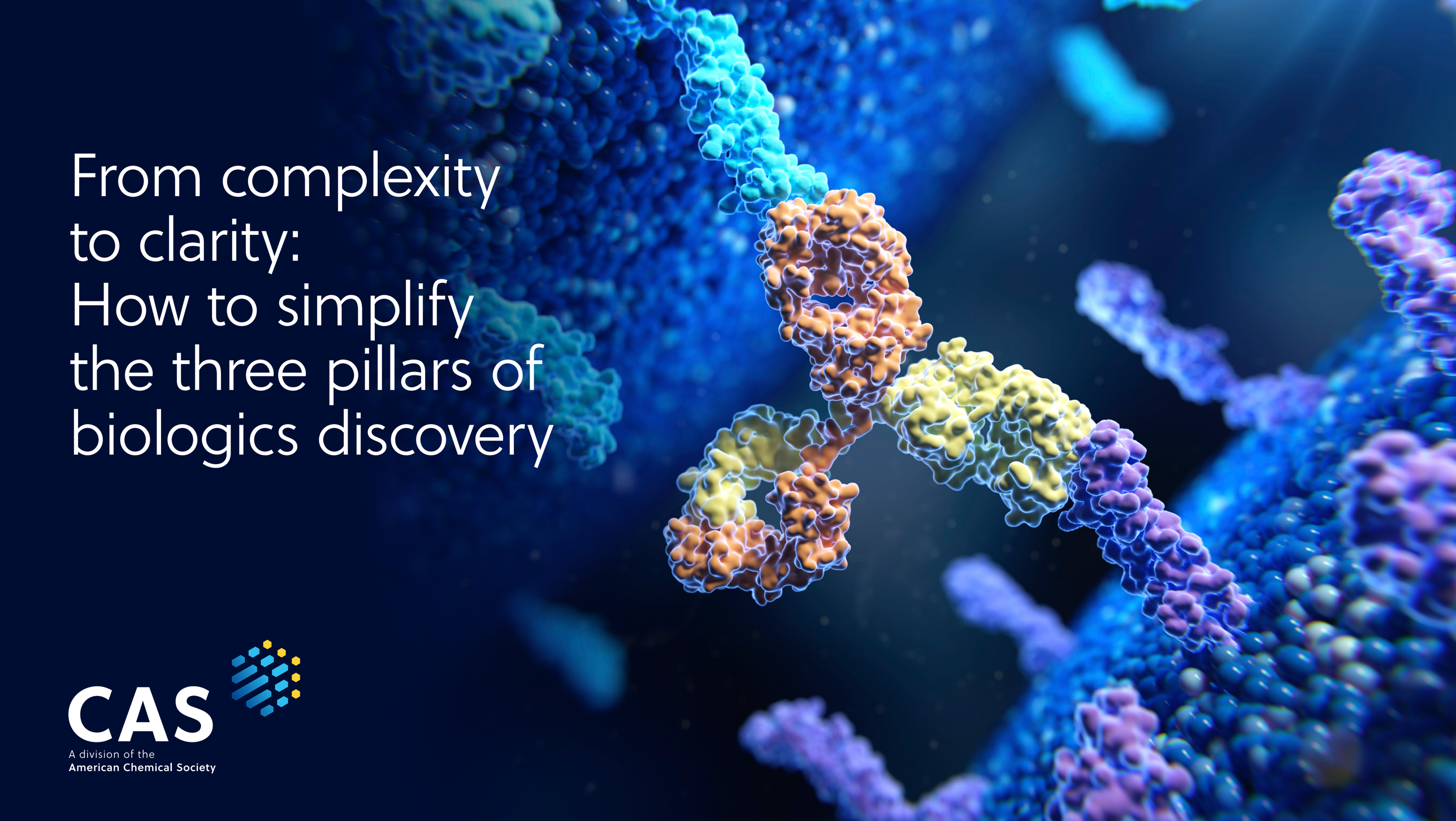
From complexity to clarity: How to simplify the three pillars of biologics discovery



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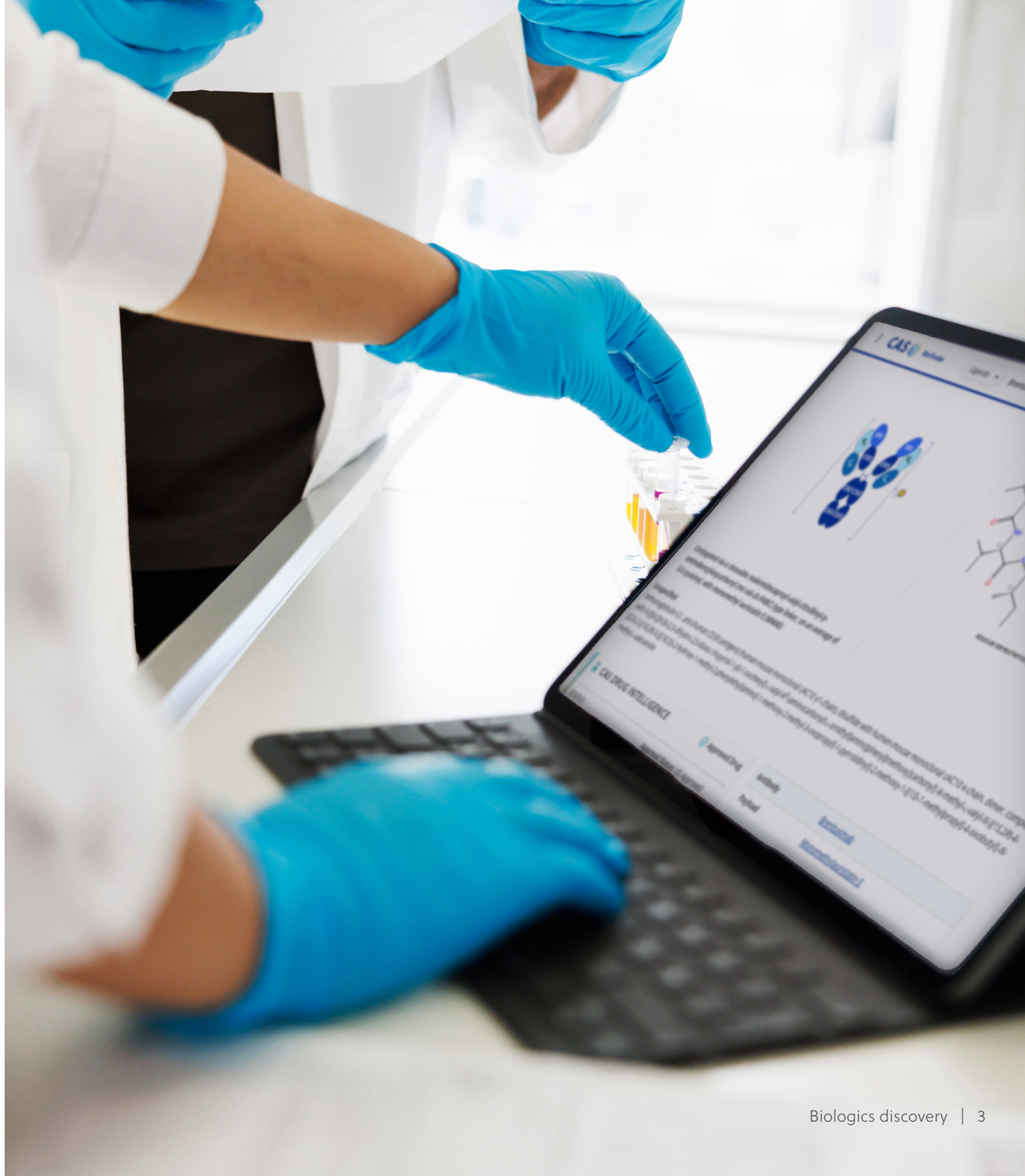
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Biologics discovery leaves no room for guesswork

Challenges of biologics discovery

Novel biologic modalities expand therapeutic innovation possibilities at an unprecedented speed. However, pushing the boundaries of drug discovery brings new layers of complexity, which can stall life-changing pipelines. As demand grows for safer, more effective therapies, discovery teams face rising pressure to design smarter, move faster, and meet stricter safety, manufacturing, and regulatory standards.

In the urgency of drug discovery workflows, the wrong focus can make the difference between progress and heavy setbacks. Which targets offer real potential? Which candidates are worth the push? Which early wins mask late-stage vulnerabilities?

In this paper, we explore three critical data challenges in biologics discovery and show how integrated, purpose-built discovery platforms can help biologics discovery teams prioritize the right targets, invest in the right candidates, and advance safer therapeutics for increased chances of success.



How to help your team discover the right target

Finding the right target starts with the right information. Key insights into disease biology, pathways, and targets are often buried across scattered publications and disconnected databases, forcing discovery biologists to spend hours manually connecting the dots before real analysis can begin.

Without a complete view of the scientific and intellectual property (IP) landscape, even the most fundamental drug discovery questions become difficult to answer:

- What's known about the target of interest?
- Has it already been studied in the context of biologics such as monoclonal antibodies or antibody-drug conjugates (ADCs)?
- Are there existing claims around the target or related biologics modalities?

Poor visibility into published literature, scattered data sources, and a fast-moving IP landscape not only slow decision-making but also increases the risk of wasting resources on targets with weak therapeutic relevance or limited novelty. **What does it take to transform disparate data into insightful decisions?**

Three steps to turn fragmented data into fuel for drug discovery workflows

Consolidate
Integrate disparate publication sources, databases, and patents into a unified, searchable platform to eliminate silos, streamline information retrieval, and accelerate access to relevant data.

Standardize
Standardize formats, abbreviations, and identifiers across biological databases, antibody sequences, and pharmacological data to reduce inconsistencies, simplify cross-checks, and speed up analysis.

Connect
Link related entities (e.g., antibodies, ADCs, protein targets) using authoritative identifiers to unify context, reveal hidden relationships, and speed up insight generation across workflows.

Reaching this level of integration is critical for accelerating biologics discovery but requires a large and consistent investment. Without this integration, researchers are pulled away from high-priority work to manually piece together disconnected information across scientific journals, databases, and other sources. With biologics data growing in complexity and volume, how can your discovery team realistically keep pace?



How CAS BioFinder® supports target discovery

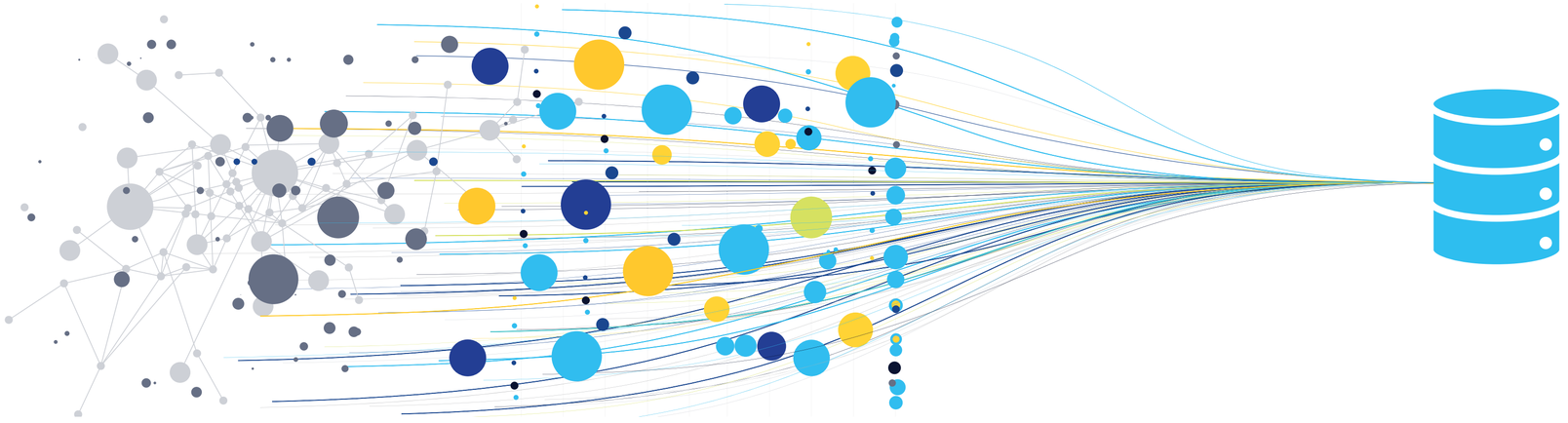
To cut through the complexity of biologics discovery, researchers need connected insights, not scattered data points. CAS BioFinder streamlines access to critical information so your team can **make more confident recommendations faster.**

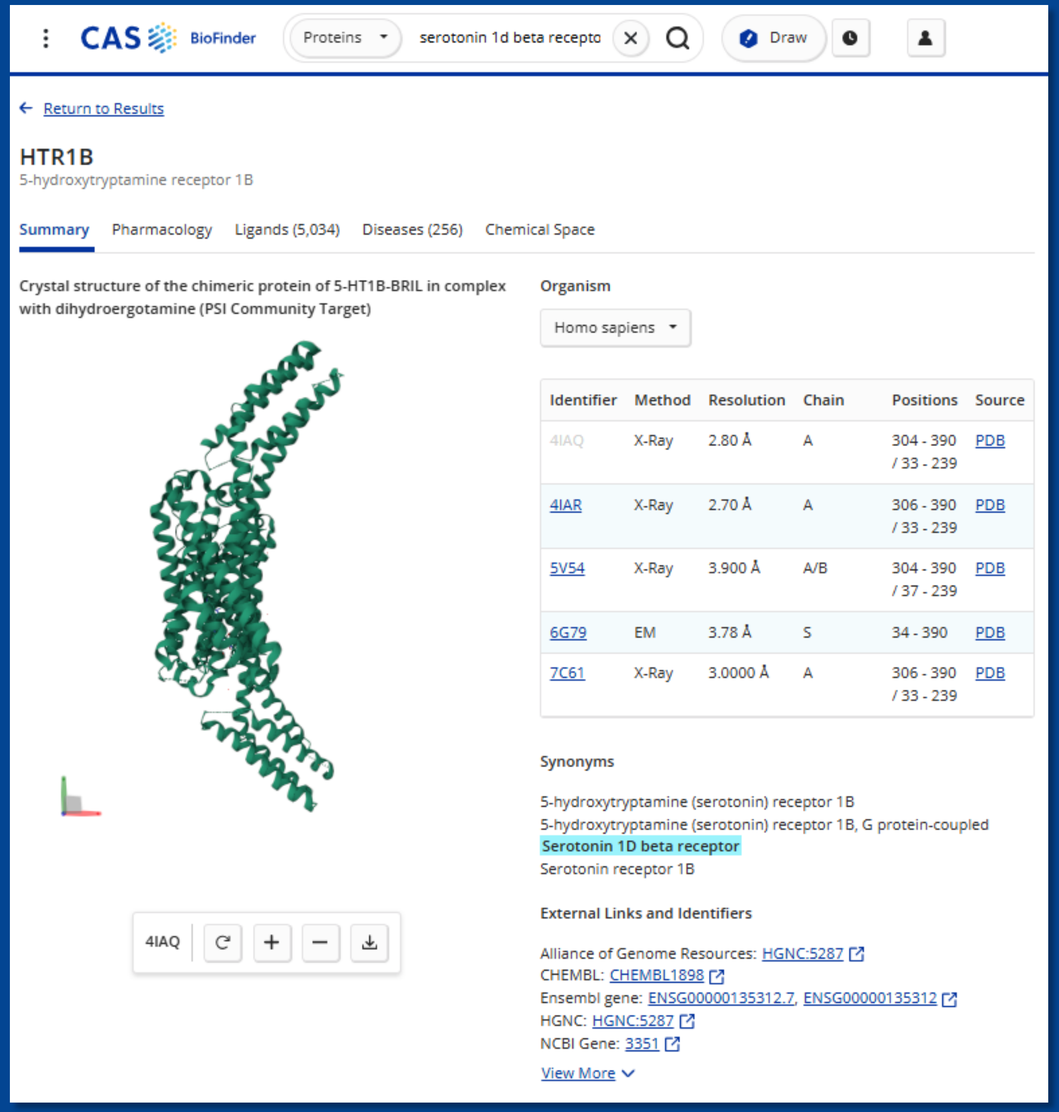
At CAS, our experts not only centralize but also structure, verify, and connect drug discovery-relevant information into a unique interface so you gain easy access to curated information from:

- Thousands of top life sciences journals.
- Over 100 global patent authorities.
- Trusted chemical, biological, and pharmacological databases—including the CAS Content Collection™ that powers CAS SciFinder®.

Scientific data landscape:
Countless sources of unstructured data

CAS BioFinder:
A single, integrated source of drug discovery data





How do we make sure your team doesn't miss anything?

Every day, CAS scientists and data experts manually **extract, curate,** and **verify** scientific and patent information so researchers don't have to second-guess its accuracy or reliability. CAS experts assign consistent identifiers to proteins, genes, and diseases and link related **chemical, biological,** and **pharmacological data,** ensuring clarity and alignment across sources.

Explore targets with integrated authoritative sources

CAS BioFinder brings together trusted, authoritative sources—including UniProt, NCBI, and PDB—in one platform. This unified view ensures **consistent target naming, taxonomy alignment, and contextual understanding,** simplifying the comparison of protein targets and ligands across disease contexts and biologics discovery workflows for faster and more confident insight generation.

Proteins, molecules, diseases, and other data in CAS BioFinder include a comprehensive list of searchable synonyms and links to other authorities to ensure accuracy and clarity.



How do we make sure you don’t get overloaded with data?

CAS BioFinder allows you to avoid crowded or dead-end targets and focus on the most promising areas for therapeutic development. With clarity into target novelty, relevance, and functional viability, you can **prioritize the best targets** for further investment.

By making novelty, relevance, and IP risks visible upfront, CAS BioFinder helps your team identify druggable targets faster so you can make informed investments and avoid costly missteps. However, finding the right target is only the first step. The real value comes from selecting and optimizing the right molecule to act on it.

2

How to support your team in optimizing the right molecule

Even the best target fails without a well-matched candidate. Biologics often come with limited context, precedent, and functional clarity to inform lead prioritization and guide molecule optimization.

Despite substantial data gaps and limited visibility, discovery biologists are expected to make high-stakes decisions early in the pipeline, which increases the risk of missing optimization opportunities and advancing poorly differentiated candidates.

What's standing in the way of advancing optimal molecules?

Streamlining candidate screening and lead optimization depends on your team's ability to gain context and clarity into candidates' structures, mechanisms, and functions. What is standing in the way, and how can your discovery team overcome it?

Barrier	Data-driven solution
Limited ability to detect structural or functional similarity across antibody formats and biologics	Leverage data from known antibody therapeutics and past programs to predict similarity, even without exact matches
Insufficient structure-activity relationships (SAR) data across antibody and ADC formats	Compare antibody structures and domains to similar scaffolds with literature-backed and predicted bioactivity context
Unclear or inconsistently reported functional roles, such as partial agonism or multi-target modulation	Assess functional relevance and selectivity using published and predicted data

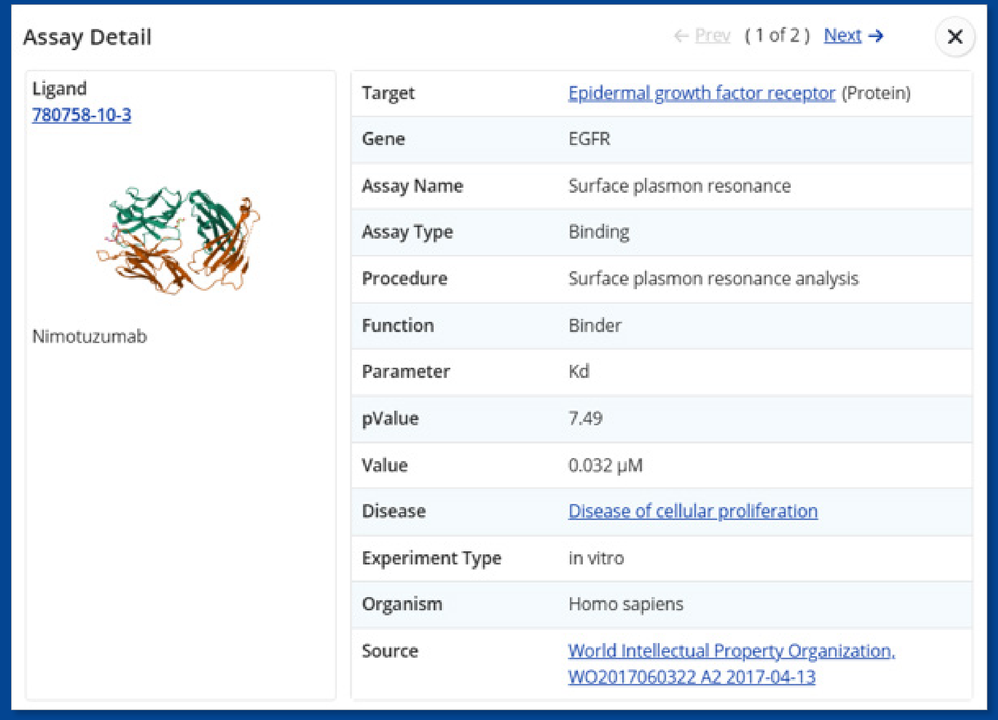
By combining published and predicted information, biologists can **bypass critical data gaps** to progress the most promising candidates quickly and confidently. While this plan of action is clear, disconnected information, databases, and predictive tools make it difficult for your team to translate to real-life workflows.

CAS BioFinder: Data intelligence for confident molecule prioritization

Connected, curated content for data-backed decisions

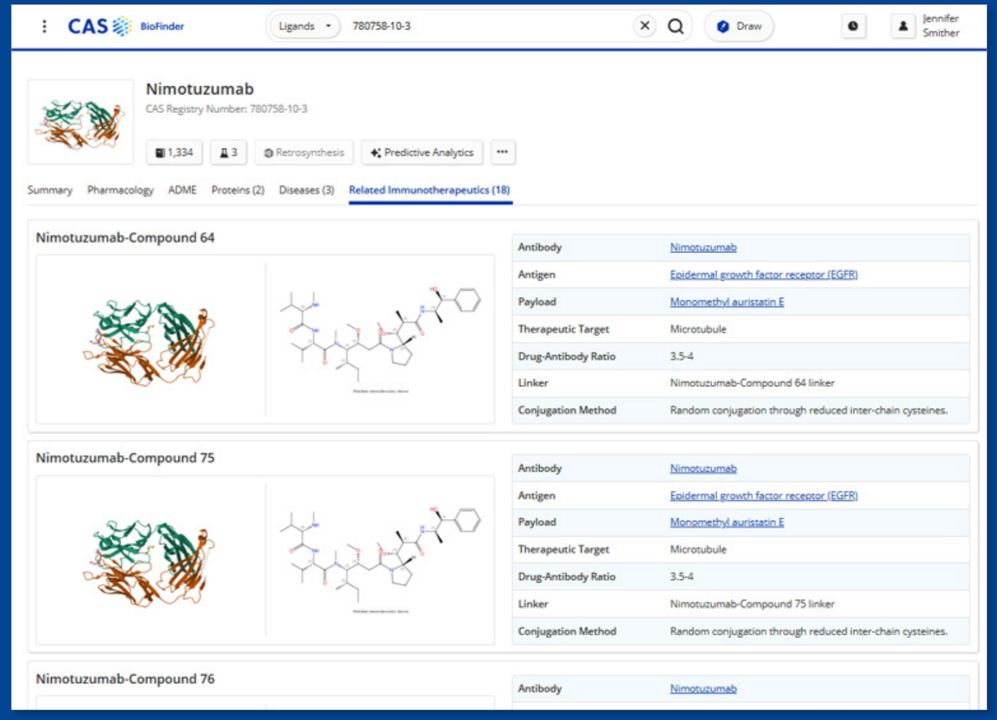
Discovery workflows need more than access to raw data: They need deep connections that reveal insights, bridge gaps, eliminate redundancy, and drive confident decisions. CAS BioFinder delivers expertly curated content to help your discovery team.

Make confident calls on molecule relevance and optimization using literature-backed pharmacology and bioactivity data across antibody formats.



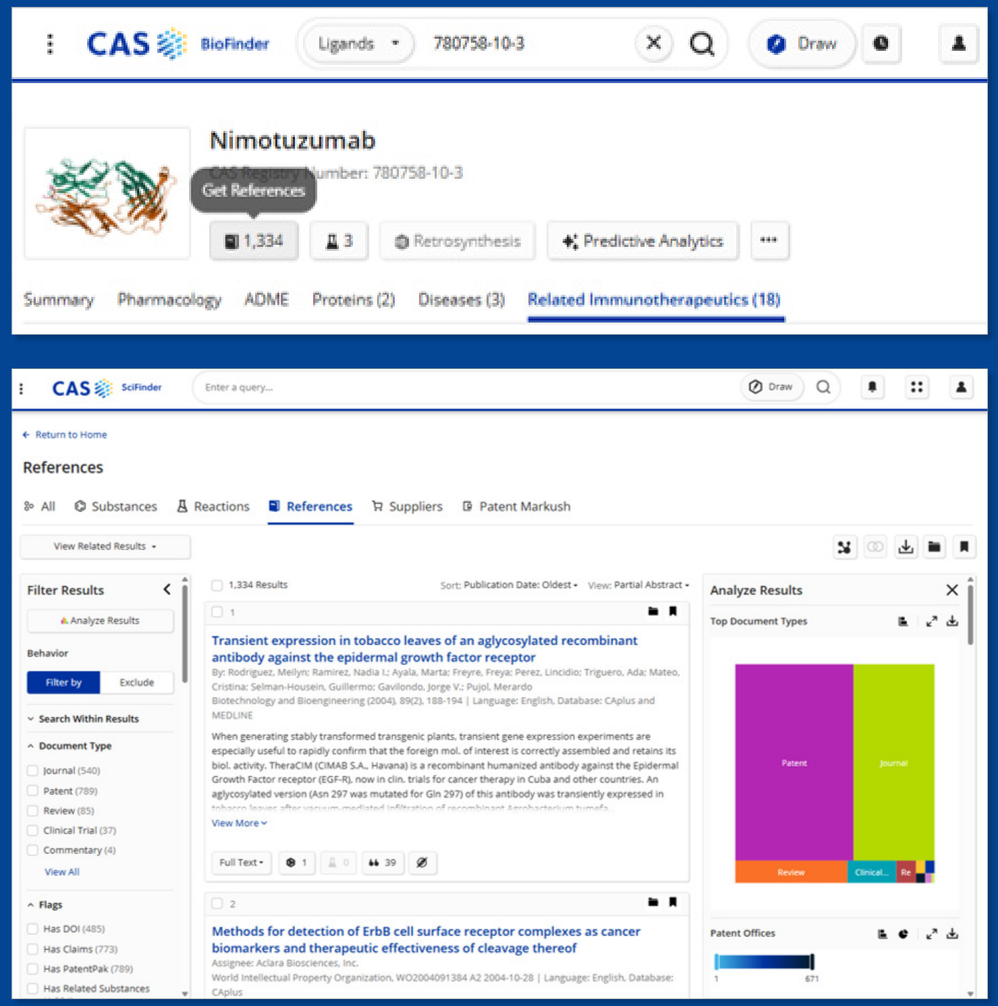
Assay details provide more context to the data points and allow you to double-check insights.

Fast-track decision-making by uncovering which biologics have already been studied in relevant therapeutic contexts.



Immunotherapeutics related to an antibody show you what payload combinations have already been experimented with.

Strengthen your case with direct access to the source literature.



Quickly explore the source documents for all the data points in CAS BioFinder.

With connected, curated data, CAS BioFinder helps you **overcome critical data gaps** so you can confidently **prioritize high-potential biologic candidates.** Yet, hidden safety liabilities can still surface downstream and turn high-potential leads into late-stage failures. How can you turn early uncertainty into an opportunity to develop safer biologics?



3

How to enable your team to identify safety risks earlier

While biologics generally have higher success rates than small molecules, they are not immune to late-stage failures due to safety issues. Unseen early-stage risks can quickly derail even the strongest candidate and lead to failed trials, extended development cycles, and costly regulatory setbacks.

In early biologics workflows, your team relies on evidence-based insights into candidates' mechanistic red flags and adverse outcomes to drive life-changing go/no-go decisions. Yet, crucial safety data is often fragmented, hard to retrieve, or simply nonexistent. This leaves researchers with blind spots, increasing the risk of advancing candidates with off-target interactions, poor selectivity, and tolerability issues, which pose a serious safety risk in clinical trials.

The data behind smarter safety decisions

Biologists need a clearer picture of candidates' potential liabilities, long before clinical trials begin.
What data can reliably reveal those red flags?

ADME/Tox data	Reveals absorption, distribution, metabolism, excretion, and toxicity risks
Selectivity/off-target data	Highlights unintended biological interactions
Pharmacology profiles	Summarizes functional effects across multiple systems
Bioactivity data	Quantifies potency and efficacy, revealing safety windows

For many novel compounds or emerging targets, crucial safety information is often missing or difficult to access, limiting the ability to draw meaningful conclusions. To close these gaps, biologists need tools that combine published data with predictive analytics to **help uncover hidden risks** and guide confident go/no-go decisions.

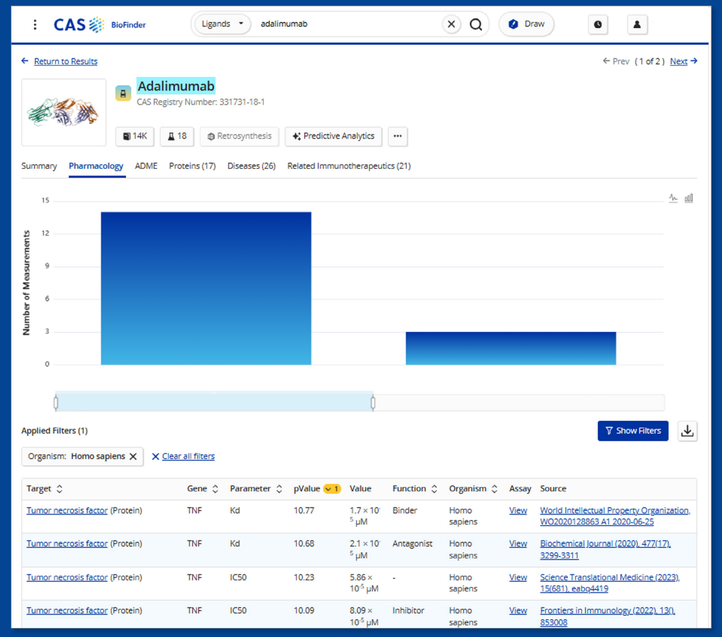


CAS BioFinder: Closing data gaps to drive confident go/no-go decisions

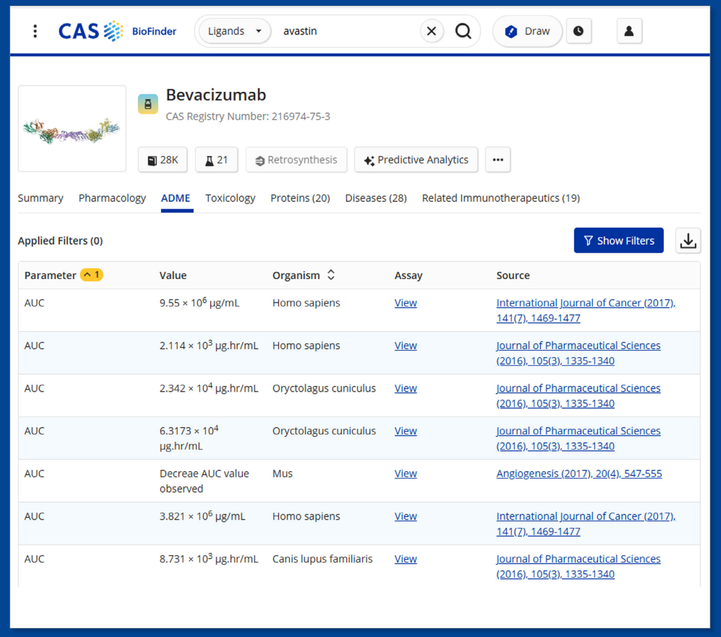
As a decision-maker, you need more than a gut feeling. You need clear, evidence-backed support from your team to justify high-stakes go/no-go decisions and **confidently recommend candidates for clinical trials.** We designed CAS BioFinder to centralize drug discovery-relevant information and enrich it with predictive insights so your toxicology team can surface safety risks early, **even when the literature is incomplete.**

CAS BioFinder helps your team:

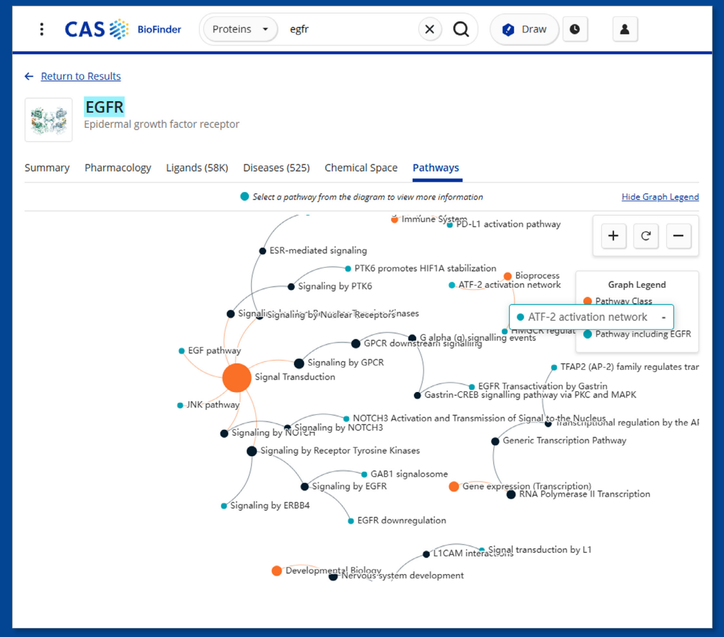
Trace known adverse outcomes to referenced bioactivity data.



Explore ADME and toxicology data for ligands of interest.



Find biological liabilities based on interactions with pathways and cellular processes.



By leveraging CAS BioFinder to **surface potential liabilities earlier** in discovery, you can reduce late-stage failures and make confident go/no-go decisions. The combination of published data and predictive insight helps the program avoid later safety-related setbacks and move biologics from labs to patients faster.

Biologics discovery leaves no room for guesswork

When every decision affects speed, budgets, and life-changing pipelines, teams need information they can trust, not second-guess. Yet, when data is scattered, inconsistent, or missing, seeing the full picture becomes challenging, especially when evaluating novel targets or complex candidates.

We designed CAS BioFinder to help drug discovery scientists locate insights that expedite R&D workflows. By combining expertly curated data with predictive intelligence and deep biologics context, we help your team identify promising targets faster so you can prioritize safer candidates and make confident decisions across the pipeline.

From target selection to safety profiling, CAS BioFinder helps accelerate critical decisions so you can get life-changing biologics to patients faster.

Click to learn more or visit link.cas.org/biologics-contact.



CAS connects the world's scientific knowledge to accelerate breakthroughs that improve lives. We empower global innovators to efficiently navigate today's complex data landscape and make confident decisions in each phase of the innovation journey. As a specialist in scientific knowledge management, our team builds the largest authoritative collection of human-curated scientific data in the world and provides essential information solutions, services, and expertise. Scientists, patent professionals, and business leaders across industries rely on CAS to help them uncover opportunities, mitigate risks, and unlock shared knowledge so they can get from inspiration to innovation faster. CAS is a division of the American Chemical Society.

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