



信息速递

- 实验室动态 >
- 通知公告 >
- 学术交流 >
- 近期发表论文**
- 设备设施 >
- 联系我们 >

近期发表论文

首页 > 信息速递 > 近期发表论文 > 正文

Natural variation of *OsGluA2* is involved in grain protein content regulation in rice

发布日期: 2019-04-26 浏览次数: 22

Nature Communications **10**, Article number: 1949 (2019)

Yihao Yang, Min Guo, Shengyuan Sun, Yelu Zou, Shuangyi Yin, Yannan Liu, Shuzhu Tang, Minghong Gu, Zefeng Yang & Changjie Yan

Abstract

Grain protein content (GPC) affects rice nutrition quality. Here, we identify two stable quantitative trait loci (QTLs), *qGPC-1* and *qGPC-10*, controlling GPC in a mapping population derived from *indica* and *japonica* cultivars crossing. Map-based cloning reveals that *OsGluA2*, encoding a glutelin type-A2 precursor, is the candidate gene underlying *qGPC-10*. It functions as a positive regulator of GPC and has a pleiotropic effect on rice grain quality. One SNP located in *OsGluA2* promoter region is associated with its transcript expression level and GPC diversity. Polymorphisms of this nucleotide can divide all haplotypes into low (*OsGluA2^{LET}*) and high (*OsGluA2^{HET}*) expression types. Population genetic and evolutionary analyses reveal that *OsGluA2^{LET}*, mainly present in *japonica* accessions, originates from wild rice. However, *OsGluA2^{HET}*, the dominant type in *indica*, is acquired through mutation of *OsGluA2^{LET}*. Our results shed light on the understanding of natural variations of GPC between *indica* and *japonica* subspecies.

<https://www.nature.com/articles/s41467-019-09919-y#Abs1>

