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ORA EST : functional analysis of jasmonate-responsive AP2/ERF-domain transcription factors in *Arabidopsis thaliana*

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Stellingen

behorende bij het proefschrift

ORA EST: Functional analysis of jasmonate-responsive AP2/ERF-domain transcription factors in *Arabidopsis thaliana*

1. The ORA transcription factors are terminal regulators of several, but not all, JA responses.

This thesis

2. ORA59 activates and ORA37 represses the same subset of JA- and ethylene-responsive genes in order to fine-tune an adapted response.

This thesis

3. The signal amplification, in which a small amount of JA, initially produced in response to stress, leads to more JA production, is controlled by ORA47 via transcriptional regulation of the JA biosynthesis genes.

This thesis

4. The observation that no target genes were found for several ORAs when overexpressed in untreated plants may be attributed to the fact that the activity of these transcription factors requires JA-dependent protein modifications or interactions with other regulatory proteins.

This thesis

5. ORA59, rather than the transcription factor ERF1 as previously proposed, constitutes the integrator of the output from the JA and ethylene signaling pathways, thereby leading to a synergistic effect on defense gene expression and resistance.

This thesis

Lorenzo et al. (2003) Plant Cell 15, 165-178

6. Besides the fact that jasmonic acid is not the only jasmonate-related compound showing biological activity, it might also not be the most important signaling molecule in the jasmonate-dependent defense response *in planta*.

This thesis

Stintzi et al. (2001), PNAS 98, 12837-12842

Taki et al. (2005), Plant Physiology 139, 1268-1283

7. One needs to be cautious when interpreting results arisen from organisms constitutively and ectopically overexpressing a gene of interest: the phenotype observed could be a good indicator of the natural function of the studied protein but should always (when possible) be confirmed by inducible overexpression or knock-down approaches.

This thesis

Whalen (2005) Mol. Plant Pathol. 6, 347-360

Zhang (2003) Curr. Opin. Plant Biol. 6, 430-440

8. With the newly emerging “omics” technologies, engineers gave biologists toys to play with, but left the manual of instructions to mathematicians.

Provat and McCourt (2004) Curr. Opin. Plant Biol. 7, 605-609

9. Biologists want to impose linear and rigid models in cells, organs or organisms by placing unidirectional arrows and cascades of events everywhere, while they should also consider the notions of freedom, adaptation and anarchy when looking at living organisms.

10. Gene duplication, and the resulting functional redundancy that often occurs among genes, could well be an evolutionary defense mechanism against the natural curiosity and quest for absolute knowledge of scientists.

11. *Ifs, ands or buts*, terms that belong to the core of scientific reasoning, must be prohibited when you want to quit smoking.

12. Music must be consumed as if it was an expensive rare Bordeaux rather than a cheap abundant Californian wine.