

Life Sciences Case Study on Nucleic Acid Encapsulation

Cache DNA Inc., San Carlos, CA, USA

A public biotechnology company called Newclease Therapeutics* with headquarters in Boston, Massachusetts was recently interviewed regarding its sample storage practices.

With Cache's ambient nucleic acid encapsulation, Newclease saw considerable impacts to its bottom line:

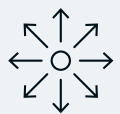
	Existing Biostorage Operation Costs	Biostorage Operation Costs with Cache	Potential Savings with Cache (74%)
Annual	\$77,619	\$20,646	\$56,973
12 Year Cummulative	\$931,422	\$247,750	\$683,672

ADDITIONAL IMPACTS



I. Sustainability: Greener Footprint

- **718 metric tons of CO₂** (equivalent to planting 11,876 trees, according to the [EPA](#))
- **1.03 million kWh** reduced electricity consumption (equivalent to 142 homes for a year)
- **Less waste:** no replaced freezers, no redundant aliquots due to freeze-thaw considerations



II. Overhead efficiencies: Doing More with Less

- Up to **320 sq. feet of space reclaimed**, enough for 5 new incubators or analyzers
- One of Newcleate's existing liquid handler systems, if run for 1 hour per day, can even convert the samples **without needing new equipment**.
- With a better-integrated ambient sample management system, **hundreds of hours** of research time could be reclaimed across the staff.

III. Protection: Robust Sample Assurance & Insurance



- Ambient storage **eliminates** the need for costly **dry ice shipping** downstream.
- **No more uninterruptible power supply** is needed for samples at room temperature.
- Unlock opportunities by keeping samples longer and preserving fragile nucleic acids (e.g. **RNA**)

*Actual company names redacted to preserve the anonymity of participants.

Case Study Company Background

About

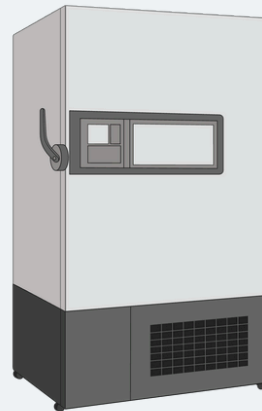
The organization has a proprietary platform for genomic medicine, with technologies ranging across the gene editing and cell/gene therapy landscape. As part of their research & development, Newclease collects and retains many biospecimens—ranging from formalin-fixed paraffin-embedded (FFPE)/paraffin-embedded tissues (PETs) to assorted tissues from animal studies. Newclease runs assays such as **FISH, microarrays, and short-read sequencing** on these samples as part of its ongoing workflows.



In fact, in their pre-clinical environment, **nucleic acid samples must be kept in storage indefinitely** for reproducibility and quality control steps, a measure often required by the FDA for the development of human drugs until they reach the market (read more from the Global Bioanalysis Consortium Harmonization Team [here](#)). On average, it takes 12 years to bring a drug to market ([McKinsey](#)).

Logistics

As a result, 20% of the total space in their lab is occupied by two dozen -80°C freezers running continuously. Newclease has an estimated **100,000 samples with 50,000 new samples each year**, stored in Eppendorf tubes with TRIzol™ or 96-well plates. Along with the primary biospecimens, for roughly 60% of the samples, RNA and DNA are isolated and kept. Due to the high cost of outsourcing RNA storage, the team has assembled their manual biorepository onsite, shared across 60 personnel and their shifting project needs. This costs the organization \$77,619 annually or \$931,422 over the lifetime of the samples. For a typical freezer, this cost breaks down into energy consumption (39%), initial purchase prices (28%), HVAC (11%), Maintenance (11%), and floor space (11%) ([Stirling Ultracold](#)).



x14.5



x1

Transitioning to Ambient

By transitioning to Cache's ambient storage solutions, **14.5 freezers can be phased out** or repurposed by just one of Cache's automated systems. The conversion of retrospective samples takes roughly 1 year. Prospective samples can then be Cached directly. Newclease stands to **save \$56,973 annually** on average, or **\$683,672 over the lifetime** of currently stored samples.

To find out how Cache's technology may benefit your organization, reach out to hello@cache-dna.com for a personalized quote.

[Request a Demo Kit](#)