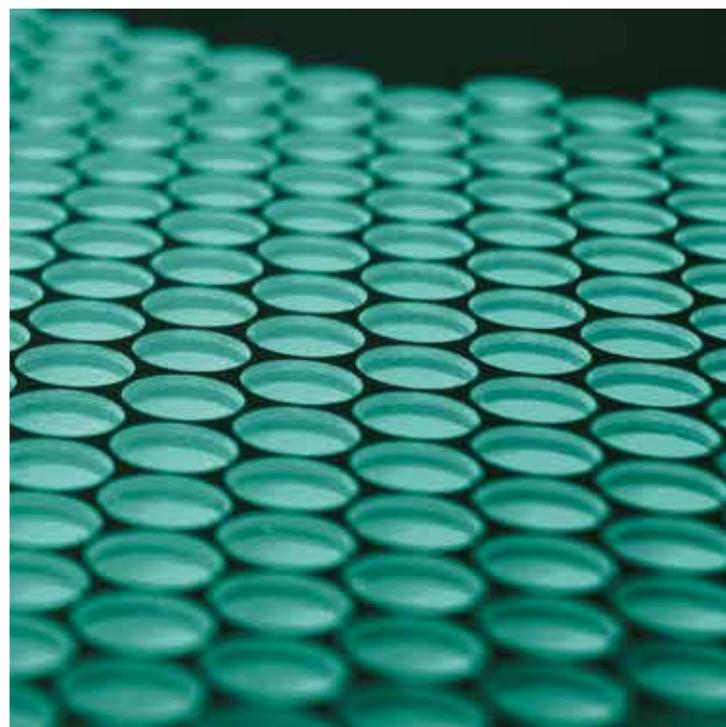


**sample
management**

**future-proof
lab solutions**



www.ttplabtech.com

 **ttp**labtech

sample protection from storage to bench

TTP Labtech created the world's first automated and modular vial-based storage systems for the secure, high-density storage of chemical and biological samples at low temperatures (-20°C and -80°C).

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

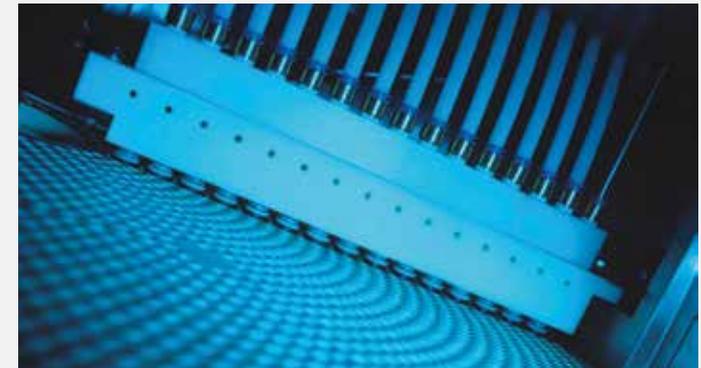
easily integrated

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® (-20°C store)

picks up to 600 tubes/hour



arktic® (-80°C biostore)

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



mosquito® liquid handlers

accurate, low volume pipetting
(25 nL — 5 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, with
- 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 sample 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 such as Titian Software's Mosaic.

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.



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 robots. Microvials are decapped and recapped and the mosquito HTS liquid handler dispenses the compound from the mother plates.

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.

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 m²) 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.

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, 138,000 x 0.5 mL vials
throughput	450 vials/hour



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.

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

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
moquito X1	25 nL – 1.2 µL or 500 nL – 5 µL	single



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 comPANION and compILER



comPANION

remote sample delivery – direct to the lab bench

- comPANION 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
- comPANION can connect comPOUND stores in parallel so that samples held in different modules can be accessed simultaneously
- comPANION 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

improving the **'flow' in workflow**

“TTP Labtech is a reliable partner that works closely with us - I never feel alone in this endeavor to improve our compound management system.”

Dr. Jose Quiroz,
Associate Director, Dart NeuroScience,
San Diego, USA

Dart NeuroScience

Dart NeuroScience LLC (DNS), San Diego, CA, USA made the strategic decision to invest in its own intellectual property by creating more drug compounds in house.

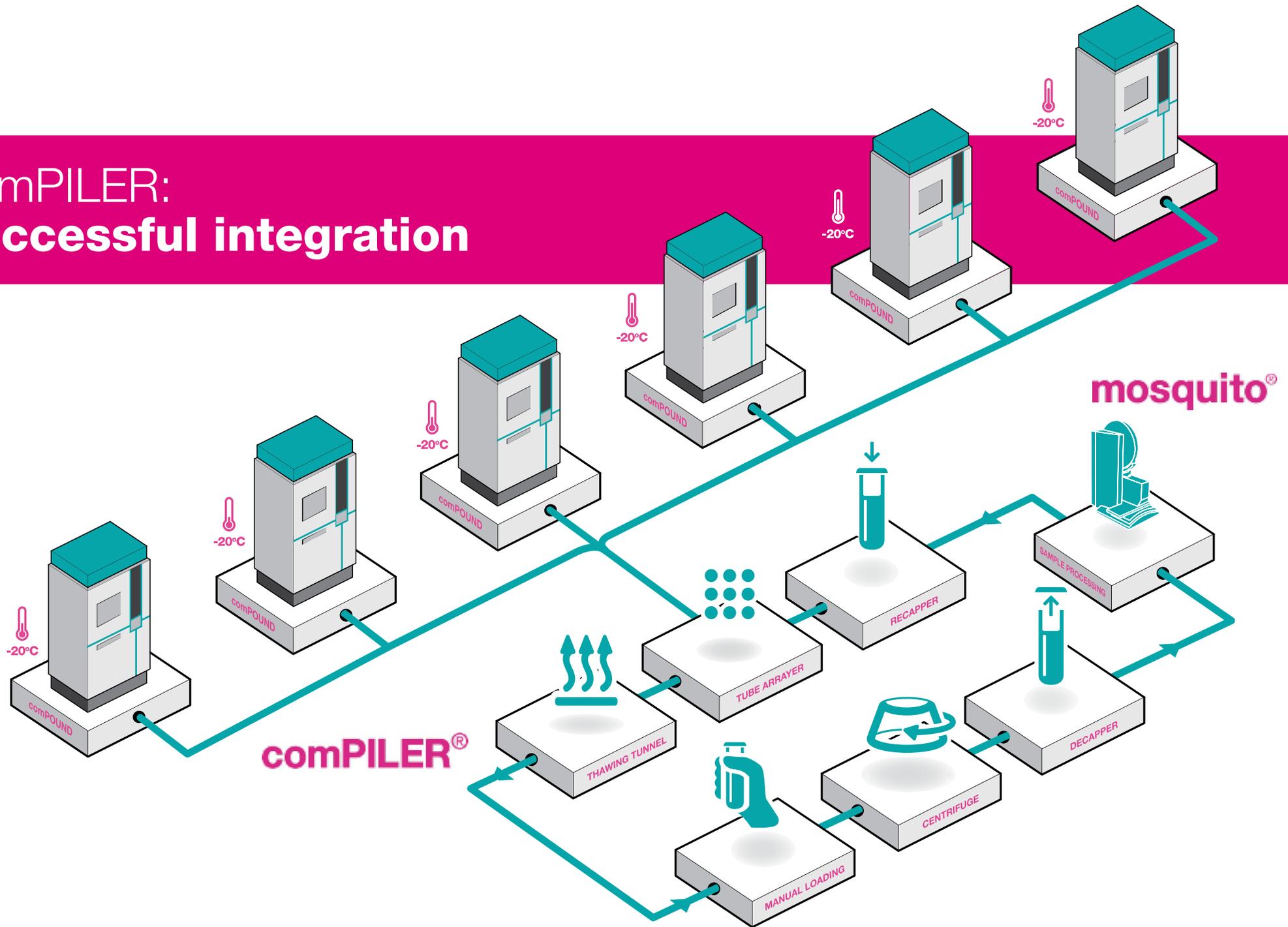
Dr. Jose Quiroz, Associate Director at DNS, collaborated with TTP Labtech to create a successful fully-automated workflow that processed compounds using comPOUND and comPILER, and created assay-ready plates using mosquito X1 (for plate hit-picking), and a mosquito HTS (for serial dilution of the compounds).

DNS had a number of requirements for storing and processing up to 1 million compounds:

- **automated workflow** to assure compound integrity
- **modular storage units** that would need to support company growth
- **high speed and throughput**
- **cost** in line with company budgets
- **trust and support** in vendors

Using the complete automated workflow provided by TTP Labtech, DNS reported the total picking time for a 5,000 hit-picking campaign was reduced by 80%, from 5 days to 1 day and the total personnel time required was reduced from 8 FTE hours to 1 FTE hour (88%).

comPILER: successful integration



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, 138,000 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 (53 x 32 x 78 inches)
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	comPANION
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	121 (links 1 comPOUND to 1 comPANION) 124 (links up to 4 comPOUNDS)
throughput	1000 vials/hour			1440 vials/hour

	mosquito® HTS	mosquito® HV	mosquito® X1
pipetting range	25 nL – 1.2 µL	500 nL – 5 µL	25 nL – 1.2 µL or 500 nL – 5 µL
channels	8 or 16 channels	8 or 16 channels	single channel
primary SBS plate format	96, 384, 1536	96, 384, 1536	any type including slides
applications	integration and miniaturisation of sample management workflow	integration and miniaturisation of sample management workflow	provides walk-away “hit picking” of samples
throughput	2 mins/ 96-well plate, 3 mins/ 384 well copy 5 mins/ 4 x 384 plate stamp out	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
consumables	Visit ttplabtechstore.com for more information on our consumables range!		

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