

# Development of DNA as an Electronic Memory Storage Device

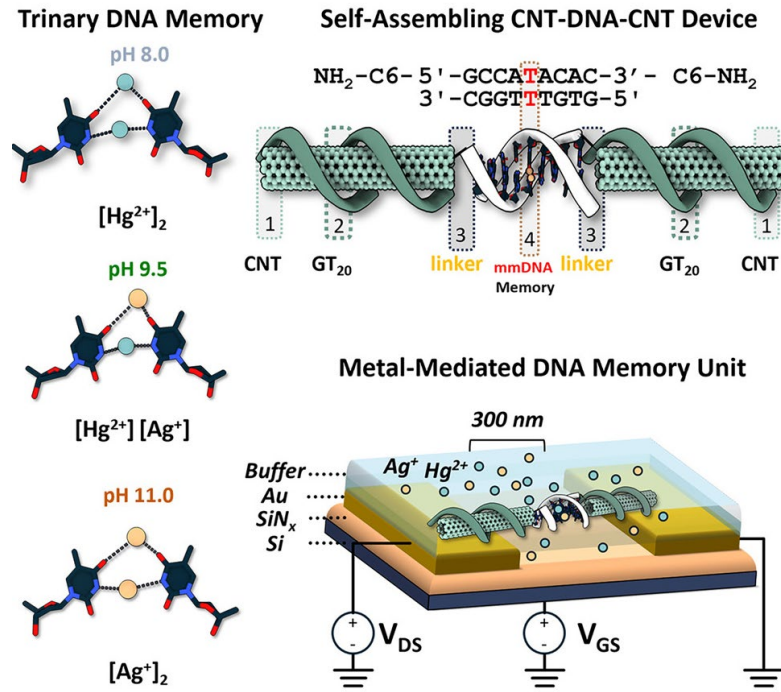


Illustration of the pH-mediated metal switching on the nanofabricated platform. The metal ion exchange defines the memory mechanism, which was shown to be writable, readable, and erasable.

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## Scientific Achievement

Researchers showed how DNA molecules can switch between different memory states by using time-resolved X-ray crystallography to directly observe metal ions moving within a DNA structure.

## Significance and Impact

This work shows that DNA can function as an electronically controlled memory device, with X-ray studies providing clear evidence of the atomic-scale changes that make the memory rewriting process possible.

## Research Details

- pH was used to precisely place mercury and silver ions in DNA crystals and on a nanofabricated platform.
- By collecting X-ray structures throughout a full pH cycle, the team tracked how mercury and silver ions exchanged positions within the DNA, revealing the structural basis for the different memory states.

