**Genome editing to refine soybean as a plant-based protein source**

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Soybean is among the best sources of plant-based protein in human diets and is given high hopes to substitute animal meat and milk and help fill the forecasted global protein gaps in a sustainable manner. Nevertheless, various barriers, such as the oﬀ-ﬂavor, anti-nutrient factors, and poor texture, can hinder the promotion of soy-products. Genome editing technology could rapidly and precisely modify multiple genes in plants, making it a revolutionizing tool in molecular breeding. We have developed a highly efficient genome editing system in soybean 1,. To improve the sensory profile of soybean produce, we have generated “beany-flavor-free” varieties by multiplex genome editing. We also reduced anti-nutritional factors by generating soybean with ultralow RFO, and reduced phytic acids. To improve the functional property of soy-protein, we customized storage protein composition for ultra-high emulsibility or gelling ability 2. Now, we are simultaneously editing dozens of genes, aiming to “re-design” soybean with sensory profile, nutritional composition, and functionality that is preferable as a protein source in human diets.

***Reference:***

1 Bai, M. *et al.*. (2020 ) Generation of a multiplex mutagenesis population via pooled CRISPR-Cas9 in soya bean. *Plant Biotech. J.* **18**, 721-731

2 Bai, X. *et al.* (2022) Combination of two multiplex genome-edited soybean varieties enables customization of protein functional properties. *Mol.Plant*  **15,** 1081-1083.