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## 近期发表论文

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### The qSAC3 locus from indica rice effectively increases amylose content under a variety of conditions

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#### Abstract

#### BACKGROUND:

Amylose content (AC) is a critical factor for the quality of rice. It is determined by the biosynthesis gene *Waxy* (*Wx*) and a variety of quantitative trait loci (QTLs). Although many QTLs have been reported to affect rice AC, few of them have been investigated under varying growth conditions, especially various temperatures, which are known to greatly influence the AC.

#### RESULTS:

We analyzed the AC at different temperatures and planting seasons in a set of chromosome segment substitution lines (CSSLs) which were derived from a cross between the indica variety 9311 and the japonica variety Nipponbare carrying the same *Wx<sup>b</sup>* allele. A joint analysis detected a single locus, qSAC3, with a high logarithm of odds (LOD) score in four different conditions. The qSAC3 from indica 9311 (qSAC3<sup>ind</sup>) substantially increased the AC in japonica Nipponbare under all tested growth conditions. Furthermore, introducing the qSAC3<sup>ind</sup> into the soft rice variety Nangeng9108 with *Wx<sup>mq</sup>*, a mutant allele of *Wx<sup>b</sup>*, also moderately increased its AC and improved its appearance quality significantly by reducing the chalkiness of the polished rice.

#### CONCLUSIONS:

Our results indicate that the qSAC3<sup>ind</sup> could increase the AC of japonica rice in different environments as well as in the background of different *Wx* alleles and that qSAC3 is a valuable locus for fine-tuning the rice AC and ameliorating the dull endosperm in rice varieties with the *Wx<sup>mq</sup>* allele.

**Key words:** Amylose content; Chromosome segment substitution lines; Environmental effect; Quantitative trait loci; Rice quality

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