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农业生物技术专题

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1．单转录因子促进水稻产量和免疫力

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前沿资讯

1．模式硅藻的蛋白质组精细图谱完成

简介：硅藻是一类重要的单细胞光合真核生物，分布广泛，提供了地球上约20%的初级生产力，对整个地球生物圈意义重大。三角褐指藻(Phaeodactylum tricornutum)是海洋硅藻的模式生物，其基因组序列于2008年公布，但目前基因组的注释仍很不完善。蛋白基因组学(Proteogenomics)是利用蛋白质组学数据，尤其是高精度的串联质谱数据，结合基因组和转录组数据对基因组进行深度注释。中国科学院水生生物研究所研究员葛峰学科组前期采用蛋白基因组学的研究策略和方法，完成了模式蓝细菌的基因组深度解析（PNAS，2014，111（52）：E5633-E5642)并开发了针对原核生物的蛋白基因组学专业分析软件Gapp（Molecular & Cellular Proteomics. 2016；15(11)：3529-3539）。在这些工作的基础上，葛峰学科组对三角褐指藻的基因组进行了深度解析并构建了蛋白质组精细图谱。

来源：生物谷

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全文链接:

http://news.bioon.com/article/6727311.html

2．研究揭示植物精细胞谱系发育的分子路径

简介：植物的精细胞谱系（sperm cell lineage）发育过程十分独特。在此过程中，单倍体小孢子经过不对称有丝分裂产生一个较大的营养细胞和包裹其中的较小的生殖细胞，然后生殖细胞继续分裂形成两个精细胞。精细胞谱系发育的核心问题是如何有序地调节不同阶段细胞的命运和定向发育、以建立这种独特的发育模式。中国科学院植物研究所王台研究组分离了番茄小孢子、生殖细胞和精细胞；通过转录组研究发现小孢子具有全能性细胞的分子特征，从小孢子向精细胞的定向发育伴随着细胞全能性、体细胞发育、代谢相关基因的转录抑制以及生殖细胞和精细胞优势表达的基因显着上调。同时，激活型组蛋白修饰H3K4me3 和 H3K9ac水平的降低，抑制型组蛋白修饰H3K9me1/2/3水平的升高。进一步研究显示，精细胞谱系比非精细胞谱系细胞的转录组含有更高比例的长链非编码RNA，而且位于共表达网络重要节点的长链非编码RNA 在生殖细胞显着富集，表明长链非编码RNA在精细胞谱系发育过程中可能起重要调控作用。该研究发现多个基因可以作为区分精细胞谱系不同细胞类型身份的分子标记。相关的转录组数据将有助于进一步了解精细胞谱系发育过程中的分子编程与长链非编码RNA的功能。

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http://news.bioon.com/article/6727313.html

相关专利

1．Stabilization method of functional nucleic acid(功能性核酸的稳定化方法)

简介：This invention is intended to enhance and improve the resistance of a single- or double-stranded nucleic acid fragment comprising a base sequence of a functional nucleic acid to degradation by nucleolytic enzymes in a simple and cost-effective manner. The single- or double-stranded nucleic acid fragment comprises, ligated to at least one end thereof, hairpin-shaped DNA comprising: (A) a nucleic acid region comprising 2 to 5 arbitrary nucleotides; (B) a nucleic acid region comprising a "gna" or "gnna" base sequence, wherein each "n" represents "g", "t", "a", or "c", a base analogue, or a modified base; and (C) a nucleic acid region comprising a base sequence complementary to the nucleic acid region (A), sequentially from the 5' end toward the 3' end.
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http://agri.ckcest.cn/ass/cb702b27-47bb-4746-a490-cf5e0a0baed7.pdf

2．SgRNA And Knockout Method Of Human RSPO2 Gene Targeted With CRISPR-Cas9 Specificity And Application Thereof（ 用CRISPR-Cas9特异性靶向的人RSPO2基因的sgRNA和敲除方法及其应用）

简介：A method for knocking out a human RSPO2 gene targeted with CRISPR-Cas9 specificity includes steps of: 1) designing the sgRNA of the human RSPO2 gene targeted; and 2) constructing a CRISPR-Cas9 recombinant lentivirus vector for knocking out the RSPO2 gene. A method for preparing a lentiviral-packaged system for knocking out a human RSPO2 gene targeted with CRISPR-Cas9 specificity includes steps of: 1) designing the sgRNA of the human RSPO2 gene targeted; 2) constructing a CRISPR-Cas9 recombinant lentivirus vector for knocking out the RSPO2 gene; and 3) processing the CRISPR-Cas9 recombinant lentivirus vector for knocking out the sgRNA of the human RSPO2 gene with lentiviral packaging, so as to obtain the lentiviral-packaged system.
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学术文献

1．A single transcription factor promotes both yield and immunity in rice(单转录因子促进水稻产量和免疫力)

简介：Plant immunity often penalizes growth and yield. The transcription factor Ideal Plant Architecture 1 (IPA1) reduces unproductive tillers and increases grains per panicle, which results in improved rice yield. Here we report that higher IPA1 levels enhance immunity.Mechanistically, phosphorylation of IPA1 at amino acid Ser163 within its DNA binding domain occurs in response to infection by the fungus Magnaporthe oryzae and alters

theDNA binding specificity of IPA1. Phosphorylated IPA1 binds to the promoter of the pathogen defense gene WRKY45 and activates its expression, leading to enhanced disease resistance. IPA1 returns to a nonphosphorylated state within 48 hours after infection, resuming support of the growth needed for high yield. Thus, IPA1 promotes both yield and disease resistance by sustaining a balance between growth and immunity.

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