Login | Sign up

Whitepapers | Reg Hardware | The Channel

The Register®

Biting the hand that feeds IT

Data Centre   Cloud   Software   Hardware   Networks   Security   Jobs   Business   Policy   Science   Bootnotes   Forums

Search site

SPB

Print   Comment   Tweet 50   Alert

Squillions of bytes in one cup of DNA
I/O is rubbish, but DNA will be around once the LTO standard is dust

By **Richard Chirgwin** • Get more from this author

Posted in Science, 23rd January 2013 23:32 GMT

It's not the first time that digital data has been encoded on DNA, but new research published today in *Nature* brings bio-storage a significant step closer to reality.

Scientists have previously demonstrated that DNA is viable as a digital storage medium – for example, Stanford University demonstrated last year that a bit written onto DNA could survive cell reproduction.

Both reading and writing DNA are error-prone, particularly if a DNA 'letter' repeats in the string, and it's only possible to manufacture short strings of DNA at the moment. It's these problems the researchers have worked to address.

In their paper, the researchers describe a technique to encode manufactured DNA to avoid code repetition.

As co-author Ewan Birney explains:

> "We knew we needed to make a code using only short strings of DNA, and to do it in such a way that creating a run of the same letter would be impossible. So we figured, let's break up the code into lots of overlapping fragments going in both directions, with indexing information showing where each fragment belongs in the overall code, and make a coding scheme that doesn't allow repeats. That way, you would have to have the same error on four different fragments for it to fail – and that would be very rare."

In his demonstration, Birney and fellow-researcher Nick Goldman, both of the EMBL-European Bioinformatics Institute, called on Agilent Technologies to help them encode a variety of content onto manufactured DNA: a jpg photo of the EMBL-EBI, a PDF of the Watson and Crick paper that first described DNA, a txt file containing all of Shakespeare's sonnets, and an mp3 of Martin Luther King's "I Have a Dream" speech.

All of this went onto manufactured DNA strings "as big as a speck of dust", Agilent's Emily Leproust said – meaning that a cupful of DNA would hold "a hundred million hours of high-definition video".

While you won't see DNA replacing the RAM in your computer, the researchers say its density and longevity – it can be decoded from creatures long-dead such as woolly mammoths – make it an ideal archival medium. ®

READ MORE   Storage   Science   Dna

Share this article   Send corrections   24 comments | Post a comment

Related stories

Ditch disk and bin tape: Harvard boffins have cracked DNA storage (5 September 2012)
Pic Boffins cram binary data into living cells' DNA (23 May 2012)

Asteroid miners hunt for platinum, leave all common sense in glovebox
Analysis *El Reg* metals expert drills into sci-fi biz

MOST READ   **MOST COMMENTED**

- **Red supergiant Betelgeuse heads for SMACKDOWN with 'dust bar'**
- **Asteroid-mining 'FireFlys' will be ready for action by 2015, vows space firm**
- **Microsoft's Intel-powered Surface Pro to launch in February**
- **Microsoft to pump cash into Dell buyout deal?**
- **Chinese boffins crack cloaking tech for camouflage**

MORE FROM THE REGISTER

Send us News Tips   Week's Headlines   Reg Archive   Top 20 Stories

The Channel | Reg Hardware

about managing our cookies.
e site, we'll assume you're happy to accept the cookies anyway.   I'm fine with this [X]