
简单前生物合成高多样性动态组合聚酯库

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论文标题：Simple prebiotic synthesis of high diversity dynamic combinatorial polyester libraries

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简单前生物合成高多样性动态组合聚酯库。最近Communications Chemistry发表的一项研究Simple prebiotic synthesis of high diversity dynamic combinatorial polyester libraries表明高多样性动态组合库，在许多原始行星以及前星体的环境上，可由含有丰富的前生物 α -羟基酸的混合物自发形成。

人们普遍认为，生命的起源取决于由环境驱动的非生物产生的有机化合物的复配。聚合是复配化的一种，为了进行优胜劣汰而产生许多不同的聚合物序列是很重要的。在原始行星的环境条件下，并不是所有的化合物都容易聚合，除了现代生物化学中使用的单体外，生命的起源也可能得到了其他单体的辅助。

来自日本东京理工学院地球生命科学研究所的H. James Cleaves及其研究团队证明了 α -羟基酸，很可能是丰富的前生物单体，可以进行寡聚生成大量的、可能完整的序列库，并且这些库在相当长的一段时间内都是稳定存在的。这可以发生在各种反应条件下(温度、浓度、盐度和同系物存在)，与早期地球和其他太阳系的地球化学环境相适应。这些化合物所能实现的高序列异质性可能对支撑生命起源有重要作用。

摘要： It is widely believed that the origin of life depended on environmentally driven complexification of abiotically produced organic compounds. Polymerization is one type of such complexification, and it may be important that many diverse polymer sequences be produced for the sake of selection. Not all compound classes are easily polymerized under the environmental conditions present on primitive planets, and it is possible that life ' s origin was aided by other monomers besides those used in contemporary biochemistry. Here we show that alpha-hydroxy acids, which are plausibly abundant prebiotic monomers, can be oligomerized to generate vast, likely sequence-complete libraries, which are also stable for significant amounts of time. This occurs over a variety of reaction conditions (temperature, concentration, salinity, and presence of congeners) compatible with geochemical settings on the primitive Earth and other solar system environments. The high-sequence heterogeneity achievable with these compounds may be useful for scaffolding the origin of life.

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