Assessing the potential of PROTACs as treatments for Alzheimer's disease

Discover how our client developed a thorough understanding of the PROTAC development landscape for Alzheimer's disease to help prioritize their R&D strategy.

Challenge

A need to monitor novel PROTACs targeting Alzheimer's disease and their patent coverage

PROteolysis TArgeting Chimeras (PROTACs) represent a promising class of drugs designed to degrade disease-causing proteins by leveraging the ubiquitin-proteasome system.

Our client, an emerging pharma company specializing in PROTACs, aimed to explore the feasibility of PROTAC drugs as potential therapies for Alzheimer's disease (AD). However, several factors contribute to the difficulty in determining whether PROTACs can effectively target this complex neurodegenerative disorder.

The PROTAC field is rapidly evolving, with numerous companies and academic institutions actively developing molecules for various disease targets. However, identifying promising PROTAC candidates and navigating the complex patent landscape poses significant challenges.

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An easy analysis of the associations among drugs, targets and diseases

The company's R&D team benefited from using Cortellis Drug Discovery Intelligence™, an intelligence solution that integrates multi-source biological, chemical, pharmacological and patent data in a single platform. In a few clicks the researchers accessed critical drug and patent information related to PROTACs for their analysis.

Understanding the current development landscape and potential opportunities

The team explored current PROTAC drug projects with the potential to degrade AD-causing proteins. In a few clicks they were able to produce a comprehensive list of all PROTAC developments in AD. This information allowed the research team to identify potential starting points for further development and assessing the competitive landscape.

Further analysis of these chemical structures provided the investigators with valuable insights into different design strategies, and the foundations for further optimization.

Figures 1-3 show examples of the type of insights the researchers could easily access in a few clicks.

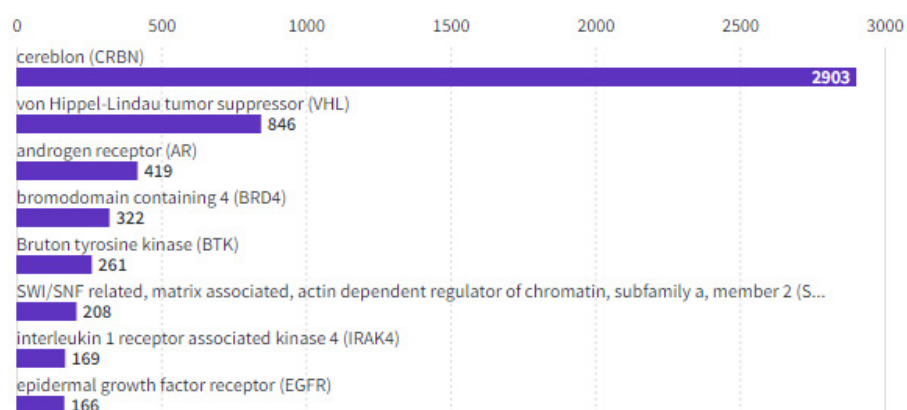**Figure 1: Top PROTACs targets by number of drugs.**

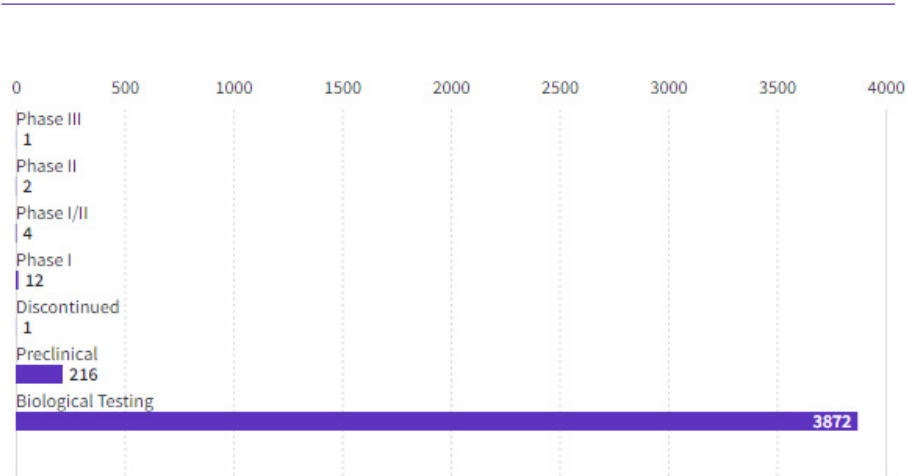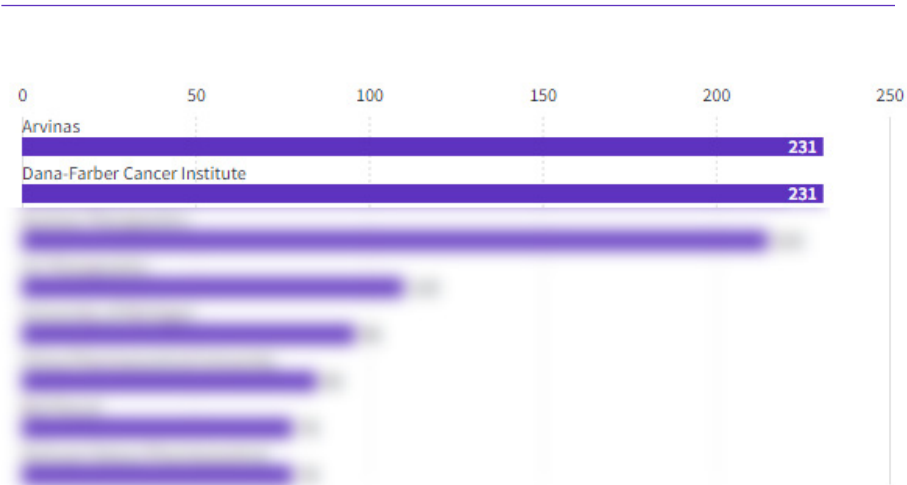**Figure 2: Overview of PROTACs by development phases.**

Figure 3: Top organizations developing PROTACs.

Navigating the IP landscape

Cortellis Drug Discovery Intelligence integrates patent information with drug pipeline data, providing a holistic view of the IP landscape. This allowed the researchers to identify patents claiming specific PROTAC structures, and PROTACs in the context of AD. These granular insights empowered the R&D team to understand potential for freedom-to-operate and explore opportunities for collaborative research or licensing agreements.

Figures 4-6 show examples of patent landscape insights available on Cortellis Drug Discovery Intelligence.
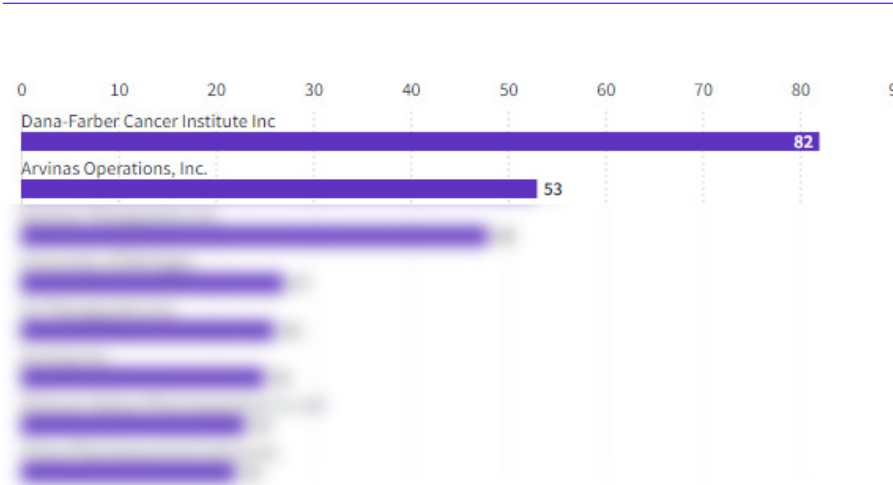
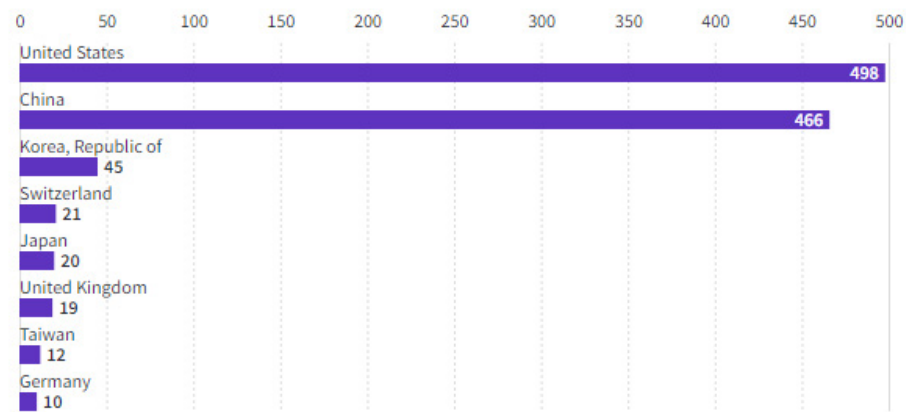**Figure 4: Top PROTACs' patent applicants.**

Figure 5: PROTAC Patent application time trend.

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Figure 6: Top PROTAC patent applicant countries.

Learning from past successes and failures

The researchers reviewed the scientific literature relating to AD-focused PROTACs to gain valuable insights into the key challenges that have been encountered, such as achieving optimal target degradation while minimizing off-target effects. Cortellis Drug Discovery Intelligence makes this daunting task easy by pinpointing the scientific publications describing the development and evaluation of existing AD-focused PROTACs. Cortellis also includes experimental pharmacology data points for PROTACs, to help benchmark the different drugs for specific targets or diseases.

This knowledge allowed the company to design possible strategies for optimizing PROTAC efficacy and selectivity, and optimize their novel PROTAC design.

Advancing research with confidence

Cortellis Drug Discovery Intelligence helped the client obtain:

Confidence

A thorough, data-driven evaluation of the development landscape guided the company's R&D prioritization decisions.

Opportunity

Freedom-to-operate analysis helped the company uncover potential licensing opportunities.

Strategic guidance

Identifying potential patent obstacles early in the development process enabled informed decision-making and risk mitigation strategies.

Efficiency

By reducing the time spent on manually compiling and tracking this drug development research, the R&D team freed up resources to focus on value-added analysis.

PROTAC coverage on Cortellis Drug Discovery Intelligence:

4K+
PROTAC drugs,
98% with
chemical structure

3K+
PROTAC drugs
with experimental
pharmacology information

1K+
patents covering
PROTACs, made by
300+ applicants

1K+
literature records
mentioning
PROTAC drugs

15
years' coverage
of PROTACs

10K+
experimental
pharmacology data points
related to PROTACs

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Discover how Cortellis Drug Discovery Intelligence can help you make confident R&D decisions

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