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农业生物技术专题

本期导读

前沿资讯

1．我国科学家开发生命科学领域专业数据库

学术文献

1．受体样激酶902与油菜素甾体信号激酶1结合磷酸化，调节植物免疫

2．BRI1通过RLP44和PSK信号调控拟南芥根部细胞命运

相关专利

1．一种茄子CRISPR/Cas9基因敲除载体的构建方法和应用

2．基于CRISPR的基因组修饰和调控

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前沿资讯

1．我国科学家开发生命科学领域专业数据库

简介：中国科学院北京基因组研究所生命与健康大数据中心近日针对生命科学一些重要研究领域，开发了系列特色专业数据库，将为科研人员进一步破解生命奥秘提供重要数据支持。当前，生命科学研究和应用已进入大数据时代，生物大数据爆发使原来假说驱动的传统研究模式转变为大量数据与假说共同印证的系统研究模式。如何存好、管好、用好海量生命科学大数据，不仅直接影响着生物医学和生物技术的发展，也从基础上决定了一个国家在生命科学和生物医药技术领域的持续创新能力。中科院北京基因组研究所生命与健康大数据中心在现有数据资源基础上，开发了ＤＮＡ甲基化数据库、ＲＮＡ编辑与疾病数据库、植物ＲＮＡ编辑数据库、长非编码ＲＮＡ数据库、跨物种全基因组核小体定位图数据库以及犬类数据库等。这些数据库资源与疾病发生机制、基因组功能元件与结构、基因修饰与变异、动物遗传多样性研究等息息相关。

来源：科学网

发布日期:2018-11-05

全文链接:

http://news.sciencenet.cn/htmlnews/2018/11/419548.shtm

学术文献

1．RECEPTOR-LIKE KINASE 902 Associates with and Phosphorylates BRASSINOSTEROID-SIGNALING KINASE1 to Regulate Plant Immunity（受体样激酶902与油菜素甾体信号激酶1结合磷酸化，调节植物免疫）

简介：Plants employ receptor-like kinases (RLKs) and receptor-like proteins for rapid recognition of pathogen invasion and RLKs then transmit signals to receptor-like cytoplasmic kinases (RLCKs) to activate immune responses. RLKs are under fine regulation mediated by subcellular trafficking, which contributes to the proper activation of plant immunity. In this study, we show that Arabidopsis thaliana RECEPTOR-LIKE KINASE 902 (RLK902) plays important roles in resistance to the bacterial pathogen Pseudomonas syringae, but not to the fungal powdery mildew pathogen Golovinomyces cichoracearum. RLK902 localizes to the plasma membrane, and associates with ENHANCED DISEASE RESISTANCE 4 (EDR4), a protein involved in clathrin-mediated trafficking pathways. EDR4 and CLATHRIN HEAVY CHAIN 2 (CHC2) regulate the subcellular trafficking and accumulation of RLK902 protein. In addition, RLK902 directly associates with the RLCK BRASSINOSTEROID-SIGNALING KINASE1 (BSK1), a key component of plant immunity, but not with other members of the FLAGELLIN SENSING 2 immune complex. RLK902 phosphorylates BSK1, and Ser-230 of BSK1 is a key phosphorylation site that is critical in RLK902-mediated defense signaling. Taken together, our data indicate that EDR4 regulates plant immunity by modulating the subcellular trafficking and protein accumulation of RLK902 and that RLK902 transmits immune signals by phosphorylating BSK1.

来源：Molecular Plant期刊
发布日期:2018-10-16
全文链接:
http://agri.ckcest.cn/file1/M00/02/9C/CsgkOFvo5FqAVFQiAB5nSlsaB8w277.pdf

2．BRI1 controls vascular cell fate in the Arabidopsis root through RLP44 and phytosulfokine signaling(BRI1通过RLP44和PSK信号调控拟南芥根部细胞命运)

简介：Cell-fate determination and cellular behavior in plants rely mainly on positional information and intercellular communication. A plethora of cues are perceived by surface receptors and integrated into an adequate cellular output. Here, we show that the small receptor-like protein RLP44 acts as an intermediary to connect the receptors for two well-known signaling molecules, brassinosteroid and phytosulfokine, to control cell fate in the root vasculature. Furthermore, we show that the brassinosteroid receptor has functions that are independent from the responses to its hormone ligands and reveal that phytosulfokine signaling promotes procambial cell identity. These results provide a mechanistic framework for the integration of multiple signaling pathways at the plasma membrane by shifting associations of receptors in multiprotein complexes.
来源：PNAS期刊
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全文链接:
http://agri.ckcest.cn/file1/M00/02/9C/CsgkOFvo1SGAIX_NABCCBSjYEcs845.pdf

相关专利

1．一种茄子CRISPR/Cas9基因敲除载体的构建方法和应用

简介：本发明涉及一种茄子CRISPR/Cas9基因敲除载体的构建和应用，属于生物技术领域。是以茄子WRKY26基因的基因组DNA序列为参照，设计靶位点gRNA；构建靶位点gRNA和Cas9蛋白的表达盒；再将gRNA和Cas9蛋白的表达盒插入到双元表达载体pCAMBIA1301。将重组质粒转入农杆菌EHA105菌株中，并由EHA105介导转化茄子子叶，获得遗传转化植株，经PCR和测序验证确定突变株系。本发明以茄子SmWRKY26基因为例，快速简单高效率地对茄子基因进行了地定点突变。
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http://agri.ckcest.cn/file1/M00/02/9C/CsgkOFvqJciAM6I7AA57gXsExzI036.pdf

2．CRISPR-based genome modification and regulation(基于CRISPR的基因组修饰和调控)

简介：he present invention provides RNA-guided endonucleases, which are engineered for expression in eukaryotic cells or embryos, and methods of using the RNA-guided

endonuclease for targeted genome modification in in eukaryotic cells or embryos. Also provided are fusion proteins, wherein each fusion protein comprises a CRISPR/Cas-like protein or fragment thereof and an effector domain. The effector domain can be a cleavage domain, an epigenetic modification domain, a transcriptional activation domain, or a transcriptional repressor domain. Also provided are methods for using the fusion proteins to modify a chromosomal sequence or regulate expression of a chromosomal sequence.

来源：国家知识产权局
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http://agri.ckcest.cn/file1/M00/02/9C/CsgkOFvqJGaAJObjAElN3no3gBU749.pdf