

数据资源: [林业专题资讯](#)

打印

下载

分享

MfbHLH38, a *Myrothamnus flabellifolia* bHLH transcription factor, confers tolerance to drought and salinity stresses in *Arabidopsis*

编号 040027503

推送时间 20210125

研究领域 [森林培育](#)

年份 2021

类型 期刊

语种 英语

标题 MfbHLH38, a *Myrothamnus flabellifolia* bHLH transcription factor, confers tolerance to drought and salinity stresses in *Arabidopsis*

来源期刊 BMC Plant Biology

期 第275期

发表时间 20201202

关键词 [bHLH transcription factor](#); [Abiotic stress tolerance](#); [Abscisic acid \(ABA\)](#); [Myrothamnus flabellifolia](#);

摘要 Background

The basic helix-loop-helix (bHLH) proteins, a large transcription factors family, are involved in plant growth and development, and defensive response to various environmental stresses. The resurrection plant *Myrothamnus flabellifolia* is known for its extremely strong drought tolerance, but few bHLHs taking part in abiotic stress response have been unveiled in *M. flabellifolia*.

Results

In the present research, we cloned and characterized a dehydration-inducible gene, MfbHLH38, from *M. flabellifolia*. The MfbHLH38 protein is localized in the nucleus, where it may act as a transcription factor. Heterologous expression of MfbHLH38 in *Arabidopsis* improved the tolerance to drought and salinity stresses, as determined by the studies on physiological indexes, such as contents of chlorophyll, malondialdehyde (MDA), proline (Pro), soluble protein, and soluble sugar, water loss rate of detached leaves, reactive oxygen species (ROS) accumulation, as well as antioxidant enzyme activities. Besides, MfbHLH38 overexpression increased the sensitivity of stomatal closure to mannitol and abscisic acid (ABA), improved ABA level under drought stress, and elevated the expression of genes associated with ABA biosynthesis and ABA responding, such as NCED3, P5CS, and RD29A.

Conclusions

Our results presented evidence that MfbHLH38 enhanced tolerance to drought and salinity stresses in *Arabidopsis* through increasing water retention ability, regulating osmotic balance, decreasing stress-induced oxidation damage, and possibly participated in ABA-dependent stress-responding pathway.

PDF文件 [浏览全文](#)

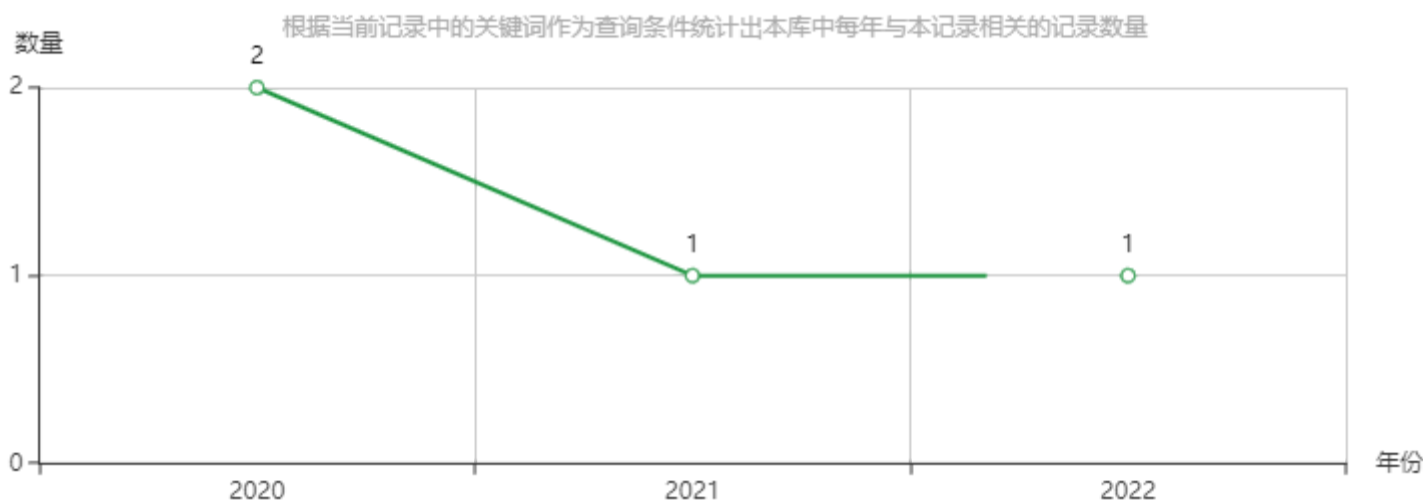
相关记录

[更多](#)

Overexpression of Myrothamnus flabellifolia MfWRKY41 confers drought and sali...	2022-09-05
An RNA thermoswitch regulates daytime growth in Arabidopsis	2020-05-25
Cytokinin oxidase PpCKX1 plays regulatory roles in development and enhances d...	2020-02-17

相关图谱

相关主题趋势分析图



相关链接: [中国工程院](#) [国家林业和草原局](#) [中国林业科学研究院](#) [中国林业信息网](#) [中国林业数字图书馆](#) [国家林业和草原科学数据中心](#)

友情链接: [自然资源部](#) [科学技术部](#) [中国林学会](#) [中国科技资源共享网](#) [中国林草植物新品种保护](#) [中国林业知识产权网](#) [中国林业新闻网](#)

主办单位: [中国林业科学研究院林业科技信息研究所](#) 电话: 010-62889748 E-mail: wangjiaosky92@163.com 京ICP备14021735号-2 访问量: 12467230
建议使用谷歌、火狐、360、IE8或IE8以上版本的浏览器