Projekt: Computing with Molecules

Fundamental Questions:

First, are molecules capable of universal computation?

Second, what kinds of algorithms can molecules implement?

Third, can the error rates in the manipulations of the molecules be controlled enough to allow for useful computation

Fourth, can physics problems be solved with bio computers?

Theoretical work has shown that molecules (specifically) DNA is in fact capable of universal computation. Furthermore, algorithms for solving interesting questions have been described

D.Beaver. A Universal Molecular Computer. DNA Based Computers (Selected papers from Proc. of DIMACS Workshop on DNA Based Computers'95), DIMACS Series in Discrete Mathematics and Theoretical Computer Science, 27, pp.29-36, 1996.
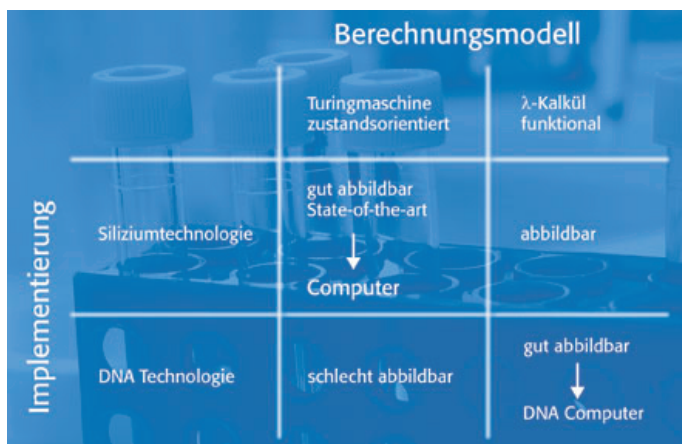
Teach molecules to compute!

Your task will be to simulate the computation with molecules

References

9 Mar 2000 ExoScience: DNA computer solves chess problem (http://www.sciforums.com/)

Mitsunori Ogihara and Animesh Ray. Simulating Boolean circuits on a DNA computer. Technical Report 631, University of Rochester, August 1996.

L.Adleman. On Constructing A Molecular Computer. DNA Based Computers (Selected papers from Proc. of DIMACS Workshop on DNA Based Computers'95), DIMACS Series in Discrete Mathematics and Theoretical Computer Science, 27, pp.1-21, 1996.