MI·DNA DISC

The first *in vivo* system to store and edit DNA-based data

www.midnadisc.eu

Partners

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

TUM

SVEUČILIŠTE U ZAGREBU 1874 PMF PRIRODOSLOVNO - MATEMATIČKI FAKULTET 1946

EKO Refugium

dayone your sidekicks beyond research

Get in touch with MI-DNA Disc

www.midnadisc.eu

European Innovation Council

Funded by the European Union

The MI-DNA Disc Project was funded by the EU Commission in the framework of the Horizon Europe – EIC Transition Open programme.

In MI-DNA Disc we will develop a low-cost, energy-efficient, and fast data drive that is able to write, edit, store, and retrieve DNA-based data. For this purpose, we propose a novel in vivo system that will overcome the limitations of current DNA-data storage technologies.

To achieve this vision, we will exploit the ability of bacteria to store and exchange DNA following light-dependent stimulation.

MI·DNA DISC

Positive environmental impact
The cultivation of bacteria requires little energy, no rare-earth elements, and other toxic compounds.

Integrity
Writing and storage cartridges can be used independently from each other. The two cartridge types can be combined with other DNA writing and storing concepts due to the simple inlet and outlet interfaces.

Reliability
Introduction of checksum and hashing function elements into the DNA data in combination with a data duplicate encoded as reverse complementary sequence will allow to perform in silico data corrections necessary due to mutations during DNA replication and amplification.

Sustainability
Bacteria can use an almost infinitive reservoir of organic and inorganic compounds as power and nutrition source. They can be even autotrophic meaning that the power themselves directly from sunlight. Compared to in vitro DNA synthesis systems, there are not required chemicals, plasticware (e.g., pipette tips, tubes), and sophisticated liquid handling instruments.

Scalability
MI-DNA Disc uses data drive that are mass products. Displays and filter cartridges are essential in several sectors such as the biotech, pharma, food, and beverage industry.

MI-DNA Disc novel approach could change the way we store data and bring relevant benefits to the following sectors

- **Pharma and medical data**
- **Digital legacy documents**
- **Cultural heritage digital documents**
- **Corporate data centres**