sample management

future-proof lab solutions

ttplabtech

sample protection from storage to bench

The world's first automated and modular vial based storage systems for the secure, high-density storage of samples at a range of temperatures.

TTP Labtech's sample management portfolio provides a unique solution for storing, transporting and processing your samples – but most importantly keeping them safe throughout their journey.

innovative technology

Based on pneumatics, to ensure reliability by enabling all the mechanical robotic elements to remain outside the cold environment of the store

large density, small footprint

Novel design provides compact storage paired with fast cherry picking without the need to defrost racks

modular

Stores can be linked for faster processing, and samples delivered conveniently into a single rack in a remote location

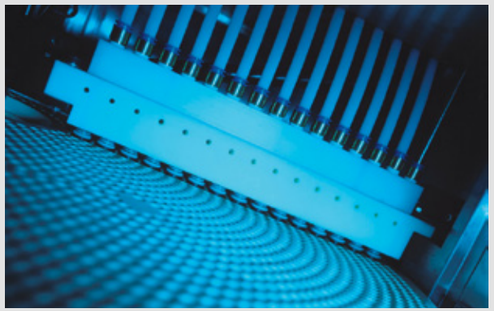
easily integrated

Can be integrated seamlessly with automated sample processing workflow

pneumatic technology - a breath of fresh air!

At the heart of our storage systems is pneumatic technology, using a cushion of compressed air or nitrogen and a system of flexible tubes to transport microvials.

Our equipment minimises the use of moving parts ensuring reliable operation even at -80°C; unlike other systems that use robotics in the cold zone. This proven technology means that end users will have maximum uptime and availability of their systems.



putting your **sample's needs first**

comPOUND® (+4°C, ambient and -20°C store)

picks up to 600 tubes/hour

arktic® (-20°C and -80°C biostore)

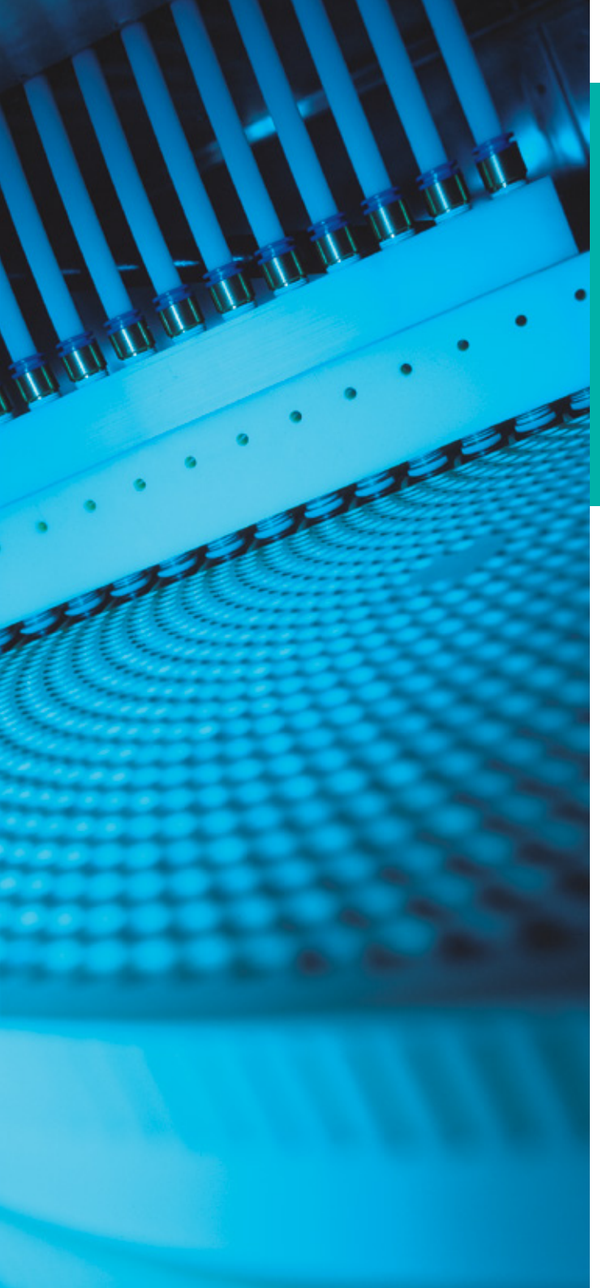
up to 7-fold greater sample density compared to equivalent systems

liquid handling

- accurate, low volume pipetting (25 nL — 5 µL)
- non-contact dispensing (200 nL — 4 µL)

automation and integration

maximise efficiency for any workflow



comPOUND®: the world's first modular -20°C to ambient vial storage system

TTP Labtech's comPOUND provides multiple benefits by combining:

- **a unique carousel system** which enables high-density storage in a secure chamber
- **pneumatics** which ensures fast, reliable cherry-picking of samples

function	comPOUND
temperature	-20°C, +4°C, ambient
dimension (w x d x h)	1.2 x 1.65 x 2.4 m (48 x 65 x 93 inches)
capacity	100,000 x 1.4 mL vials, 200,000 x 0.5 mL vials
throughput	600 vials/hour (1 sample/6 secs/unit)

sample integrity

Samples are stored individually under dry air (or nitrogen) in a hermetically-sealed chamber at a user-defined temperature ranging from -20°C to ambient. Only requested microvials are retrieved, avoiding unnecessary freeze/thaw cycles.

robustness and security

Using pneumatics enables all the mechanical robotic elements to remain outside the store's cold environment. Pneumatic transport allows samples to be transported securely onward across the entire workflow. Simple interface integrates with LIMS systems.

position anywhere

Each store is self-contained, as well as compact - modules can be located anywhere and samples delivered remotely.

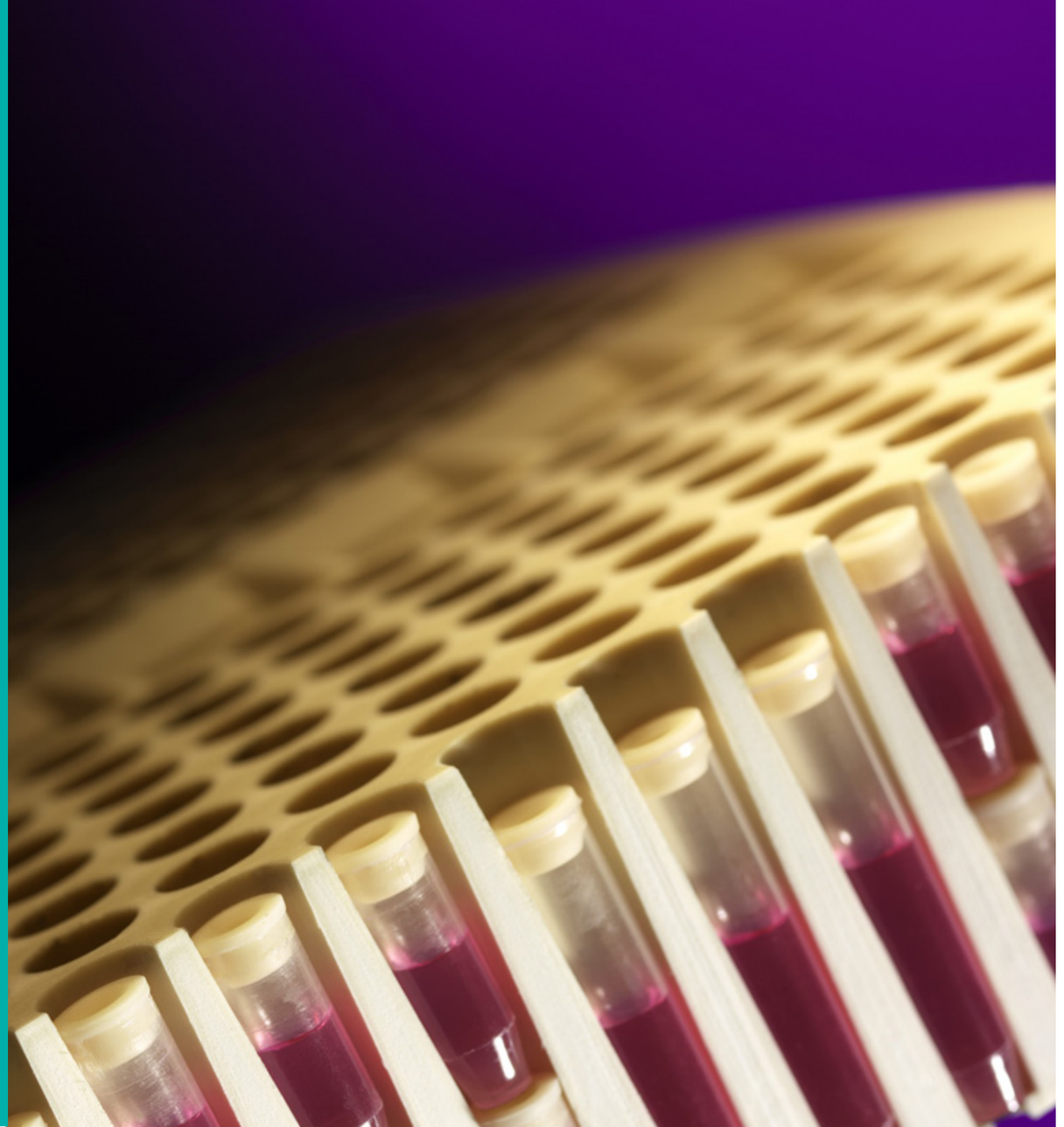
modular and easy to grow

Stores can be linked while functioning at different locations and temperatures. Samples are rapidly retrieved from any location into a single rack. Linking stores increases sample throughput, so your processes can keep pace as your library grows.

case study:

cost **effective** insourcing of **compound management**

> **TTP Labtech is not just a vendor but a co-creator of the solution we have put in place.**
>
> Ludovic Otterbein,
> Head of Compound Management
> and Analytical Chemistry,
> Lundbeck, Denmark



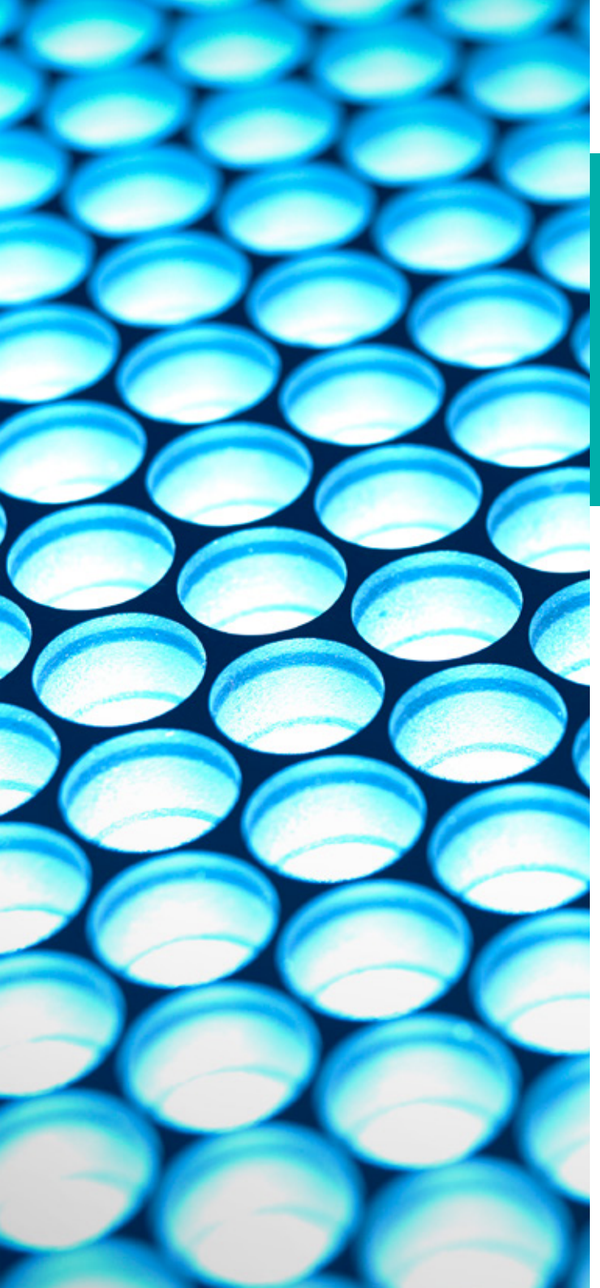
Lundbeck

The challenge for Ludo Otterbein, Head of Compound Management and Analytical Chemistry, Lundbeck Denmark, was to increase organisational efficiency and promote a high-performance culture.

TTP Labtech was able to provide Lundbeck with a complete solution. Their compounds are stored in several linked -20°C comPOUND repositories and access to these compounds is managed using TTP Labtech's lab2lab connect^{XC} system. Compounds are transferred to mother plates and low volume assay ready plates are prepared using the mosquito HTS liquid handler.

the impact of change

- significant reduction in picking and pilot screening times
- provided an accurate method to miniaturise Lundbeck's compound collection, saving compound while increasing the diversity of its output, with no increase of FTE
- minimised lab space required due to comPOUND's small footprint but high-density storage capacity
- implementation and collection migration was done in less than 6 months
- solution was cost neutral by year 4



arktic®: the most compact **-80°C biostore on the market**

Many biobanks are still struggling with manual systems for sample picking and tracking. TTP Labtech created arktic to provide a low-cost, automated and secure -80°C biostore facility.

arktic addresses biobanking's key issues by building on TTP Labtech's compact storage and pneumatic technology.

function	arktic
temperature	-80°C
dimension (w x d x h)	1.35 x 0.8 x 1.98 m (53 x 32 x 78 inches)
capacity	60,000 x 1.0 mL vials, 139,000 x 0.5 mL vials
throughput	450 vials/hour

sample integrity

Only the samples needed are retrieved, avoiding unnecessary freeze/thaw cycles.

unsurpassed storage density

Up to 7-fold greater storage density compared to equivalent systems. Small footprint (< 1.1 m^2) to maximise the use of existing lab space.

secure storage

-80°C storage with fail-safe systems. Full sample tracking so you never lose a sample. 100% refrigeration backup. State-of-the-art insulation to ensure low running costs and continued sample protection. Continuous system monitoring for early diagnosis of any issues.

cost savings

Rapid sample retrieval, saving hundreds of manual hours per year. Easy system setup which only takes a day.

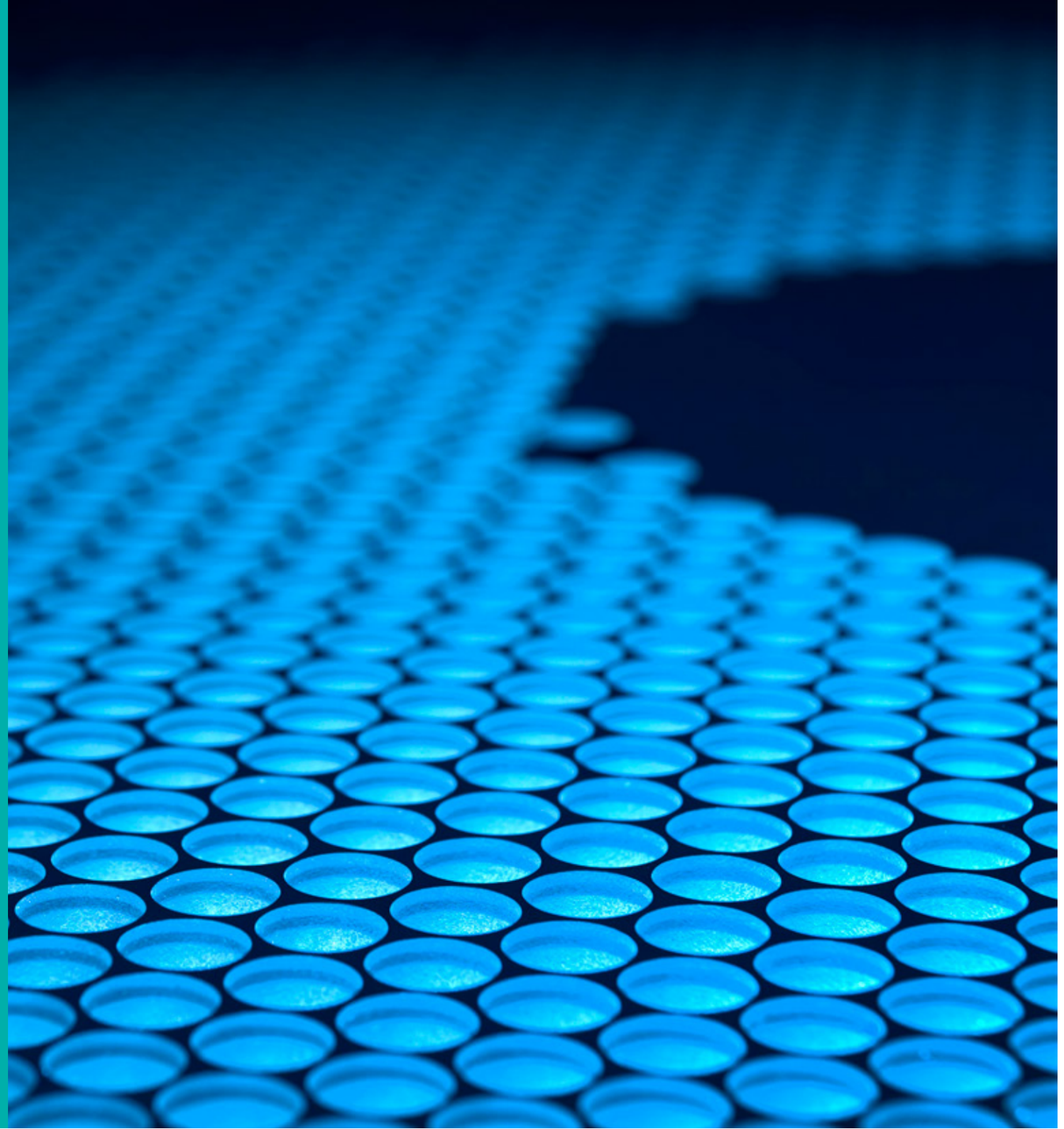
complementary to manual freezers

arktic compliments manual freezers holding working copies of samples and used as a front end sorting to device, to better organise samples for archiving in manual freezers.

case study:

arktic® - more than just a low temperature freezer

> **We are now able to track and reorganise samples automatically thus reducing a lot of the manual procedures previously involved in the process.**
>
> Dr. Debora Lucarelli,
> Head of Laboratory at the MRC Epidemiology Unit,
> University of Cambridge, UK



MRC Epidemiology Unit, University of Cambridge

Dr. Debora Lucarelli, Head of Laboratory at the MRC Epidemiology Unit, University of Cambridge, UK is responsible for the collection of biological samples (e.g. blood, serum, plasma, urine) from studies investigating metabolic disorders.

The MRC Epidemiology Unit laboratory needed to be able to receive, organise, record, store, and retrieve large numbers of different samples on a regular basis whilst maintaining integrity and tracking.

Their solution utilised arktic's ability to track samples and its efficiency of retrieving samples from any location to a predefined rack.

sample organiser

Samples are transferred from field collection tubes to aliquots in bar-coded 1 mL vials which are transferred to arktic. The store is used to organise and reshuffle samples within the store, keeping one aliquot of each type of sample and releasing the remaining aliquots to be stored in the archive manual store.

assay creator

arktic prepares orders overnight, loading and dispensing a rack in a predefined order the following morning. Samples are then immediately stamped out for specific assays via a further robotic system.

mosquito® liquid handlers making the essential exceptional

Liquid handling is essential to the sample management workflow. Costs can be reduced by miniaturising the sample volumes used, however, data quality must not be compromised.

TTP Labtech's mosquito range of versatile liquid handlers (single-, 8- or 16-channel) is able to aspirate, dispense and mix miniaturised volumes of samples or reagents without splashing or spilling drops.

liquid handler	volume range	channels
mosquito HTS	25 nL – 1.2 µL	8 or 16 channels
mosquito HV	500 nL – 5 µL	8 or 16 channels
mosquito X1	25 nL – 1.2 µL or 500 nL – 5 µL	single

accuracy and precision

Robust performances with any liquid type, from nanolitre to microlitre volumes (25 nL to 5 µL). Each of TTP Labtech's disposable tips has its own individual piston – not an air gap or system fluid – offering true positive-displacement pipetting with no risk of cross-contamination. The tips are cost-effective, compact to store and fast to load

high-throughput

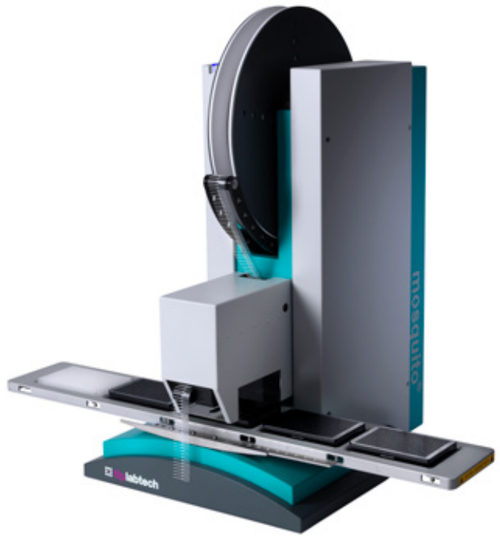
Fast pipetting using micro tips stored on a high-density spool (36,000 tips per spool)

cost savings

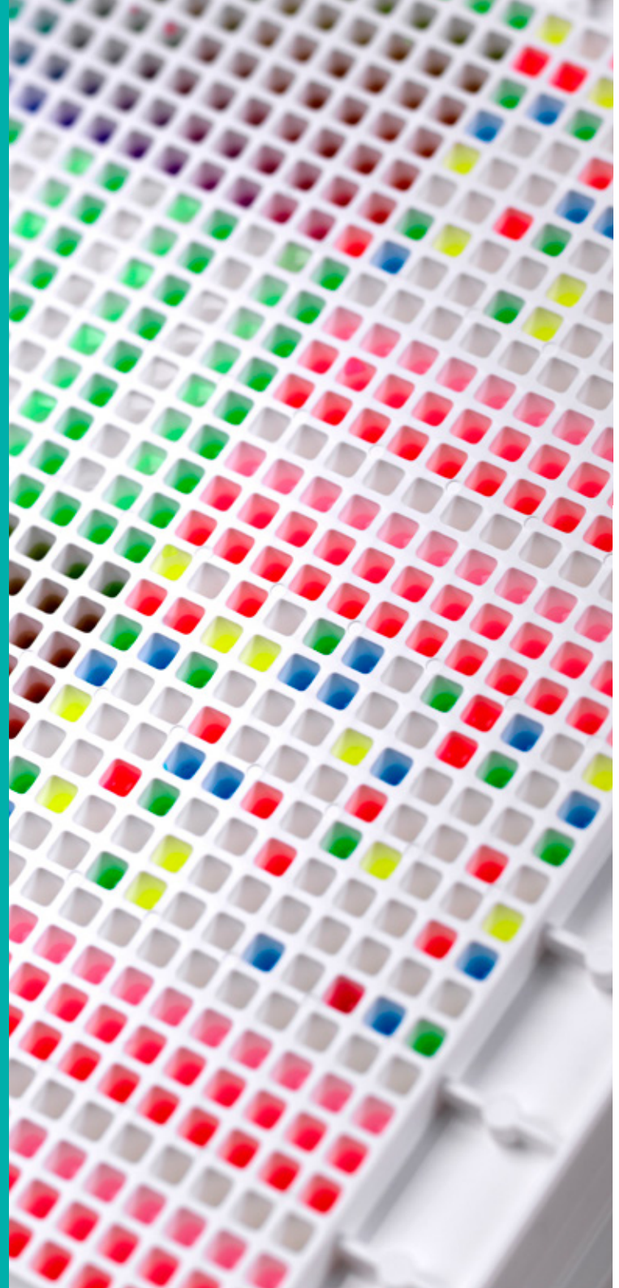
Optimised sample and reagent use, reduced waste and minimal dead volumes

ease-of-use

Intuitive setup and software proven in multiple-user labs; just walk up and use it. No wash steps or system fluids that require high maintenance



revolutionary non-contact dispensing

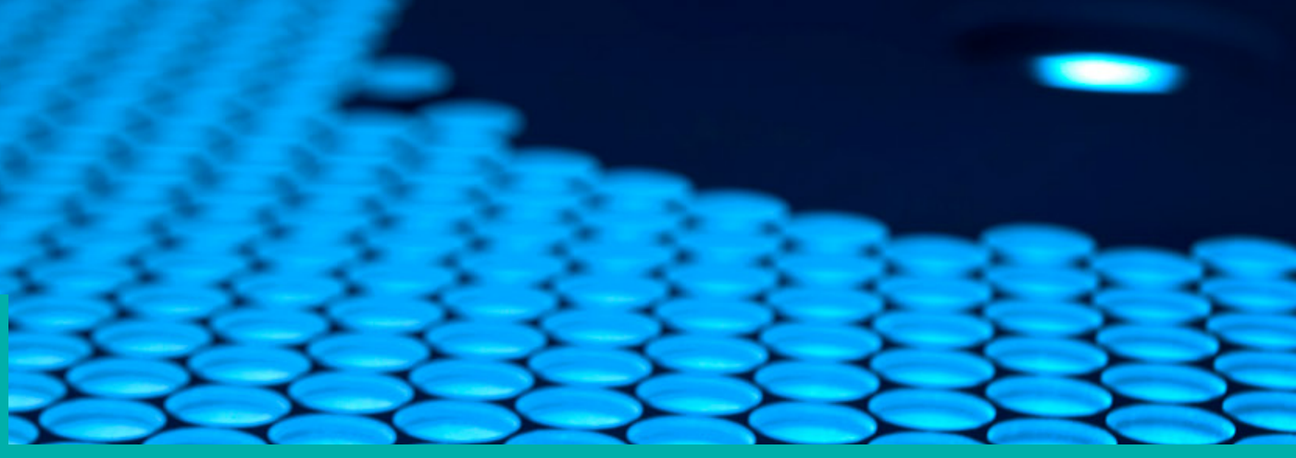


dragonfly® discovery combines non-contact, positive displacement pipetting with disposable tips (ensuring zero cross-contamination) to automate the assay development, screening and hit to lead process.

Each pipette can dispense any volume (from 200 nL - 4 mL) of any liquid into any well of the plate, allowing complex DoE experiments, assay gradients or optimisation screens to be rapidly prepared.

Reliable and repeatable dispensing at high speed also provides a robust solution for HTS reagent dispensing - eliminating issues of clogging and blocking.

- 96, 384 and 1536 well plate compatible
- assay development and validation
- design of experiment (DoE)
- HTS
- lead optimisation/hit to lead screening

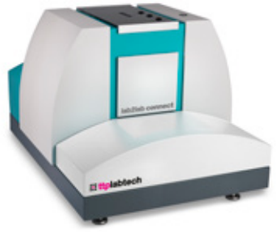


products that work together to **complete your automated workflow**

comSTACKER®

walk-away sample loading and unloading

- comSTACKER is a simple add-on unit for comPOUND storage modules. It enables the unattended automatic removal or replacement of microvials from comPOUND storage modules into racks held within the unit
- comSTACKER can work in harmony with lab2lab connect and comPILER



lab2lab connect

remote sample delivery – direct to the lab bench

- lab2lab connect co-ordinates and directly moves samples to and from a comPOUND store. This benchtop add on can send or receive samples from up to 25 m away and is ideal for work cell integration
- lab2lab connect can connect comPOUND stores in parallel so that samples held in different modules can be accessed simultaneously
- lab2lab connect can be provided with a rack handling system that manages the transfer of racks into your sample processing workflow

comPILER®

automated creation of assay plates from stored samples

- comPILER is interfaced directly to comPOUND stores in order to provide a high-throughput automated system that creates assay plates directly from stored compound libraries. Sample integrity is maintained throughout the entire process of thawing, decapping, liquid handling and recapping
- comPILER can cherry-pick microvials from up to 12 comPOUND stores simultaneously, allowing the system to retrieve, process and re-store over 60,000 microvials a day

lab2lab

flexible microvial transportation

- lab2lab is a flexible pneumatic transport system that co-ordinates the fast and safe delivery of single samples to specific locations
- it comprises a series of transport pipes that allow samples to be blown, using low pressure compressed air, to selected destinations for analysis or other processing
- samples can be transported from:
  - lab to analytical equipment (HPLC, GC/MS or NMR)
  - lab to lab
  - building to building
  - lab to store
  - store to lab

cube
scans all SBS racks and cryoboxes

A fast camera based scanner capable of imaging and decoding a rack in one to two seconds. Intuitive software that is simple to integrate with LIMS and other automation.

The cube scanner offers easy set-up, straight out of the box, delivered pre-calibrated, you only need to plug in and download the software.

easy to install and use
simple installer, no dongles required

versatility to suit your needs
benchtop or integrated use. Multiple 2D tube format compatibility

productive use of time
rapid scanning and simple data export

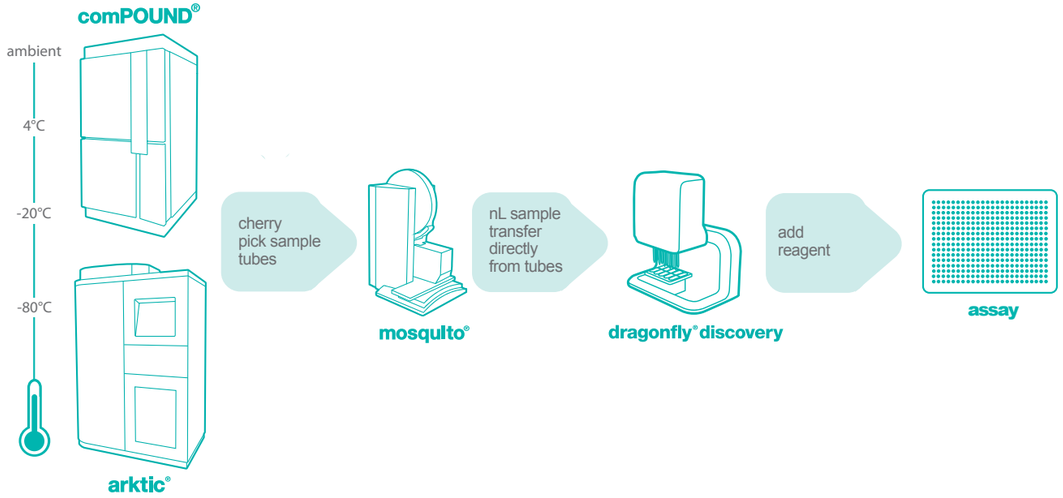
economical use of space and budget
smallest 'scan all' scanner with free software updates for life

reliability you can depend upon
durable construction with a 2-year guarantee

high quality scanning ensured
cryoprotection ensures no condensation

low volume 2D barcoded **tubes**

The full benefits of assay miniaturisation have not been realised due to the challenges of preparing assay ready plates from stock compounds. This usually requires several intermediate dilution plates to arrive at the final assay plate. New low volume 2D barcode tubes offer the ability to manage compound inventory efficiently and prepare assay plates directly from the storage tubes.



specifications

	comPOUND	arktic
function	modular sample storage from -20°C to ambient	modular storage at -80°C
capacity	100,000 x 1.4 mL vials, 200,000 x 0.5 mL vials	60,000 x 1.0 mL vials, 139,000 x 0.5 mL vials
dimensions (w x d x h)	1.2 x 1.65 x 2.40 m (48 x 65 x 93 inches)	1.35 x 0.8 x 1.98 m
throughput	600 vials/hour	450 vials/hour
applications	storage of biological and chemical samples e.g. candidate drug compounds, DNA, proteins, antibodies, oligos	storage of biological and chemical samples e.g. DNA, RNA, serum, oligos, RNAi library

	comPILER	comSTACKER	lab2lab	lab2lab connect
function	automated creation of assay plates from stored samples	walk-away sample loading and unloading	flexible, microvial transportation	remote delivery of samples from comPOUND to lab
capacity	links up to 12 comPOUND modules	up to 10 racks	N/A	lab2lab connect links up to 4 comPOUNDS
throughput	1000 vials/hour	50 vials/hour		1440 vials/hour

	mosquito HTS and HV	mosquito X1	dragonfly discovery
pipetting range	HTS - 25 nL – 1.2 µL HV - 500 nL – 5 µL	25 nL – 1.2 µL or 500 nL – 5 µL	200 nL – 4 mL
channels	8 or 16 channels	single channel	single channel
primary SBS plate format	96, 384, 1536	any type including slides	96, 384, 1536
applications	integration and miniaturisation of sample management workflow	provides walk-away “hit picking” of samples	assay development and optimisation screening without contamination or liquid classification
throughput	2 mins/ 96-well plate, 3 mins/ 384 well copy 5 mins/ 4 x 384 plate stamp out	6 seconds average cycle time to: aspirate, move, dispense, change tip	high speed dispensing (fill 384 well plate in < 1 min or 1536 well plate in < 3 min) irrespective of viscosity
consumables	Visit ttplabtechstore.com for more information on our consumables range		

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