

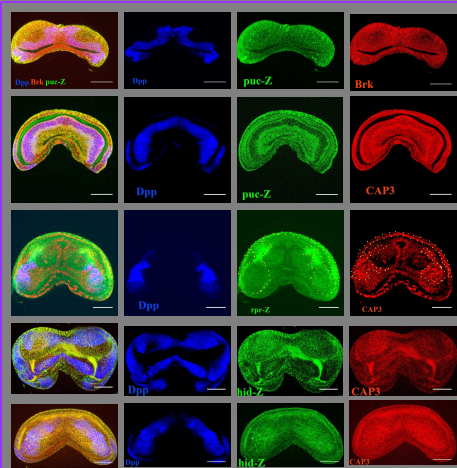


EXPRESSION OR NOT OF DPP TWO DIFFERENT POPULATIONS OF GROWING CELLS IN *DROSOPHILA*

Ana Macías, Carolina Arias, Gimena Fussero and Marcelo Zacharonok
Cátedra Genética, Facultad de Ciencias Exactas Físicas y Naturales
Universidad Nacional de Córdoba, ARGENTINA.

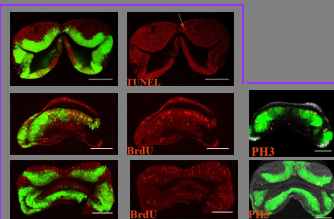
Dpp is a growth factor that induces growth in relation with its absolute cellular amount (Martín-Castellano and Edgar, 2002). However, there is other evidence respect to the growth function of Dpp that is to repress a negative repressors of growth, *brinker (brk)* (Martín *et al.*, 2004). Anyhow, Dpp it is supposed to be disposed in a gradient and to act in relation with its levels. When sharp differences in Dpp activity were produced, cells at both side of the Dpp discontinuity are eliminated by JNK mediated apoptosis, in which it was described as a type of cell competition (Adachi-Yamada and O'Connor, 2001). The question is if there are discontinuities in Dpp activity at physiological conditions. For example when Dpp is activated there might be differences in the levels among cells that express and do not express Dpp. If this is true this discontinuity should be marked by the Dpp targets; the expression of JNK; the occurrence of competitive death and compensatory proliferation. A good example to analyze this question is in the genital disc at the third larval stage (L3) because Dpp in these imaginal cells is activated at the second larval stage (L2) (review in Estrada *et al.*, 2003), so from L2 to L3 have passed 48h which comparatively it is little time to achieve balance in the Dpp levels among the source and the rest of the cells.

Dpp expression in relation with that of Brk/JNK/RH/caspases

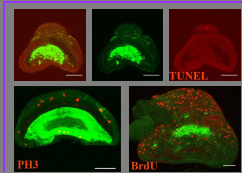


In the genital discs we distinguished two regions and at the boundary of both an intermediate situation. Cells that express Dpp and exhibit lower levels of Brk/JNK/RG/caspases, cells that do not express Dpp with elevate levels of Brk/ JNK/RH/caspases, and cells at the boundary that express Dpp and manifest elevate levels of Brk/ JNK/RH/caspases. In females A8 primordium there is less Hid than in the corresponding of the males.

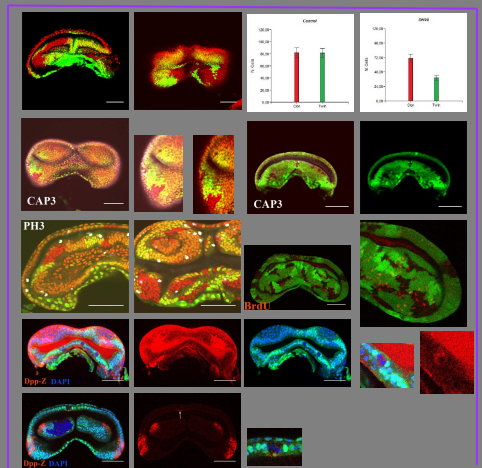
Dpp expression boundary is bordered by cell death and cell division



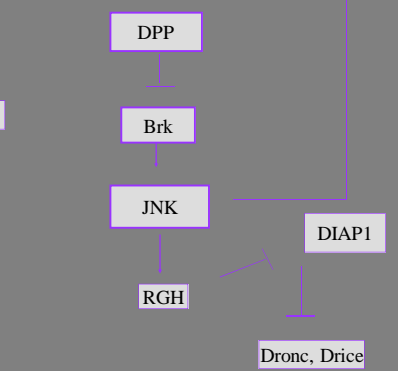
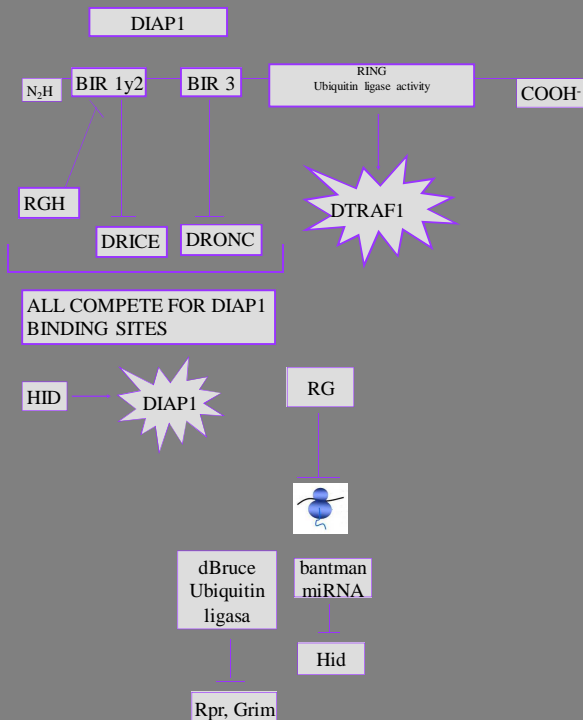
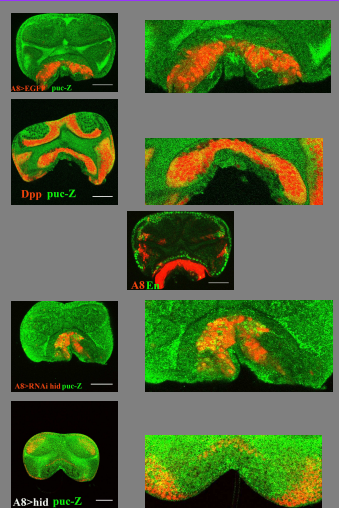
Created discontinuities in Dpp are bordered by cell death and cell division



GROWTH OF DTH99 MOSAICS



The downregulation as well as the up-regulation of Hid increase the levels JNK in non autonomous way



CONCLUSIONS

1. The border of Dpp expression/activity at wt conditions constitutes a discontinuity in growth conditions.
2. The discontinuity is marked by the border of Dpp expression and elevated level of expression or activation of Brk, JNK, RH and caspases.
3. At the discontinuity border there is cell competition and compensatory proliferation.
4. The RGH repress proliferation, probably by the inhibitory action of RG over translation and the degradation of DIAP1 by Hid.