Name: green flesh (gf)

Accessions: OC10

Gene ID: Solyc08g080090

Map position: chromosome 8 (long arm).

Gene function: STAY-GREEN (SGR) protein necessary for chlorophyll degradation.

Gene effect: plants with the mutated allele inhibit chlorophyll degradation during ripening

Phenotypes: the retention of chlorophyll produces brown-colored fruits. The seed placental tissue (gel) remains green at ripe stage. Detached leaves also remain green for longer in humid chambers.

Comments: The "black" and "purple" tomato varieties created using *gf* may provide for the false idea of a tomato that accumulates the antioxidant anthocyanin. However, the color effect is actually brown, which is the combination of green (chlorophyll) and red (lycopene) pigments.

Description of accessions available: MT-*gf* is a BC6Fn introgressed from LA1797.



Figures:

MT-gf (right) showing ripening modification

Bibliography

Akhtar MS, Goldschmidt EE, John I, Rodoni S, Matile P, Grierson D (1999) Altered patterns of senescence and ripening in *gf*, a stay-green mutant of tomato (Lycopersicon esculentum Mill.). Journal of Experimental Botany 50: 1115–1122.

Barry CS, McQuinn RP, Chung MY, Besuden A, Giovannoni JJ (2008) Amino acid substitutions in homologs of the STAY-GREEN protein are responsible for the green-flesh and chlorophyll retainer mutations of tomato and pepper. Plant Physiol. 147: 179-187.

Barry CS, Pandey P (2009) A survey of cultivated heirloom tomato varieties identifies four new mutant alleles at the green-flesh locus. Molecular Breeding 24: 269-276.

Bortolotti S, Boggio SB, Delgado L, Orellano EG, Valle EM (2003) Different induction patterns of glutamate metabolizing enzymes in ripening fruits of the tomato mutant *green-flesh*. Physiologia Plantarum 119: 384-391.

Cheung AY, McNellis T, Piekos B (1993) Maintenance of chloroplast components during chromoplast differentiation in the tomato mutant *green flesh*. Plant Physiology 101: 1223-1229.