



**HAL**  
open science

## Experimental DNA storage platform

Olivier Boullé, Dominique Lavenier

► **To cite this version:**

Olivier Boullé, Dominique Lavenier. Experimental DNA storage platform. DSMM 2022 - 1st International Conference on Data Storage in Molecular Media, Mar 2022, Virtual, France. pp.1-1. hal-03817374

**HAL Id: hal-03817374**

**<https://hal.science/hal-03817374v1>**

Submitted on 17 Oct 2022

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

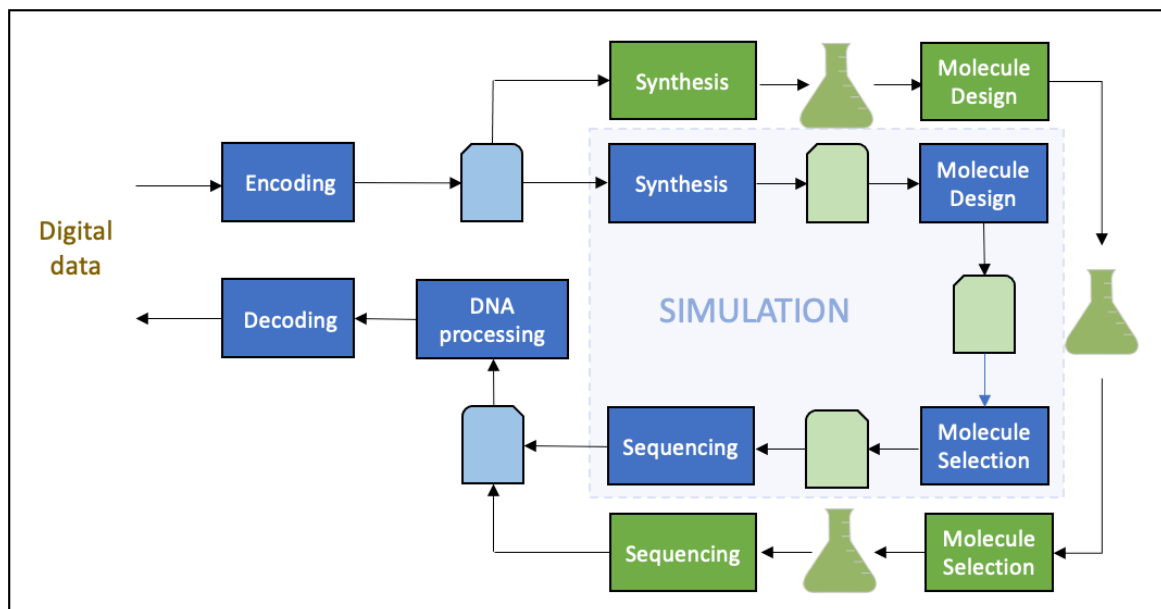
## Experimental DNA storage platform

Olivier Boullé ([olivier.boullé@inria.fr](mailto:olivier.boullé@inria.fr)), Dominique Lavenier ([lavenier@irisa.fr](mailto:lavenier@irisa.fr))  
Univ. Rennes, CNRS IRISA, Inria RBA, Rennes, France

The dnarXiv projects<sup>1</sup> aims to explore various strategies for DNA storage. We have designed an experimental DNA storage platform allowing both to conduct real and/or in-silico experiments. The platform includes different modules generally used in the write/read DNA storage process: encoding, synthesis, molecule design, storage, molecule selection, genomic data processing, decoding. This is a flexible environment for testing various approaches simply by substituting new modules to the existing ones.

As an example, we demonstrated the feasibility of using nanopore sequencing for DNA storage. Starting from a text or an image, the encoding module generates DNA sequences of length compatible with synthesis technology. After synthesis, sequences are grouped to form longer DNA molecules. These molecules are then sequenced with nanopore technology, base-called and processed with bioinformatics tools to recover the DNA sequences from which the original document can be reconstructed.

The advantage of performing both real or in-silico experiments is that real experiments provide data and valuable information from which models of the biotech modules (synthesis, molecule design, sequencing, etc.) can be built to reproduce in-silico experiments on larger data sets.



*dnarXiv platform*

<sup>1</sup> <https://project.inria.fr/dnarxiv/>