



Graphical Abstract

This study corroborates chloroplast metabolic engineering using a synthetic biology approach for producing novel metabolites belonging to carotenoid class in industrially important tobacco plant. The synthetic multigene construct resulted in producing a novel metabolite, keto-lutein with high accumulation of xanthophyll metabolites. This figure was drawn using BioRender ([https:// www. biore nder. com](https://www.biorender.com))