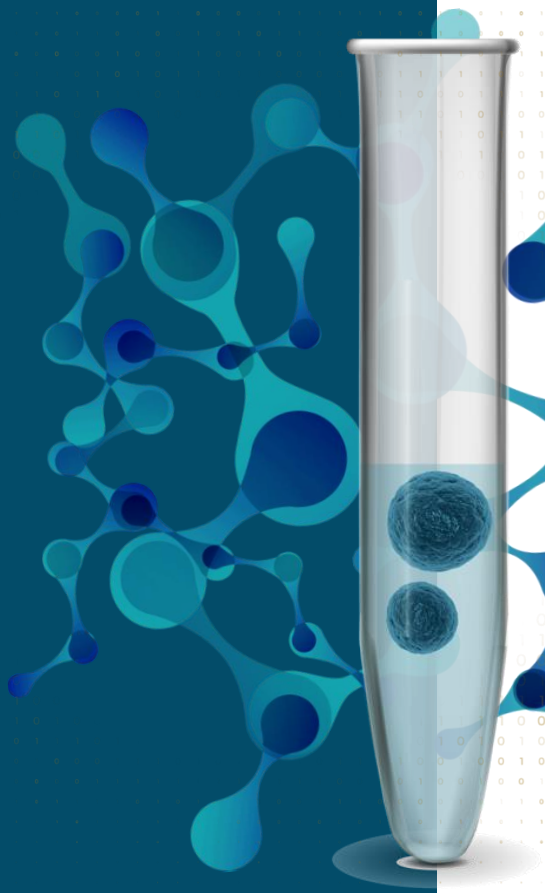
THE NAVIGATING SYSTEM OF GENETIC NETWORKS



VIDIUM

SYSTEMS BIOLOGY SOLUTIONS

MASTERING CELL FATE

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THE UNMET NEED

AI offers great tools to accelerate drug design, identify biomarker or manage the huge resource of knowledge in literature. However, it fails to find novel targets for first-in-class development, to unveil resistance mechanisms or to explain the causes of variability of clinical trials outcomes.

Thus, pharma industry still needs to accelerate and de-risk the development for innovative, efficient and safe treatments. The biggest unmet need is then to find an alternative to "pure AI" approaches to better understand and master complex cellular processes to control the entire R&D process.

WHO WE ARE

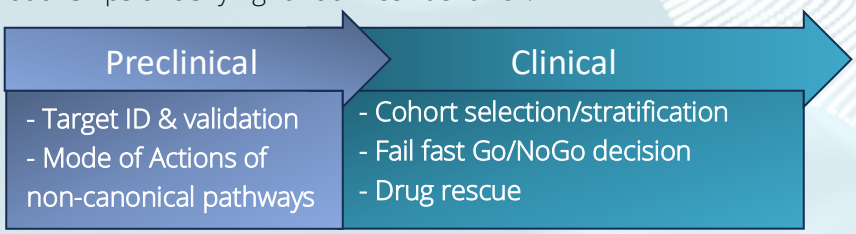
Founded in January 2019, Vidium was born from the merge of 2 visions:

The first vision is transposing to therapeutic development the successful recipe for mastering complexity in aeronautics: an integrated transdisciplinary approach with systematic use of mechanistic "digital twins". Aircraft simulators allow "silo breaking" at every stage of aircraft development: prototyping, development, testing, certification, training and commercial operation. The second vision is the revolutionary probabilistic vision of cellular processes in opposition to the fully deterministic vision.

Based on this dual vision, Vidium introduces a groundbreaking technology that enables the control and mastery of cellular genetic expression, accelerating and de-risking the development of innovative treatments.

OUR VALUE PROPOSITION

In only few months, we guide our clients at every stage of R&D process with our discovery platform combining retro-engineering and Machine Learning applied to single cell multi-omics data to model and validate the key genetic relationships underlying random cell behavior.



Our method has already proven results in challenging health issues like cancer resistance and genetic diseases. We revolutionize drug discovery by shifting the focus from a single gene target to the underlying causal gene regulatory network of the cell.

OUR DIFFERENCE

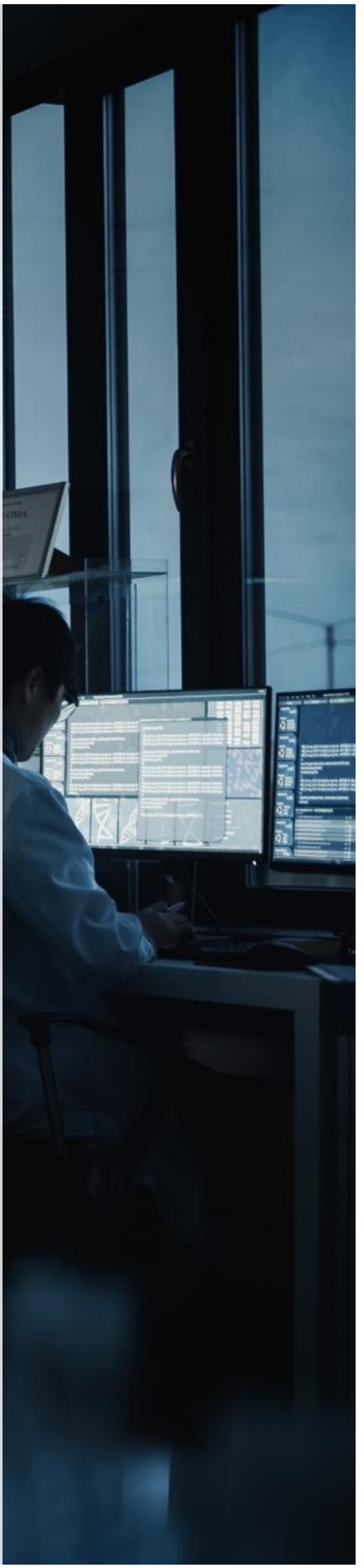
Inspired by aeronautics, we have developed a unique retro-engineering platform that deciphers the dynamic and probabilistic behavior of gene expression, allowing us to control cell fate like never before.

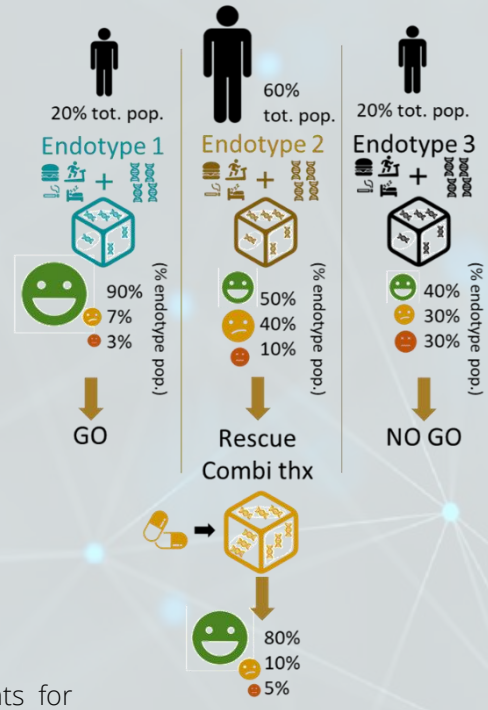
We now understand that cells operate on the basis of probabilistic processes, akin to "biological dice." This is why other competitors struggle to pinpoint meaningful correlations and causations related to diseases. In the probabilistic vision, environmental and genetic factors play a role in shaping these biological dice, essentially determining the likelihood of various outcomes. This probabilistic process explains, for example, the extraordinary plasticity of tumors cells.

Over the past five years at Vidium, we've tailored insilico models and ML tools to the intricacies of probabilistic biology. Our focus is on extracting insights from smart data (i.e. single cell omic data), not just big data, from biological model or clinical trials to unravel the biological dice driving cell fate.

We do this through our unique R.E.A.L. platform, to infer the set of gene interactions that defines the probabilities of dynamic phenotypic states.

In **preclinical phase** the analysis of these insilico networks allow us to find new targets and develop new drugs to **change the probabilities** of those "biological dices", therefore significantly increasing the probability to respond. With our technology we control the probabilities to create more **universal treatments.** We can also unravel mechanism of action of a drug candidate to explain non-canonical pathway involved in resistance or plasticity and potentially to rescue the drug before clinical trials.





In clinical phases, patient single cell omic data are analyzed to infer gene regulatory networks for each patient. A meta-analysis on these genetic networks regarding patient endotype enable patient stratification to take fast and smart decision:

- to continue clinical trials with endotype 1 for example
- to rescue the drug candidate with a combi-therapy for endotype 2
- to simply stop clinical trial for endotype 3

OUR MISSION

Our dedication to improving and creating more specific treatments for regenerative medicine, cancer resistance, immunology, neurodegenerative, and rare diseases has led us to partner with research, biotech, and pharma institutions to scale target discovery and validation massively. We are committed to leading the charge towards unparalleled innovation in target discovery.

OUR PROMISE

- NOVEL VALIDATED RESULTS: 100% of our current projects have resulted in novel and significant outcomes. Our approach to discovering and validating specific functional targets, with a comprehensive understanding of their involvement in gene regulatory networks, ensures unparalleled precision and additional safety in the discovery process. This approach helps avoid non-specific targets and potentially minimizes undesirable residual effects.
- ACCELERATE RESEARCH: We aim to identify and early-validate disease-modifying targets within six to twelve months, a significant reduction compared to the conventional five to ten years. Additionally, we focus on identifying the mechanism of action of novel treatments during the preclinical or clinical phase, further expediting the research process or optimizing clinical trials.
- REDUCTION OF COSTS: Considering the low success rate of alternative approaches, the average cost of drug development from discovery to market stands at $5.5 billion. Notably, approximately 50% of clinical studies fail due to non-specific targets. By mitigating the risks associated with target discovery, we substantially reduce costs from the discovery phase through the preclinical and clinical stages.

How do we work with our partners?

- We work with academics, biotechs and pharma industry involved in R&D of therapeutic treatments with unmet medical needs, and in particular: Rare diseases / Oncology / Immunology in general and in particular cancer resistance mechanisms / Regenerative medicine or to contribute to hyperrealist organoids industrial development

- Requirements: Doing R&D - AND - generate or be able to generate single-cell transcriptomics data

- Our method based on the analysis and predictions of "white boxes" insilico model of GRN is iterative and need to be experimentally validated in a "lab-in-a-loop" approach. We optimize and provided experimental validation protocols

- What we can offer, either in collaborative mode or in pure FFS mode:
  - Analysis and integration of multi-omics data in single cells
  - Identification and validation of targets
  - Identification of mechanisms of action and signaling pathways
  - Identification of biomarkers for precision medicine
  - Insilico safety validation: check that genes interactions involved in the therapy are specific to the targeted organ
  - Design of "killer" experiments to validate or fine tune insilico model predictions
  - Clinical cohort selection/stratification
  - Fail-fast Go/NoGo decision to pursue clinical trial
  - Drug rescue by novel target identification for combi-therapy