Ardigen

Artificial Intelligence & Bioinformatics for Precision Medicine

Bringing Our Visionary Approach to Data-Driven Drug Discovery Process
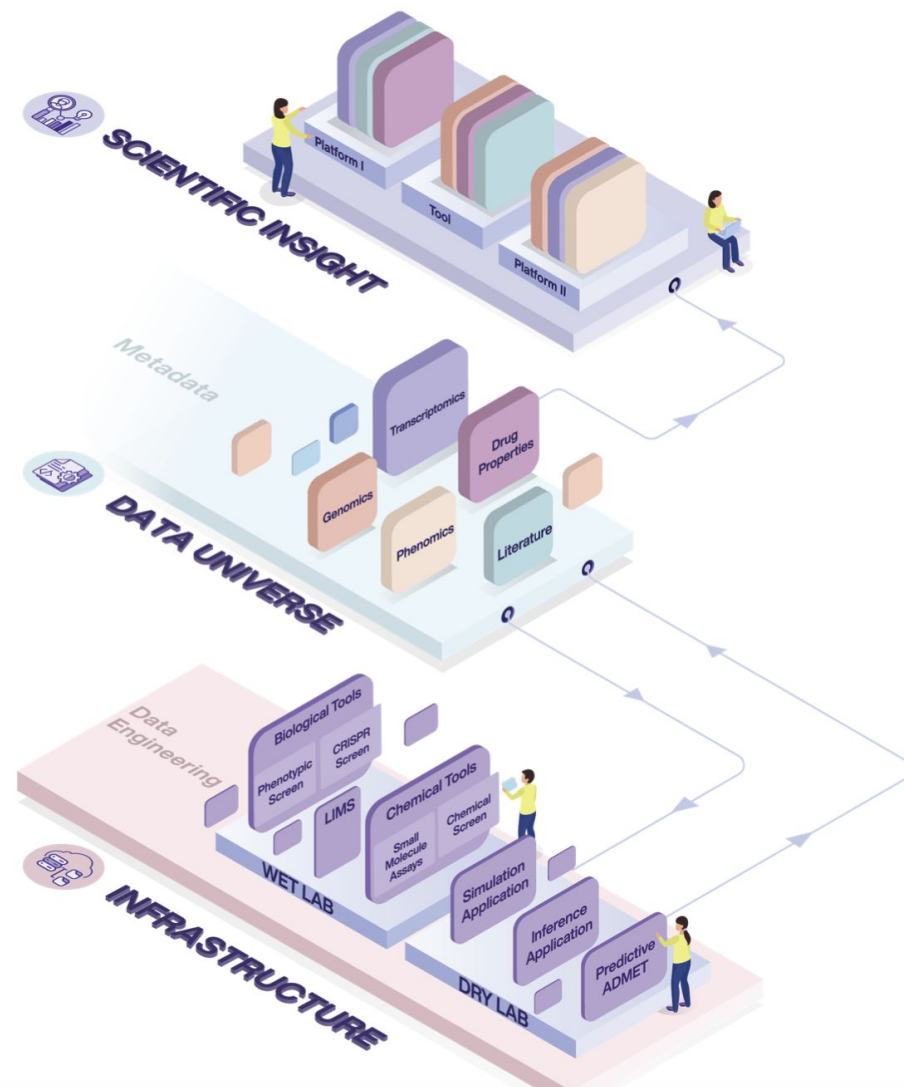
Ardigen

Ardigen enables digital transformation for biotechs and pharmas to leverage the full potential of data

The current and future suite of Platforms augments your decision making by providing **actionable insights** at the Drug Discovery Process stages to accelerate your programs. Those in silico derived insights, validated in laboratories, can increase your success in the subsequent steps of the drug discovery funnel.

The core of the tripartite system constitutes the **Data Universe**. This collection of highly diverse, multi-dimensional and highly relatable datasets originating from a multitude of biological and chemical experiments provides the source of the insights for the Scientific Insights Layer. By cataloguing the data modalities with the accompanying metadata descriptors, the expandable Data Universe can accumulate more datasets in the future.

The foundation of the Data Universe is composed of the **Infrastructure** Layer. The ground source of the biological and chemical data, together with the accompanying software, enabling efficient data capture.

We Increase the Likelihood of Success and Accelerate Your Drug Discovery Process

Ardigen

> *We envision a future where the delivery of drugs with high-potential to the clinic takes a much shorter time. This can be achieved by creating a system where the failures in the discovery funnel are identified and addressed much earlier, and therefore, increasing the chances of success in the subsequent stages. The core success of this type of holistic approach lies in testing many hypotheses and deriving the insights at the very beginning of the Drug Discovery process.*

Janusz Homa
CEO

Why Ardigen?
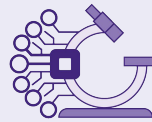
We have a deep understanding of scientific challenges in the Drug Discovery process and translate them into computational solutions

Our multidisciplinary team of experts harness the synergy of life sciences and computational competencies

We have delivered 300+ successful projects on-time

At the heart of everything we do, there are our Core Values:

| Trust | Knowledge | Persistence | Quality |

Discover Our Cutting-Edge Services and Accelerate Your Drug Discovery Process

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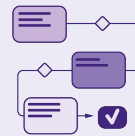| Target ID	Target Validation	Hit ID	Hit to Lead	Lead Opt.	Preclinical	Clinical Testing

Scientific Insight Services

Small Molecules

Phenotypic Screening Platform (phenAID)

AI-based scoring of whole slide biopsies

Target Discovery and Validation Platform (daGama)

Small molecules properties prediction and optimization (COPTIC & RMAT)

Gene Regulation Suite (siRNA | miRNA | CRISPR | Genetic Reports)

Biologics

Biological molecules property prediction and optimization (PRISM)

Predictors of Clinical Trial Outcomes

Off-target toxicity predictions (ARDitox)

Design multi-epitope peptide-based vaccines (ARDesign)

Identify HLA-I & -II presented targets (ARDentify & ARDisplay)

TCR Suite of computational tools (design, explore, select & optimize)

Microbiome Platform

AI and Bioinformatics Services

Single Cell | CRISPR-Cas | siRNA | Multiomics | Microarrays | Biomedical Imaging | AI-Chemoinformatics | Predictive Models | Multimodal Models | Machine Learning | Deep Learning | NLP | Computer Vision

Data Universe

Sequencing e.g. SRA, TCGA | Arrays e.g. GEO, ArrayExpress | Images e.g. JUMP-CP | Structures e.g. PDB, PubChem | Unstructured data e.g. PubMed | Structured data e.g. pathway, disease

Data Engineering Services

Digital & Cloud Transformation	Data Governance & Processing	Data Management & Visualization
Comprehensive life science computing support	Data architecture consulting	Data capture & storage systems
End-to-end cloud-native systems development	Data ingestion & engineering	Harmonization & FAIRification pipelines
MLOps solutions for AI projects	Big data analytics	Reporting & dashboard solutions
Security & legal compliance	Bioinformatics workflows engineering	Self-service data marts

Experience Our Solutions Through Real-World Case Studies

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Target ID	Target Validation	Hit ID	Hit to Lead	Lead Opt.	Preclinical	Clinical Testing

Scientific Insight Services

ML-driven novel therapeutic concept discovery by leveraging single-cell transcriptome profiling

We used Deep Learning (DL) and Machine Learning (ML) to deconvolute cell types according to their health status in patient samples solely based on their transcriptome data modality. We identified an importance-ranked list of genes separating the two patient groups, resulting in the potential novel therapeutic targets.

Identification of therapeutic targets presented via HLA-I & -II molecules

Our ARDentify platform enables the precise identification of various peptides presented on the cell surface via HLA molecules. Together with our client, we have selected 35 therapy targets, and for 29 of them, we have isolated T-cells that recognize them.

Small Molecules

PhenAID bridges the gap between Cell Imaging and small molecule design

This solution enables the identification of small molecule drug candidates. It performs a variety of predictive and generative tasks with easy to configure AI-based pipelines.

Biologics

Address off-target toxicity in cancer immunotherapies long before it happens

The ARDitox platform provides the ability to identify and inspect epitopes that can potentially lead to off-target toxicity, which have already proven fatal in several cases. Together with our client, we were able to identify a cross-reactive epitope 9 amino acids long, of which, 4 differed from the target itself and wouldn't have otherwise been found.

Biomarker discovery

We analyzed multiple heterogeneous datasets from a clinical trial study to discern the combination of markers allowing for the identification of an increased number of responders. In the benchmark test, the Ardigen model achieved the highest log-rank test score. The study was presented at the ASCO conference, together with our business collaboration.

Clinical study analysis and interpretation

We performed a comprehensive analysis of multiomics datasets from cancer patients that underwent the therapy based on an oncolytic virus. The main goal of the study was to indicate potential biomarkers of the response to therapy and the disease progression among manually curated gene categories. We proposed novel immune mechanisms induced by the therapy and identified gene signatures related to the response to treatment.

Data Universe

We identified, acquired, and curated public and proprietary heterogenous datasets. We have interacted with BioBanks requiring an application process as part of the verification step. At Ardigen, we also collected our own datasets from lung, skin and intestine tissues.

Data Engineering Services

Sequence Browser

The goal was to deliver a user-friendly application for the visualization and annotation of protein sequences. Users can browse sequence features (eg. chains, domains, variable regions, liabilities and germline mutations) as well as generate expandable summaries and additional charts.

NGS data processing pipeline automation

Our client uses a third-party service provider to generate next generation sequencing (NGS) data for samples. In the project, we addressed the need to create an automated pipeline to process this sample data in preparation for analysis, with a maximum turnaround time for each sample of 24 hours.

Knowledge graph training hub

Biological public databases and internal research outcomes were combined in the form of a knowledge graph that feeds machine learning model predictions. In order to allow constant improvement of the model, a web application was developed which can provide new data, manage them and train new models, and compare the versions.

Client Satisfaction is Our Top Priority

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What started as a pilot project many years ago turned into a trusted broad collaboration between Ardigen and BI. Ardigen substantially contributed to several of our key projects, enabling us to significantly ramp up the scope of what we can achieve.

Markus Bauer, PhD
Global Computational Biology and Digital Sciences,
Therapeutic Area Oncology at Boehringer Ingelheim

At Atreca, Ardigen has established themselves as a comprehensive, service providing, and multi-disciplined team that manages all aspects of our informatics needs. We have been impressed with their flexibility to grow teams and add new specializations on-demand, and at a reasonable cost.

Gregg Espiritu Santo
Senior Director of Informatics Systems at Atreca

Ardigen has been a trusted partner to Alchemab for several years, helping us to accelerate our key software projects. Ardigen works seamlessly alongside our internal team, and we are always impressed by the quality of the work delivered.

Jake Galson, PhD
CTO at Alchemab

Based on the CSAT Survey 2022 our customers appreciate us for:

Ardigen

High quality of service

Competent and committed staff with research background

Collaborative approach

On-time delivery

Net promoter score:

57%

-100   0   100

Client satisfaction rating: 8.9/10
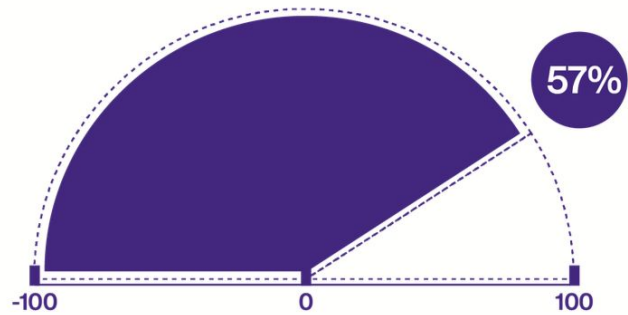
Ardigen is Recognized as a Leader of the Global AI in Drug Discovery Market

Ardigen

BROAD INSTITUTE

JUMP-CP Consortium

As a supporting partner for the Joint Undertaking in Morphological Profiling-Cell Painting (JUMP-CP) Consortium, we are contributing our technology and expertise to strengthen the efforts of the Consortium.

Consortium members include 10 of the most well-known and successful pharmaceutical companies:

Amgen	Biogen	Merck KGaA	Takeda
AstraZeneca	Eisai	Pfizer	
Bayer	Janssen	Servier	

DREAM CHALLENGES

Ardigen achieved second place in the NCI-CPTAC DREAM Proteogenomics Challenge, which gathered over 500 participants.

The task was to predict the abundance of phosphorylated proteins based on selected omie data: CNV, transcriptomics, and mass spectroscopy data of proteins (non-phosphorylated).

As a result of the challenge, we published a research paper in Cell Systems with the challenge organizers and other teams.

300+
Projects

50+
Partners

13
Big Pharmas

8 Years
on the Market

20+
Scientific Publications

25% of PhDs
among Employees

One of the Biggest AI & Bioinformatics Companies in Europe With Interdisciplinary Expert

Ardigen

Field of Data Science

My devotion has always been computing the disease. But to hunt for clinically useful insights, with tsunamis of data around, you need a mix of meticulous data science and a respect for the complexity of cells and molecules. With Ardigen's unique capacity of talent, proven experience, and versatile expertise, I am thrilled to take up those challenges.

Tomasz Jetka, PhD
Excellence Center Director of Data Science

Field of Molecular and Cellular Biology

It is so exciting to be a part of the team transforming the drug discovery process.
I'm very happy to be able to apply my twenty years of experience working in the field of High Content Phenotypic screening to support AI and data science experts building an innovative technology leveraging imaging data.

Magda Otrocka, PhD
Lead Molecular Biologist

Field of Software Engineering

I strive to strengthen our software competencies and continue improving the delivery of projects. This ensures that prototypes prepared by our bioinformaticians and data scientists are going to be turned into stable and very specialized solutions that support our clients at various stages of the drug discovery process.

Piotr Faba
Excellence Center Director of Software Engineering
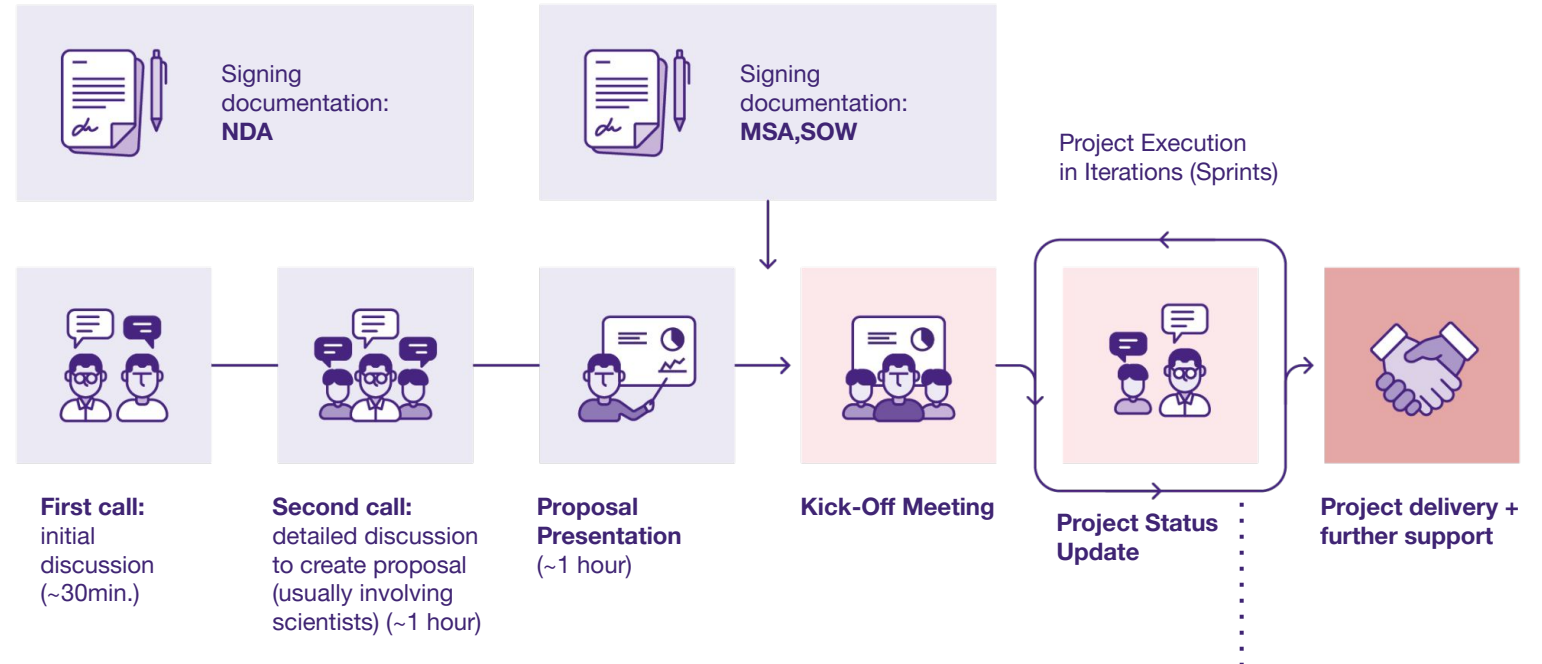
Field of Bioinformatics
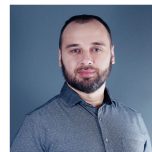
We are at the edge of transformation of the drug discovery process sparked by the application of AI methods to the human genome data. At Ardigen we work to /everage bioinformatics and machine learning to improve traditional pharma workflow.
I am thrilled by solving difficult problems and would be delighted to hear about yours.

Marek Kudła, PhD
Excellence Center Director of Bioinformatics

Ardigen Flexible Engagement Models

Ardigen

How do we work?

- We focus on partnering, have a collaborative attitude, and always aiming to establish long-term relationships with our clients

- Client satisfaction and quality of delivery are our priorities

- We use an agile approach to projects to ensure efficient, transparent, and flexible delivery

- Our delivery team is supported by Excellence Centers and leverages our tools and methodologies to accelerate delivery

Signing documentation: **NDA**

Signing documentation: **MSA,SOW**

Project Execution in Iterations (Sprints)

First call: initial discussion (~30min.)

Second call: detailed discussion to create proposal (usually involving scientists) (~1 hour)

Proposal Presentation (~1 hour)

Kick-Off Meeting

Project Status Update

Project delivery + further support

Agile for Life Sciences Methodology

We work according to Agile methodology, which we have adopted for Life Science projects. This approach accelerates the delivery of business value. Through a process of continuous planning and feedback, we are able to constantly maximize value throughout the research and development processes.

Our Engagement Models

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Time & Material	FTE Based	License Fee
Managed Service	Managed Capacity	Success Fee

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LL-C (Certification)