# Why we cannot make life

*Bert Meijer*

"*The origin of life on earth*" is without doubt one of the most intriguing scientific topics, while the wish to create life in a laboratory is amongst the most difficult challenges. The enormous progress in science and technology over the past decades has provided many deep insights into the miraculous composition and functioning of living systems. Today, on the one hand, we can clone sheep, grow organs from stem cells, while cells, plants, animals and bacteria have been genetically modified. On the other hand, the synthesis of small and large molecules has become so sophisticated that almost every molecule that exists on earth can now be made in a laboratory, including long strands of DNA, proteins and complex drugs that can cure diseases. These many insights, however, also show the enormous complexity of the chemical biology of living cells. As a result, the more intriguing is the question how life could ever have originated. The lecture will illustrate the most important challenges encountered while trying to understand the origin of life, including an explanation of why it will take a very, very long time before a living cell can be made in a laboratory out of its individual components, if it is possible at all. Special attention will be paid to the self-organization of complex molecular systems as a critical step in the building process.

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