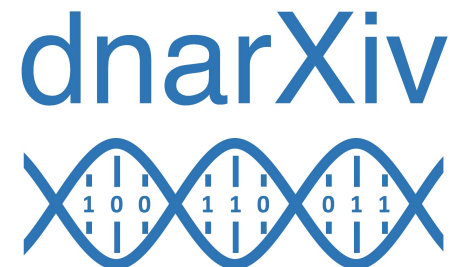


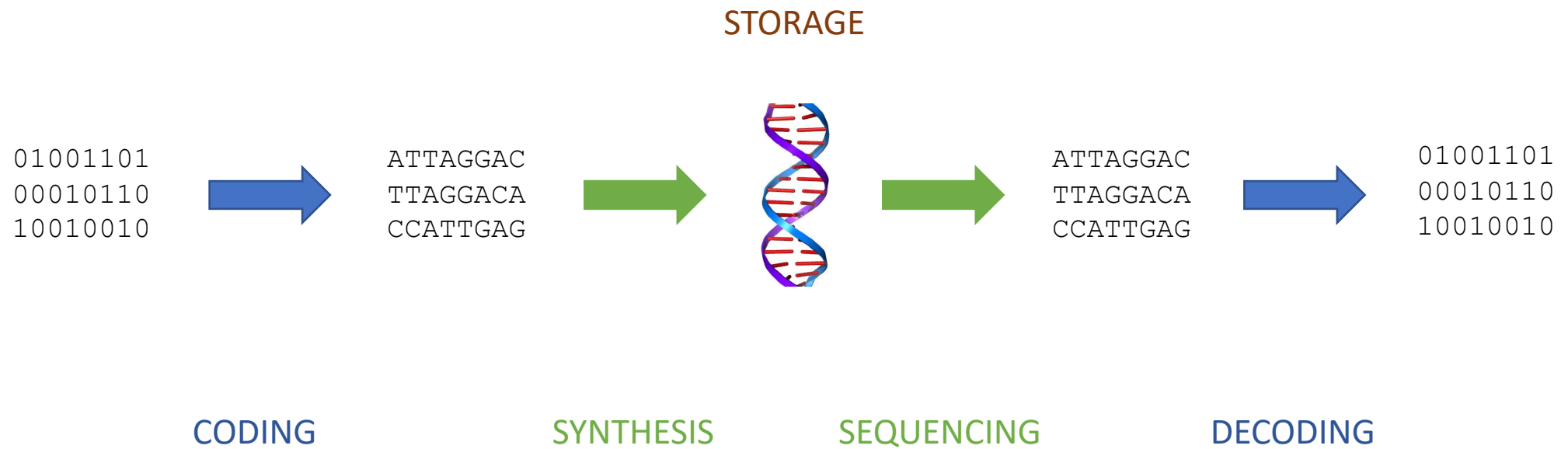


dnarXiv Platform

Spring 2021



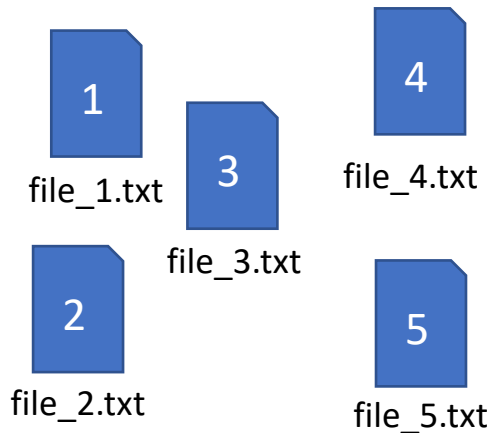
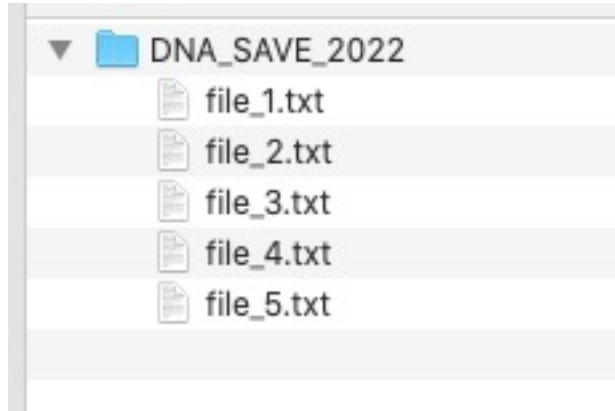
Principle of DNA data storage



dnarXiv approach

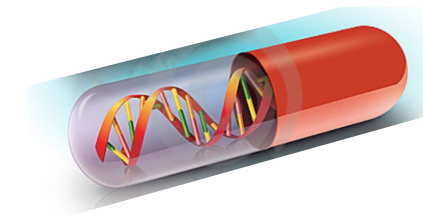
Copy files to store on the same DNA container inside the same directory

dna_copy



dna_store

Store on DNA molecules all the files contained in the directory



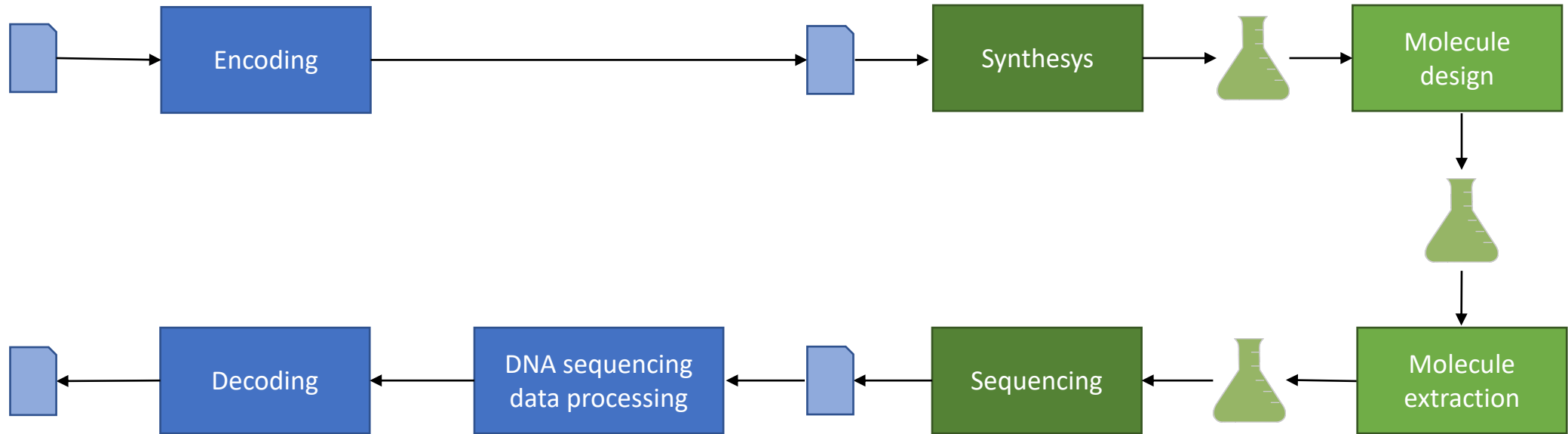
DNA container

dna_read

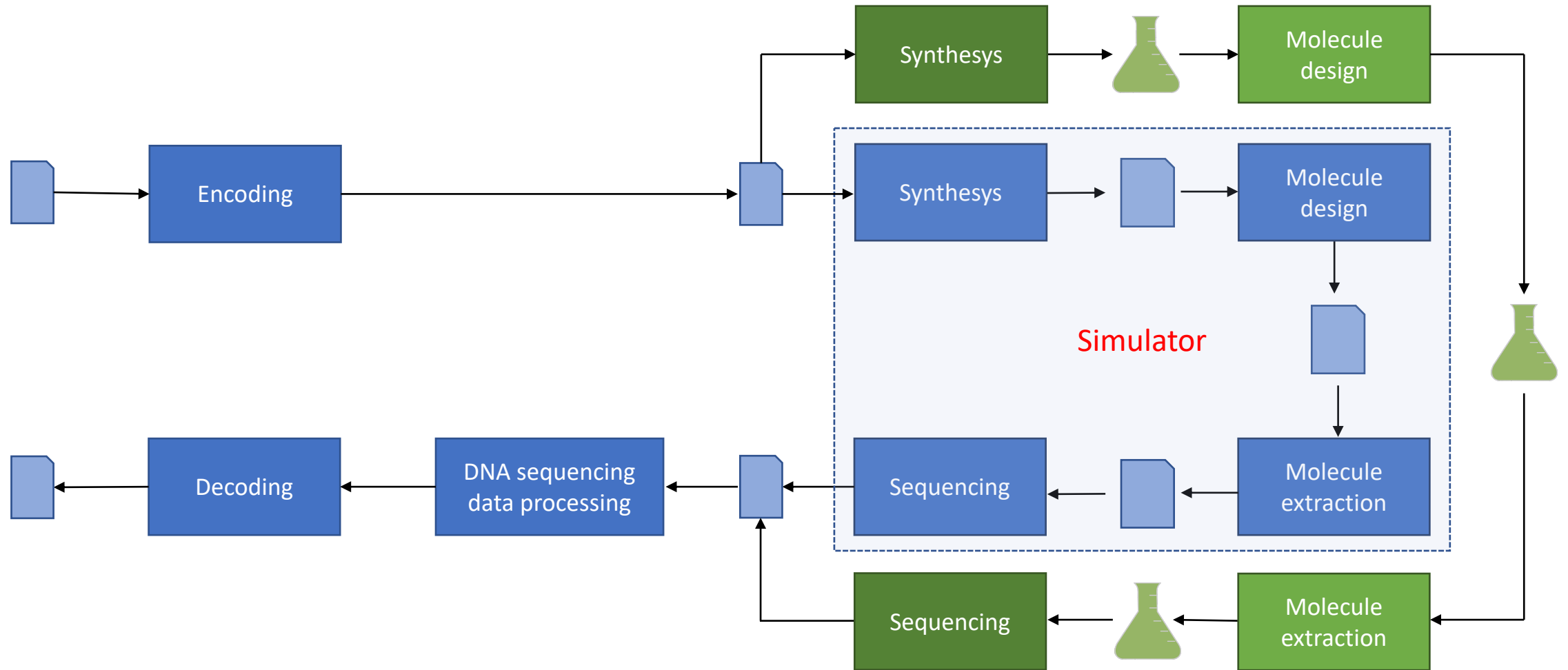
Extract a specific file



dnarXiv implementation



in-silico alternative



dnarXiv: commands & scenarios

commands

dna_create

Create an empty container

dna_copy

Add a file to a container

dna_del

Remove a file from a container

dna_list

List the files of a container

dna_store

Write the container files on DNA

dna_read

Read a DNA file from a container

scenarios

A scenario is associated to:

- ❖ the execution mode: wet-lab or in-silico
- ❖ the nature of the objects to archive
- ❖ the source coding scheme
- ❖ the error corrector code
- ❖ the synthesis technology
- ❖ the structure of the DNA molecules to store
- ❖ the molecule extraction strategy
- ❖ the sequencing technology
- ❖ ...

dnarXiv command implementation

dna_create <container_name> <file_scenario>

Create an empty container

dna_copy <file_name> <container_name>

Add a file to a container

dna_del <file_name> <container_name>

Remove a file from a container

dna_list <container_name>

List the files of a container

dna_store

Write the container files on DNA

dna_read

Read a DNA file from a container

Create a directory that contain

- The scenario specification
- The files to store inside the same DNA container

dnarXiv commands

dna_create

Create an empty container

dna_copy

Add a file to a container

dna_del

Remove a file from a container

dna_list

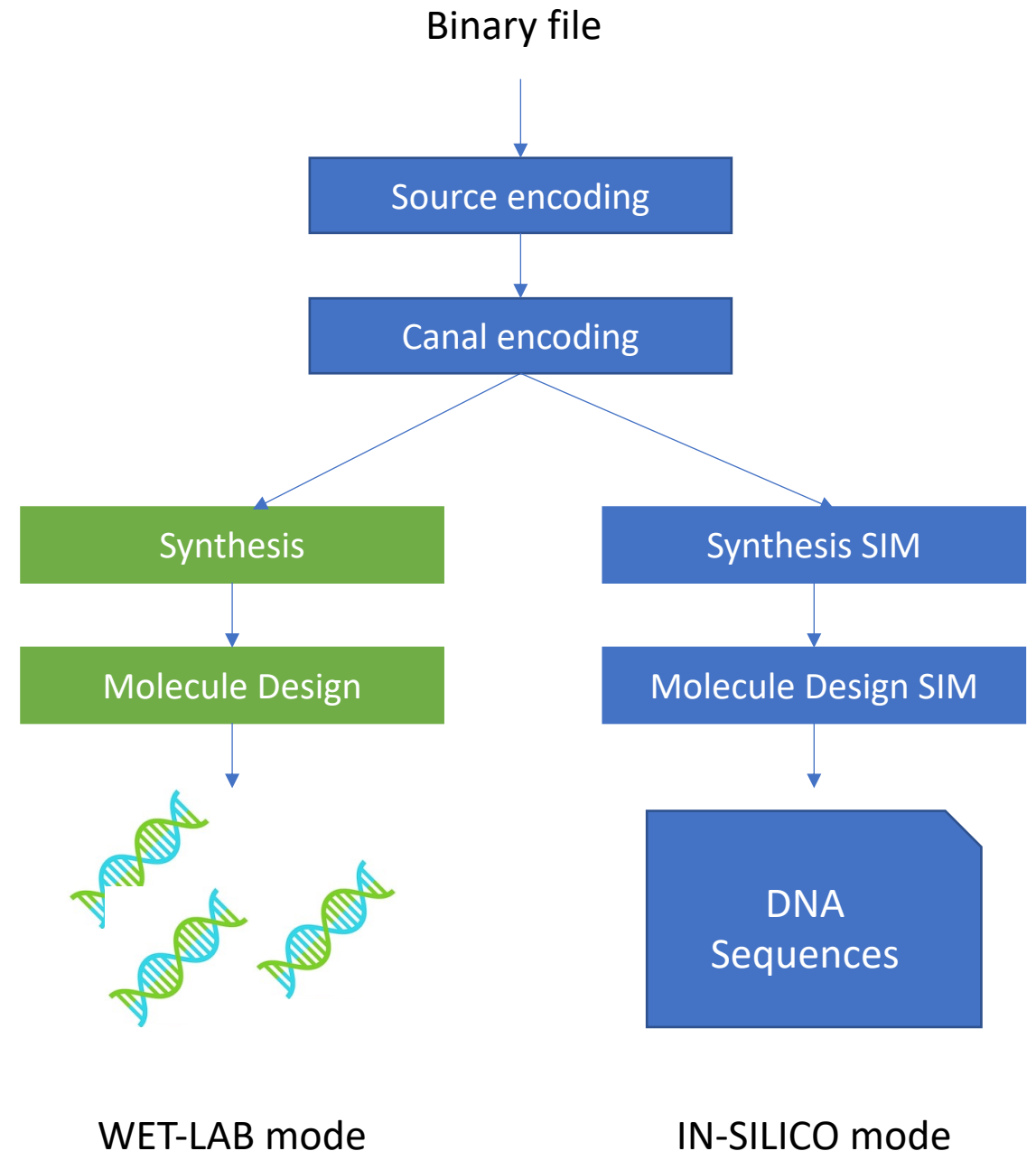
List the files of a container

dna_store

Write the container files on DNA

dna_read

Read a DNA file from a container



dnarXiv commands

dna_create

Create an empty container

dna_copy

Add a file to a container

dna_del

Remove a file from a container

dna_list

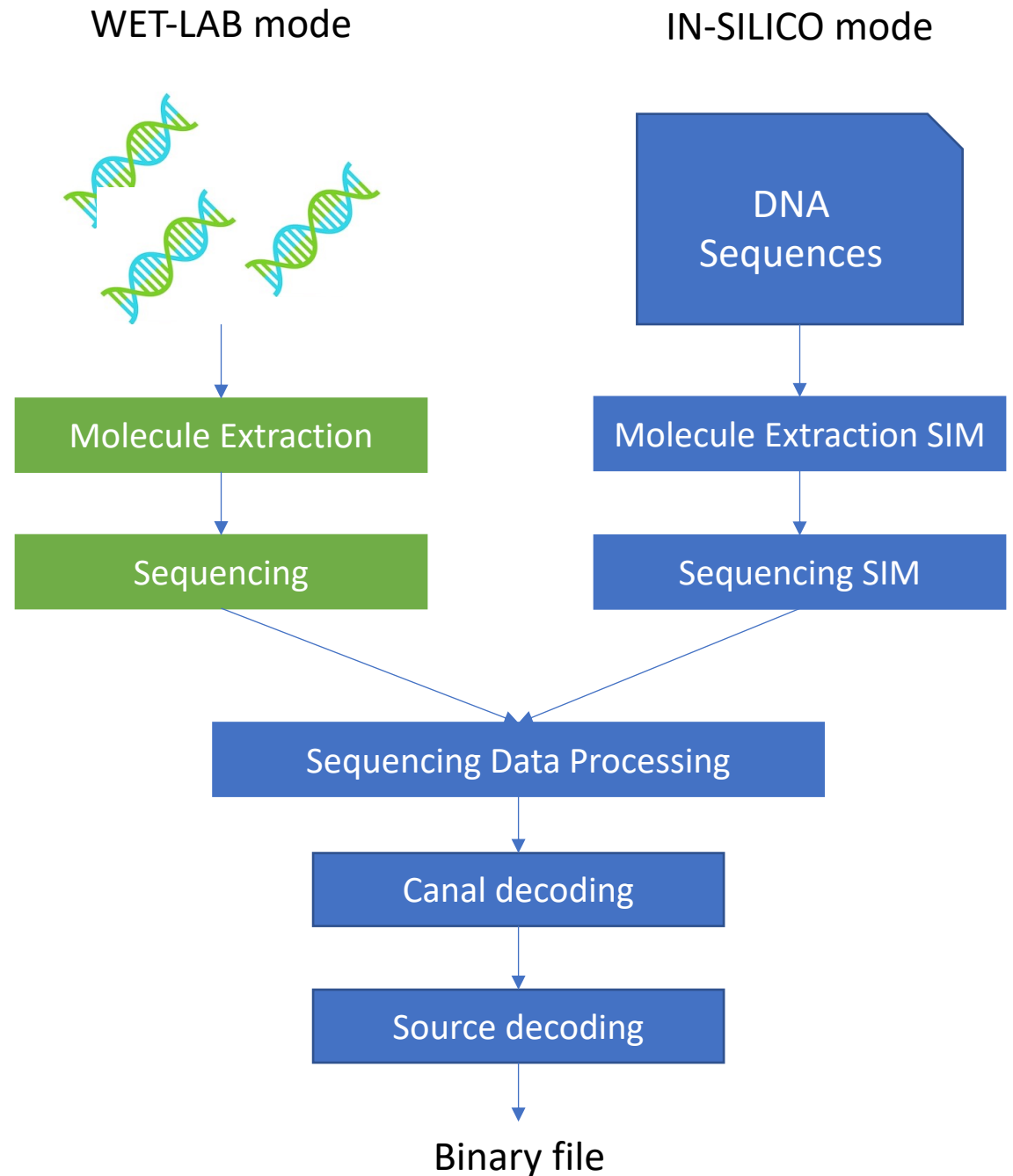
List the files of a container

dna_store

Write the container files on DNA

dna_read

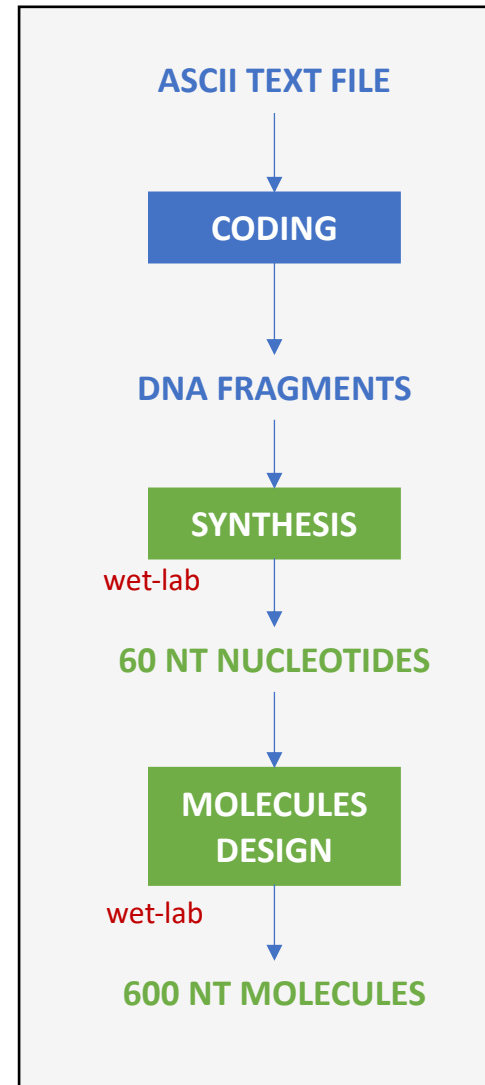
Read a DNA file from a container



Scenario example

- Mode : **wet-lab**
- Object : single ASCII text file
- Coding : ASCII → DNA fragments
- Error Corrector code : no
- Synthesis : 60 nt oligonucleotides
- Molecules : 10 ordered nucleotides
- Extraction : no
- Sequencing : Minion

dna_store



dna_read

