

## MEICOM Marie Curie ITN 2018 ESR Progress Summary

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**Workpackage Title:** Cas9- based induction of site specific meiotic crossovers (COs) in tomato

**Research aims and progress for the period:**

01 August 2018 – 10 January 2019

The aims of the study is to develop a colour marker system to evaluate synthetic cross-overs induced during meiosis in *Solanum lycopersicum* (tomato) and to induce inversions in tomato.

The progress to date:

*Solanum lycopersicum* cv. Micro-tom was used to produce a yellow tomato mutant by using CRISPR-Cas9 to produce a mutation in the Phytoene synthase 1 (PS1) gene. The putative mutants are nearing a stage where they can be screened for the mutation in PS1 gene.

Further, the meiosis specific double strand break proteins MTOPVIB and PRD3 were identified in the available tomato genome, and the cloning strategy is in progress to evaluate synthetic double strand breaks induced by CRISPR/Cas9.

Three naturally inverted regions in the tomato genome were identified. The state of the inversions will be investigated in Micro-Tom, and these inversions will be used to investigate the rates of inversion and deletion induction in Micro-Tom.

**Skills Training received:**

None

**Meetings attended:**

15<sup>th</sup> Biennial meeting of the German Society of DNA Repair (DGDR) 9 – 12 September 2018

**Outreach activity:**

None