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研究、探讨

DNA编码限制条件与编码策略

李 珍, 王淑栋

山东科技大学 信息科学与工程学院，山东 青岛 266510

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摘要 以评价DNA编码的基本限制条件之一——Hamming距离为出发点分析了DNA编码的三个参量：码字个数、码字长度与Watson-Crick Hamming距离，并得到它们之间的内在联系；讨论了Watson-Crick Hamming距离与DNA码字重量之间的关系；在此基础上得到了DNA编码的编码策略；提出了适合DNA编码的改进Watson-Crick Hamming距离及DNA编码模块化的定义，对DNA编码的优化做出了详细分析，为DNA计算的发展注入了活力。

关键词 DNA计算 DNA编码 Watson-Crick Hamming距离 DNA编码策略

分类号

Constraints and encoding strategy of DNA codes

LI Zhen,WANG Shu-dong

College of Information Science and Engineering，Shandong University of Science and Technology，Qingdao，Shandong 266510，China

Abstract

The parameters of DNA encoding which contain the numbers，length and the Watson-Crick Hamming distance of DNA codes are analyzed based on Hamming distance.The relations among them are also achieved.The Watson-Crick Hamming distance and weights of DNA codes are discussed.Based on this the DNA encoding strategy is proposed.And then the definitions of improved Watson-Crick Hamming distance which is suitable for DNA encoding and a modularized DNA code are proposed.Based on the modularized DNA code，a process to design optimized codes is available at the condition of knowing the needed numbers of the DNA codes.

Key words DNA computation DNA encoding Watson-Crick Hamming distance DNA encoding strategy

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通讯作者 李 珍 topway0202@163.com