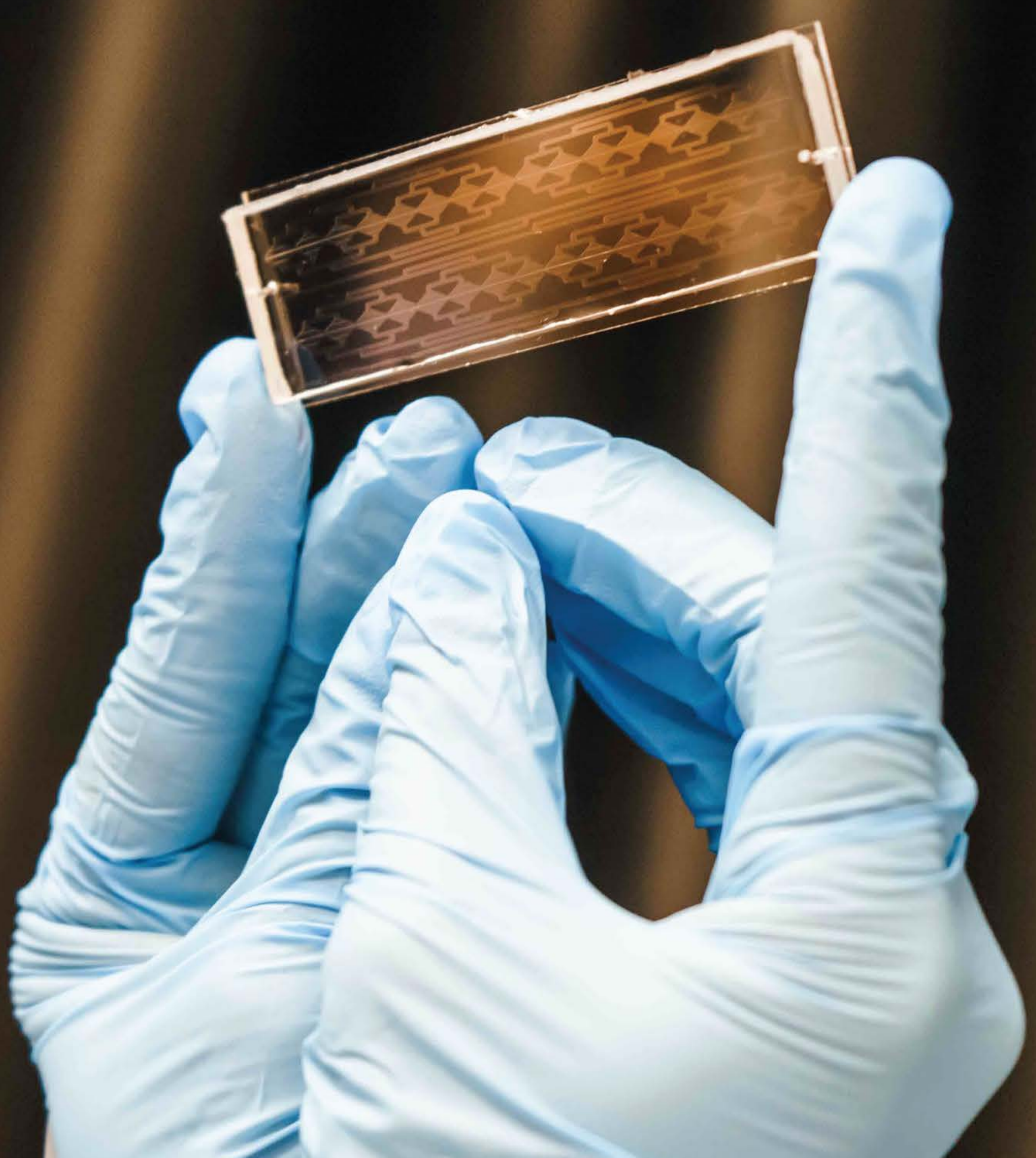


Microfluidics for liquid biopsy



Continuous, reliable and real-time information

Liquid biopsy is a minimally invasive and painless method that provides continuous, reliable and real-time information on the tumour progression, overcoming the limitations of the clinical procedures.

Through the analysis of circulating biomarkers, being circulating tumour cells (CTCs), extracellular vesicles (EVs) and circulating tumour DNA (ctDNA), liquid biopsy has the potential to access genetic and phenotypic information about the primary and secondary tumour, providing non-invasive and real-time information about cancer progression.

The analysis of circulating biomarkers permits to further understand tumour cell communication and to study some markers related to tumour microenvironment. Also, EVs and ctDNA can provide reliable information about cancer specific mutations, while the presence of CTCs in cancer patients has been found to correlate with tumour burden. Due to these advantages, the liquid biopsy field has grown in the last decade as a promising tool to investigate tumour heterogeneity, dynamics and progression. Nonetheless, their technical isolation remains a challenge and requires a specific and independent blood sample for each entity to obtain reliable and efficient isolation.

At INL, we have developed a series of microfluidic devices that are able to very efficiently isolate these circulating biomarkers, displaying high efficiencies of isolation, while ensuring miniaturization and automation through microfluidics. Furthermore, our microfluidic devices are designed in such a way that further downstream analyses (i.e. fluorescence, molecular analyses, -omics) can be performed with minimal sample exchange.

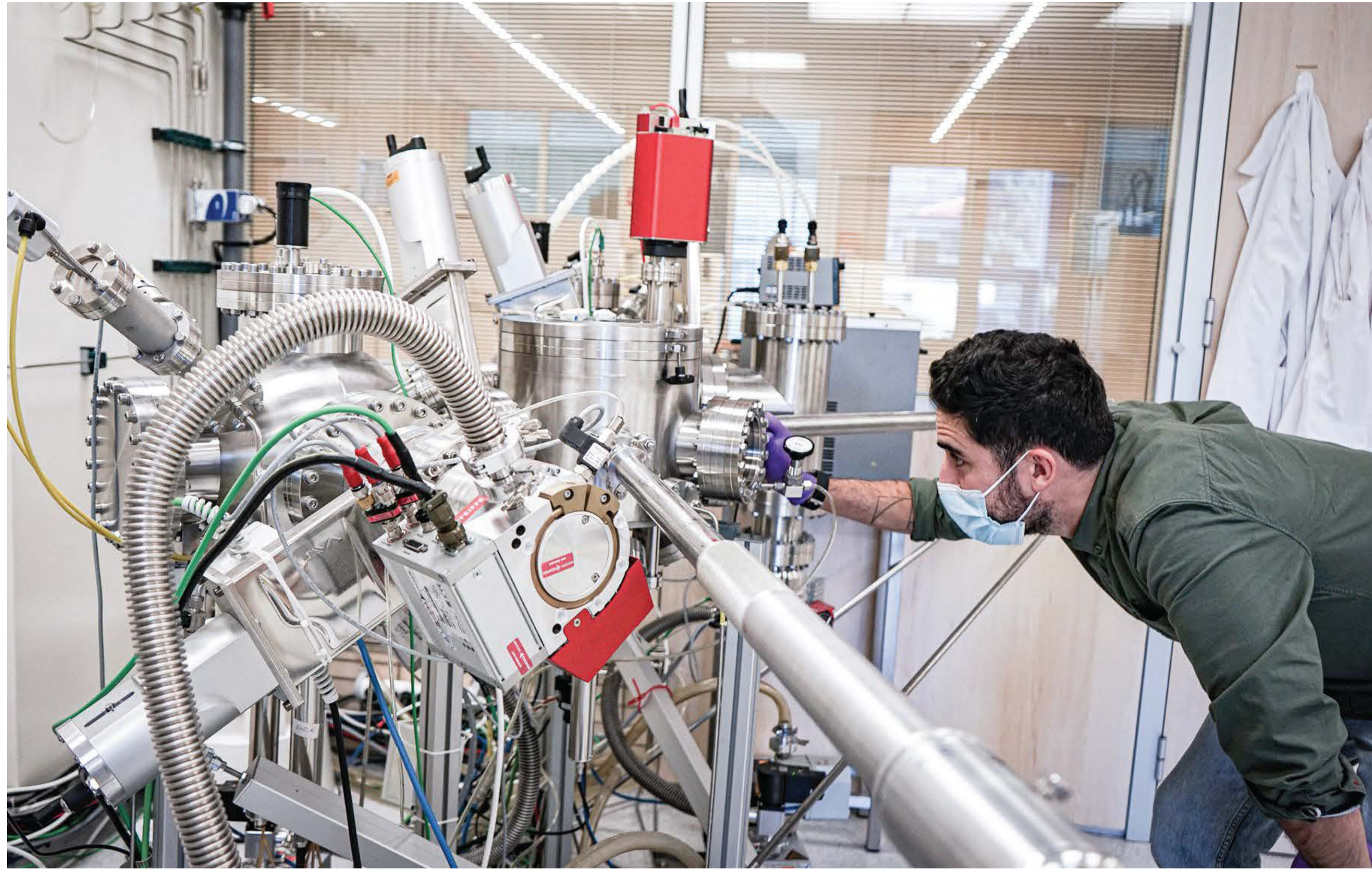
TRL
5-6

+ Suggested applications

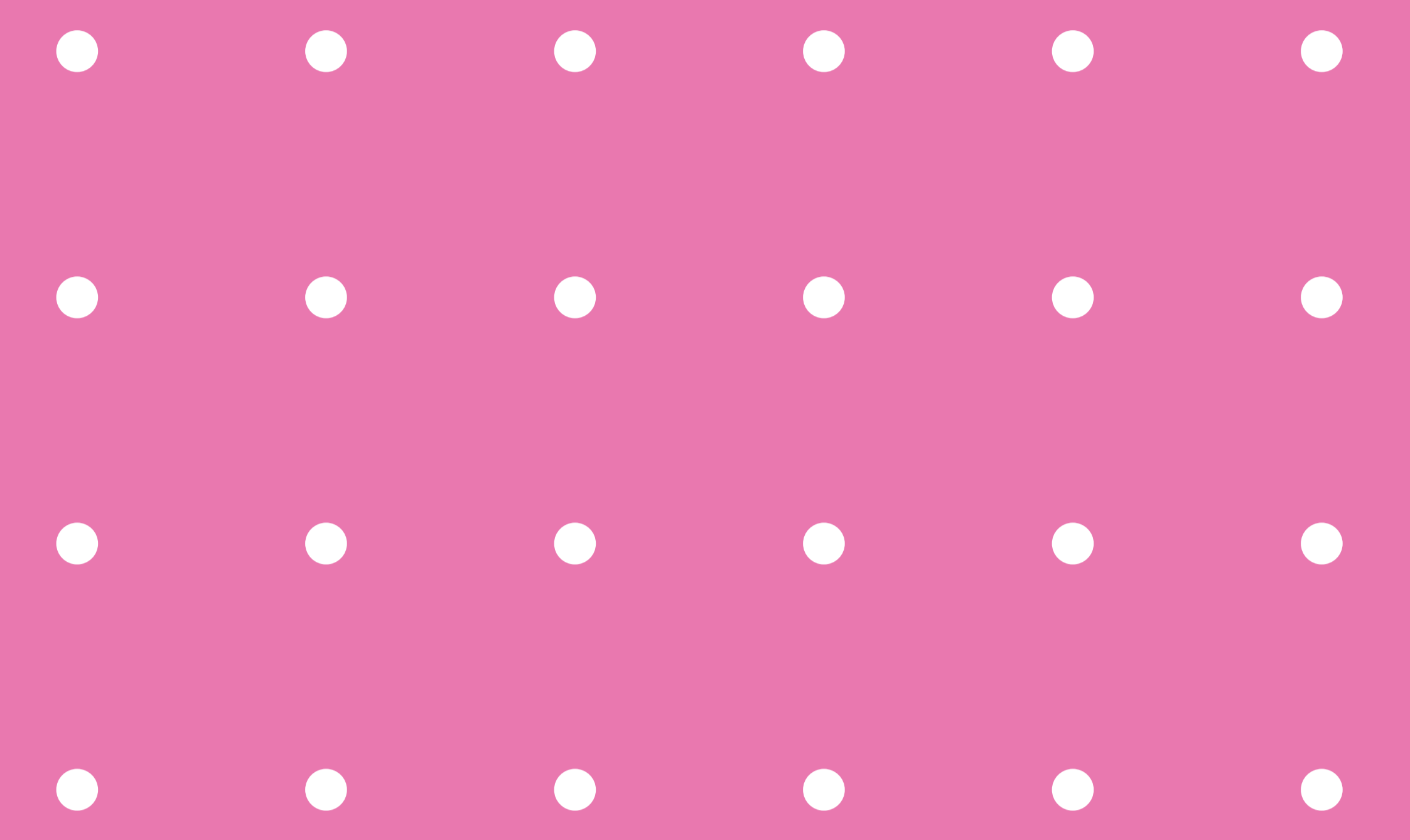
Personalised medicine
Therapy monitoring
Progression monitoring
Recurrence surveillance
Companion diagnostics
Patient stratification

+ Features

No sample pre-processing
Miniaturised and automated
Non-invasive & early detection
Access to viable biological material
Enables functional and -omics analyses



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Shaping the future together in Clean Energy, Food, Health, Smart Digital NanoSystems, Sustainable Environment and Advanced Materials & Computing.

01 SCIENCE

Discover our areas of research and expertise, where we dive into nanoscience and intermix various disciplines to transform it into nanotechnology.

02 TECHNOLOGY

By nourishing on our multiple disciplines in house and with partners, we develop and deploy solutions to the market.

03 SERVICES

INL has state-of-the-art scientific equipment which can be used by internal and external stakeholders within the research, technology, and innovation fabric. You can access this open facility with expert support, either remotely or in-person, for full-service or for independent use after initial in-house training.

04 SOCIETY

INL is committed to disseminating to all audiences the nanotechnology concepts, to bring society closer to our scientific developments. Visit our website and explore our activities and events.

For more information:



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