

# Development



**Cover:** The change in form between larva (left) and pupa (right) of the red flour beetle *Tribolium castaneum* requires the *Broad-Complex* gene. See research article by Konopova and Jindra on p. 559.

## REVIEW

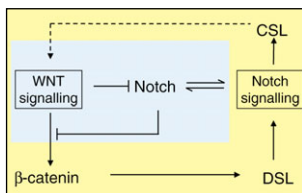
- 411** Wnt/Notch signalling and information processing during development  
Hayward, P., Kalmar, T. and Martinez Arias, A.

## RESEARCH REPORT

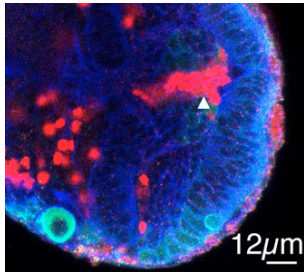
- 425** Constitutive PtdIns(3,4,5) $P_3$  synthesis promotes the development and survival of early mammalian embryos  
Halet, G., Viard, P. and Carroll, J.

## RESEARCH ARTICLES

- 431** Free-radical crosslinking of specific proteins alters the function of the egg extracellular matrix at fertilization  
Wong, J. L. and Wessel, G. M.
- 441** *Six3* inactivation causes progressive caudalization and aberrant patterning of the mammalian diencephalon  
Lavado, A., Lagutin, O. V. and Oliver, G.
- 451** The *Gata5* target, *TGIF2*, defines the pancreatic region by modulating BMP signals within the endoderm  
Spagnoli, F. M. and Brivanlou, A. H.
- 463** Lgl and its phosphorylation by aPKC regulate oocyte polarity formation in *Drosophila*  
Tian, A.-G. and Deng, W.-M.
- 473** *Insm1* (IA-1) is a crucial component of the transcriptional network that controls differentiation of the sympatho-adrenal lineage  
Wildner, H., Gierl, M. S., Strehle, M., Pla, P. and Birchmeier, C.
- 483** FGF signaling regulates mesenchymal differentiation and skeletal patterning along the limb bud proximodistal axis  
Yu, K. and Ornitz, D. M.
- 493** The chromatin-remodeling enzyme BRG1 plays an essential role in primitive erythropoiesis and vascular development  
Griffin, C. T., Brennan, J. and Magnuson, T.
- 501** Pivotal roles for eomesodermin during axis formation, epithelium-to-mesenchyme transition and endoderm specification in the mouse  
Arnold, S. J., Hofmann, U. K., Bikoff, E. K. and Robertson, E. J.
- 513** *Drosophila* Activin- $\beta$  and the Activin-like product Dawdle function redundantly to regulate proliferation in the larval brain  
Zhu, C. C., Boone, J. Q., Jensen, P. A., Hanna, S., Podemski, L., Locke, J., Doe, C. Q. and O'Connor, M. B.
- 523** FGF2-dependent neovascularization of subcutaneous Matrigel plugs is initiated by bone marrow-derived pericytes and macrophages  
Tigges, U., Hyer, E. G., Scharf, J. and Stallcup, W. B.
- 533** Jak/Stat signalling in niche support cells regulates *dpp* transcription to control germline stem cell maintenance in the *Drosophila* ovary  
López-Onieva, L., Fernández-Miñán, A. and González-Reyes, A.
- 541** Impaired generation of mature neurons by neural stem cells from hypomorphic Sox2 mutants  
Cavallaro, M., Mariani, J., Lancini, C., Latorre, E., Caccia, R., Gullo, F., Valotta, M., DeBiasi, S., Spinardi, L., Ronchi, A., Wanke, E., Brunelli, S., Favaro, R., Ottolenghi, S. and Nicolis, S. K.



The Wnt and Notch signalling pathways are crucial for animal development, and recent findings suggest that they are intricately intertwined. Now Alfonso Martínez Arias and colleagues propose that this relationship reflects the functioning of these pathways as an integrated device that determines the probability that a cell will adopt a particular fate. See review on p. 411.



White prepupa larval brain lobes of a *babo*<sup>32/52</sup> *Drosophila* mutant labelled by anti-Dachshund (red), anti-Miranda (green) and anti-Scribbled (blue) antibodies, from a study that reports that Activin and Dawdle act redundantly through the Babo receptor and Smad2 to regulate neuroblast numbers and proliferation in the developing larval brain. See [research article on p. 513](#).

**559** Broad-Complex acts downstream of Met in juvenile hormone signaling to coordinate primitive holometabolous metamorphosis  
Konopova, B. and Jindra, M.

**569** The role of Broad in the development of *Tribolium castaneum*: implications for the evolution of the holometabolous insect pupa  
Suzuki, Y., Truman, J. W. and Riddiford, L. M.

#### DEVELOPMENT AND DISEASE

**579** Zeb1 links epithelial-mesenchymal transition and cellular senescence  
Liu, Y., El-Naggar, S., Darling, D. S., Higashi, Y. and Dean, D. C.

**589** Disruption of PDGFR $\alpha$ -initiated PI3K activation and migration of somite derivatives leads to spina bifida  
Pickett, E. A., Olsen, G. S. and Tallquist, M. D.

**599** KBP is essential for axonal structure, outgrowth and maintenance in zebrafish, providing insight into the cellular basis of Goldberg-Shprintzen syndrome  
Lyons, D. A., Naylor, S. G., Mercurio, S., Dominguez, C. and Talbot, W. S.