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综述

系统发育研究中“长枝吸引”现象概述

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摘要

系统发育研究(phylogeny)不仅有助于重建地球所有生物体的进化历史，而且还可以揭示进化生物学领域中的一些基本问题。清晰了解各生物物种进化历程及不同物种之间的进化关系，是进一步研究和探索生物学其他学科的基础。但是现今广泛应用的所有系统发育分析方法都存在一定的局限性，在一定程度上不能有效消除各种误差，从而不能客观地处理和分析数据，也就不能成功重建生物进化历程，真实反映物种进化关系。系统发育研究中，“长枝吸引”(Long-branch Attraction, LBA)假象是最为困扰研究者的问题。文章从“长枝吸引”问题的产生原由、检测方法以及消除策略等多个方面进行详尽概述，并通过列举典型实例，阐述了解决“长枝吸引”问题的途径。

关键词 系统发育研究 长枝吸引 系统发育分析方法

分类号

“Long Branch Attraction” Artifact in Phylogenetic Reconstruction

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Abstract

<SPAN lang=EN-US style="FONT-SIZE: 10pt; LAYOUT-GRID-MODE: line; FONT-FAMILY: 'Times New Roman'; LETTER-SPACING: 0.2pt; mso-bidi-font-size: 12.0pt; mso-fareast-font-family: 方正书宋简体; mso-font-kerning: 1.0pt; mso-ansi-language: EN-US; mso-fareast-language: ZH-CN; mso-bidi-language: AR-SA">Phylogenetic reconstruction among various organisms not only helps understand their evolutionary history but also reveal several fundamental evolutionary questions. Understanding of the evolutionary relationships among organisms establishes the foundation for the investigations of other biological disciplines. However, almost all the widely used phylogenetic methods have limitations which fail to eliminate systematic errors effectively, preventing the reconstruction of true organismal relationships. “ Long-branch <SPAN style="TEXT-TRANSFORM: uppercase">a</SPAN>ttraction” (LBA) artifact is one of the most disturbing factors in phylogenetic reconstruction. In this review, the conception and analytic method as well as the avoidance strategy of LBA were summarized. In addition, several typical examples were provided. The approach to avoid and resolve LBA artifact has been discussed.</SPAN>

Key words phylogenetic reconstruction Long-branch Attraction phylogenetic methods

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