

研究报告

八肋游仆虫一种富含三核苷酸重复序列的新基因 *GARP* 的克隆与序列分析

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摘要

人类基因中三核苷酸重复序列拷贝数的异常扩增, 可导致多种神经系统疾病。一种富含GAA三核苷酸的 *GARP* (glutamic acid-rich protein) 基因从八肋游仆虫 (*Euplotes octocarinatus*) 大核文库中筛选获得。大核中该基因的染色体全长460 bp, 基因两端具有下毛类纤毛虫大核特有的端粒序列 (C₄A₄C₄A₄C₄A₄C₄), 开放读框内含有一个 TGA₍₈₈₋₉₉₎ 密码子, 在游仆虫中编码为半胱氨酸。经DNA Star 软件分析, 该基因编码的蛋白质由112个氨基酸组成, 预测其分子量为13 kDa, 等电点为3.82, 含有四个 [[alpha]] 螺旋和一个 [[beta]] 折叠。小核中对应的该基因含有两个内部删除序列, IES1 和 IES2。IES1 和 IES2 分别长41 bp, IES1 以GA二核苷酸直接重复为删除信号, IES2 以TA二核苷酸直接重复为删除信号。RT-PCR 证明该基因具有转录活性。

关键词 [八肋游仆虫](#) [GARP基因](#) [三核苷酸重复](#)

分类号

Cloning and characterization of a novel trinucleotide repeat-containing gene *GARP* from *Euplotes octocarinatus*

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Abstract

<P>The expansion of trinucleotide repeats in genome is related to the pathogenesis of several neurodegenerative diseases. A GARP (glutamic acid-rich protein) gene was isolated from the macronuclear plasmid mini library of Euplotes octocarinatus. A micronuclear version of the GARP gene was amplified by polymerase chain reaction. The macronuclear DNA molecule carrying the GARP gene is 460 bp long and shows the characteristics of macronuclear chromosomes of hypotrichous ciliates. One of the three cysteines is encoded by the opal codon TGA₍₈₈₋₉₀₎. The predicted open reading frame encodes a 112-amino acid polypeptide, with a predicted molecular mass of 13 kDa and an isoelectric point of 3.82. Micronuclear version of the GARP gene contains two internal eliminated sequences (IES), IES1 and IES2. IES1 is 41 bp long and is flanked by 5'-GA-3' direct repeats. IES2 is 41 bp long and flanked by 5'-TA-3' direct repeats. Transcriptional activity of GARP gene was confirmed by reverse transcription polymerase chain reaction (RT-PCR).</P>

Key words [Euplotes octocarinatus](#) [GARP gene](#) [trinucleotide repeats](#)

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