mosquito® / dragonfly® discovery

low-volume liquid handling for genomics

increase speed and efficiency while reducing costs

sptlabtech

Miniaturize your genomic workflows with confidence

Next-generation sequencing (NGS) has revolutionized genomics, unlocking transformative opportunities in research, diagnostics, and therapeutics. Despite advancements in NGS speed and throughput, library preparation remains a costly and labor-intensive bottleneck.

Traditional methods rely on high-volume library preparation due to the limitations of manual pipettes and conventional liquid handlers, yet only a small fraction of the prepared library is used for sequencing. SPT Labtech's mosquito® systems, with their innovative positive displacement pipetting technology, offer an effective solution to reduce reagent cost and conserve sample inputs, freeing up your time to focus on more innovative and creative tasks.

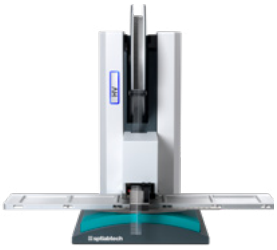
With over **40 genomic methods successfully miniaturized**, mosquito enables you to expand existing projects or embarkon new ones, even on a limited budget.

Click to Learn More

mosquito® LV genomics

PCR/qPCR setup, DNA assembly and cloning, single cell genomics and transcriptomics, DNA and RNA quantification, high throughput proteomics

mosquito® HV genomics / mosquito® Gen3



PCR/qPCR setup, NGS library prep, including bead clean-ups, single cell DNA- and RNA-seq, DNA and RNA quantification, library pooling

mosquito® X1 genomics

cherry picking and re-arraying, sample and library normalization, pooling

product benefits

Volumetric accuracy and precision, every time
irrespective of liquid viscosity or laboratory conditions

Faster data generation
rapid reaction setup in 96- and 384-well formats

Ease-of-use
application-led software for users of any level

Reduced single-use plastic and chemical waste
with patented tip technology and cardboard packaging

Over 40 methods successfully miniaturized
enabling savings of over 75%

No cross contamination
with pre-sterilized disposable pipettes

Future-proof open platform
implement your protocols or develop new methods

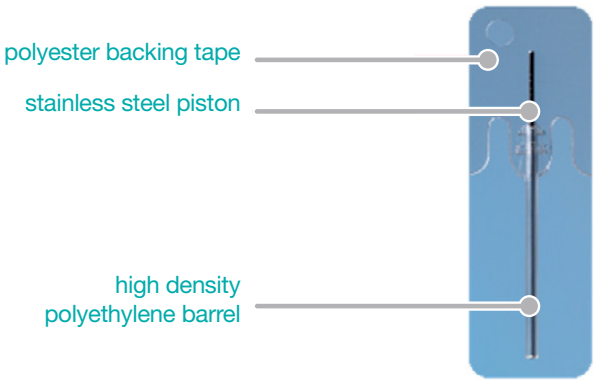
No tip boxes
save laboratory space with densely packed spool with up to 36,000 pipettes

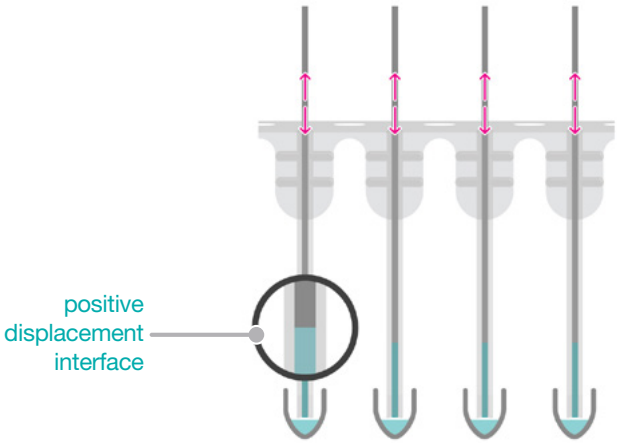
Further increase throughput, while reducing single-use plastic with positive displacement non-contact reagent dispensing

dragonfly® discovery is the perfect companion to mosquito® in high-throughput genomics workflows, such as single-cell RNA- and DNA-seq, pathogen surveillance, and metagenomics:

- **Dispense any volume** from 200 nL to 4 mL, into any well, from any syringe, at any time.
- **No liquid classification,** making reaction setup quick and easy.
- **Ready to use** without needing to wash, maintain, check, calibrate prior to a run.
- **Dramatically reduce** tip consumption and waste by replacing reagent pipetting steps with non-contact dispensing from an individual syringe.
- **Facilitate sample and library normalization** by adding a variable volume of diluent from independent dispensing heads.

Positive displacement pipetting:
The accurate way to handle liquids

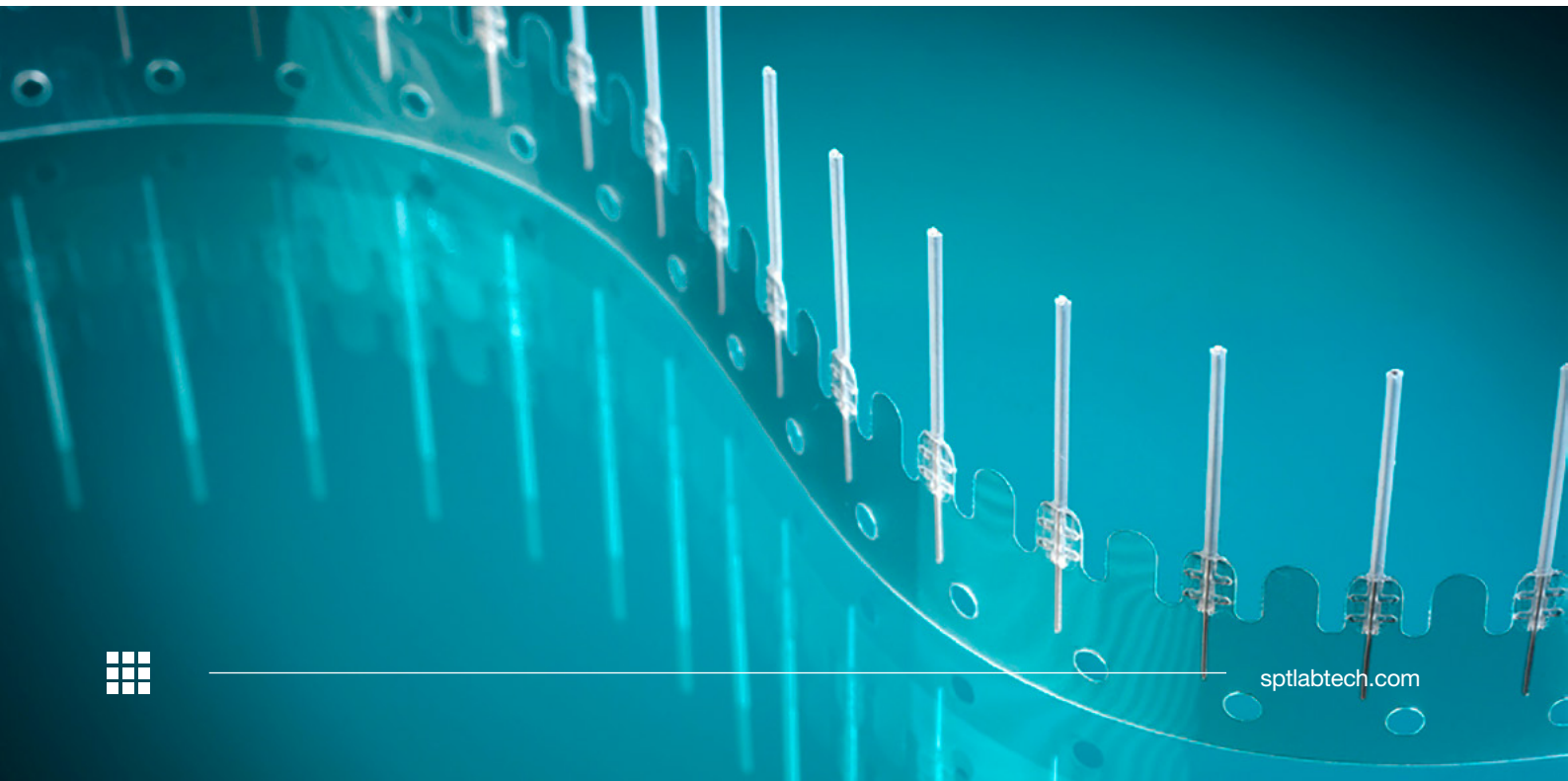




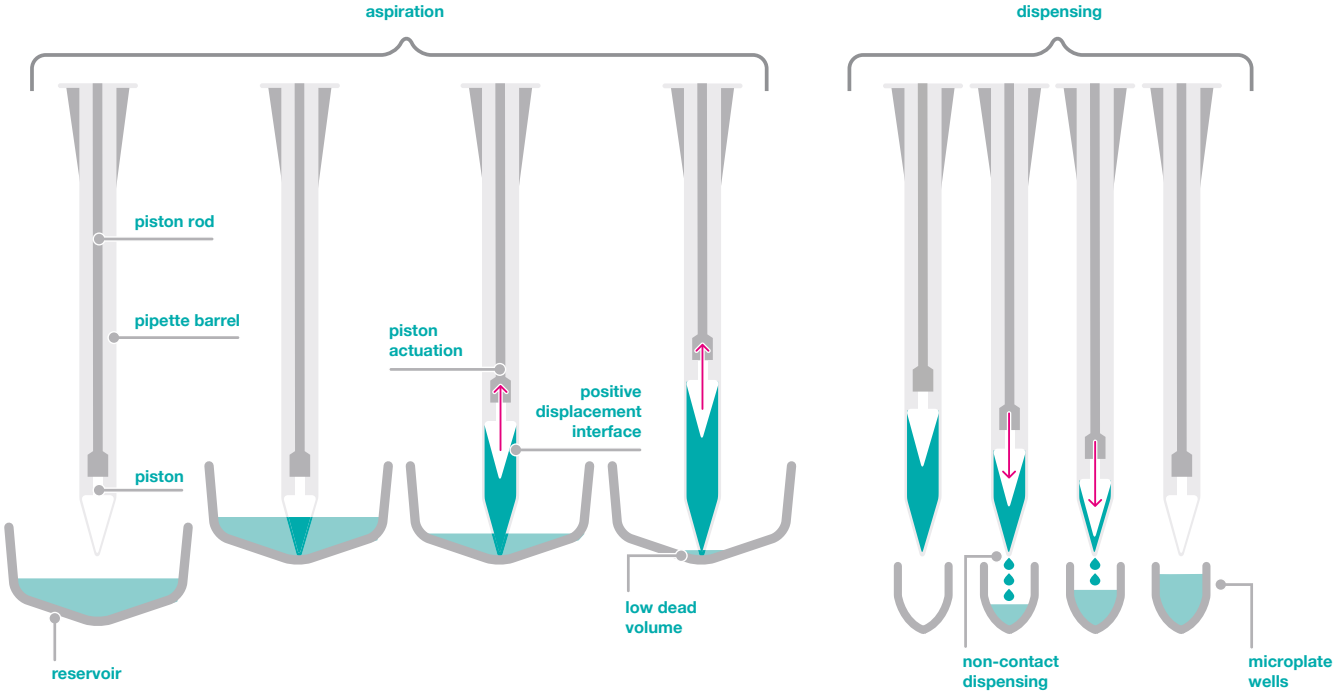
Pipetting low volumes accurately is challenging, especially when working with viscous or volatile reagents commonly used in genomics workflows.

SPT Labtech's mosquito and dragonfly discovery systems overcome these challenges with **patented positive displacement pipetting technology**. The direct contact between the piston and liquid ensures consistent aspiration and dispensing, independent of liquid properties. This technology eliminates the influence of environmental factors like temperature, pressure, or humidity, which can affect air-displacement systems. By delivering volumes as low as 25 nL with unparalleled precision, our systems enable robust and reproducible data generation, regardless of liquid complexity.

The **mosquito** nanoliter pipettor uses positive displacement with disposable tips to handle low volumes (25 nL - 5 µL) of liquid for plate-to-plate or intra-plate transfers using contact dispensing. This makes it ideal for traditional pipetting tasks that users would like to miniaturize.



The **dragonfly discovery** non-contact dispenser uses larger (4 mL) positive displacement, disposable syringes to aspirate from reservoirs and dispense into wells within plates. This makes this instrument ideal for combination and bulk reagent dispensing, as well as for accurately handling difficult liquid classes.



technical specifications

	Liquid handling	Volume range	Volumetric performance	Supported plate format	Dead volumes	Throughput
mosquito® LV genomics	nanoliter pipettor	25 nL – 1.2 µL (LV)	accuracy within 5% of target volume; precision with an average of 3% CVs throughout the volume range	96-, 384- and 1,536-well skirted plates	as low as 0.3 µL	2 minutes/ 96-well plate copy 3 minutes/ 384-well copy
mosquito® HV genomics / mosquito® Gen3		500 nL – 5 µL		96- and 384-well skirted plates		
mosquito® X1 genomics		25 nL – 1.2 µL (LV) 500 nL – 5 µL (HV)		any type, including slides		6 seconds average cycle time (aspirate, move, dispense, change tip)
dragonfly® discovery	non-contact dispenser	200 nL – 4 mL	<5% error and <5% CV at 1 µL, <5% head-to-head variability	96-, 384- and 1,536-well plates, deep well blocks	70 µL irrespective of the number of plates, fully recoverable	<15 seconds/ 96-well plate fill <60 seconds/ 384-well plate fill

consumables

SPT Labtech consumables are developed and manufactured to the same high standard of design and engineering as our instruments – quality that we also demand from our suppliers. The combination of cutting-edge innovation and precision manufacturing ensures accurate results in the lab, every time.

support

Stay connected and protected with best-in-class service and support. Our reliance® engineers and field application scientists partner with you throughout the lifetime of your instrument to minimize downtime, maintain optimal performance, and secure the longevity of your investment.

selection of papers:

Tabula Muris Consortium. Single-cell transcriptomics of 20 mouse organs creates a Tabula Muris. Nature. 2018; 562 (7727): 367-372.

VanInsberghe M, van den Berg J, Andersson-Rolf A, *et al.* Single-cell Ribo-seq reveals cell cycle-dependent translational pausing. Nature. 2021; 597 (7877): 561-565.

Wik L, Nordberg N, Broberg J, *et al.* Proximity Extension Assay in Combination with Next-Generation Sequencing for High-throughput Proteome-wide Analysis. Mol Cell Proteomics. 2021; 20: 100168.

Cerrizuela S, Kaya O, Kremer LPM, *et al.* High-throughput scNMT protocol for multiomics profiling of single cells from mouse brain and pancreatic organoids. STAR Protoc. 2022; 3 (3): 101555.

Karthikeyan S, Levy JI, De Hoff P, *et al.* Wastewater sequencing reveals early cryptic SARS-CoV-2 variant transmission. Nature. 2022; 609 (7925): 101-108.

Li J, Zaslavsky M, Su Y, *et al.* KIR+CD8+ T cells suppress pathogenic T cells and are active in autoimmune diseases and COVID-19. Science. 2022; 376 (6590): eabi9591.

Manjunath HS, Kalikiri MKR, Kabeer BSA, Tomei S. When Mosquito HV bites Biomark HD: An automated workflow for high-throughput qPCR. SLAS Technol. 2022; 27 (3): 219-223

Shaffer JP, Nothias LF, Thompson LR, *et al.* Standardized multi-omics of Earth's microbiomes reveals microbial and metabolite diversity. Nat Microbiol. 2022; 7 (12): 2128-2150.

Mei Z, Wang F, Bhosle A, *et al.* Strain-specific gut microbial signatures in type 2 diabetes identified in a cross-cohort analysis of 8,117 metagenomes. Nat Med. 2024; 30 (8): 2265-2276.