

DNA storage techniques mimic Human Nature

Over the past few years, researchers at Harvard, the [European Molecular Biology Laboratory \(EMBL\)](#) in Heidelberg, [ETH Zurich university](#), and other research facilities have been experimenting with storing data in DNA. Researchers are starting to find we may be able to store data for thousands of years by using techniques first perfected by Mother Nature.

What makes DNA attractive for data storage is the density with which it can store data. Data is stored in nucleobases. Each nucleobase can represent at least one bit of data, and each living cell can contain millions of nucleobases. If all this is hard to fathom, look at this way: storing data in DNA will allow a density close to one-million gigabytes (GB), or one petabyte, per cubic millimeter. These absolutely dwarfs the data density of modern magnetic and electronic storage.

Another problem with current storage solutions, even solid state drives and magnetic tape, is that with time their reliability degrades and data is lost. SSDs can lose data if left unpowered for too long (a few months), making them unreliable for long-term storage. Magnetic tape lasts longer, but it can degrade over decades as its chemical makeup breaks down.

DNA, left unprotected, behaves in much the same way. In fact, without some kind of protection, DNA wouldn't last as long as most hard drives, perhaps only about two or three years. In the biological world, DNA degrades due to a number of factors, among them moisture, heat, and oxygen.

Read full, original article: [Could DNA be the key to passing digital data to future generations?](#)