

# The data you cannot afford to lose, protected for 150 years.

An air-gapped, tamper-proof vault that stores your most critical secrets in synthetic DNA. Physically offline, unreachable by any network, and readable for up to 150 years.

## WHY THIS MATTERS NOW

Data volumes are exploding, and the fastest-growing category is cold data: information that is rarely touched but can never be lost. It already makes up 60% of everything generated today,<sup>1</sup> and it is exactly where encryption keys, recovery credentials and long-term records live. Traditional storage was not built to protect it. Cloud infrastructure stays online and exposed. Magnetic tape and disk media degrade, and are easy to lose or steal. Paper doesn't scale. When these records disappear, so does your ability to recover, to prove compliance, or to operate at all.

## THE MISSING LAYER

Biomemory built DNA Shield to close that gap. It pairs a purpose-built appliance, physical DNA storage, and a secure handling protocol to turn your most critical digital assets into a biosecure archive that cannot be reached over a network, cannot be altered without detection, and does not depend on any other piece of infrastructure surviving alongside it.

## WHERE DNA SHIELD FITS

Four use cases for the small, irreplaceable information an organization cannot afford to lose, led by key custody continuity.

### Key custody continuity

An offline share and the records to keep your key recovery scheme working through custodian and vendor change.

### Crown-jewel IP

An offline, in-jurisdiction copy of the industrial knowledge you cannot afford to lose.

### Regulated integrity records

A tamper-evident package proving your critical records are exactly what was approved.

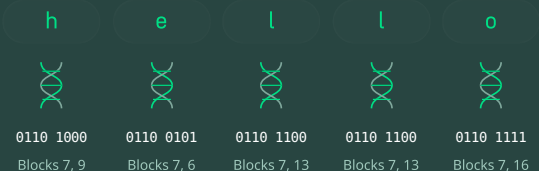
### Sovereign memory

Preserving records that must outlast the institutions and systems that created them.

## HOW DNA STORES DATA

Digital files are sequences of 0s and 1s. DNA Shield is designed to translate that information into sequences built from DNA's four natural bases: adenine, thymine, guanine and cytosine. The encoding scheme is engineered so the synthesised DNA can't be used by living organisms. Biosecure by design. The result is a physical molecule that stores information at a density no electronic medium can match, and that is designed to stay chemically stable for the long term without power.

Example: the word "hello", printed as 10 DNA blocks.



## WHY DNA

1,000,000x

denser than magnetic storage<sup>2</sup>

150 yrs

readability, design target<sup>3</sup>

Air-gapped

by design, offline at rest<sup>3</sup>

0

energy consumption at rest

WHAT'S INSIDE DNA SHIELD

- Secure DNA printing to write your encrypted data into DNA
- A DNA data vault for secure physical custody
- Qualified DNA storage, the physical storage medium itself
- A write and recovery service covering encoding and retrieval
- An error correction pipeline that verifies data integrity end to end

Write and read DNA data, the complete solution

DNA Shield is delivered as a complete solution, not a lab process you have to run yourself. Available as **storage-as-a-service**.

HOW IT WORKS

1

Select and encrypt

Encrypt data before it leaves your systems.

2

Send to DNA Shield

Encrypted file sent to Biomemory's print service.

3

Encode and print

Translated into DNA and printed.

4

Store, air-gapped

Sealed and stored offline, our vault or yours.

5

Retrieve on Demand

Located, sequenced, read back to binary via DNA Shield portal.

6

Restore

Data returned; you decode and restore.

BUILT TO OUTPERFORM WHAT YOU USE TODAY

Based on FAIR model risk analysis (Annual Loss Expectancy), DNA Shield delivers up to a 95% reduction in risk against the media most organizations rely on today.

| Medium         | Air-gap strength       | Readable by           | Long-term retention               |
|----------------|------------------------|-----------------------|-----------------------------------|
| Cloud          | Always online          | Anyone with access    | About 5 years                     |
| USB key / disk | Online on connect      | Any computer          | About 5 to 10 years               |
| Tape           | Online on transfer     | A standard tape drive | About 10 to 30 years <sup>4</sup> |
| Paper          | No signal, but fragile | The naked eye         | Variable                          |
| DNA            | Fully air-gapped       | A DNA sequencer only  | 100+ to 1,000+ years              |

WHO NEEDS THIS

Defense, intelligence and government

Banking and insurance

Healthcare and life sciences

Critical infrastructure

IP-intensive industries

Blockchain, Web3 and tokenization

Selected for high sensitivity, long-term exposure, high impact of loss, and fit with DNA's constraints.

Let's protect what matters most.

The next step is simple: a scoped pilot on one critical dataset, with success criteria agreed up front.

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AIR-GAPPED | BIOSECURE | IMMUTABLE | 150-YEAR MOLECULAR RETENTION

1. "Cold data" growth figure: [CTERA, The Cold Data Storage Report](#).  
2. Density comparison: [nature.com/articles/537022a](https://nature.com/articles/537022a). Describes DNA as a storage medium generally (including disk and tape), not a Biomemory appliance.  
3. Long-term readability and air-gap: design targets under active qualification, not yet independently verified. Framed here as design intent, not a guaranteed result.  
4. Tape's upper-range figure assumes active archival management: climate-controlled storage and periodic retensioning/rewinding on a fixed schedule. Left simply written and stored, tape's practical life runs well short of that. DNA Shield requires none of this: write once, store, and forget.