Scientists just calculated the total amount of DNA there is on Earth

The Earth is brimming with life, and within that life, is information, stored in strands of deoxyribonucleic acid: DNA. This information constitutes instructions that tell life how to grow and function. In a multitude of analyses, scientists have tabulated the biomass present on Earth: the blood, the guts, the bark, the leaves, all biological material that makes up life. Yet, curiously, nobody previously attempted to measure the sheer amount of information present within that life. University of Edinburgh researchers Hanna Landenmark, Duncan Forgan, and Charles Cockell just did.

By using prior estimates of biomass, cellular abundance, and average genome size, they calculated the amount of DNA on Earth from all domains of life: 5.3 × 1031 megabases, a mind-boggling amount.

“By analogy,” the researchers explain, “it would require 1021 computers with the mean storage capacity of the world’s four most powerful supercomputers to store this information.”

Taking the rate of DNA transcription as an analogy for processing speed, they further estimated Earth’s computational power: 1015 yottaNOPS.

The researchers’ calculations are part of a new, informational approach to understanding life on our planet.

“An information-based view of the biosphere may provide a way to consider the changing complexity of the biosphere through time. For example, mass extinctions can be considered to be similar to physical hard drive damage in a computer. This analogy is particularly appropriate to the case of a hard shock caused by asteroid or comet impact, as proposed for the end-Cretaceous extinction.”

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis. Read full, original post: How Much DNA Is There on Earth?