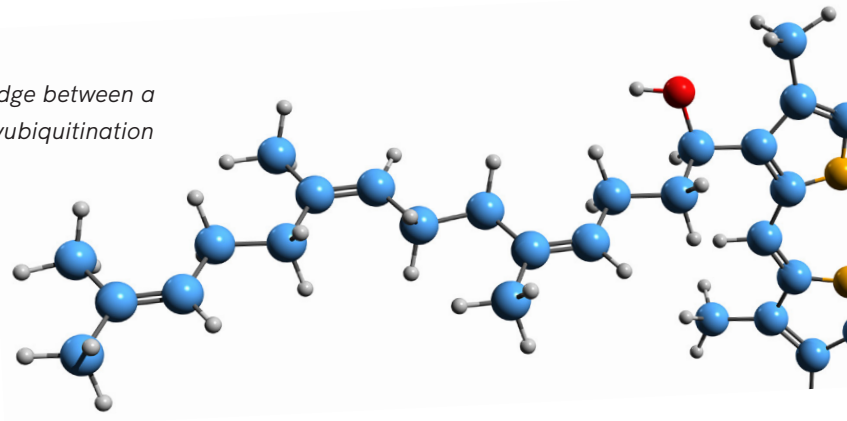
Each PROTAC consists of two linker-conjoined ligands, one of which binds the target protein while the other binds a ubiquitin ligase. When both ligands are simultaneously attached to their binding partners, ubiquitinylation of the target protein results in its degradation by the ubiquitin–proteasome system. The PROTAC is then free to repeat this process for another copy of the target.

A main difference between PROTACs and traditional small molecule drugs is that the latter have a one-to-one relationship with the target. Because PROTACs instead perform multiple iterations of the same catalytic step, they represent a promising means of inhibiting proteins that have historically been difficult to target via traditional methods.

The Revvity Signals Research Suite empowers PROTAC research by both guiding PROTAC design and streamlining verification of each step involved in the target degradation process. And, by enabling close collaboration between biologists and chemists at every stage of PROTAC development, the Revvity Signals Research Suite represents an essential tool to help bring the first of these novel drugs to market.



PROTAC®s induce targeted protein degradation by serving as a bridge between a POI and an E3 ligase. The resulting ternary complex catalyzes polyubiquitination of the target protein, tagging it for degradation by the proteasome.



One Team, One Goal – Harmonized Alignment for Scientific Excellence

The Enterprise Customer Experience team delivers a wide range of services for designing, deploying, and managing an informatics solution that aligns with your organization's R&D Informatics needs. Service offerings include:

- Implementation Services
- Validation Services
- Consulting & Design Services
- Configuration & Integration Services
- Education Services

We understand technology and the science of our customers. We apply that expertise to delivering solutions that meet and exceed customer expectations.

200

Professional Services Staff Globally

75%

Advanced Scientific or Technology Degrees

350

Projects Completed per Year

Conclusion

Drug discovery is complex, time-consuming, and expensive, and the risk of failure is high. Close collaboration between biologists and chemists is vital to bring new drugs to market but can often be prohibited by outdated working practices that capture information in siloed informatics systems. The Revvity Signals Research Suite gives biologists complete control of their workflows across every assay technique, modality, and data type to empower better interaction between multidisciplinary project teams. Whatever the nature of your drug discovery program, the Revvity Signals Research Suite solution can help you bring your scientific breakthroughs to patients faster.

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To learn more about the Revvity Signals Research Suite and how it can accelerate your drug discovery program, visit **revvitysignals.com/products/research/signals-research-suite**

Footnote: *PROTAC® is a registered trademark of Arvinas. In this brochure, PROTAC specifically refers to the abbreviation of PROteolysis TArgeting Chimera as therapeutic modalities.*

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