

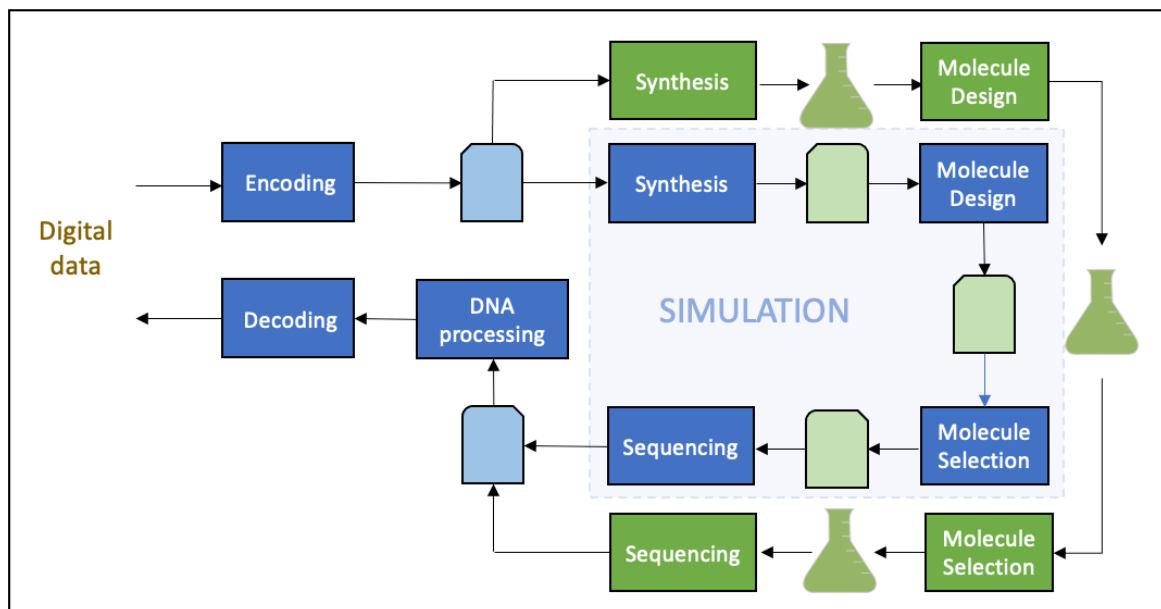
Experimental DNA storage platform

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The dnarXiv projects¹ 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

¹ <https://project.inria.fr/dnarxiv/>