Report on the Sixth International Meeting on DNA Based Computers June 13-17 2000, Leiden, The Netherlands

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The Sixth International Meeting on DNA Based Computers (DNA6) was hosted by the Leiden Center for Natural Computing (LCNC). The Meeting is the premier event for the presentation of results in this exciting new field, and DNA6 was the first to be held outside the USA.

Overall, the Meeting featured 5 invited lectures, 6 tutorials, 16 contributed talks and 15 posters. Prior to the first session of the Meeting, tutorial lectures were presented by Laura Landweber (Tools of Molecular Biology), Hendrik Jan Hoogeboom (Introductory Tutorial on Computing), Anne Condon (DNA Word Design) and Erik Winfree (Physical Models of DNA Hybridization and Self-Assembly).

The main conference was opened by an invited talk by Laura Landweber (Princeton), who described current work on the use of RNA to solve an instance of a satisfiability problem. After describing experimental work, Landweber then presented the intriguing hypothesis that natural selection for error-minimization shapes the assignment of amino acids in the genetic code.

The first section of contributed talks featured a paper by Weiss and Knight (MIT) on engineering communications for microbial robotics. In his talk, Weiss described the results of experiments concerned with engineering intercellular communication mechanisms between living bacterial cells. The session was closed by a presentation from the group headed by Len Adleman (the "father" of DNA computing), describing their development of a gel-based DNA computer.

The next invited talk was given by Thomas Schmidt (Leiden), who described techniques for and applications of single molecule detection. The following session included a paper by Winfree, Eng and Rozenberg on DNA self-assembly for the purposes of computation.

The next day of the conference opened with an invited talk by Masami Hagiya (Tokyo). Hagiya described work being carried out by the Japanese Molecular Computer Project on autonomous molecular computation. This area

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is obviously of great interest, as it has the potential to minimize the amount of human intervention required for a molecular computation. The penultimate presentation of the session was given by Reif and LaBean (Duke), who described work on applying concepts and methods used in Computer Science to develop improved biotechnology. The session closed with presentations from representative groups around the globe on their current activities and results.

The final main day of the conference began with an invited talk by John Reif, who described challenges and applications for self-assembled DNA nanostructures. The final invited presentation was given by Lloyd Smith (Wisconsin-Madison), who presented experimental results from DNA computing on surfaces. The Meeting closed with tutorial talks from Martyn Amos (Complexity Issues in DNA Computing) and Gheorge Paun (Membrane Systems). The DNA Based Computers Steering Committee was announced at the end of the meeting, the Committee comprising the following: Anne Condon, Masami Hagiya, Lila Kari, Laura Landweber, Richard Lipton, John Reif, Grzegorz Rozenberg (chair), Harvey Rubin, Ned Seeman, Erik Winfree, Len Adleman (honorary member).

The excellent social programme included a tour of the Museum Boerhaave, the national museum of the history of science and medicine, and a conference dinner in the Indonesian restaurant Anak Bandung. The attendees would like to thank everyone who made their time in Leiden so enjoyable, as well as the conference sponsors:

- ACM Special Interest Group on Algorithms and Computation Theory (ACM SIGACT)
- European Association for Theoretical Computer Science (EATCS)
- European Molecular Computing Consortium (EMCC)
- European Commission (EC)
- Institute for Programming research and Algorithmics (IPA)
- Leiden Institute for Advanced Computer Science (LIACS)
- Lorentz Center
- Netherlands Organization for Scientific Research (NWO)

In particular, the Local Organizing Committee, co-ordinated by Marloes Boon-van der Nat, is deserving of particular praise. Their efficient, cheerful and often patient handling of the Meeting ensured the complete success of DNA6. The proceedings of the Meeting will appear in the Lecture Notes in Computer Science (LNCS) series of Springer-Verlag. DNA7 will be hosted by the University of South Florida (contact Natasha Jonoska, jonoska@math.usf.edu) and DNA8 is to be held in Japan.