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2019年4月29日

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▶ 前沿资讯

1. 当“基因剪刀”遇上农业生产

简介: 自CRISPR/Cas9“基因剪刀”诞生后,生命科学领域各类研究成果相继涌现。这一发现于细菌天然免疫系统内的工具可对真核细胞DNA进行迅速高效的切割。经过多种改造和延伸,CRISPR/Cas9强悍的应用潜力引起诸多研究者的兴趣,其应用范围至今仍在不断拓展。除了治愈遗传疾病、制造更强大的干细胞,基因编辑还可能为农业带来新的翻盘机会。比如让牛远离结核病、让水稻更耐寒、让大豆或玉米更高产。目前,美国农业部已经明确基因编辑作物无需受到与转基因作物规格相同的监管,但欧盟最高法院却规定,基因编辑作物应与转基因生物遵守同样严格的法规。无论是畜牧业还是种植业,都需要培育出更强壮、更高产的作物以提高经济效益。不管怎样,日渐增多的研究成果使人们对基因编辑的认识愈发深刻。

来源: 科学网

发布日期:2019-04-18

全文链接:

<http://news.sciencenet.cn/htmlnews/2019/4/425335.shtm>

2. 中科院植物所北京植物园温室改造后重新对公众开放

简介: “我手中所拿的是猴面包树的果实和种子”,在焕然一新的温室中,来自马达加斯加的留学生Romer向《中国科学报》记者介绍道,“猴面包树在我国被称为‘母亲树’,人们相信在吃了它的果实后可以得到新的生命。”近日,北京城最古老的热带亚热带植物展览温室——中国科学院植物研究所北京植物园展览温室完成整体修缮和设备更新,重新面向社会公众开放。

来源: 科学网

发布日期:2019-04-09

全文链接:

<http://news.sciencenet.cn/htmlnews/2019/4/424956.shtm>

▶ 学术文献

1 . A functional allele of CsFUL1 regulates fruit length through inhibiting CsSUP and auxin transport in cucumber (一个功能性等位基因CsFUL1通过抑制黄瓜中的CsSUP和生长素运输来调控果实长度)

简介: Fruit length is a prominent agricultural trait during cucumber (*Cucumis sativus*. L) domestication and diversifying selection; however, the regulatory mechanisms of fruit elongation remain elusive. We identified two alleles of the FRUITFULL-like MADS-box gene CsFUL1 with 3393C-A SNP variation among 150 cucumber lines. Whereas CsFUL1A was specifically enriched in the long-fruited East Asian type cucumbers (China and Japan), the CsFUL1C allele was randomly distributed in cucumber populations, including wild and semi-wild cucumbers. CsFUL1A knockdown led to further fruit elongation in cucumber, whereas elevated expression of CsFUL1A resulted in significantly shorter fruits. No effect on

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fruit elongation was detected when CsFUL1C expression was modulated, suggesting that CsFUL1A is a gain-of-function allele in long-fruited cucumber that acts as a repressor during diversifying selection of East Asian cucumbers. Furthermore, CsFUL1A binds to the CARG box in the promoter region of SUPERMAN (CsSUP), a regulator of cell division and expansion, to repress its expression. Additionally, CsFUL1A inhibits the expression of auxin transporters PIN-FORMED 1 and 7, resulting in decreases in auxin accumulation in fruits. Together, our work identifies an agriculturally important allele and suggests a strategy for manipulating fruit length in cucumber breeding that involves modulation of CsFUL1A expression.

来源: The Plant Cell

发布日期: 2019-04-12

全文链接:

http://agri.ckcest.cn/file1/M00/06/6A/Csgk0Fy9IKiAN40BADLRz_90NF8059.pdf

2 . The Ca²⁺ sensor SCaBP3/CBL7 Modulates Plasma Membrane H⁺-ATPase Activity and Promotes Alkali Tolerance in Arabidopsis (Ca²⁺ 传感器CAPP3/CBL7调节拟南芥质膜H⁺-ATPase活性, 促进其耐碱性。)

简介: Saline-alkali soil is a major environmental constraint impairing plant growth and crop productivity. In this study, we identified a Ca²⁺ sensor/kinase/plasma membrane H⁺-ATPase module as a central component conferring alkali tolerance in Arabidopsis thaliana. We report that the a SCaBP3 (SOS3-LIKE CALCIUM BINDING PROTEIN 3)/CBL7 (CALCINEURIN B-LIKE 7) loss-of-function plants exhibits enhanced stress tolerance associated with increased plasma membrane (PM) H⁺-ATPase activity and provides fundamental mechanistic insights into the regulation of PM H⁺-ATPase activity. Consistent with the genetic evidence, interaction analyses, in vivo reconstitution experiments and determination of H⁺-ATPase activity indicate that interaction of the Ca²⁺ sensor SCaBP3 with the C-terminal RI domain of the PM H⁺-ATPase AHA2 (Arabidopsis thaliana PLASMA MEMBRANE PROTON ATPASE 2) facilitates the intramolecular interaction of the AHA2 C terminus with the Central loop region of the PM H⁺-ATPase to promote autoinhibition of H⁺-ATPase activity. Concurrently, direct interaction of SCaPB3 with the kinase PKS5 (PROTEIN KINASE SOS2-LIKE 5) stabilizes the kinase-ATPase interaction and thereby fosters the inhibitory phosphorylation of AHA2 by PKS5. Consistently, yeast reconstitution experiments and genetic analysis indicate that SCaBP3 provides a bifurcated pathway for coordinating intramolecular and intermolecular inhibition of PM H⁺-ATPase. We propose that alkaline stress-triggered Ca²⁺ signals induce SCaBP3 dissociation from AHA2 to enhance PM H⁺-ATPase activity. This work illustrates a versatile signaling module that enables the stress-44 responsive adjustment of plasma membrane proton fluxes.

来源: The Plant Cell

发布日期: 2019-04-08

全文链接:

<http://agri.ckcest.cn/file1/M00/06/6A/Csgk0Fy9F-yAPWxwABdu1KFLRvw385.pdf>

行业报告

1. 2019年3月农产品供需形势分析月报

简介: 牛羊肉止涨回落。季节性需求疲软，牛羊肉结束了连续8个月的上涨。3月份，牛肉集市均价每公斤68.70元，环比跌1.8%，同比涨6.0%；羊肉集市均价每公斤69.07元，环比跌2.4%，同比涨11.9%。从周价看，牛肉、羊肉从2月第2周开始连降7周，累计跌幅分别为3.1%、4.1%。鸡蛋价格连续6个月下跌。产蛋鸡存栏量稳中微增，市场供应充足，蛋价连续回落。3月份，全国鸡蛋零售均价每公斤8.99元，环比跌7.5%，同比跌5.3%，继2018年10月以来连续6个月下跌，累计跌幅16.9%。蔬菜价格季节性回落缓慢。2月底全国大范围雨雪天气和“倒春寒”延缓蔬菜生产，影响蔬菜采收及运输，春节后菜价回落慢于常年。3月份，28种蔬菜全国批发均价每公斤4.83元，环比跌0.6%，同比涨17.8%，较近3年同期高7.1%，同比涨幅超过40%的品种有西红柿、蒜薹和菠菜。

来源: 农业农村部市场与信息化司

发布日期: 2019-04-19

全文链接:

http://agri.ckcest.cn/file1/M00/06/6A/Csgk0Fy9IXqANd4kAA-S7Rx4_o8228.pdf