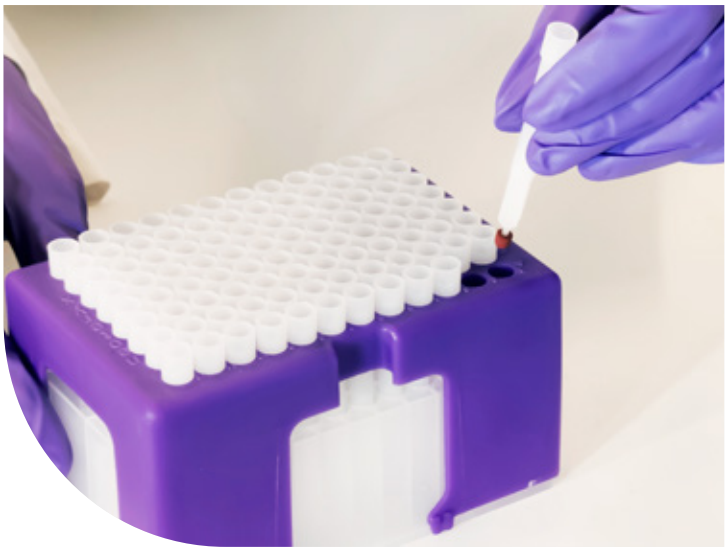
TRAJAN



Specimen collection without barriers

With Trajan's Neoteryx branded portfolio, you can collect precise samples more easily, more often and at lower cost.

www.neoteryx.com

neoteryx by TRAJAN

Scientific measurement is important to human wellbeing

Better samples. Better decisions. Better outcomes.

In clinical environments, every decision you make starts with a biological sample and the quality of that sample defines the quality of the insight.

Precision, clinical-grade sampling... Anywhere!

Microsampling transforms how and where you collect blood and skin specimens. By reducing invasiveness, simplifying workflows, and enabling remote collection across the field, lab, or home, you can capture richer, real-world data, without compromising analytical integrity.

This accessible, high-quality data enables you to establish personalized baselines and monitor change over time helping unlock the future of more predictive, preventative, and personalized care.

Your trusted microsampling solutions

Neoteryx is Trajan's dedicated microsampling portfolio – bringing you innovative, proven blood and skin collection technologies designed for accuracy, portability, and affordability to meet the demands of modern clinical research and care.

Because when sampling is simple, reliable, and scalable, you don't just collect data – you unlock better science, better decisions, and better outcomes.

What is microsampling?

Microsampling is the process of collecting a small volume of biological fluid or tissue, often just a few microliters or thousands of cells, compared to the larger amounts obtained in standard clinical practice. This innovative approach is reshaping how biological samples are collected, offering a simpler, less invasive, and more flexible alternative to conventional methods.

Why it's useful

- **Improves patient comfort and compliance**
  Easier collection and smaller samples improve the participant's experience
- **Empowers individuals**
  Minimize clinic visits with easy home or caregiver-assisted collection
- **Increases convenience**
  Fast, clean, and simple sample collection designed for effortless use
- **Enables remote and decentralized testing**
  Ship samples directly to the lab, no cold-chain logistics needed
- **Expands clinical flexibility**
  Enable precise, anytime-anywhere collection to optimize drug monitoring and study schedules

Then

- ~5-7 mL blood sampling
- 3-6 mm skin biopsy

Multiple surgical tools and tubes often needed

Now

- <150 µL blood sampling (e.g. 4 x 30 µL)
- Microbiopsy of a thousands of cells

What powers your microsampling?

At Trajan, we give you the tools to simplify and improve how you collect biological samples. Our core microsampling technologies – VAMS® and microbiopsy™ – are designed to make sampling easier, enable longitudinal tracking, and enhance analytical precision.

Today, you can access these technologies in the Mitra® and Harpera™ devices, putting next-generation specimen collection directly in your hands.

The technologies behind your samples

VAMS®

Trajan's proprietary VAMS® technology puts volumetric absorptive microsampling directly in your hands through the Mitra® device. The absorptive tip, made from a porous polymer "precision sponge," quickly and consistently absorbs a defined volume of biological fluid. Once collected, the sample dries, stabilizing most analytes for easier handling.

Available in 10, 20, or 30 µL, VAMS® helps you:

- Collect precise, reproducible samples
- Simplify workflows from collection to analysis
- Reduce logistics cost and complexity with stable, dry samples
- Enable decentralized, longitudinal clinical research and care

Microbiopsy™

Trajan's microbiopsy technology lets you perform minimally invasive, suture-free, and scarless skin sampling with consistent, high-quality results. Available via the Harpera™ device, it reduces patient discomfort while enabling precise tissue collection for dermatological research and clinical applications.

Key benefits for you:

- Perform scarless, precise skin microbiopsy procedures
- Minimize patient discomfort and recovery time
- Expand research and diagnostic potential in skin biology and disease
- Enable molecular dermatology approaches

Microsampling has endless applications

Where it's used

Our tools make it easier for you to collect, ship, and process high-quality biological samples – wherever your work takes you – while reducing patient burden, lowering costs, and unlocking richer, real-world data for smarter decisions.

Preclinical research and vet diagnostics

Collect high-quality samples while reducing stress on animals – accelerating drug discovery and improving animal welfare.

- Early biomarker identification and validation
- Longitudinal PK/PD and toxicology studies
- Routine health monitoring and field studies

Pharmaceutical drug clinical trials

Ease participant burden, improve recruitment, and gain richer insights on drug efficacy and safety to accelerate drugs to market.

- Longitudinal PK/PD insights
- Decentralized, global clinical trials
- Remotely market surveillance and companion diagnostics

Clinical and translational research

Capture rich data in longitudinal, decentralized studies to translate discoveries from bench to bedside faster.

- Biomarker discovery & validation
- Omics (proteomics, metabolomics, lipidomics)
- Disease progression and mechanistic studies

Clinical diagnostics

Ease patient burden, broaden access, and collect reliable, cold-chain free biological specimens efficiently.

- Laboratory Developed Tests (LDTs) in CLIA-certified labs
- TDM, clinical biomarkers, toxicology panels, etc.
- Compatible with liquid handlers, mass spec, immunoassays, clinical analyzers, NGS, and more

Consumer health and product goods

Track wellness, nutrition, and lifestyle biomarkers conveniently and consistently for personalized insights.

- Nutritional monitoring & wellness tracking
- Personalized biomarker baselines and insights
- Lifestyle biomonitoring and at-home testing

Dermatological and skin research

Collect precise, scarless skin samples with minimal patient discomfort.

- Biomarker analysis for skin diseases
- Treatment response monitoring
- Longitudinal dermatology studies

Other applications

- Anti-doping
- Biobanking and research repositories
- Forensics
- Occupational safety
- Reliable, precise alternative to DBS Cards

Apply personalized sampling solutions to advance research and healthcare with Trajan Microsampling solutions

Trusted, adopted, delivered

Trajan's Neoteryx® branded microsampling portfolio – including the Mitra® and Harpera™ devices – is trusted by researchers and clinicians worldwide.

~99%

sample collection acceptance rates by end-users

82%

of people surveyed prefer our microsampling solutions vs. traditional sampling methods

>900

labs are using Trajan products

1,000

published materials that demonstrate the scientific accuracy and validity of our microsampling products

78

countries supplied with our microsampling products

8

Chosen by leaders in science

Join the microsampling movement embraced by top organizations around the world.

An ocean of data from such a tiny sample

Over the past 10 years, Trajan's microsampling technologies have been widely adopted across the scientific community, with over **1,000 publications** and **15,000+ citations**. Their proven performance is driving high-quality data and meaningful insights in pharmaceutical, biomedical, clinical, and translational research.

High-impact journals

- Bioanalysis
- Journal of Pharmaceutical and Biomedical Analysis
- Therapeutic Drug Monitoring
- Analytica Chimica Acta
- Clinical Chemistry and Laboratory Medicine

Leading research areas

- Biomedical and Clinical Sciences
- Chemical Sciences
- Analytical Chemistry
- Pharmacology and Pharmaceutical Sciences

SCAN here to access our Microsampling Publications Library

The new standard in multi-analyte analysis

With Mitra® and Harpera™ devices, you can expand the scope of your bioanalysis by reliably detecting a wide range of analytes from a single microsample. By standardizing micro-scale collection of blood, interstitial fluid, or tissue, you remove volume constraints and simplify workflows—enabling precise, high-integrity data across applications without the need for invasive, high-volume sampling.

Illicit drugs

Cathinones, cannabinoids, and more

Therapeutic drugs

Antibiotics, anti-psychotics, anti-epileptics, sedatives, and many more

Proteins and peptides

Antibodies, peptide biomarkers, HbA1c, and more

Immunosuppressants

Tacrolimus, sirolimus, methotrexate, and more

Omics

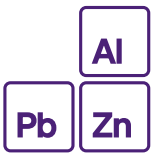
Biomarker detection via proteomics, lipidomics, metabolomics, and more

Vitamins and supplements

Vitamin D3, Folate, and more

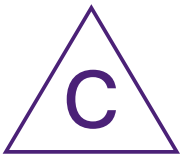
Hormones and steroids

Estrogens, anabolic steroids, and more



Metal exposure and environmental contaminants

Lead, iron, prothesis metals, PFAS and more



Cytotoxins

Saxitoxin, sulfur mustard albumin adducts, and more

DNA and RNA

miRNA, SNPSs, and more

The gold standard in remote specimen collection

Mitra®

Powered by patented VAMS® technology, the Mitra Microsampling Device streamlines biological specimen collection, transport, and preparation.

It delivers precise, reliable dried microsamples compatible with a wide range of downstream applications. Its performance is validated by thousands of scientific publications and millions of devices used in the field, making it the most trusted solution for remote sampling worldwide.

What is Mitra®?

Native barcoding to manage tracking and chain of custody

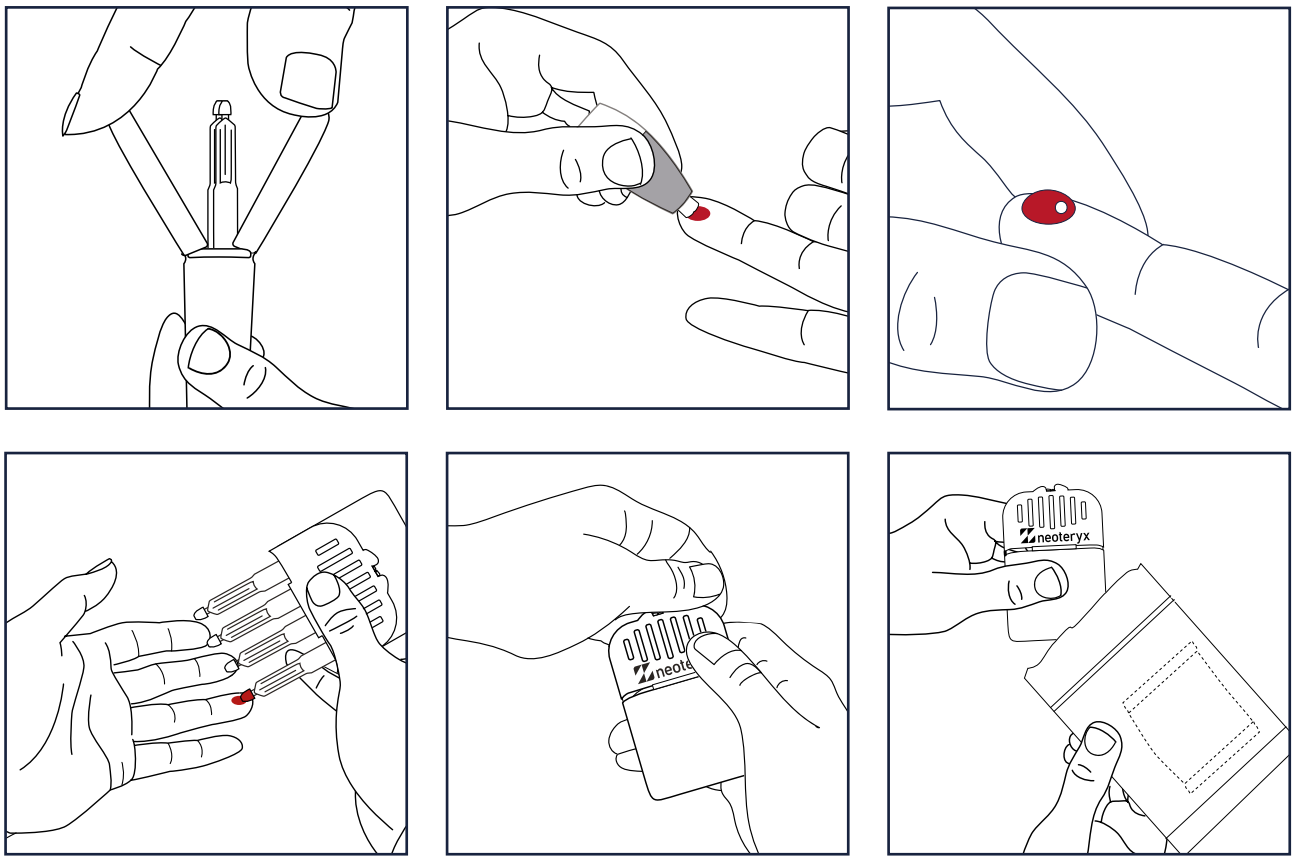
Packaged in a resealable specimen bag containing desiccants for safely shipping samples

User friendly format suited for unassisted remote collection

Instructions for use and videos in various languages

Various configurations (e.g. tip sizes, # of samplers) and formats (specimen bag, kits, etc.) to meet diverse end-user and analytical needs.

Example of simple steps to collect a biological sample



Key benefits of using the Mitra® device

Reliable

Quantitative sampling with pipette-like precision (RSD ≤ 5%). VAMS eliminates traditional blood hematocrit biases and results in extremely low in-lab sample rejection rates. No glue used in assembly, no matrix interferences.

Versatile

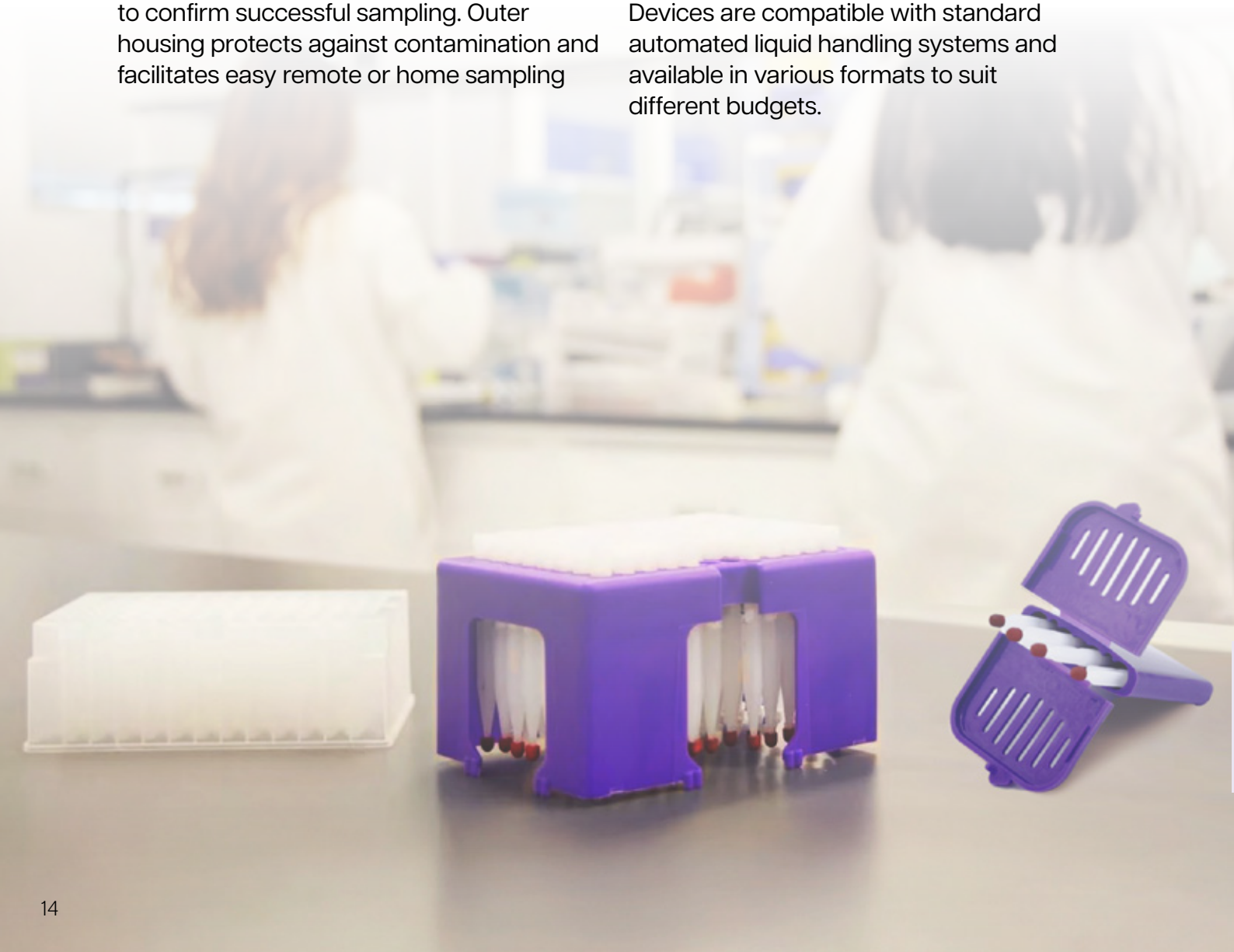
Collect biological fluids—blood, plasma, urine, saliva, and even tears—efficiently from humans and animals (e.g., finger, arm, knee, tail, etc.) or containers. Manual to fully automated workflows are available.

User-friendly

99% sample acceptance rate validated by studies. VAMS tip acts as a fill indicator to confirm successful sampling. Outer housing protects against contamination and facilitates easy remote or home sampling

Cost-effective

Eliminate phlebotomy, couriers, and cold-chain shipping / storage requirements. Devices are compatible with standard automated liquid handling systems and available in various formats to suit different budgets.



Configure it your way – Mitra adapts to your application

- **7 Configurations:** 3 Sampler tip sizes (10, 20, or 30 µL) on Dual (2), Quad (4) or 96 samplers
- **3 Formats:** Specimen bag, Microsample collection kit, 96-autorack
- **Regulatory status:**
  - Mitra device | 96-autorack (CE-IVD)
  - Microsample collection kit (CE-MD)
  - All (available as RUO)

Specimen bag

Build your own kits or sample large cohorts remotely

- 30x Mitra Devices (x2 or x4 samplers) in Specimen Bag with Desiccant
- Sample ID Barcodes
- 1x IFU

Microsample collection kit

All-in-one solution for remote specimen collection

- 1x Mitra Device (x2 or x4 samplers) in Specimen Bag with Desiccant
- Sample ID Barcode
- Lancet (x2 or x4)
- Gauze (x1 or x2)
- Bandage (x2 or x4)
- 1x Plastic Shipping Envelope
- 1x IFU

96-Autorack

For the lab – accession and process multiple Mitra samples at once; easy method development

- 1x 96-Autorack (alone or x96 samplers)
- Sample ID Barcode
- 1x Collection Plate
- 1x IFU

Our Instructions For Use are available in English, German, Danish, Spanish, French, Italian, Dutch, Norwegian, Polish, Japanese, Vietnamese and Portuguese.

Need a different language?

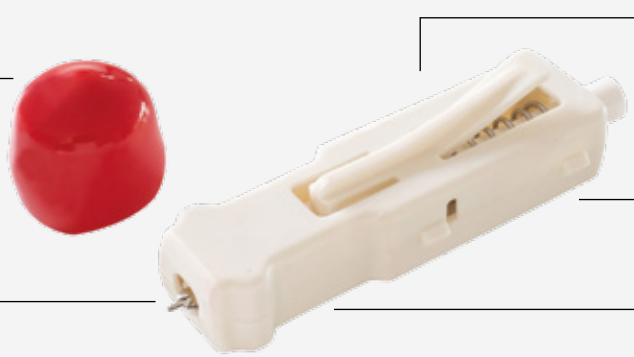
No problem – just reach out to us at neo.support@trajanscimed.com, and we'll be happy to assist!

Harpera™ Microbiopsy™ Punch

Minimally invasive. Suture-free. Scarless

Skin sampling shouldn't be a barrier to research or patient care. The Harpera™ Microbiopsy Punch offers a revolutionary, suture-free approach to tissue collection that is virtually scarless. By prioritizing precision and patient comfort, Harpera enables consistent, high-quality sampling without the traditional downtime. This breakthrough technology is opening new frontiers in dermatology—making it easier than ever to explore the complexities of skin biology and disease.

What is Harpera™ Microbiopsy™ Punch?



Safety cap and insert for enhanced protection during handling and disposal

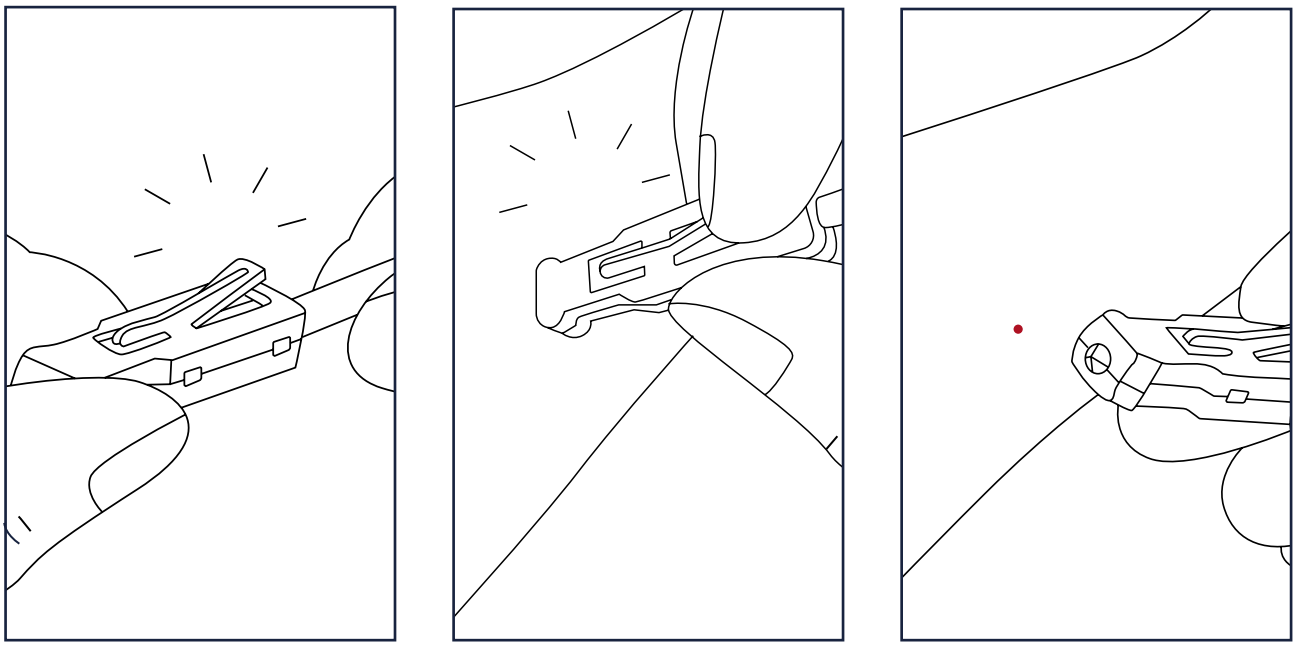
Microbiopsy collector crafted from precision laser-cut stainless steel

Ergonomic handle. Lightweight, for effortless handling

Tyvek sterile pouch individually wrapped

Packaged conveniently in dispensing box of 20 units

Example of simple steps to collect a skin microbiopsy specimen



Key benefits of using the Harpera™ Microbiopsy Punch

A better patient experience

Perform precise, scarless procedures that eliminate the need for sutures and significantly reduce recovery time.

Clinical-grade consistency

Achieve high-quality tissue yields with a simplified workflow designed for both research and diagnostic accuracy.

Expanded research reach

Increase participant enrollment and frequency of sampling by removing the discomfort and logistical hurdles of traditional biopsies

Collect thousands of cells from a single microbiopsy punch

- **1 Configuration:** 1.2 mm microbiopsy tip length
- **1 Format:** In dispensing box of 20 units
- **Regulatory status:**
  - Harpera microbiopsy punch (MD) - US only
  - Harpera microbiopsy punch (IUO) - Rest of the world

Harpera microbiopsy punch (dispensing box)

Collect microbiopsy specimen in your dermatology studies

- 20x Harpera microbiopsy punch in individual tywek pouch
- Sterile product
- 1x IFU

Our Instructions For Use (IFUs) are available in various languages such as English, French, German, and Japanese.

Need a different language?

No problem – just reach out to us at neo.support@trajanscimed.com, and we'll be happy to assist!

More than a device
Your partner in precision microsampling

Trajan works alongside you with tailored solutions, expert support, and trusted lab partners to seamlessly turn your samples into meaningful insights.

Tailored precision

Product customization

Every study is unique, and Trajan provides customizable microsampling solutions designed to fit your workflow and protocol. Our tailored approach ensures consistency, compliance, and data quality from the first sample, with:

- Customized kitting and private labeling to align with your study design, protocol, and brand
- Specialized device configurations adapted to your specific sampling and operational needs

Expert guidance

Dedicated technical support

You don't have to implement microsampling alone. Trajan supports you from early concept through clinical execution with expert guidance. Our scientists and engineers work alongside your team to ensure confident adoption and reliable performance.

- Hands-on technical support for method development, complex matrix troubleshooting, and assay optimization
- Training and implementation support for remote collection protocols, led by Trajan scientific and engineering experts

Seamless integration

Laboratory partnerships

The true value of a microsample is unlocked in the lab. We cultivate deep partnerships to streamline your analytical journey and bridge the gap between remote collection and the bench.

- A direct access to our Lab Directory for connecting with global CROs and clinical laboratories that already adopted our microsampling solutions
- Supply of Trajan's automated hardware and analytical tools designed for high-throughput, high-quality laboratory requirements

Microsampling breakthrough from Bologna sets new standard in bioanalysis

Researchers at the University of Bologna have unveiled a series of breakthroughs showcasing how Volumetric Absorptive Microsampling (VAMS®) can transform the way biological samples are collected and analyzed. Led by Professor Laura Mercolini and Dr. Michele Protti, the team demonstrated that a simple fingerprick sample can reliably replace traditional blood draws across multiple fields—including antidoping testing, forensic drug analysis, and therapeutic drug monitoring.

Their studies show that VAMS delivers high analytical accuracy, long-term stability at room temperature, and easy at-home sampling, making it a powerful tool for both scientific research and everyday clinical care. From tracking anabolic steroids to monitoring antipsychotic medications, the University of Bologna's innovations position VAMS as a gamechanging technology that brings laboratorygrade testing closer to athletes, patients, and investigators worldwide.

Major impacts on human health

1. A fingerprick that replaces traditional blood draws

VAMS® enables fast, minimally invasive sample collection anywhere—no needles, no specialized staff—making highquality diagnostics more comfortable and more widely accessible.

2. Strong, proven performance across multiple fields

From detecting anabolic steroids to analyzing synthetic drugs and monitoring antipsychotic medications, VAMS® consistently delivers labgrade accuracy and stability.

3. Designed for the real world—simple storage, easy shipping

Dried samples remain stable for extended periods at room temperature, cutting costs, eliminating coldchain requirements, and enabling global sample transport with ease.

4. Scientific leadership driving global adoption

Under the guidance of Prof. Laura Mercolini and Dr. Michele Protti, the University of Bologna is establishing VAMS® as a next generation standard for antidoping agencies, forensic laboratories, and clinical medicine.

Michele Protti
Associate Professor
Research Group of Pharmaco-Toxicological Analysis (PTA Lab)

Laura Mercoloni
Associate Professor
Research Group of Pharmaco-Toxicological Analysis (PTA Lab)

> One of the greatest advantages we have been able to appreciate about the Mitra® with VAMS® technology is the simplicity and rapidity of use, while maintaining high performance and guaranteeing the reliability of quali-quantitative analytical data.

Source:

https://www.neoteryx.com/microsampling-blog/the-dried-blood-sampling-landscape-michele-protti-phd-on-microsampling

Protti, M., et al. (2025). "How microsampling is impacting pharmacokinetic and toxicokinetic studies: volumetric absorptive microsampling (VAMS)." Bioanalysis 17(15): 997-1009.

Protti, M., et al. (2022). "Volumetric Absorptive Microsampling (VAMS) for Targeted LC-MS/MS Determination of Tryptophan-Related Biomarkers." Molecules 27(17).

Protti, M., et al. (2019). "Tutorial: Volumetric absorptive microsampling (VAMS)." Anal Chim Acta 1046: 32-47.

Clinical implementation of VAMS® for tacrolimus monitoring in transplant patients

The research team at CHU de Rennes, France, under the leadership of Ass. Prof. Florian Lemaitre, has made pioneering contributions to the clinical implementation of Volumetric Absorptive Microsampling (VAMS) for therapeutic drug monitoring (TDM) in transplant patients. Their work established a robust, high-performance analytical method enabling the precise quantification of tacrolimus from small volumes of capillary blood.

Through extensive validation, the group demonstrated that this approach provides high analytical reliability and strong concordance with conventional venous sampling while avoiding key limitations such as hematocrit-related bias. They further confirmed that VAMS samples maintain stability during real-world transport, making the technique fully compatible with decentralized or home-based workflows.

Beyond analytical breakthroughs, the team integrated VAMS into active patient care pathways. Their research showed that solid organ transplant recipients can successfully perform self-sampling at home, enabling frequent monitoring when drug exposure fluctuates or clinic visits are difficult. This proved particularly impactful for managing complex drug–drug interactions where close monitoring is essential for safety.

Additionally, the team identified atypical pharmacokinetic profiles in certain recipients; for these patients, the minimally invasive nature of VAMS allows for multiple samples to be taken easily. This facilitates individualized dosing, optimizing drug exposure while decreasing the risk of adverse events. Collectively, the efforts of CHU de Rennes and Prof. Lemaitre represent a major advancement in patient-centric transplantation medicine, improving therapy precision and enhancing the quality of life for transplant recipients.

Major impacts on human health

1. Reliable, high-quality Tracolimus monitoring

The team developed a high-performance method that ensures precise tacrolimus quantification from tiny blood volumes. This approach eliminates hematocrit-related bias, providing the same analytical reliability as traditional venous sampling.

2. Microlite self-sampling empowers remote care

By enabling patients to perform finger-prick self-sampling at home, their method removes the need for frequent, invasive hospital visits. It is a major win for patient autonomy, especially for those who are medically vulnerable or live in remote areas.

3. Suitable for real-world logistics and AUC profiling

Samples remain stable during standard transport, making the technique perfectly suited for decentralized, home-based workflows. This allows for complex pharmacokinetic profiling (AUC) to be conducted conveniently outside of a clinical setting.

4. Modernizing transplant therapeutic drug monitoring

This patient-centric advancement shifts transplant medicine toward a more agile and personalized model of care. It improves the safety of immunosuppressive therapy by allowing for closer monitoring of drug interactions and exposure fluctuations.

Dr. Florian Lemaitre

Associate Professor of Pharmacology
IATDMCT President-elect
CHU de Rennes

> We are now planning to extend the remote TDM program to every liver transplant recipient followed by our institution. That means fourteen hundred patients living in an area covering roughly a quarter of France. This is a huge challenge to offer patients the TDM expertise of a very specialized unit directly at-home.

Source:
https://www.neoteryx.com/microsampling-blog/microsampling-for-patients-on-therapeutic-drugs-dr.-lemaitre

Golbin, L., et al. (2023). "First Experience of Optimization of Tacrolimus Therapeutic Drug Monitoring in a Patient Cotreated With Nirmatrelvir/Ritonavir: How Microsampling Approach Changes Everything." Transplantation 107(2): e68-e69.

Tron, C., et al. (2021). "Volumetric absorptive microsampling for the quantification of tacrolimus in capillary blood by high performance liquid chromatography-tandem mass spectrometry." J Chromatogr B Analyt Technol Biomed Life Sci 1165: 122521.

Driving innovation in patient-centric sampling

Professor Christophe Stove and his team at the Laboratory of Toxicology at Ghent University have been global leaders in the transition from traditional blood sampling to patient-centric microsampling. Their work has primarily focused on transforming Volumetric Absorptive Microsampling (VAMS®) from a novel concept into a clinically validated tool for high-stakes medical and forensic monitoring.

Evaluation and validation of VAMS® over the past decade

The core of Prof. Stove's contribution lies in solving the "hematocrit (Hct) bias"– the primary technical hurdle that historically limited the accuracy of dried blood samples.

- **Methodological Breakthroughs:** In 2015, Stove published one of the first major comparative studies demonstrating that our VAMS tips effectively eliminate the volume-related hematocrit bias found in traditional Dried Blood Spots (DBS).
- **Technological Advancement:** Most recently (2024), his team developed a non-contact near-infrared (NIR) spectroscopy method. This allows laboratories to determine the hematocrit of a dried VAMS sample without consuming the sample itself, providing a "bridge" to convert dried blood results into the plasma-equivalent values that doctors are accustomed to using.

Clinical and forensic utilization

- **Therapeutic Drug Monitoring (TDM):** The group has validated VAMS® for monitoring complex medications, including anti-epileptics, immunosuppressants (for transplant patients), and tyrosine kinase inhibitors (for cancer therapy).
- **Alchohol and forensic biomarkers:** A significant portion of their work involved Phosphatidylethanol (PEth), a direct biomarker for alcohol consumption. Stove's group has proved that VAMS® is a reliable tool for forensic abstinence monitoring and clinical addiction studies.
- **Nutrition and public health:** The group has utilized VAMS® for large-scale national surveys, such as assessing thiamine (Vitamin B1) status in the Belgian population, proving that high-quality epidemiological data can be gathered without traditional phlebotomy.
- **Toxicology:** Stove's lab continues to use VAMS® for the detection of new psychoactive substances (NPS) and environmental toxins like mycotoxins, especially in resource-limited areas.

Major impacts on human health

1. Empowering patient-centric care

By validating VAMS® for “at-home” sampling, Stove’s work has enabled vulnerable patients (such as organ transplant recipients and oncology patients) to monitor their medication levels without frequent, stressful hospital visits.

2. Strong, proven performance across multiple fields

His rigorous analytical studies provided the scientific proof needed for clinical laboratories to trust microsampling, ensuring that a patient’s blood “thickness” does not lead to a life-threatening over- or under-dosing of medication.

3. Designed for the real world—simple storage, easy shipping

Through the standardization of PEth testing via microsampling, his work has provided clinicians and forensic experts with a highly accurate, objective tool to monitor alcohol abstinence and support recovery.

4. Scientific leadership driving global adoption

By demonstrating that VAMS® can be used for vitamin and nutrient tracking in national surveys, his research has paved the way for more efficient, less invasive public health monitoring and disease prevention.

Prof. Dr. Christophe Stove

Head of the Laboratory of Toxicology

Ghent University

> “VAMS® technology allows convenient at-home monitoring and is minimally invasive. It also offers efficiencies in the clinical setting, as providers will have blood results in hand before meeting with the patient.”

Source:

https://www.neoteryx.com/microsampling-blog/podcast-microsampling-in-toxicology-biomarkers-of-drugs-and-alcoholDe Kesel, P. M., et al. (2015).

“Does volumetric absorptive microsampling eliminate the hematocrit bias for caffeine and paraxanthine in dried blood samples? A comparative study.” Anal Chim Acta 881: 65-73.

Verougstraete, N., et al. (2017). “Volumetric absorptive microsampling at home as an alternative tool for the monitoring of HbA1c in diabetes patients.” Clin Chem Lab Med 55(3): 462-469.

Van Uytfanghe, K., et al. (2021). “Quantitation of phosphatidylethanol in dried blood after volumetric absorptive microsampling.” Talanta 223(Pt 1): 121694.

Capiau, S. and C. Stove (2020). “Hematocrit prediction in volumetric absorptive microsamples.” J Pharm Biomed Anal 190: 113491.

From microbiopsy to molecular insight

Professor Tarl Prow, currently Director of the Skin Research Centre at the Hull York Medical School, is a leading figure in the convergence of biomedical engineering and clinical dermatology. His work is characterized by the development of "micro-nanobiotechnology" platforms designed to move skin diagnostics from invasive, subjective visual assessments to painless, objective molecular profiling. His team's innovations have significantly influenced both the medical treatment of skin pathologies and the precision-testing of cosmetic formulations.

From microsampling, molecular profiling, to targeted delivery

Professor Prow's scientific legacy is defined by a synergistic approach to skin health that collapses the distance between engineering and biology. At the center of his work is the Microbiopsy technology, a transformative leap from invasive 4 mm punch biopsies to a sub-millimeter, painless extraction method. This device captures a minute but functionally complete "molecular snapshot" of the skin (approximately a thousand cells) without the need for anesthesia or sutures.

This innovation serves as the gateway to his second major contribution: High-Resolution Molecular Profiling. By proving that these microscopic samples contain stable RNA and DNA, Prow's team shifted dermatology from subjective visual diagnosis to objective genetic analysis. This allows for the detection of skin cancer and inflammatory markers at a cellular level long before physical symptoms appear.

Finally, Prow has bridged the gap between diagnosis and treatment through Nanodermatology and Precision Drug Delivery. Utilizing engineered elongated microparticles and microneedle arrays, his team developed methods to bypass the skin's outer barrier (stratum corneum) to deliver therapeutics directly to diseased cells. Together, these three pillars—painless sampling, genetic mapping, and localized delivery—form a closed-loop system for modern, personalized skin care that is as effective in a high-end cosmetic lab as it is in a remote tropical clinic.

Major impacts on human health

1. Democratization of skin cancer screening

By removing the need for a sterile surgical suite and local anesthesia, the microbiopsy allows for skin cancer screening in non-traditional settings. This "point-of-care" approach enables general practitioners and nurses – rather than just specialized surgeons – to perform essential diagnostic sampling, drastically reducing wait times for oncology referrals.

2. Advanced diagnostics in underserved regions

Prof. Prow has successfully deployed his technology in resource-limited environments to combat infectious diseases. His work in the field has enabled the detection of Leishmaniasis and other parasitic infections in remote parts of Africa and South America. The portability and ease of use of his devices allow for high-level diagnostics in areas where traditional pathology labs are non-existent.

3. Precision medicine in chronic skin disease

His research into the molecular profiling of inflammatory conditions (such as psoriasis and eczema) has paved the way for personalized medicine. By identifying the specific inflammatory pathways active in an individual patient through a painless micro-sample, clinicians can select the "biologic" or topical treatment most likely to work for that specific patient, avoiding the "trial and error" phase of treatment.

4. Reduction in patient trauma and scarring

On a human-centric level, the elimination of surgical scarring and biopsy-related anxiety has improved patient compliance. Patients are more likely to agree to frequent monitoring of suspicious moles or lesions when the procedure is perceived as no more invasive than a standard blood draw. This leads to earlier detection and, ultimately, higher survival rates for aggressive cancers like melanoma.

Prof. Tarl Prow

Director of the Skin Research Centre

Hull York Medical School

SCAN here to watch Prof. Prow's webinar to learn more about the clinical and analytical performance of the Harpera™ Microbiopsy Punch

Want to transform your ideas into breakthrough innovations?

Reach out to https://www.coherent-science.com/ and get a first free consultation on how to implement microbiopsy procedure in your clinical service.

Source:

Hossain, A., et al. (2024). "MicroRNA expression profiling of cutaneous squamous cell carcinomas and precursor lesions." Skin Health and Disease.

Yamada, M., et al. (2020). "Microbiopsy-based minimally invasive skin sampling for molecular analysis is acceptable to Epidermolysis Bullosa Simplex patients where conventional diagnostic biopsy was refused." Skin Res Technol.

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Lin, L. L., et al. (2013). "Microbiopsy engineered for minimally invasive and suture-free sub-millimetre skin sampling." F1000Res 2: 120.

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Mitra® device specification and part numbers

Intended Use	A single-use, non-sterile device used as a specimen collector, and for the storage and transport of blood and other biological fluids for analytical and diagnostic analyses.
Product	The intended user is a healthcare professional or a layperson (including use with pediatric population). The blood sample is typically taken through a prick in the fingertip using a lancet. The sampler tip (contained within the Mitra Device) is gently applied to the drop of blood on the fingertip until the entire sampler tip turns red indicating a volumetric sample (10, 20, or 30 µL depending on the device being used) has been collected. This process is repeated for each sampler tip in the device. Once all sampler tips (one (1), two (2), three (3), or four (4) depending on the device being used) have been filled, the device outer housing is clicked closed to secure the sample(s).
Storage and handling	• Device Storage: Up to 30°C. For a shorter time (e.g. during transport) up to 45°C. • Sample Storage: The guidelines for sample storage are analyte dependent and will need to be determined by device end-user.
Compliance Certification	Mitra® devices are CE-IVD (IVDR) devices intended as a specimen collector, and for the storage and transport of blood and other biological fluids for analytical and diagnostic analyses. They are available as registered IVD Devices in the European Union and United Kingdom, Australia, Brazil, China, Israel, Colombia, South Africa, and Canada, as well as multiple Health Ministries worldwide. In the USA, Mitra devices are supplied as a research use only (RUO) product to assist in method development, other research-related and non-diagnostic activities. End-users and laboratories must validate the use of the Mitra devices for the particular diagnostic testing intended.
Precautions	• Single use only for a single individual. • Do not use after expiration date. • For external use only. • Devices should be transported/mailed to the analytical laboratory, and appropriate documentation maintained according to local regulations and the analytical laboratory procedures and policies. • Do not use if device packaging has been opened or damaged. • Labs must validate use of product for their specific assay. • Observe universal biological risk precautions. • All used materials with blood residues must be handled and disposed of safely in accordance with local regulations. • Any serious incident that has occurred in relation to the medical device should be reported to Trajan Scientific and Medical and the competent authority of the Member State in which the user and/or patient is established. • Please reach out to neo.support@trajanscimed.com in case of multiples under-sampling events.

Technical data	
Product features	
Sample type	Dried Whole Blood
Formats	Mitra Device in Specimen Bag with Desiccant, Mitra Microsample Collection Kit, 96-Autorack
Sample volume	10, 20, or 30 µL
Volumetric precision (%RSD)	< 5%
Number of samples collected	Up to 96 (depending on Device used)
Substrate	Polymer
Shelf Life	18 months

P/N	# unit /PK	Configuration		Format	Lancets	Regulatory status
		Volume (µL)	# of samplers			
VM-102KMBD	30	10	2	Collection kit	Unistik Touch 16G	MD
VM-102KMBR						Research Use Only
VM-102KMGD					Unistik Touch 12G	MD
VM-102KMGR						Research Use Only
VM-102SNLD				Specimen bag	No Lancet	IVD
VM-102SNLR						Research Use Only
VM-104KMBD			4	Collection kit	Unistik Touch 16G	MD
VM-104KMBR						Research Use Only
VM-104SNLD				Specimen bag	No Lancet	IVD
VM-104SNLR						Research Use Only
VM-202KMBD		20	2	Collection kit	Unistik Touch 16G	MD
VM-202KMBR						Research Use Only
VM-202KMGD					Unistik Touch 12G	MD
VM-202KMGR						Research Use Only
VM-202SNLD				Specimen bag	No Lancet	IVD
VM-202SNLR						Research Use Only
VM-204KMBD			4	Collection kit	Unistik Touch 16G	MD
VM-204KMBR						Research Use Only
VM-204SNLD				Specimen bag	No Lancet	IVD
VM-204SNLR						Research Use Only
VM-302KMBD		30	2	Collection kit	Unistik Touch 16G	MD
VM-302KMBR						Research Use Only
VM-302SNLD				Specimen bag	No Lancet	IVD
VM-302SNLR						Research Use Only
VM-304KMBD			4	Collection kit	Unistik Touch 16G	MD
VM-304KMBR						Research Use Only
VM-304SNLD				Specimen bag	No Lancet	IVD
VM-304SNLR						Research Use Only
V10101	1	10	96	96-Autorack™ + 96-well plate	No Lancet	IVD
V10101-R						Research Use Only
V20101		20				IVD
V20101-R						Research Use Only
V30101		30				IVD
V30101-R						Research Use Only
AC-DR02V108		N/A	0			N/A

Harpera™ device specifications and part numbers

Intended Use	The Harpera™ Microbiopsy™ Punch is intended to enable the collection of a specimen from the cutaneous skin surface by a healthcare professional.
Product	The Harpera™ device is a single-use manual microbiopsy punch, a hand-held disposable device intended to achieve a controlled skin puncture in order to obtain a specimen. The punch is supplied individually packaged and sterile.
Storage and handling	In its sterile packaging, the device can be stored at room temperature up to 30°C. After use, dispose of the device properly in the biohazard waste. Dispose of the microbiopsy collector as sharp medical waste to prevent infection as per local guidance.
Compliance Certification	FDA-registered for marketing in the US, Harpera™ is made available as an investigational use only (IUO) product for use in performance studies outside of the US.
Precautions	• Do not re-use (single use) • Reuse of this device presents a risk of infection to the patient. • Read IFU and watch IFU video prior to use. • Do not resterilize. • During activation, step 4-5, use with one hand. • Handle with care so as not to injure yourself by touching the sharp tips/edges of the microbiopsy collector. • If the tip of the microbiopsy collector comes in contact with a foreign object, replace the device with a new one. • Do not use the device if any damage is observed to the packaging or the device itself. • If an incident occurs with the device or failures occur in collecting specimen, please contact neo.support@trajanscimed.com as soon as possible.

Technical data	
Product Features	
Specimen type	Cellular material from the cutaneous skin surface
Format	Harpera punch alone, in a Tyvek pouch
Sterilization process	Gamma irradiation at 25 kGy
Number of specimens collected	1
Maximum penetration depth	1.2 mm
Substrate (microbiopsy collector)	304 Stainless Steel
Substrate dimensions	5 mm x 10 mm x 0.15 mm
Shelf life	Under evaluation
Materials and Colors	
Product color	Nylon 6 (white) with red protective cap
Packaging	
Unit/pack	20 units/pack
Tool dimensions	L 65 mm x W 17 mm x H 18 mm
Unit dimensions	L 102 mm x W 127 mm x H 20 mm
Pack dimensions	W 23 cm x H 30.5 cm

P/N	# unit/PK	Configuration		Regulatory status
		Microbiopsy length	Material	
VH-01M20PI	20	1.2 mm	304 Stainless steel	IUO
VH-01M20PD				MD

Request pricing information

Ready to optimize your project with the right microsampling solution? Connect with a Microsampling Specialist who will help you select the ideal device configuration and format, tailored specifically to your project's requirements and budget.

Let us assist you in streamlining your specimen collection transport and storage process efficiently and cost-effectively.

SCAN here
to access our
product
purchasing form

Automate your assays

Reliable samples, effortless analysis.
Go from collection to data in one seamless step.

Helping labs work smarter and faster

CHRONECT™ – automation built for microsampling clinical workflows.

CHRONECT™ by Trajan is a platform of standard and customizable automated workstations, software, consumables, and services, designed by scientists for scientists. It streamlines microsample workflows, improving efficiency, data quality, and scalability in clinical labs. Backed by Trajan's expertise in automation and ongoing innovation, CHRONECT™ helps you accelerate results and unlock the full potential of your samples.

What CHRONECT™ brings to your lab

CHRONECT supports your lab through three core pillars designed to simplify and optimize your complex analytical workflows.

Automated workstations

Choose application-specific automated workstations paired with tailored software and qualified consumables—engineered to deliver precise, integrated sample preparation and analysis for your workflow.

Training and education

Gain confidence and expertise with CHRONECT Academy, offering flexible training option to ensure your team maximizes system performance from day one.

Support and service

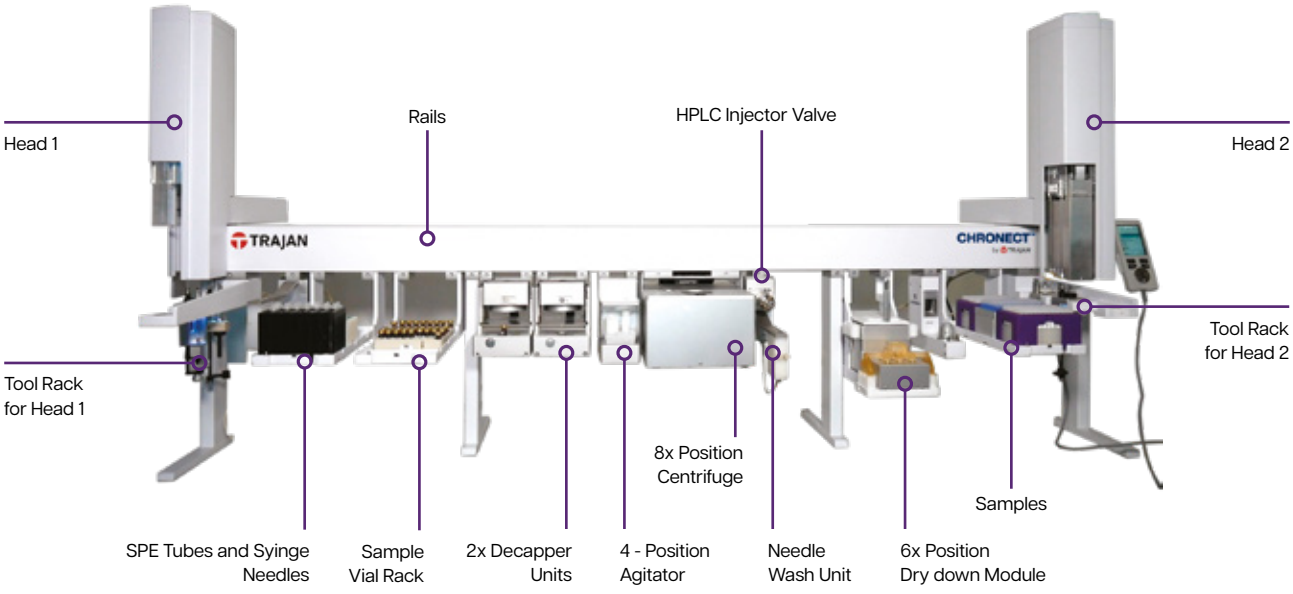
Protect your investment with service contracts backed by Trajan's expert engineers, providing preventative maintenance, timely repairs, and ongoing technical support to keep your lab running smoothly.

Purpose-built automation for bioanalysis and clinical workflows

Revolutionize your biofluid sample preparation.

CHRONECT™ Workstations automate complex workflows for LC/MS and molecular applications, saving time and boosting consistency. From Mitra microsamples to traditional blood tubes and biofluid containers, CHRONECT™ standardizes every step: accessioning, extraction, and direct injection. This eliminates manual errors and reduces hands-on time. Ideal for bioanalytical method development, clinical trials, research, wellness programs, and omics applications.

With modular hardware, flexible software, and an expanding library of methods, CHRONECT™ platforms are built to grow with your lab. The front-end sample handling and preparation automation is vendor-agnostic and compatible with many mass spectrometry and other analytical instrumentation platforms. Whether scaling up for throughput or adapting to new regulatory or analytical requirements, CHRONECT™ keeps your lab agile and efficient.



Efficient Prep-N-Load

Combine accessioning, sample prep and direct LC/MS injection in one streamlined workflow, reducing manual steps, minimizing transfer errors, and ensuring full utilization.

Versatile and adaptable

Easily configure and run a variety of analytes, biofluids, and methods on your CHRONECT™ Workstation to adapt to LC-MS, NGS, PCR, Immunoassay, and more.

Microsample compatible

Easily automate, scale, and optimize your workflow purpose-built for our Trajan microsampling product line so you're ready as demand grows.

Scan barcode → Extract and clean → Reformat → Inject or store

Applications

Biomonitoring

Automate processing for mass spec-driven biomonitoring helping you meet regulatory demands, reduce variability, and speed results in clinical research, toxicology, population health, and wellness programs.

Pharmaceutical bioanalysis

Enhance precision, reproducibility, and speed by automating critical workflows for method development, clinical trials, PK studies, and more while lowering the barrier of user expertise needed.

SCAN here
to learn more

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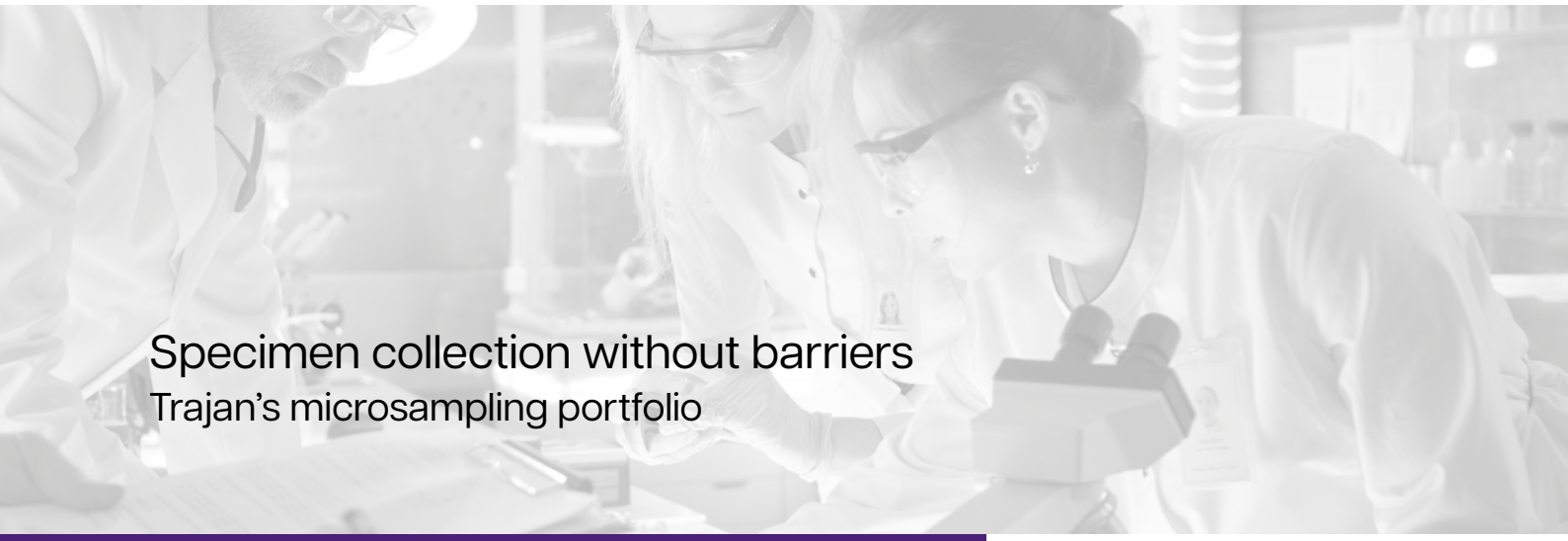

Specimen collection without barriers

Trajan's microsampling portfolio

Visit us at www.neoteryx.com or contact your regional Trajan representative for more information.

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Harpera™ Microbiopsy™ Punch is a manual surgical device intended to enable the collection of a specimen from the cutaneous skin surface by a healthcare professional. FDA-registered for marketing in the US, Harpera is made available as an investigational use only (IUO) product for use in performance studies outside of the US.

Science that benefits people

Trajan Scientific and Medical develops products and services that can enable critical improvement in the analytical workflow. We aim to have positive impact on human well-being with the delivery of precision products that protect sample integrity and minimize result variation.

www.trajanscimed.com

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