EXHIBITION

Essence of creation

Isabelle Kaufmann

Both biotechnologists and artists create. *Genesis — The Art of Creation*, at the Zentrum Paul Klee in Bern, Switzerland, suggests their methods and aesthetics show unexpected kinships.

The Zentrum Paul Klee houses the largest collection of works by the eponymous early-twentieth-century painter, who spent much of his life in Bern. Working at the interface of figurative and abstract art, Klee studied the forms of plants, shells and stones, and drew from them new and imaginative shapes.

Genesis — the process of creation — was a key theme. According to Klee, the painter starts with the basic elements of point, line, tone and colour (pictured, *physiognomische Genesis*, 1929). He experimented with them, recombining them, and so bringing something new into existence. Replace brush and canvas with pipette and test tube, and this, the exhibition posits, could be a genetic engineer rearranging DNA and creating new forms of life.

Klee's geometric compositions and chimaeric beasts are juxtaposed with paintings by fellow modernists such as Piet Mondrian and anatomical drawings by Leonardo da Vinci. Exhibits by contemporary artists borrow the techniques of biotechnology. A video of transgenic organisms in Eduardo Kac's installation projects a plate of bacteria expressing blue or yellow fluorescent proteins; as the cells grow, mutate and conjugate, new colour variations emerge.

Also on display are paintings and prints inspired by microscopic images. Ross Bleckner's *In Replication* imagines the scene inside a dividing cell: a wild and colourful dance of molecules pairing, entwining and separating. David Fried's bubble shapes recall pictures of fertilized egg cells, captured in reproduction, and growing in harmonic patterns. These pieces demonstrate that scientific images enrich our knowledge and that their unusual beauty has a truth of its own. ■

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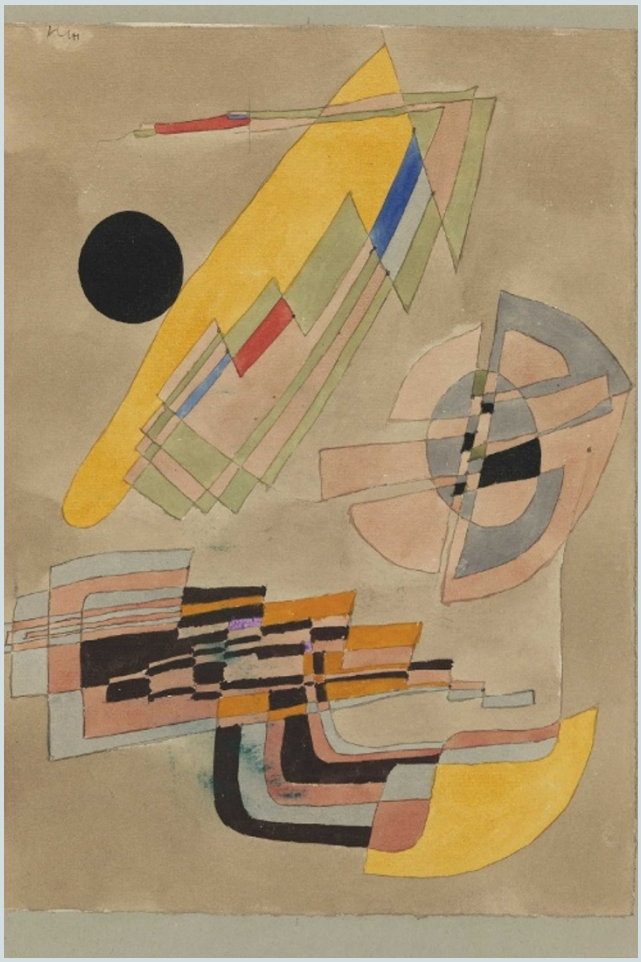
***Genesis — The Art of Creation* (until 27 April) is at the Zentrum Paul Klee, Bern, Switzerland (www.zpk.org).**



PRIVATBESITZ SCHWEIZ, DEPOSITUM IM ZENTRUM PAUL KLEE, BERN

applied to integrated electronics and electromechanical systems, lithographic techniques are reaching a physical limit. Moreover, below a scale of tens of nanometres, fundamental problems such as interconnection and quantum effects arise.

Today, nanotechnology is embracing biology. The authors rightly dismiss fantastic worries that our DNA may be modified by nanobots capable of getting into cells as well as nanotechnology's dubious association with genetically modified organisms. But they are rash to focus on recent controversial observations of bacteria less than 100 nanometres long that might be incorporated into molecular machines. They ought instead to have emphasized current research efforts to build machines from self-assembly and supramolecular chemistry.

Caveats aside, this popular book sets out the science that underpins nanotechnology and in so doing gives a realistic picture of its impact, applications and political, economic and societal context. ■

Vincent Dusastre is editor of *Nature Materials* (www.nature.com/naturematerials).

Genomes evolve, but how?

The Origins of Genome Architecture
By Michael Lynch
Sinauer: 2007. 510 pp. $59.95 (hbk)

Axel Meyer

"Nothing in biology makes sense, except in the light of evolution," said the great geneticist and evolutionary biologist Theodosius Dobzhansky. Twenty-five years on, genomics as a discipline has yet to embrace evolution fully. Michael Lynch is an exception. His timely textbook demands that population thinking, population genetics and evolutionary theory be meshed more explicitly. After all, genomes did not appear suddenly from nowhere, and mutational changes from single base-pair substitutions to whole-genome duplications are at least one basis of molecular as well as phenotypic evolutionary change.

As the cost of genome-sequencing falls and more genomes of the major model systems are sequenced, evolutionary biologists have more say in which organisms will be investigated next. Population samples of, for example, the model species *Drosophila* (fruitflies) are a good target.

Yet this line of research is still driven strongly by technical innovation, such as the speed and cost of data collection, rather than the testing of theories that might direct future experiments. Genomics research is progressing incredibly fast, off the back of genomic data that are being produced ever more rapidly. Still in a stage of wondrous discovery, this nascent field today evokes the excitement of the early days of natural history.

Lynch is a population geneticist who has made major contributions to numerous evolutionary questions and recently expanded his interests to genomics. He has published landmark studies on mutation rates, gene