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农业生物技术专题

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▶ 前沿资讯

1. 北大7位学者历时7年刷新DNA测序精度

简介: 日前,北京大学黄岩谊教授带领的团队在《自然—生物技术》期刊上在线发表《基于信息理论来修正错误的高准确度荧光产生DNA测序方法》,这标志着我国学者已成功刷新DNA信息解读的精确程度,从根本上提高了测序方法本身的精度,打破了国外在基因测序领域的技术垄断,极大推动了我国生命科学与医学的研究发展,同时今后有望为婴儿基因突变检测、循环肿瘤DNA等测序临床医学应用的进一步发展提供更好的工具。这个研究团队,包括北京大学教授谢晓亮、黄岩谊,博士后陈子天,博士研究生周文雄、乔朔、康力以及副研究员段海峰。7位成员分别来自化学、物理、生物等不同学科背景。

来源: 人民日报

发布日期: 2017-12-14

全文链接:

http://news.xinhuanet.com/tech/2017-12/14/c_1122107346.htm

2. 拜耳杀菌剂Delaro™ 将于2018年在美国上市

简介: 世界农化网中文网报道: 拜耳的新杀菌剂Delaro(活性成分:丙硫菌唑+肟菌酯)在获得美国环保署(EPA)登记批准后,将于2018年种植季在美国上市,用于玉米和大豆。在过去的一个种植季里,拜耳在美国20个州就Delaro开展了500次田间试验。试验结果表明,Delaro通过双重作用机理和提高植物健康,提供广谱的病害防控。拜耳玉米和大豆杀菌剂产品经理Thorsten Schwindt表示,“今年,玉米和大豆病害压力在整个美国是不尽相同的,这也就意味着会让一些种植者措手不及。种植者需要一种工具控制造成产量损失的病害,帮助他们充分发挥他们杂交玉米和大豆品种优势。”拜耳杀菌剂产品组合经理Randy Myers解释,种植者从Delaro中看到的扩展性能,是三唑类和甲氧基丙烯酸酯类杀菌剂结合的结果,在整个应用周期提供更好的表现和抗性管理。Delaro与当今市面上的其它产品不同,它具有更长的残效活性。

来源: 基因农业网

发布日期: 2017-12-14

全文链接:

<http://www.agrogene.cn/info-4561.shtml>

▶ 学术文献

1. Single-cell transcriptome analysis reveals widespread monoallelic gene expression in individual rice mesophyll cells (单细胞转录组分析揭示了在个体水稻叶肉细胞中广泛存在的单等位基因表达)

简介: Monoallelic gene expression refers to the phenomenon that all transcripts of a gene in a cell are expressed from only one of the two alleles in a diploid organism. Although monoallelic gene expression has been occasionally reported with bulk transcriptome analysis in plants, how prevalent it is in individual plant cells remains unknown. Here, we developed a single-cell RNA-seq protocol in rice and investigated allelic expression patterns in mesophyll

cells of indica (93-11) and japonica (Nipponbare) inbred lines, as well as their F1 reciprocal hybrids. We observed pervasive monoallelic gene expression in individual mesophyll cells, which could be largely explained by stochastic and independent transcription of two alleles. By contrast, two mechanisms that were proposed previously based on bulk transcriptome analyses, parent-of-origin effects and allelic repression, were not well supported by our data. Furthermore, monoallelically expressed genes exhibited a number of characteristics, such as lower expression levels, narrower H3K4me3/H3K9ac/H3K27me3 peaks, and larger expression divergences between 93-11 and Nipponbare. Taken together, the development of a single-cell RNA-seq protocol in this study offers us an excellent opportunity to investigate the origins and prevalence of monoallelic gene expression in plant cells.

来源: Science Bulletin 期刊

发布日期:2017-10-15

全文链接:

<http://agri.ckcest.cn/ass/c0b51aab-76e8-4c40-8191-f3ffac0a5344.pdf>

2. 科学家发现重楼属植物新物种

简介: 中国科学院昆明植物研究所王跃虎研究组在湖北省竹溪县境内考察时,发现重楼属家族的新成员——啟良重楼 (*Paris qiliangiana* H. Li, J. Yang & Y. H. Wang)。重楼属 (*Paris*) 植物是重要的药用植物资源,全球已发现约40种,其中近一半有药用记载。该新种的叶形和质地与侧膜亚属 *Subgenus Daiswa* (*Rafinesque*) H. Li 蚤休组 *Sect. Euthyra* Franchet 的金线重楼 (*P. delavayi* Franchet.) 相似。金线重楼的基本特征为萼片狭小,反折;花瓣暗紫色,长不及萼片之半,反折;药隔凸长0.2-0.4cm;花柱基紫黑色。其中卵叶重楼 *P. delavayi* var. *petiolata* (Baker ex C. H. Wright) H. Li 的叶片卵形,基部心形或圆形。该新种特征为叶片卵形,雄蕊2轮,侧膜胎座,果实开裂,外种皮红色多汁,但萼片斜升而不反折;花瓣较长,黄绿色,直立、长于萼片而不为暗紫色,也不反折;药隔凸出部分较短,绿色或褐色,长约0.1-0.2cm。其花柱基通常呈白色或淡紫色而非暗紫色等特点则与金线重楼存在明显差异。

来源: 科学网

发布日期:2017-12-12

全文链接:

<http://paper.sciencenet.cn/htmlpaper/2017121221433873245313.shtm>

3. Structural insights into the committed step of bacterial phospholipid biosynthesis (对细菌磷脂生物合成蛋白的深入研究)

简介: The membrane-integral glycerol 3-phosphate (G3P) acyltransferase PlsY catalyses the committed and essential step in bacterial phospholipid biosynthesis by acylation of G3P, forming lysophosphatidic acid. It contains no known acyltransferase motifs, lacks eukaryotic homologs, and uses the unusual acyl-phosphate as acyl donor, as opposed to acyl-CoA or acyl-carrier protein for other acyltransferases. Previous studies have identified several PlsY inhibitors as potential antimicrobials. Here we determine the crystal structure of PlsY at 1.48Å resolution, revealing a seven-transmembrane helix fold. Four additional substrate- and product-bound structures uncover the atomic details of its relatively inflexible

active site. Structure and mutagenesis suggest a different acylation mechanism of 'substrate-assisted catalysis' that, unlike other acyltransferases, does not require a proteinaceous catalytic base to complete. The structure data and a high-throughput enzymatic assay developed in this work should prove useful for virtual and experimental screening of inhibitors against this vital bacterial enzyme.

来源: Nature Communications期刊

发布日期:2017-11-22

全文链接:

<http://agri.ckcest.cn/ass/07e9e5d5-6ca5-4c61-b4e7-41440feabd43.pdf>