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DNA COMPUTING METHOD FOR CANCER DIAGNOSIS

Sebastian Sakowski^{1,2} and Tomasz Poplawski³

¹Faculty of Mathematics and Computer Science, University of Lodz
Banacha 22, 90-238 Lodz, Poland,

²Centre for Data Analysis, Modelling and Computational Sciences, Lodz, Poland

³Department of Microbiology and Pharmaceutical Biochemistry, Medical University of Lodz
Mazowiecka 5, 92-215 Lodz, Poland,
sebastian.sakowski@wmii.uni.lodz.pl
tomasz.poplawski@umed.lodz.pl

ABSTRACT

Over the past three decades, beginning with the pioneering laboratory experiments of Leonard Adleman [1], DNA computing has evolved into an established interdisciplinary research field that combines theoretical computer science with molecular biology and has inspired novel models of computation. Recent experimental implementations of DNA-based computational systems have shown considerable potential for molecular diagnostics [2, 3].

The presentation will (i) review recent advances in DNA computing and (ii) present our recent research findings, with particular emphasis on molecular diagnostics. Special attention will be devoted to the interpretation of cancer in terms of information encoding in DNA, emphasising how mutations disrupt the encoding and processing of genetic information. This perspective will be developed within the formal apparatus of automata theory and formal language theory, with particular emphasis on theoretical models of DNA computation [4].

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