



Hallo!

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Florianne Koechlin

Synthetic Biology

Experiment of Craig Venter

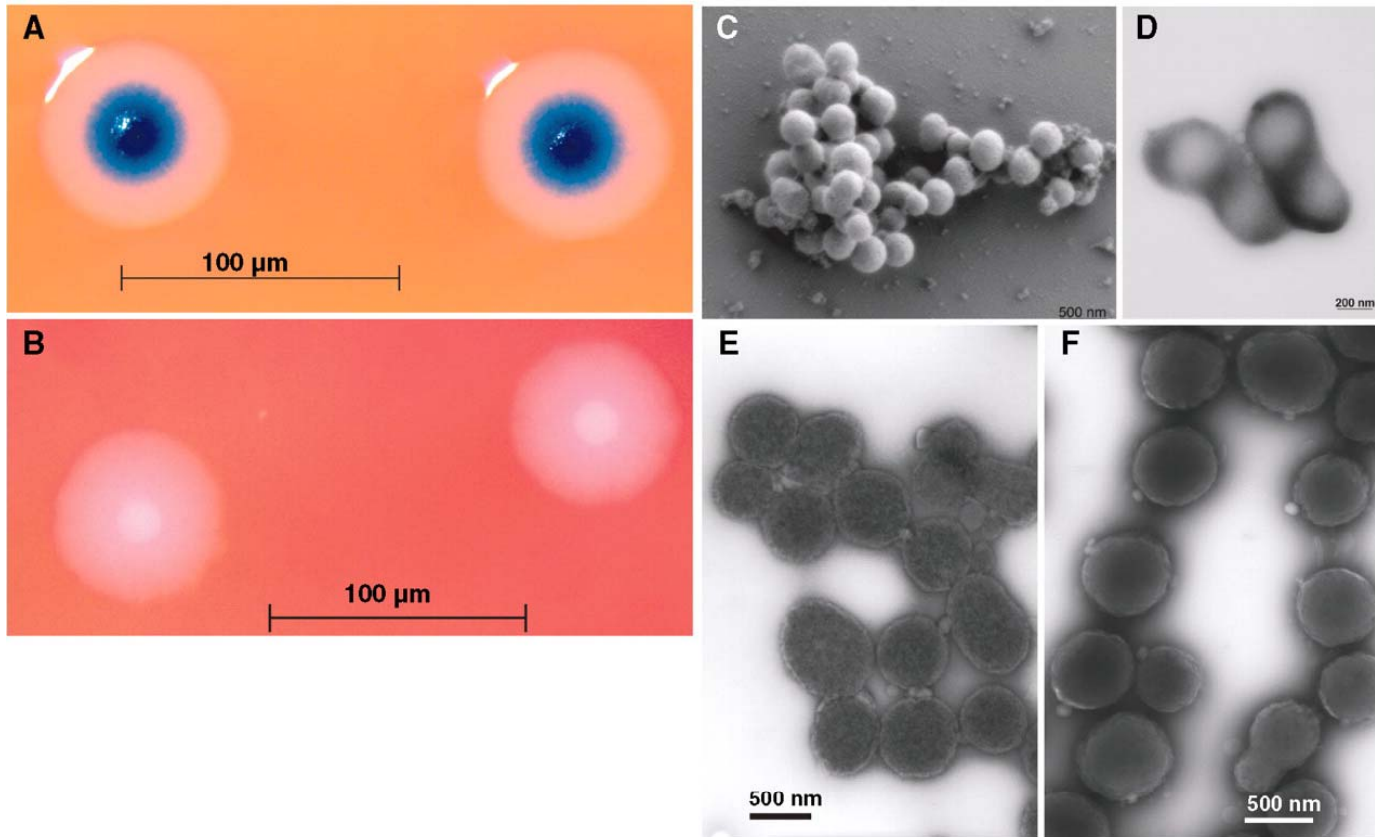
Synthetic Biology?

Methods

Promises

Synthesise new living beings

Summary





JANUARY 17, 1994 No. 3

1.94

CLINTON
MISSION TO EUROPE

TIME

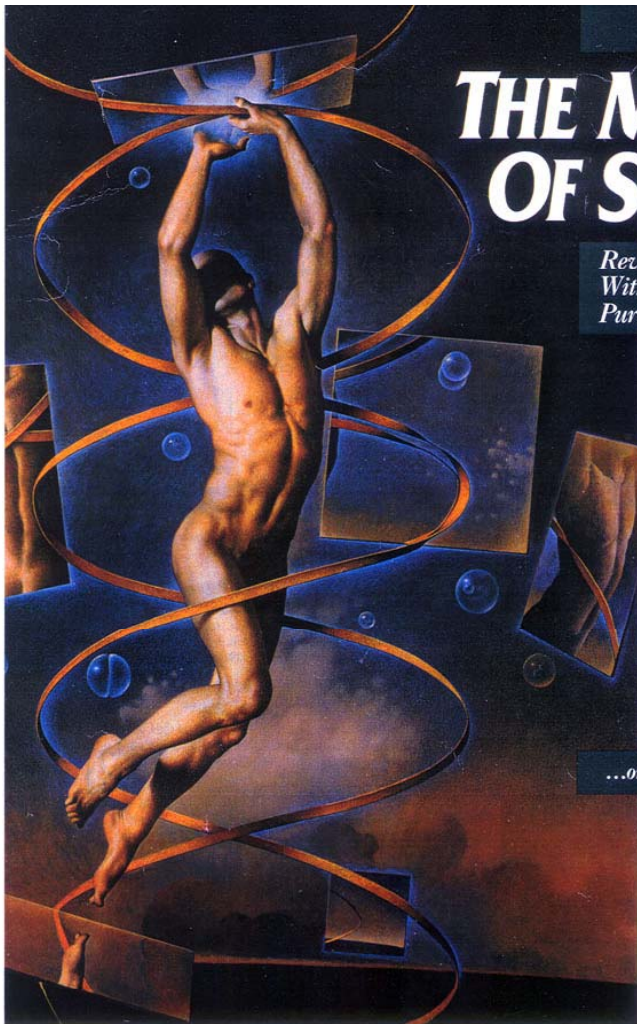


Genetics THE FUTURE IS NOW

New breakthroughs can cure diseases and save lives,
but how much should nature be engineered?



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Standardising and automating the production of biological systems forms the core of SB.

Its goals:

- „the design and fabrication of biological components and systems that do not already exist in the natural world
- the re-design and fabrication of existing biological systems“ (EKAH, p. 7)

„To a synthetic biologist, life is a special kind of chemistry, one that combines a frequently encountered property of organic molecules (the ability to undergo spontaneous transformation) with an uncommon property (the ability to direct synthesis of self copies) (...). Any chemical system that combines these properties will be able to undergo Darwinian selection, evolving in structure to replicate more efficiently. In a word, ‘life’ will have been created“ (Steven A. Brenner, Nature, 2003)

Chassis model (top-down)

Lego model (bottom up)

Synthesis of DNA Sequences

Synthesise (create)

new

living beings

Does an organism relate to purely physical/chemical properties, is it of a purely material nature?
(Then there is no reason why the lego modell should not be successfull in future)

Or is it that an organism is not solely explicable in physical/chemical properties? Is there more to an organism? Are even bacterias more than „soulless, gene-driven machines“? (Then we‘ll never manage to produce life in a controlled and calculated manner)

Some new life theories

Autopoiesis

Biosemiotics

Emergence

Cybernetics

„Sie haben etwas erst dann vollständig verstanden, wenn Sie es selbst zusammenbauen können. Das ist der Leitgedanke der SB“

(Only if you can build something together yourself, did you understand it completely. This is the main thought of SB.)

(Forum Genforschung, Schweiz, 2007)

What science defines as real is real in its consequences

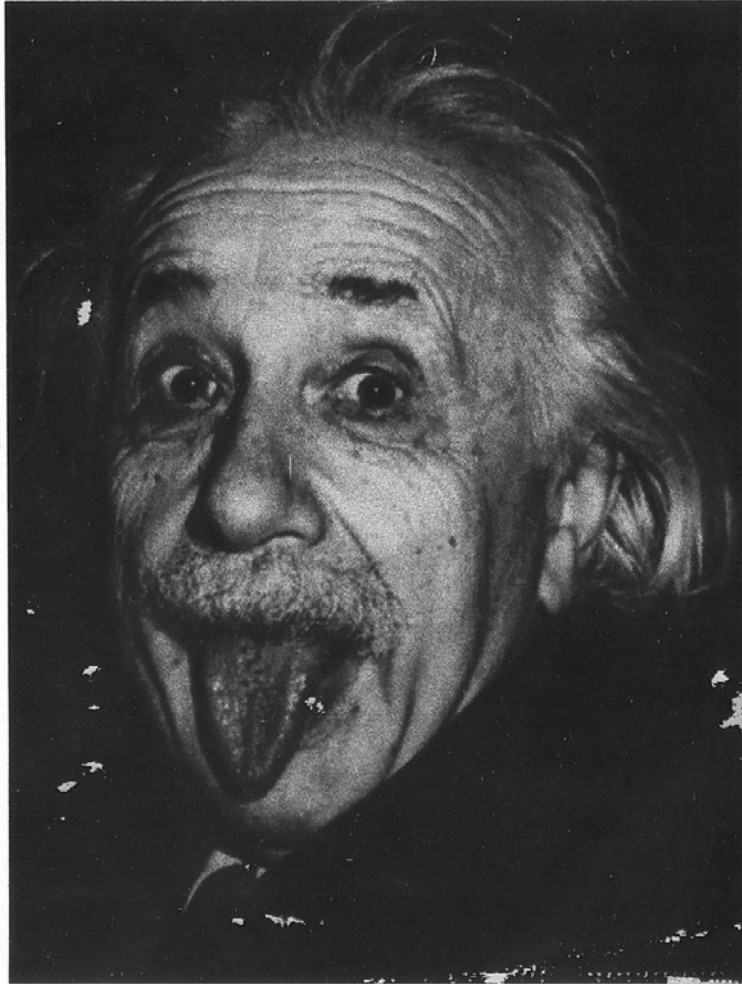
(Thomas theorem)

Big oil companies are investing in SB.

E.g. :

Exon (\$600M into Synthetic Genomics),
BP (\$500M into university of California),
Cargill, Chevron, Dupont and Virgin Fuels

„They can stay in business, have control and own patents on energy sources“ (FoE)



*„Die Probleme,
die es in der Welt
gibt, können nicht
mit der gleichen
Denkweise gelöst
werden, die sie
erzeugt hat.“*