



University of Tsukuba  
42<sup>nd</sup> PTraDResearch Seminar  
7th T-PIRC Research Seminar



Date and Time: 2018/5/28 (Mon) 15:00 –16:00  
Place: Gene Research Center, Seminar Room (211)

## Specification of differential growth domains in the tomato leaf margin

### Naomi Ori

Prof at Hebrew University of Jerusalem, Israel

In compound leaves, auxin promotes localized blade outgrowth domains, separated by intercalary domains in which the Aux/IAA protein ENTIRE (E) inhibits auxin response and blade outgrowth. The mechanism underlying the specification of differential growth domains by auxin and its contribution to leaf-shape diversity is not clear. We have identified the tomato (*solanum lycopersicum*) ortholog of Arabidopsis MONOPTEROS (SIMP)/AUXIN RESPONSE FACTOR 5 and Gibberellin (GA) as coordinated growth activators acting downstream of auxin. Loss of *SIMP* compromises the formation of leaves, leaflets and flower organs, and substantially suppresses the ectopic blade outgrowth seen in *entire/sliala9 (e)* mutants or following external auxin application. *SIMP* and additional related ARF genes act quantitatively to fine-tune leaf shape. Expression of several GA biosynthesis genes is elevated in *e* leaf-primordia, and reducing GA biosynthesis suppresses *e*- and auxin-mediated ectopic blade outgrowth. Our findings suggest that leaf-shape quantitatively responds to the extent of blade-outgrowth at the leaf margin. No growth or continuous growth lead to a simple leaf shape, while differential growth results in the formation of distinct, separate leaflets.

Facilitator : T-PIRC Hiroshi Ezura (ezura.hiroshi.fa@u.tsukuba.ac.jp)  
T-PIRC Ken Hoshikawa (hoshikawa.ken.gp@u.tsukuba.ac.jp)