

• 学术讨论 •

组成型异染色质等名词定名再议

韩贻仁

(山东大学生物系, 济南 250100)

Suggestions on Some Chinese Nomenclatures Involved in Constitutive Heterochromatin

Han Yiren

(Department of Biology, Shandong University, Jinan 250100)

由全国自然科学名词审定委员会公布的《遗传学名词》(以下简称《名词》)经过许多专家的努力,终于在1990年面世了。这是一项重要的学术工作,为科技交流创造了更好的条件。同时《名词》的前言中也提出,“希望大家在使用过程中继续提出意见,以供今后修订时参考。”本着这一精神,笔者想对“组成型异染色质”等有关名词的定名再发表一点浅见。

10年前,笔者曾对组成型异染色质的定名问题提出过看法^[1],建议把该名词定名为“恒定型异染色质”。此次公布的《名词》中把 constitutive heterochromatin (CH) 仍定名为“组成型异染色质”^[2]。由于与该词相关的名词还有一些,如 constitutive gene, constitutive mutation, constitutive mutant, constitutive transcription, constitutive protein, constitutive express, constitutive secretory pathway^[3]等,涉及范围很广,其中包括了细胞生物学、生物化学、分子生物学等诸学科领域,因而给以恰当的科学定名极为必要。为此,特再次提出此建议。

“组成型异染色质”的定名有必要重新研究的原因有二:一是“组成型”修饰词本身的含义不清,在汉文名中何所指,难于理解。二是如何确切理解“constitutive”英文词的原义,实际上该词在生物学中的含义已有所延伸。

由此可见,“组成型异染色质”及其相关名词审定得恰当与否取决于对修饰词“constitutive (C)”的准确理解。C的首义是“组成的;基本的”。可是在现代生物学中,该词则是指“恒定的;永久的;不受调节的”了。遗传学家 C.J.Avers 还对 C 一词作了专门的注解,即 constant or unchanging, 并举例说,如 C. enzyme 是不受调节而恒定合成的酶^[4]; CH 是指恒定凝缩的核染色质^[5]。

CH 一词首先是 S. W. Brown (1966) 使用的^[9]。从几位学者给 CH 下的定义中可以看出, constitutive 一词确是作为 constant, always 或 permanent 的同义词来使用的。例如:

Karp, G.(1979): "Heterochromatic sections of the chromosome can be divided into two categories, constitutive heterochromatin and facultative heterochromatin, depending on whether that chromatin is **always** condensed or only under certain conditions. The DNA of constitutive heterochromatin is **permanently** inactivated and remains in the condensed state **at all times**." ^[10]

Babu, A. and Verma, R.S.(1987): "The heterochromatin located at the identical position of homologous

chromosomes in all cells as a permanent structural entity is considered the constitutive type (constitutive heterochromatin), whereas that which varies in different cell types and developmental stages is regarded as the facultative type (facultative heterochromatin)."⁽⁷⁾

Prescott, D.M. (1988): "Some parts of autosomal chromosomes remains permanently and apparently irreversibly condensed as heterochromatin. Such chromatin is called constitutive heterochromatin."⁽¹⁴⁾

Bostock, C.J. and Sumner, A.T. (1978): "Constitutive heterochromatin is permanently condensed chromatin which is found on the same portions of both homologous chromosomes and which therefore forms a permanent structural element of homologous chromosome pairs."⁽⁸⁾

Avers, C.J. (1986): "Those regions of the chromosomes, often around the centromere, that remain permanently condensed and are laterreplicating and genetically stable or inert."⁽⁶⁾

以上几段引语中,某些词的黑体字是笔者改的,为的是标明CH释义中C的对应词,说明“恒定的”含义已被学者们所广泛采用。

如果我们再把带“C”修饰词的几个遗传学名词的定义罗列在一起分析,就更进一步表明了C的准确含义。

C. enzyme: 合成速率恒定而不受调节的酶(与可调酶相对)⁽¹⁵⁾; 与环境条件无关经常进行合成的酶⁽¹¹⁾。细菌细胞中与代谢状态无关含量恒定的酶⁽¹²⁾。

C. gene: 其表达活性只依赖于其启动子结合RNA聚合酶的效率而不受调节的基因,往往亦称管家基因⁽¹³⁾; 一直持续转录的基因。⁽¹⁰⁾

C. mutation: 导致细菌几种功能相关的诱导酶变为恒定合成的突变⁽¹¹⁾; 引起通常受调节的基因表达变为不受调节的突变。⁽¹³⁾

C. mutant: 发生C. mutation的突变体⁽¹³⁾; 导致发生恒定酶合成的突变体。⁽¹⁶⁾

C. protein: 细胞中含量不受外界环境影响的一些蛋白质。⁽¹⁶⁾

综上所述,“constitutive”修饰词定为“组成型”欠妥,似应定为“恒定型”或“恒定的”为宜。

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