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Evaluation of salt tolerant soybean germplasm and identification of salt tolerance gene
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Salt tolerance is an important trait for plants growing in saline affected field. Screening of salt tolerant soybean is very important for developing salt tolerant cultivars. In our previously research, we established simple and effective methods for screening salt tolerant soybean germplasm, and found that the Na^+ in leaf and stem of salt tolerant germplasm was significantly lower than that of sensitive ones, while no significant difference of Na^+ content was observe in roots (Liu et al., 2011 and Jiang et al., 2013).

We mapped a dominant salt tolerance gene in soybean chromosome 3 by using an $F_{2:3}$ population developed from 85-140 \times Tiefeng 8 (Guan et al., 2014a), and isolated the candidate gene *GmSALT3*, which encodes a cation/ H^+ exchanger and is localized to the endoplasmic reticulum, after fine mapping. A total of nine haplotypes of *GmSALT3* were observed in Chinese soybean germplasm, with five in cultivated soybean and eight in wild soybean (Guan et al., 2014b). The salt tolerance gene *GmSALT3* reduced the accumulation of leaf and seed pod Na^+ and Cl^- in salt tolerant soybean compared with sensitive ones, and improved soybean yield through maintaining a higher seed weight of salt tolerant soybean under saline stress (Liu et al., 2016). These results revealed that *GmSALT3* mediated regulation of both Na^+ and Cl^- accumulation in soybean, and contributed to improve soybean yield in saline field.

We also mapped a novel salt tolerance gene in wild soybean. The markers related to the two different salt tolerant gene are useful for developing salt tolerant soybean.