

From The Times

May 21, 2010

# Scientists create artificial life in laboratory



(Evan Hurd/Getty Images)

Dr Venter on his research sailboat, the Sorcerer II, off the coast of San Diego, California

Mark Henderson, Science Editor

Synthetic life has been created in the laboratory in a feat of ingenuity that pushes the boundaries of humanity's ability to manipulate the natural world.

Craig Venter, the biologist who led the effort to map the human genome, said yesterday that the first cell controlled entirely by man-made genetic instructions had been produced.

The synthetic bacterium, nicknamed Synthia, has been hailed as a step change in biological engineering, allowing the creation of organisms with specialised functions that could never have evolved in nature. The team at the J. Craig Venter Institute in Rockville, Maryland, is investigating how the technology could yield microbes that make vaccines, and algae that turn carbon dioxide into hydrocarbon biofuels.

The achievement has, however, stirred ethical concerns. Critics called for tighter regulation, citing the potential for bioterror or "bioerror" that could endanger health or the environment.

Dr Venter, who has been working on synthetic life for a decade, told The Times: "It is our final triumph. This is the first synthetic cell. It's the first time we have started with information in a computer, used four bottles of chemicals to write up a million letters of DNA software, and actually got it to boot up in a living organism.

"Though this is a baby step, it enables a change in philosophy, a change in thinking, a change in the tools we have. This cell we've made is not a miracle cell that's useful for anything, it is a proof of concept. But the proof of concept was key, otherwise it is just speculation and science fiction. This takes us across that border, into a new world."

Julian Savulescu, Professor of Practical Ethics at the University of Oxford, said: "Venter is creaking open the most profound door in humanity's history, potentially peeking into its destiny. He is going towards the role of a god: creating artificial life that could never have existed naturally. The potential is in the far future, but real and significant. But the risks are also unparalleled."

In the research, published in the journal *Science*, scientists made a synthetic copy of the genome of a bacterium,

*Mycoplasma mycoides*. Several inert DNA “watermarks” were added to distinguish the synthetic genome from the natural version.

The man-made genome was then transplanted into a related bacterium, *Mycoplasma capricolum*. This “rebooted” the cell so that it was controlled by the synthetic genome, transforming it into another species. The cell has since divided more than a billion times.

Paul Freemont, of the Centre for Synthetic Biology at Imperial College London, described the achievement as a “step change advance”. He said: “The applications of this enabling technology are enormous.”

Others, however, are unconvinced. Ben Davis, who works on synthetic biology at the University of Oxford, said: “I still think we are quite a long way away from artificial life. “You could take this synthetic genome and write in new genes with known functions, but that is not so different from molecular biology at the moment.”

David King, of the pressure group Human Genetics Alert, called for a moratorium on similar research and Pat Mooney, of the ETC Group, which campaigns against biotechnology, said: “This is a Pandora’s box moment. We’ll all have to deal with the fallout from this alarming experiment.”

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