**FLOWER MORPHOGENESIS IN ARABIDOPSIS THALIANA: A LOGICAL ANALYSIS.**

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As a large number of molecular mechanisms at the basis of gene regulation have been described during the last decades, it is now becoming possible to address questions dealing with the structure of genetic regulatory networks, at least in the case of some of the best characterised organisms.

Here, we present a qualitative analysis of the gene network involved in flower morphogenesis in Arabidopsis thaliana. The so-called NET model comprises eleven genes. Its topology has been derived from published genetic and molecular data, mainly relying on mRNA expression patterns under wild type and mutant backgrounds.

Using a 'logical' formalism, we derived the parameter constraints leading to the patterns of gene expression found in the four floral organs of Arabidopsis (sepals, petals, stamens and carpels), plus a 'non-floral' state. These patterns are consistent with those described by the combinatorial ABC model, thus providing new insights about the underlying molecular mechanisms. In particular, our analysis emphasises the roles of the various feedback circuits present in the regulatory matrix.

From a more general point of view, this work, together with other theoretical and practical considerations, leads us to propose some general conclusions about the structure of gene networks, both in terms of connectivity and modularity.