

Multiplex gene editing rapidly customizes tomato cultivars with different fruit colors

September 26 2022, by Zhang Nannan



Multiplex gene editing rapidly customizes tomato cultivars with different fruit colors. Credit: IGDB

A research group led by Prof. Li Chuanyou from the Institute of Genetics and Developmental Biology (IGDB) of the Chinese Academy of Sciences (CAS) has developed a rapid breeding strategy to generate tomato lines with different colored fruits from red-fruited materials by CRISPR/Cas9-mediated multiplex gene editing.

Using this strategy, the researchers have engineered red-fruited cultivar Alisa Craig to a series of tomato genotypes with different [fruit](#) colors, including yellow, brown, pink, light-yellow, pink-brown, yellow-green, and light-green.

Tomato is the world's most popular fruit/vegetable and its color is considering a vital trait in horticultural crops which markedly affects customer preferences. The fruit color is determined by the accumulation of different pigments such as carotenoids and flavonoids etc. It is a multigenic trait which takes years to introgress all color-related [genes](#) in a single genetic background using traditional cross-breeding, and to avoid linkage drag during this process is also difficult.

Using their developed approach, transgene-free plants with different fruit colors can be obtained in less than one year, and the most positive point is that it can retain the qualities of the original cultivar and does not affect other important agronomic traits.

This strategy provides a reference for improving multigene-controlled traits by multiplex gene editing and can be easily extended to other horticultural crops.

This work entitled "Recoloring tomato fruit by CRISPR/Cas9-mediated multiplex gene editing" was published in *Horticulture Research* on September 19.

More information: Tianxia Yang et al, Recoloring tomato fruit by CRISPR/Cas9-mediated multiplex gene editing, *Horticulture Research* (2022). [DOI: 10.1093/hr/uhac214](https://doi.org/10.1093/hr/uhac214)

Provided by Chinese Academy of Sciences

Citation: Multiplex gene editing rapidly customizes tomato cultivars with different fruit colors (2022, September 26) retrieved 3 May 2024 from <https://phys.org/news/2022-09-multiplex-gene-rapidly-customizes-tomato.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.