

Synthetic biology – A new engineering science emerges

Synthetic biology is the attempt to create cells with specific properties. It is about to establish itself as a new engineering science. This brochure wishes to help to expound the opportunities and risks presented by this scientific area about which very little is known by the general public as yet. The discipline is in its infancy, and the results that have been achieved to date seem rather to be an extension of previous work in genetic engineering. However, scientists have already succeeded in synthesizing a whole genome of a bacterium and introducing this into a foreign bacterial cell envelope. The “new” bacterium exhibits the properties of the introduced genes. Researchers are concentrating their efforts on the development of minimal cells. These contain only the essential genes needed for cell growth and are intended to serve as a chassis for other newly developed genes and functions.

The brochure opens with a philosophical contemplation which provides a counterpoint to the scientific viewpoint by questioning the extent to which that which is living can be described, and thus engineered. In the other contributions, important concepts in synthetic biology are discussed and concepts introduced by which the complexity of biological systems can be reduced. This is an important prerequisite for their commercial exploitation.

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