

# Enhancing gene editing operations through automated oligo inventory management



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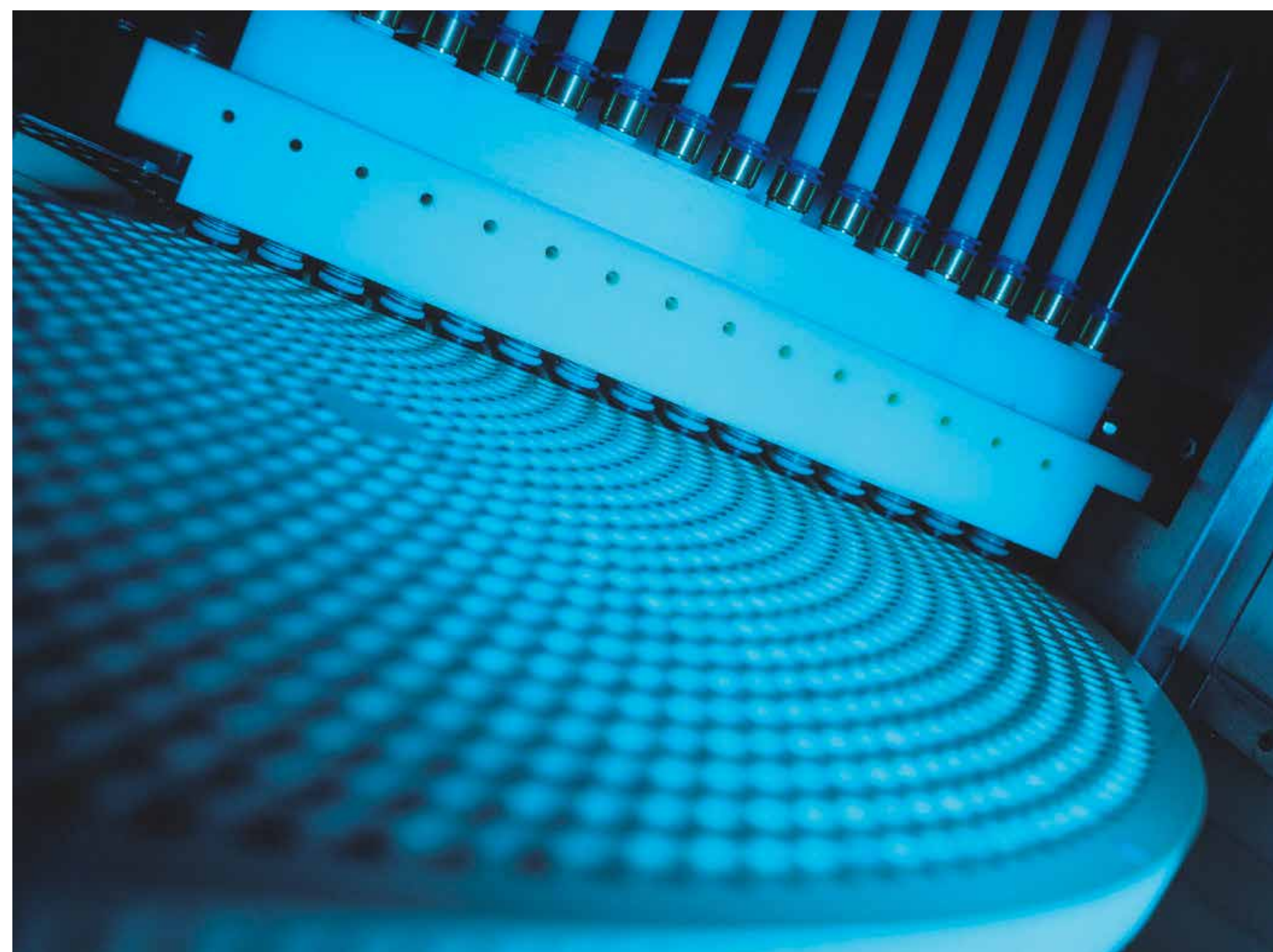
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## Overview

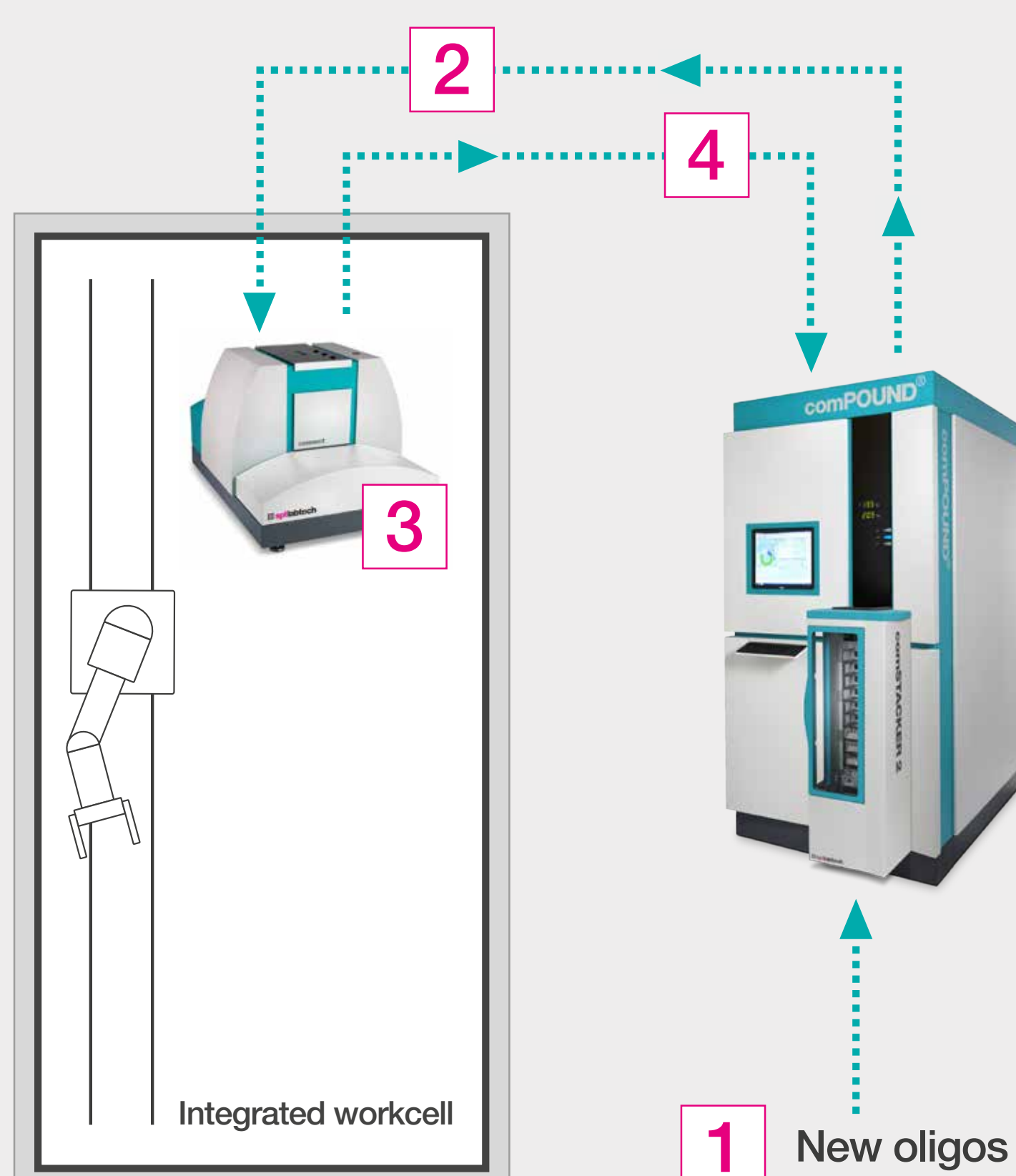
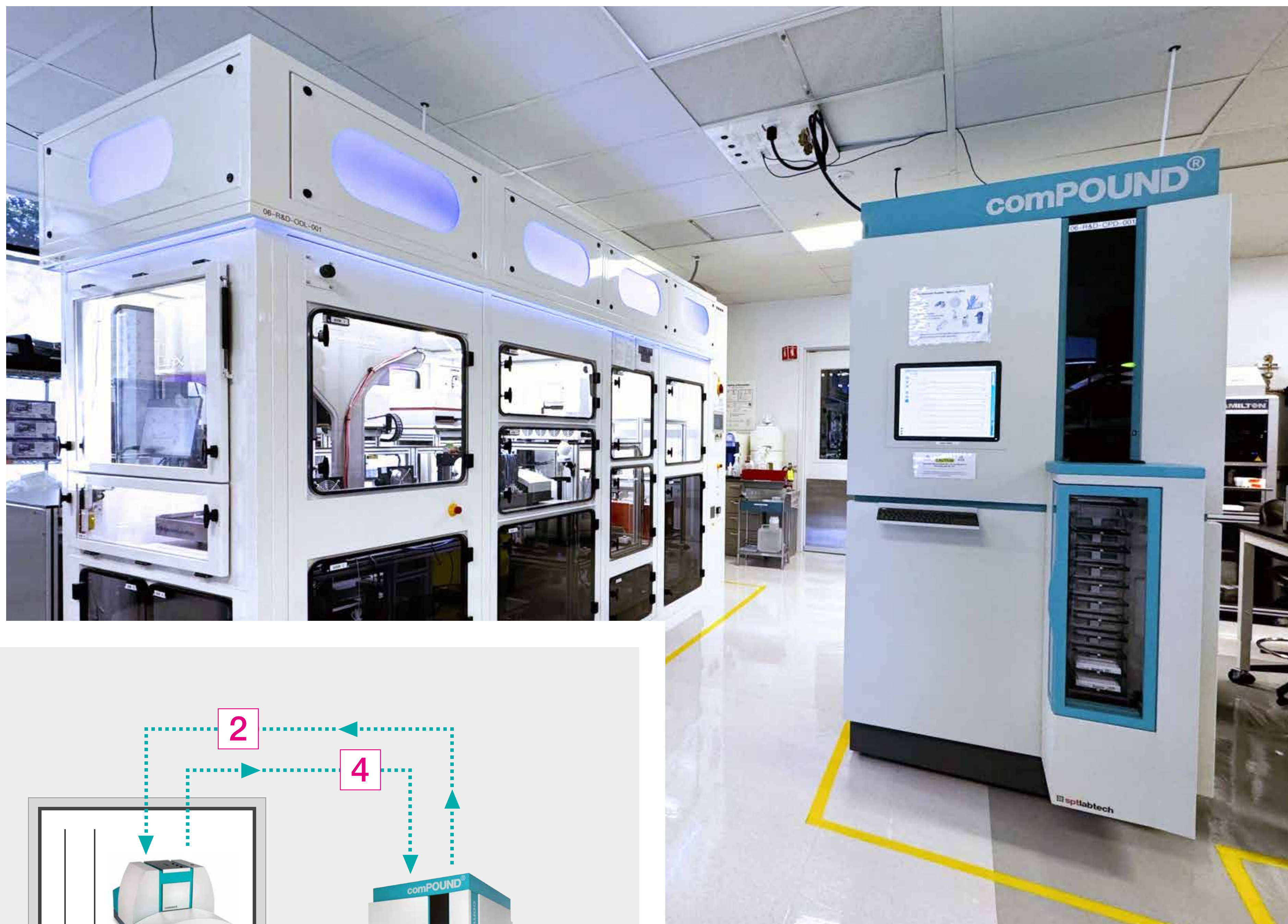
EditCo offers genome engineering solutions to facilitate research in target-based drug discovery and disease modelling. The team sought an automated solution to store and manage a growing library of over 30,000 unique oligonucleotides. The required rate and volume of sample retrieval and reformatting meant that manual operation with lab technicians simply wasn't feasible.

The poster details how the EditCo team implemented SPT Labtech's comPOUND<sup>®</sup> system for automated -20°C sample storage and retrieval as part of a larger automated work cell for downstream sample handling. This integrated solution has maximized lab efficiency by minimizing the need for manual intervention, and has ensured up-to-date records and metadata.



comPOUND uses an innovative rackless carousel system for high density, low footprint storage. Individual cherry-picked tubes are retrieved through pneumatic tubes without exposing other samples to ambient air.

## A fully automated inventory management work cell



1. New oligos arrive in tube racks, which are loaded into comSTACKER 2. This initiates the storage process into comPOUND and automatically updates the EditCo inventory system.
2. Every day, cherry-picked samples are retrieved from comPOUND and transferred via pneumatic technology to the work cell. On average, the system retrieves 1100 unique tubes per day, with some days going above 2000 tubes.
3. Samples are received in the connect module, in the optimal layout for downstream processing.
4. Post-processing, samples are returned to storage in comPOUND via the connect.

## Criteria for choosing comPOUND

- **Robust and reliable performance:** Reliable operation and a low failure rate were paramount to ensuring the integrity of valuable customer samples.
- **Cherry-picking capability:** comPOUND's rackless honeycomb storage structure allows the team to cherry-pick target oligo samples without exposing others to harmful thawing and refreezing.
- **Fast service and support:** SPT Labtech's reliance<sup>®</sup> team of engineers provide dedicated service and support to minimize instrument downtime and ensure peak performance.
- **Integration compatibility:** Seamless integration with existing work cells was essential to deliver the desired hands-free efficiency.

## Output and efficiency gains

Integration of comPOUND within the fully automated work cell has significantly reduced manual intervention, saving approximately 65 minutes per batch of tubes (up to 20 batches daily) and around 35 minutes per new sample inventory intake (2-3 times weekly).

This time saving allows the Operations team to focus on other tasks, enabling parallel workflows, and further enhancing lab efficiency.

The reduction in 'hands-on' time and eliminating the need for a separate barcode scan step has allowed users to perform other parallel tasks.

**Table 1.** Comparison of lab user touch time required for inventory management tasks before and after installation of comPOUND.

During regular operations:		User Touch Time (mins)	
User Action	With comPOUND integration	Without comPOUND	
Retrieve source labwares	0	20	
Scan barcodes and record source retrieval in inventory system	0	10	
Scan barcodes and record source return & locations in inventory system	0	15	
Return source labwares	0	20	
<b>TOTAL</b>	<b>0</b>	<b>65</b>	

During inventory loading:		User Touch Time (mins)	
User Action	With comPOUND integration	Without comPOUND	
Load new source labwares into inventory	5	20	
Scan barcodes and record locations in inventory system	0	15	
<b>TOTAL</b>	<b>5</b>	<b>35</b>	

## Other benefits of the system

- Precise oligo selection and control over destination plate layout has optimized downstream liquid handling processes.
- Ensuring accurate up-to-date inventory and metadata without manual intervention has minimized turnaround time.
- The system's ease of use meant that users were comfortable after a single training session, with no steep learning curve.
- The closed-loop end-to-end processing of each work order has enabled full traceability of samples and processes.