DNA Data Storage Alliance

Dave Landsman – Co-chair
Stephane Lemaire – Co-chair

Storage and Computing with DNA 2025

Sorbonne University, Paris, France
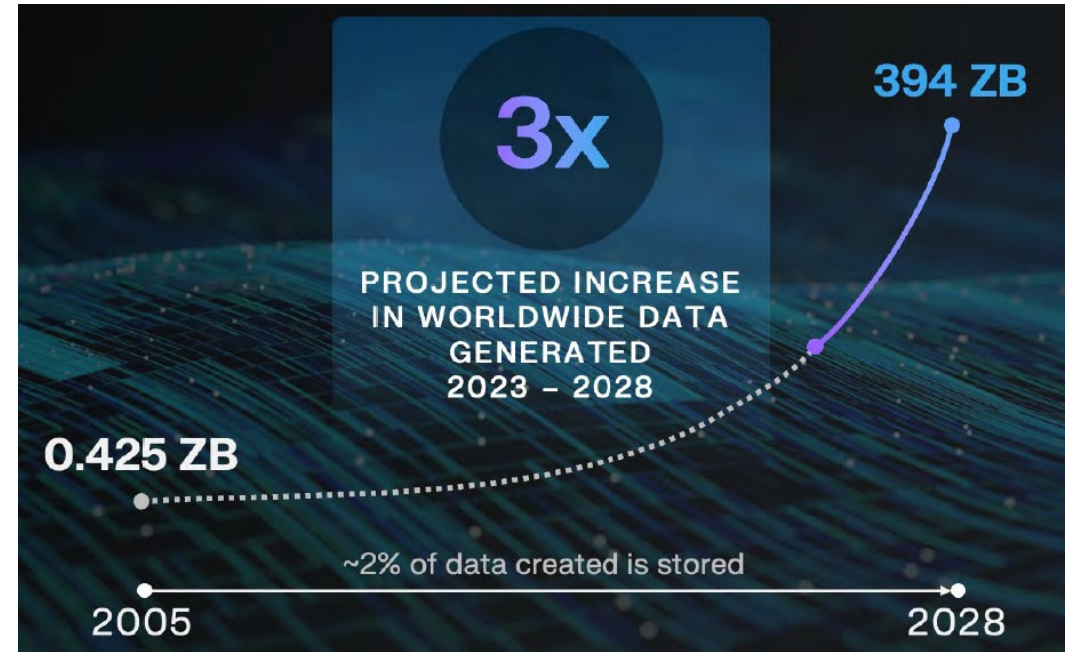
June 19-21, 2025

Why are we having this conference?

DNA data storage is amazing!

But why are we having this conference, really?

- "Save/Discard Dilemma"
  - Increasingly expensive, impractical to save all we want with existing storage technology
  - AI/ML is both adding to quantity of data to be saved and creating higher opportunity cost of throwing away information

- It's not just about the zettabytes
  - Digital archivists want to save culture, history, law, ... forever
  - Durability with no refresh is issue for this data, and durability of existing storage media not growing

- We need new storage media with radically lower TCO
  - Dense
  - Durable at room temp
  - Zero power at rest
  - No/minimal refresh

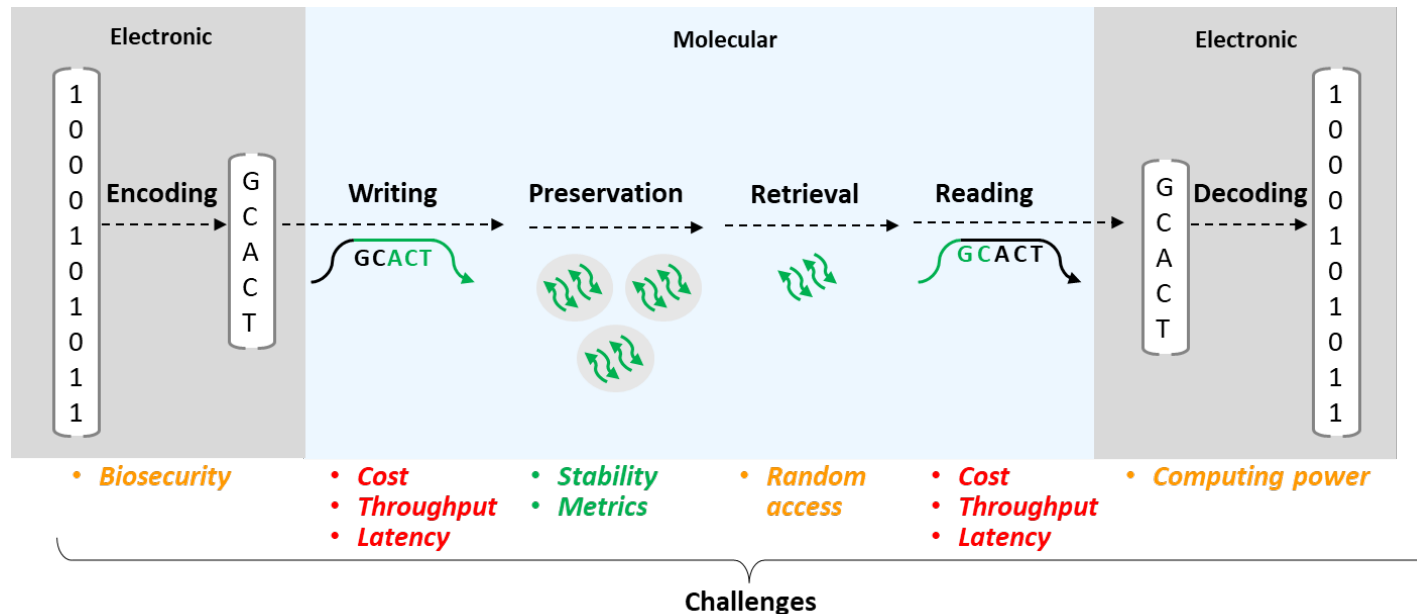- And we need to be able to compute on this data in situ

DNA data storage and compute can be a solution

Source: Worldwide IDC Global DataSphere Forecast, 2024-2028, doc #US52076424, May 2024

DNA for data storage is not just a media type

- Built on existing medical/scientific advances of past decades
- It has potential for being a multi-vendor storage ecosystem
- Hugely interdisciplinary
- Cross pipeline research and cooperation needed to address challenges

- This is why we created the DNA Data Storage Alliance

DNA Data Storage Alliance

Created 2020, Joined SNIA 2022

Mission
- Create an interoperable storage ecosystem based on DNA as a data storage and compute medium

Scope
- Educate the market to create awareness and adoption of DNA data storage and compute
- Influence and drive R&D and funding
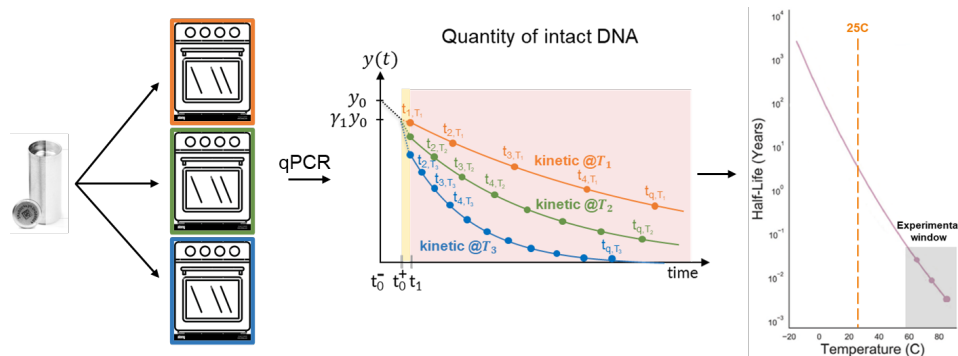- Develop standards and specifications to encourage ecosystem evolution

Profile/Activities
- 40+ members
- Regular workgroup meetings
- Events, publications, social media
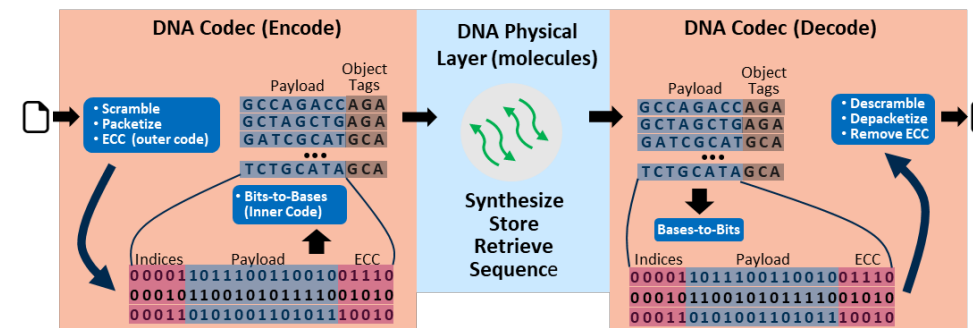- SNIA certified as ISO JTC-1 ARO and PAS

Board

General Membership

DNA Data Storage Alliance Workgroups

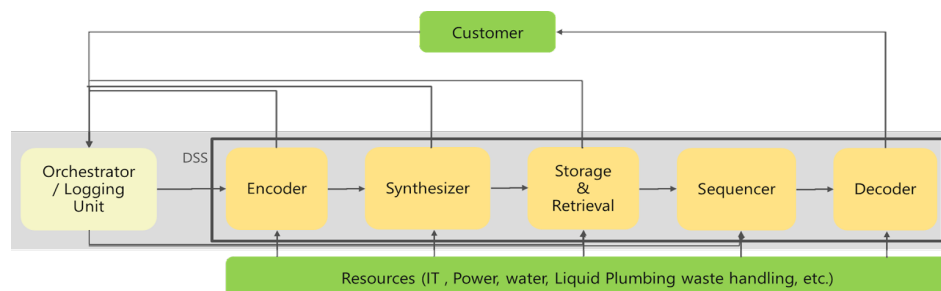## 1) Data Retention Workgroup

- **[DNA Data Stability Evaluation Method v1.0](#) (Sep-2024)**
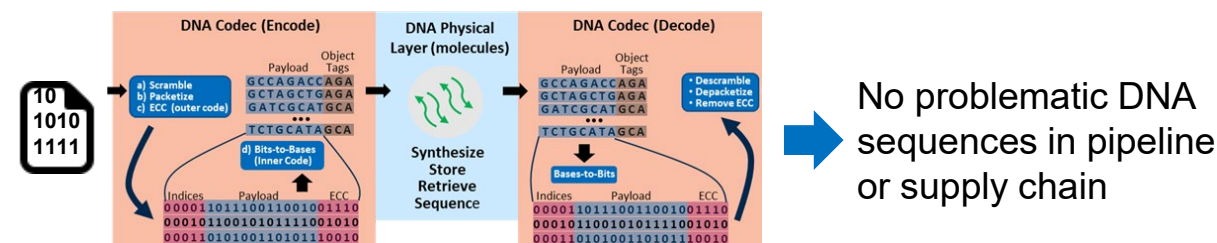
2) Codecs Workgroup

- **White paper: [DNA Data Storage Codecs](#) (Jun-2025)**

3) Interoperable Interfaces Workgroup

- **White paper planned**
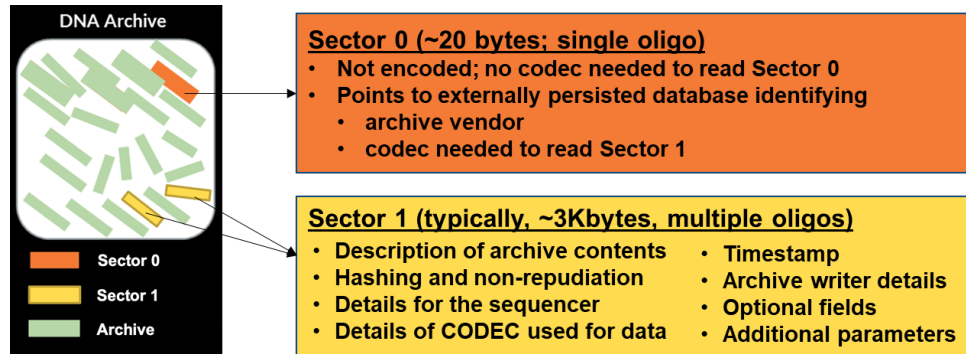
4) Biosecurity Workgroup

No problematic DNA sequences in pipeline or supply chain

- **Initial regulatory position drafted and being socialized**
- **Considering next steps: standards, best practices, etc.**

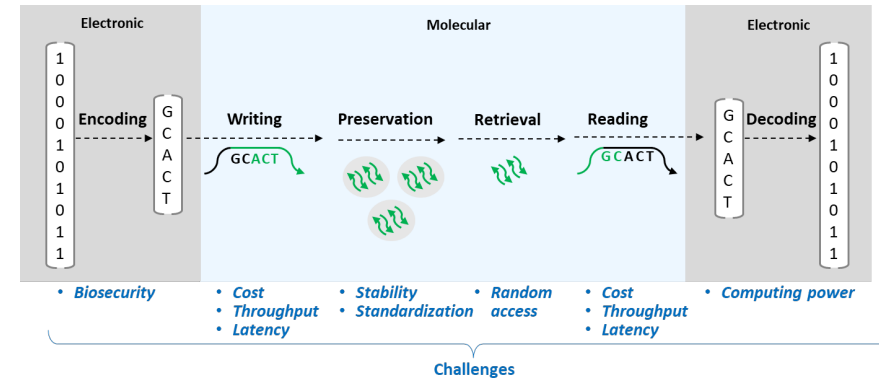# DNA Data Storage Alliance Workgroups

5) DNA Archive Rosetta Stone Workgroup

Sector 0 (~20 bytes; single oligo)
- Not encoded; no codec needed to read Sector 0
- Points to externally persisted database identifying
  - archive vendor
  - codec needed to read Sector 1

Sector 1 (typically, ~3Kbytes, multiple oligos)
- Description of archive contents
- Hashing and non-repudiation
- Details for the sequencer
- Details of CODEC used for data
- Timestamp
- Archive writer details
- Optional fields
- Additional parameters

- **Sector 0** and **Sector 1** (2023)

6) Roadmap SIG

- **White Paper: An Introduction to DNA Data Storage** (2021)
- **White paper: DNA Data Storage Technology Review** (Jun-2025)

Other workstreams being considered
- Random access
- Write verification
- …

DNA DATA STORAGE ALLIANCE
A SNIA Community

THANK YOU

Come join us:

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