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## Engineered enlargement of flowers and fruits of tomato by transgene of choline oxidase

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### Objectives

We report here that transformation of the *codA* gene significantly enlarged flower and fruit size of the transgenic tomato.

### Materials and Methods

#### 1. Material

Plant Tomato (*Lycopersicon esculentum* M. cv. Moneymaker)

*Agrobacterium* strain - EHA101/pCAMBIA 1201

#### 2. Methods

Five pairs of WT and the *codA*-transgenic plants were hydroponically grown in the greenhouse. Greenhouse conditions were maintained at 25 C under 16-h photoperiod (400-500 mol m<sup>-2</sup> s<sup>-1</sup>). Hydroponic nutrient, Flora Series (General hydroponics, Sebastopol, CA), were freshly applied every other week and pH was maintained at 5.7-5.9.

### Results and Discussion

Fruit forms an important component of the human diet and breeding efforts to increase fruit size are a primary agricultural objective. While many loci controlling fruit size have been identified, only the tomato *fw2.2* locus has been cloned to date. We report that tomato plants expressing a bacterial transgene (*codA*) catalyzing the choline-to-glycinebetaine conversion produce significantly enlarged flowers and fruits. The presence of *codA*-enlarged fruits correlated with multiple increased fruit size traits and altered expression of genes, including the down-regulation of *fw2.2*. These results suggest enlarged flower and fruit size are the pleiotropic effects of *codA* transgene expression, which may be useful for further alteration of these traits.

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