# IRIS
# Understanding cell images for decision-making at the speed of light

## In a nutshell

Imagine a world, where cancer treatments can be identified, by just 'looking' at a cancer cell. Where the decision about the optimal treatment can be made rapidly and with confidence. Where time-consuming and expensive molecular analysis can be foregone, because we are finally able to literally see how an immune cell 'feels' or whether a cell is malicious.
The current state of the art to define cellular functions and aid diagnostics is to obtain the molecular profile per cell, as it is impossible to determine cell function from imaging alone. Unfortunately, for available technologies the molecular profile is physically detached from imaging, making it impossible to understand images at scale. Providing an instrument that combines the molecular profile, aka the 'curriculum vitae' of cell, with its distinct physiological features, will be an enabling technology to understand what we see in the cell image space.
With our in-house developed Integrated Robotic Imaging and Sequencing (IRIS) instrument we are working towards finally understanding the cell image space. We combine imaging with molecular profiling on a per cell basis at high throughput. IRIS is therefore the crucial technology platform for the development of artificial intelligence approaches that rely on detailed understanding of cell images; the requirement to revolutionize precision diagnostics, cell production for therapies and antibodies.

## Why is our technology important?

Artificial intelligence (AI) models are aiding decision-making processes across the *medtech* and *biotech* spheres. Despite vast progress in the realm of single cell molecular profiling, none of these powerful methodologies are aiding routine diagnostics due to their high costs and time-consuming acquisition. Also, all molecular profiling technologies are end-point measurement, thereby prohibiting downstream utilization of cells with sought after features, such as antibody production. Overall, the technological limitations to combine the strengths of in-depth molecular understanding together with imaging have severely hampered the development of AI models that enable decision-making on a per cell basis. For example, straightforward tasks such as distinguishing a cancer cell from an immune cell in diagnostics or identifying high-producing cells for therapeutic antibody production are currently not possible.
Our technology platform links both cell imaging and molecular modalities, physically for the same cell. Our proprietary microfluidic chip-in-lab technology asserts deterministic handling of single cells. Thereby, we combine high-resolution imaging and highly efficient and sensitive molecular profiling on a per cell basis. We therefore provide the only technological solution to establish the direct connection between cell morphology and molecular profiling at scale.
We now routinely leverage our technology platform together with our clinical and industrial partners to develop AI models that discern malignancies, optimize industrial antibody production and aid the development of cells and tissues for therapy.

## The benefits of our solution

- Unprecedented link between cell image and molecular profile per cell.
- Large-scale data pivotal for AI applications relying on cell imaging.
- High-precision AI models guiding decision-making in cell-based diagnostics and antibody production.

## Keywords

Antibody production, Liquid biopsy diagnostics, Precision fermentation & Artificial meat

## Founding Team

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Get in touch
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