

全国中文核心期刊
中国科技核心期刊
中国农业核心期刊
RCCSE中国核心学术期刊
中国科学引文数据库(CSCD)期刊
CAB International 收录期刊
美国《生物学文摘》收录期刊
美国《化学文摘》(CA)收录期刊

首页 (/) 期刊介绍 编委会 投稿须知 期刊订阅 广告合作 联系我们 返回主页
(/Corp/10.aspx) (/Corp/3600.aspx) (/Corp/5006.aspx) (/Corp/50.aspx) (http://www.haasep.cn/)

«上一篇 (DArticle.aspx? type=view&id=201404002)
下一篇 (DArticle.aspx? type=view&id=201404004)



PDF下载 (pdfdown.aspx? Sid=201404003)

+分享
(http://www.jiathis.com/share?uid=1541069)



微信公众号: 大豆科学

[1]李永光,艾佳,王涛,等.大豆*gma-miR1508a*靶基因预测及功能分析[J].大豆科学,2014,33(04):483-487.
[doi:10.11861/j.issn.1000-9841.2014.04.0479]

LI Yong-guang, AI Jia, WANG Tao, et al. The Target Genes Prediction and Analysis of *gma-miR1508a* [J]. Soybean Science, 2014, 33(04): 483-487. [doi:10.11861/j.issn.1000-9841.2014.04.0479]

点击复制

大豆*gma-miR1508a*靶基因预测及功能分析

《大豆科学》 [ISSN:1000-9841 /CN:23-1227/S] 卷: 第33卷 期数: 2014年04期 页码: 483-487 栏目:
出版日期: 2014-08-25

Title: The Target Genes Prediction and Analysis of *gma-miR1508a*

作者: 李永光¹ (KeySearch.aspx?type=Name&Sel=李永光); 艾佳¹ (KeySearch.aspx?type=Name&Sel=艾佳); 王涛¹ (KeySearch.aspx?type=Name&Sel=王涛); 金龙国² (KeySearch.aspx?type=Name&Sel=金龙国); 邱丽娟² (KeySearch.aspx?type=Name&Sel=邱丽娟); 李文滨¹ (KeySearch.aspx?type=Name&Sel=李文滨)

1. 东北农业大学大豆生物学教育部重点实验室/东北农业大学农业部东北大豆生物学与遗传育种重点实验室, 黑龙江 哈尔滨 150030;
2. 中国农业科学院作物科学研究所, 北京 100081

Author(s): LI Yong-guang¹ (KeySearch.aspx?type=Name&Sel=LI Yong-guang); AI Jia¹ (KeySearch.aspx?type=Name&Sel=AI Jia); WANG Tao¹ (KeySearch.aspx?type=Name&Sel=WANG Tao); JIN Long-guo² (KeySearch.aspx?type=Name&Sel=JIN Long-guo); QIU Li-juan² (KeySearch.aspx?type=Name&Sel=QIU Li-juan); LI Wen-bin¹ (KeySearch.aspx?type=Name&Sel=LI Wen-bin)

1. Chinese Education Ministry's Key Laboratory of Soybean Biology & Agricultural Ministry's Northeast Areal Key Laboratory of Soybean Biology and Genetic Breeding, Northeast Agricultural University, Harbin150030, China;
2. Institute of Crop Science, Chinese Academy of Agricultural Sciences, Beijing 100081, China

关键词: 大豆 (KeySearch.aspx?type=Keyword&Sel=大豆); miRNA (KeySearch.aspx?type=Keyword&Sel=miRNA); 启动子 (KeySearch.aspx?type=Keyword&Sel=启动子); 靶基因 (KeySearch.aspx?type=Keyword&Sel=靶基因)

Keywords: Soybean (KeySearch.aspx?type=Keyword&Sel=Soybean); miRNA (KeySearch.aspx?type=Keyword&Sel=miRNA); Promoter (KeySearch.aspx?type=Keyword&Sel=Promoter); Target gene (KeySearch.aspx?type=Keyword&Sel=Target gene)

分类号: S565.1

DOI: 10.11861/j.issn.1000-9841.2014.04.0479 (http://dx.doi.org/10.11861/j.issn.1000-9841.2014.04.0479)

文献标志码: A

摘要: microRNA(miRNA)是生物中广泛分布的、内源性的、由21~25个核苷酸大小的非编码单链小分子RNA。miRNA与靶基因mRNA具有互补关系,能够介导降解靶基因和转录后水平的基因沉默,引起目的基因表达的下调。通过利用PlantCARE、PMRD、BAR等数据库对*gma-miR1508a*启动子顺式调控元件和靶基因进行了生物信息学分析,启动子分析结果表明*gma-miR1508a*含有多种非生物胁迫响应元件,其表达受ABA、低温、干旱等胁迫诱导。利用PMRD软件预测获得7个*gma-miR1508a*的靶基因,分别参与了细胞凋亡、开花调控、逆境胁迫、细胞壁修饰等调控,最终通过拟南芥同源基因分析获得了Glyma10g03840.1、Glyma16g27800.1、Glyma17g07280.1等5个与低温反应相关的候选靶基因。

Abstract: microRNA(miRNA) is widely distributed RNA regulatory genes, endogenous and 21-25nt noncoding single-stranded small molecule RNA. miRNA has a complementary relationship with its target gene mRNA, and mediates the degradation of target genes. The transcriptional gene silencing causes the down-regulation of the expression of the target gene. In the present study, the promoter and the target gene of *gma-miR1508a* gene were predicted by bioinformatics methodology in PlantCARE, PMRD and BAR databases. Analysis results showed that many important abiotic stress cis-acting regulatory elements were found in the promoter sequence and gene expression may induce by ABA, low temperature and drought stresses. Seven *gma-miR1508a* target genes were identified by PMRD software, which involved in cell apoptosis, regulation of flowering, stress responses, cell wall modification. Finally, Glyma10g03840.1, Glyma16g27800.1, Glyma17g07280.1 totally five of them may be the target genes of *gma-miR1508a* under low temperature stress.

参考文献/References:

- [1] Bartel D P. MicroRNAs: Genomics, biogenesis, mechanism and function[J]. Cell, 2004, 116(2): 281-297.
- [2] Molly M, Artemis G. MicroRNA promoter analysis[J]. Plant MicroRNAs Methods in Molecular Biology, 2010, 592: 149-161.
- [3] Pandey S P, Krishnamazhari A. Computational analysis of plant RNA Pol-II promoters[J]. Biosystems, 2006, 83: 38-50.
- [4] Molly M, Vesselin B, Ventsislav R. MicroRNA promoter element discovery in Arabidopsis[J]. RNA, 2006, 12: 1612-1619.
- [5] Krek A. Combinatorial microRNA target predictions[J]. Nature Genetics, 2005, 37: 495-500.
- [6] Higo K, Ugawa Y, Iwamoto M. Plant cisacting regulatory DNA elements (PLACE) database[J]. Nucleic Acids Research, 1999, 27: 297-300.
- [7] [JIP3] Lescot M, Dehais P, Thijs G. PlantCARE: a database of plant cis-acting regulatory elements and a portal to tools for in silico analysis of promoter sequences[J]. Nucleic Acids Research, 2002, 30: 325-327. [JP]
- [8] Griffiths-Jones S. miRBase: tools for microRNA genomics[J]. Nucleic Acids Research, 2007, 1(36): 154-158.
- [9] Krüger J, Rehmsmeier M. RNAhybrid: microRNA target prediction easy fast and flexible[M]. Nucleic Acids Research, 2006, 34: 451-454.
- [10] Rehmsmeier M. Fast and effective prediction of microRNA/target duplexes[J]. RNA, 2004, 10: 1507-1517.

- [11]Takaya S,Pal S.MicroRNAs targeting and target prediction[J].New Biotechnology,27(3):243-248.
- [12]Zhang B H,Pan X P,Edmund J S,et al.Identification of soybean microRNAs and their targets[J].Planta,2008,229(1):161-182.
- [13]Maragkakis M,Alexiou P,Papadopoulos G,et al.Accurate microRNA target prediction correlates with protein repression levels[J].BMC Bioinformatics,2009,10(1):295.

相似文献/References:

- [1]刘章雄,李卫东,孙石,等.1983~2010年北京大豆育成品种的亲本地理来源及其遗传贡献[J].(article.aspx?type=view&id=201301001)大豆科学,2013,32(01):1.[doi:10.3969/j.issn.1000-9841.2013.01.002]
- LIU Zhang-xiong,LI Wei-dong,SUN Shi,et al.Geographical Sources of Germplasm and Their Nuclear Contribution to Soybean Cultivars Released during 1983 to 2010 in Beijing[J].Soybean Science,2013,32(04):1.[doi:10.3969/j.issn.1000-9841.2013.01.002]
- [2]李彩云,余永亮,杨红旗,等.大豆脂质转运蛋白基因GmLTP3的特征分析[J].(article.aspx?type=view&id=201301002)大豆科学,2013,32(01):8.[doi:10.3969/j.issn.1000-9841.2013.01.003]
- LI Cai-yun,YU Yong-liang,YANG Hong-qi,et al.Characteristics of a Lipid-transfer Protein Gene GmLTP3 in Glycine max[J].Soybean Science,2013,32(04):8.[doi:10.3969/j.issn.1000-9841.2013.01.003]
- [3]王明霞,崔晓霞,薛晨晨,等.大豆耐盐基因GmIAL3a的克隆及RNAi载体的构建[J].(article.aspx?type=view&id=201301003)大豆科学,2013,32(01):12.[doi:10.3969/j.issn.1000-9841.2013.01.004]
- WANG Ming-xia,CUI Xiao-xia,XUE Chen-chen,et al.Cloning of Halotolerance 3 Gene and Construction of Its RNAi Vector in Soybean (Glycine max) [J].Soybean Science,2013,32(04):12.[doi:10.3969/j.issn.1000-9841.2013.01.004]
- [4]张春宝,李玉秋,彭宝,等.线粒体ISSR与SCAR标记鉴定大豆细胞质雄性不育系与保持系[J].(article.aspx?type=view&id=201301005)大豆科学,2013,32(01):19.[doi:10.3969/j.issn.1000-9841.2013.01.005]
- ZHANG Chun-bao,LI Yu-qiu,PENG Bao,et al.Identification of Soybean Cytoplasmic Male Sterile Line and Maintainer Line with Mitochondrial ISSR and SCAR Markers[J].Soybean Science,2013,32(04):19.[doi:10.3969/j.issn.1000-9841.2013.01.005]
- [5]卢清瑶,赵琳,李冬梅,等.RAV基因对拟南芥和大豆不定芽再生的影响[J].(article.aspx?type=view&id=201301006)大豆科学,2013,32(01):23.[doi:10.3969/j.issn.1000-9841.2013.01.006]
- LU Qing-yao,ZHAO Lin,LI Dong-mei,et al.Effects of RAV gene on Shoot Regeneration of Arabidopsis and Soybean [J].Soybean Science,2013,32(04):23.[doi:10.3969/j.issn.1000-9841.2013.01.006]
- [6]杜景红,刘丽君.大豆fad3c基因沉默载体的构建[J].(article.aspx?type=view&id=201301007)大豆科学,2013,32(01):28.[doi:10.3969/j.issn.1000-9841.2013.01.007]
- DU Jing-hong,LIU Li-jun.Construction of fad3c Gene Silencing Vector in Soybean[J].Soybean Science,2013,32(04):28.[doi:10.3969/j.issn.1000-9841.2013.01.007]
- [7]张力伟,樊颖伦,牛腾飞,等.大豆“冀黄13”突变体筛选及突变体库的建立[J].(article.aspx?type=view&id=201301008)大豆科学,2013,32(01):33.[doi:10.3969/j.issn.1000-9841.2013.01.008]
- ZHANG Li-wei,FAN Ying-lun,NIU Teng-fei,et al.Screening of Mutants and Construction of Mutant Population for Soybean Cultivar "Jihuang13" [J].Soybean Science,2013,32(04):33.[doi:10.3969/j.issn.1000-9841.2013.01.008]
- [8]盖江南,张彬彬,吴瑶,等.大豆不定胚悬浮培养基因型筛选及基因枪遗传转化的研究[J].(article.aspx?type=view&id=201301009)大豆科学,2013,32(01):38.[doi:10.3969/j.issn.1000-9841.2013.01.009]
- GAI Jiang-nan,ZHANG Bin-bin,WU Yao,et al.Screening of Soybean Genotypes Suitable for Suspension Culture with Adventitious Embryos and Genetic Transformation by Particle Bombardment[J].Soybean Science,2013,32(04):38.[doi:10.3969/j.issn.1000-9841.2013.01.009]
- [9]王鹏飞,刘丽君,唐晓飞,等.适于体细胞胚发生的大豆基因型筛选[J].(article.aspx?type=view&id=201301010)大豆科学,2013,32(01):43.[doi:10.3969/j.issn.1000-9841.2013.01.010]
- WANG Peng-fei,LIU Li-jun,TANG Xiao-fei,et al.Screening of Soybean Genotypes Suitable for Somatic Embryogenesis [J].Soybean Science,2013,32(04):43.[doi:10.3969/j.issn.1000-9841.2013.01.010]
- [10]刘德兴,年海,杨存义,等.耐酸铝大豆品种资源的筛选与鉴定[J].(article.aspx?type=view&id=201301011)大豆科学,2013,32(01):46.[doi:10.3969/j.issn.1000-9841.2013.01.011]
- LIU De-xing,NIAN Hai,YANG Cun-yi,et al.Screening and Identifying Soybean Germplasm Tolerant to Acid Aluminum [J].Soybean Science,2013,32(04):46.[doi:10.3969/j.issn.1000-9841.2013.01.011]

备注/Memo 基金项目: 抗逆转基因大豆新品种培育(2014ZX08004-002)。

第一作者简介: 李永光(1984-), 男, 博士, 助理研究员, 主要从事大豆生物技术研究。E-mail:yongguangli@neau.edu.cn。

通讯作者: 李文滨(1958-), 男, 博士, 教授, 主要从事大豆遗传育种研究。E-mail:wenbinli@neau.edu.cn。

更新日期/Last Update: 2014-09-11