中国寄生虫学与寄生虫病杂志
CHINESE JOURNAL OF PARASITOLOGY AND PARASITIC DISEASES
ISSN 1000-7423
CN 31-1248/R
主管：中华人民共和国国家卫生和计划生育委员会
主办：中华预防医学会 中国疾病预防控制中心寄生虫病预防控制所

中国寄生虫学与寄生虫病杂志 » 2013, Vol. 31 » Issue (6) :447-449 DOI:

刚地弓形虫ROP11基因的克隆及生物信息学分析

张晓磊，张进顺，贾晓晖，徐云鹏，张颖，王春苗，王燕，卢致民，赵建玲，贾天军

河北北方学院病原生物与免疫学研究所，张家口 075000

Cloning and Bioinformatics Analysis of Rhoptry Protein 11 of *Toxoplasma gondii*

ZHANG Xiao-lei，ZHANG Jin-shun，JIA Xiao-hui，XU Yun-peng，ZHANG Ying，WANG Chun-miao，WANG Yan，LU Zhi-min，ZHAO Jian-ling，JIA Tian-jun

Institute of Pathogen Microbes and Immunology，Hebei North University，Zhangjiakou 075000，China

摘要 提取刚地弓形虫（*Toxoplasma gondii*）RH株速殖子总RNA，根据棒状体蛋白11（ROP11）全长编码序列（登录号为DQ077905）的开放阅读框设计引物并进行逆转录PCR（RT-PCR）扩增，PCR产物经*Eco*RⅠ和*Not*Ⅰ酶切后与原核表达载体pGEX-6P-2连接，重组质粒转化大肠埃希菌（*E. coli*）XL-Blue，阳性菌落经PCR和双酶切鉴定，并测序。对所得序列进行生物信息学分析。结果显示，RT-PCR扩增产物约为1 500 bp。菌落PCR及双酶切结果正确。测序结果显示，获得的ROP11基因片段为1 548 bp（登录号为KC456639），与GenBank上已有的弓形虫ROP11序列相比，序列一致性为99%。生物信息学分析发现， ROP11编码蛋白质的预期相对分子质量为M_r 57 020，包括有12个保守结构区域，其前26个氨基酸残基构成信号肽，丝氨酸/苏氨酸蛋白激酶催化区域位于170~511氨基酸，且有2个潜在的N-糖基化位点。

关键词： 刚地弓形虫 棒状体蛋白11 原核表达 生物信息学分析

Abstract： Total RNA was extracted from tachyzoites of RH strain of *Toxoplasma gondii*. The open reading frame of ROP11 gene was amplified by using a pair of specific primers designed according to the coding sequence of ROP11 gene （Accession No. DQ077905）. The RT-PCR product was digested by restriction enzyme *Eco*RⅠ and *Not*Ⅰ, and then ligated into a pGEX-6P-2 vector. The recombinant plasmid was transferred into *E. coli* XL-Blue. The positive clones was selected by colony PCR, and confirmed by the double restriction enzyme digestion and sequencing. The RT-PCR product was 1 548 bp. The recombinant plasmid was confirmed by colony PCR and double restriction enzyme digestion. Sequencing results showed that the obtained ROP11 gene was 1 548 bp （Accession No. KC456639）. There was a high sequence consistency （99%） between the obtained ROP11 gene sequence and the Toxoplasma ROP11 gene from GenBank. Bioinformatics analysis showed that the ROP11 protein （Mr 57 020） consisted of the signal peptide （amino acids 1-26）, 12 conservative domains, a serine/threonine protein kinase catalytic domain （amino acids 170-511）, and two potential N-glycosylation sites.

Keywords： *Toxoplasma gondii* Rhoptry protein 11 Prokaryotic expression Bioinformatics analysis

引用本文:
张晓磊, 张进顺, 贾晓晖, 徐云鹏, 张颖, 王春苗, 王燕, 卢致民, 赵建玲, 贾天军.刚地弓形虫ROP11基因的克隆及生物信息学分析[J] 中国寄生虫学与寄生虫病杂志, 2013,V31(6): 447-449

ZHANG Xiao-Lei, ZHANG Jin-Shun, JIA Xiao-Hui, XU Yun-Peng, ZHANG Ying, WANG Chun-Miao, WANG Yan, LU Zhi-Min, ZHAO Jian-Ling, JIA Tian-Jun.Cloning and Bioinformatics Analysis of Rhoptry Protein 11 of *Toxoplasma gondii*[J] , 2013,V31(6):447-449

Copyright 2010 by 中国寄生虫学与寄生虫病杂志