enhance diagnosis & treatment decisions through tissue mechanics

Explore how Artidis® technology will transform clinical workflows and decision making

artidis

powering personalized, adaptive cancer care **through mechanomics™**

Cells and tissues communicate not only through biochemical signals but also through their physical and mechanical properties. Mechanobiology provides an additional perspective on how diseases develop and progress by examining features such as tissue stiffness and cellular resilience.

Atomic force microscopy (AFM)-based measurements allow researchers to study the nanomechanical changes in biopsy samples, offering insights that can support future diagnostic and treatment-planning approaches once clinically validated. As research advances, understanding tissue mechanics may become an important complement to clinical decision-making.

Omics 5.0: Mechanical phenotyping at the nanoscale

The mechanical properties of cells and tissues play a fundamental role in every aspect of biology. With the power of nanomechanical phenotyping—powered by atomic force microscopy (AFM)—you can combine the mechanical measurements of cells and tissues with genomic, transcriptomic, and metabolomic information. Compatible with a range of cellular and tissue research tools, nanomechanical profiling can help you create a more complete omics profile than ever before.

Clinical study overview

breast · lung · liver · pancreas · colorectal

sarcoma · bladder · brain · appendiceal

→ DIAGNOSTICS

A rapid, label-free nanomechanical readout delivers diagnostic insights from biopsies within hours. This approach showed 95% sensitivity in breast cancer diagnosis in Switzerland's largest cancer trial (the Nano Study) and is now being validated globally in the 2,700-patient ANGEL study.

→ IMMUNOTHERAPY

Incorporating the radiotherapy component, nanomechanical profiling is being evaluated to identify patients more likely to respond to immunotherapy. Ongoing trials at MD Anderson Cancer Center are assessing how these signatures correlate with immune activation and treatment outcomes, and how they may complement radiotherapy response assessment, supporting more precise therapy selection.

→ RADIATION THERAPY

Pre- and post-radiation measurements of the physical properties of tumor cells and the tumor microenvironment may offer new predictive information about radiation sensitivity. Clinical programs at MD Anderson are investigating these correlations to support more personalized radiation planning.

→ CHEMOTHERAPY

Distinct nanomechanical signatures observed across various cancer types may serve as functional biomarkers to anticipate chemotherapy responsiveness. Ongoing clinical trials are assessing how tumor biomechanical profiles integrate with existing clinical and molecular parameters to refine risk stratification and guide treatment decisions. Incorporating these measurements into routine workflows could enhance therapy selection, minimize exposure to ineffective regimens, and ultimately reduce treatment-related toxicities.

→ RECONSTRUCTION

Quantitative assessment of mechanical tissue integrity and the healing process is being investigated as a tool to guide reconstructive planning after oncologic surgery in the EMPOwER study at MD Anderson. This data may help surgeons select the most appropriate reconstructive strategy and optimize postoperative outcomes.

→ PROOF OF CONCEPT STUDIES

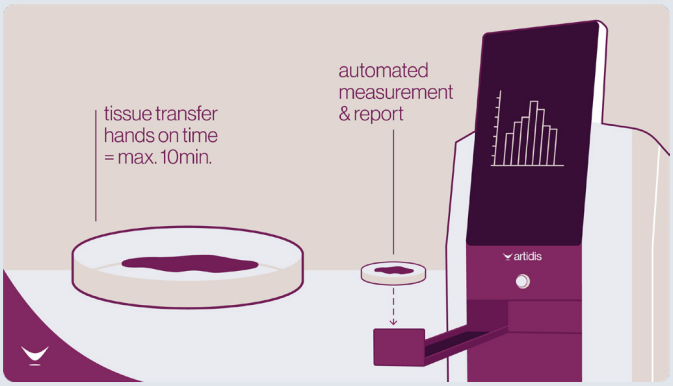
Proof-of-concept studies across multiple tumor types (including liver, pancreatic, bladder, inflammatory breast cancer, sarcoma, colorectal, appendiceal, and brain tumors) are demonstrating the feasibility of real-time nanomechanical tissue analysis. Ongoing programs are evaluating analytical and clinical validity (including diagnostic accuracy and predictive value), and workflow integration, laying out the groundwork for broader clinical adoption and future pivotal trials.

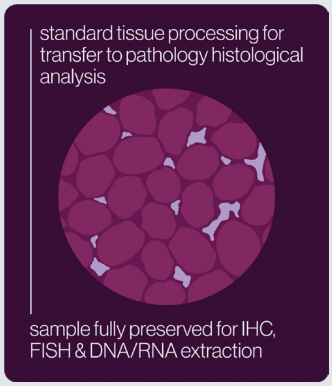
For more information about our ongoing clinical trials, please visit ClinicalTrials.gov or refer to our individual clinical study flyers.

seamless integration within radiology workflow & immediate analysis

Standard of care biopsy procedure

At the point of the first biopsy, Artidis® fully integrates into the standard radiology workflow prior to any downstream analysis making direct impact at the earliest stages of the patient journey.





Radiology / Biopsy suite: Artidis® performed and completed near-patient

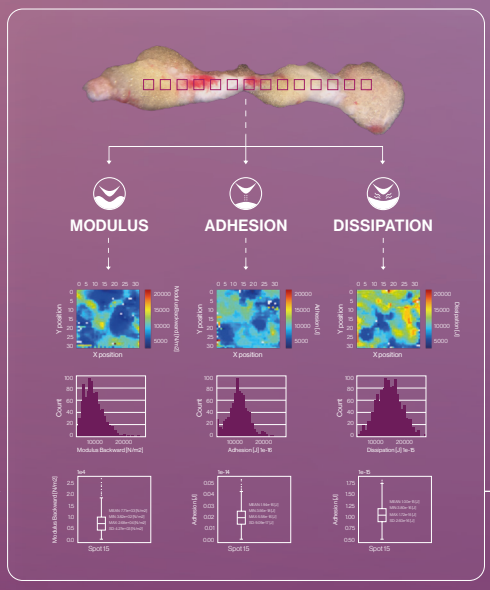
- Tissue stays within the radiology suite.
- Tissue processing is fully integrated into standard radiologist workflow.
- Artidis® processing preserves biopsy integrity, ensuring the tissue remains fully intact for subsequent pathology analyses (IHC and DNA extraction).

how does **nanomechanical phenotyping** work?

Artidis® measurements are converted into nanomechanical signatures of different tissue characteristics

ART-1® takes on average **10,000 AFM measurements / force curves** of the specimen at designated spots

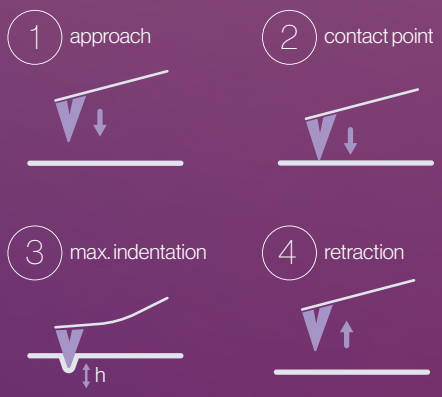
MEASUREMENTS OUTPUTS
Independent signal arrays from each measurement spot



NEO-Match®

CANCER CELL DEFORMABILITY
Imminent aggressiveness

TUMOR MICRO ENVIRONMENT MECHANICAL HETEROGENEITY
Permeability to treatment



revolutionizing **mechanomics**™ workflow

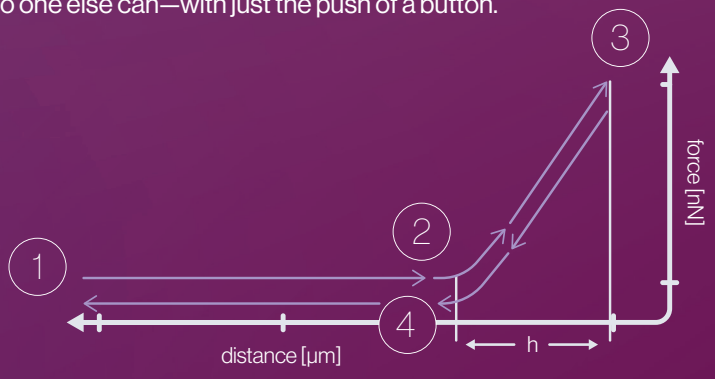
Next-generation 'omics discoveries require next-generation instrumentation. The ART-1® is the first fully autonomous atomic force microscope, offering fast-start, highly reliable and reproducible nanoscale measurements on a range of tissues, gels, and materials. Developed, validated, and produced according to the quality medical device standard (ISO 13485), Artidis® allows you to measure what no one else can—with just the push of a button.

MODULUS
Determining the elasticity/stiffness of the sample.

ADHESION
Determining the stickiness of the sample.

DISSIPATION
Determining the viscosity of the sample.

TOPOGRAPHY
Determining the surface roughness and texture of the sample.



Artidis® uses a 20-nanometer tip to record the exact amount of indentation measurements across the sample surface, enabling quantification of local mechanical properties—including Young's modulus, dissipation, adhesion, and topography—at the molecular level. Fully automated measurements are performed in a closed system under physiological conditions and in a non-destructive manner, preserving your samples for additional assays.

ai-enabled insights

The ART-1® device is connected to **ArtidisNet, Artidis® AI-driven cloud platform**, for secure data storage and comprehensive data analytics.

KEY FEATURES INCLUDE:

- A cockpit-style visualization environment for structured data, supporting clear, organized review of multimodal research information.
- The ability to view ART-1® specimen-profiling images alongside nanomechanical measurements and to compare them with digital pathology, or other imaging modalities.
- Interoperability with open platforms to support secure data exchange and integration within your laboratory's digital ecosystem.
- Advanced analytics to assist in the exploration and interpretation of complex datasets.
- ISO 27001-certified infrastructure, ensuring secure handling and storage of sensitive research and patient-related data.


Cloud platform


AI-enabled


Precision Medicine


Digital Pathology Support


Digital Radiology Support


Clinical Trial Management Suite


Interoperability (HL7 Standard)

1

Identify early-stage patients

Current diagnostic methods lack same-day readouts. Artidis® delivers real-time, bedside analysis which massively impacts 5-year survival rates for solid tumors.

2

Stratify early-stage patients

Conventional diagnostics miss red flags like e.g. imminent aggressiveness. Artidis® identifies risk for metastasis, guiding urgent intervention, because time lost can mean life lost.

3

Treat appropriately early-stage patients

The right first-line therapy is critical; it works best when matched to patient-specific biology. Biological fingerprints can guide optimal preoperative treatment assignment, improving overall outcomes.

we work with you to tailor **new clinical protocols**

Get started with Artidis®

Partner with us to explore how nanomechanical phenotyping can support your clinical research. Connect with us to discuss collaborative study opportunities and learn how this emerging technology can be integrated into your clinical investigation programs.

Who we are

Artidis® is a pioneering clinical stage health technology company that aims to set the gold standard in tissue analysis and therapy optimization. By combining its nanotechnology platform for rapid tissue analysis with a holistic data solution, Artidis® accelerates drug discovery, tissue engineering, and personalized treatment. Artidis® focuses its research and development efforts on solid tumors to enhance responses to chemo, immuno, and cell therapies, driving precision in cancer care. The company has offices in Basel (Switzerland), Barcelona (Spain), Houston (Texas, US) and Zagreb (Croatia).

Our partners

MD Anderson Cancer Center · Universitätsspital Basel · imi · Clínic Barcelona · Baylor College of Medicine · MOFFITT CANCER CENTER · St Claraspital In besten Händen. · Vall d'Hebron Barcelona Campus Hospitalari · UT Southwestern Medical Center

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GET IN TOUCH WITH US!
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