

# Development



**Cover:** Fz5/8 is required for archenteron invagination in the sea urchin embryo. DIC images of a larva in which the Fz5/8 pathway has been inhibited (right) and of a larva displaying a normal phenotype (left) after being rescued by co-injection of the wild-type form of the receptor. See article by Croce et al. on p. 547.



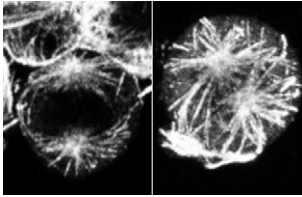
How do responding cells perceive and interpret the concentration-dependent information provided by a morphogen? Ashe and Briscoe review recent work on the molecular features of morphogen signalling and identify some emerging common principles. See review article on p. 385.

## REVIEW

- 385** The interpretation of morphogen gradients  
Ashe, H. L. and Briscoe, J.

## RESEARCH ARTICLES

- 395** *lessen* encodes a zebrafish *trap100* required for enteric nervous system development  
Pietsch, J., Delalande, J.-M., Jakaitis, B., Stensby, J. D., Dohle, S., Talbot, W. S., Raible, D. W. and Shepherd, I. T.
- 407** Cholesterol modification is necessary for controlled planar long-range activity of Hedgehog in *Drosophila* epithelia  
Gallet, A., Ruel, L., Staccini-Lavenant, L. and Théron, P. P.
- 419** The *Cdx4* mutation affects axial development and reveals an essential role of Cdx genes in the ontogenesis of the placental labyrinth in mice  
van Nes, J., de Graaff, W., Lebrin, F., Gerhard, M., Beck, F. and Deschamps, J.
- 429** Timing of identity: spatiotemporal regulation of *hunchback* in neuroblast lineages of *Drosophila* by Seven-up and Prospero  
Mettler, U., Vogler, G. and Urban, J.
- 439** The *Dictyostelium* bZIP transcription factor DimB regulates prestalk-specific gene expression  
Zhukovskaya, N. V., Fukuzawa, M., Yamada, Y., Araki, T. and Williams, J. G.
- 449** bZIP transcription factor interactions regulate DIF responses in *Dictyostelium*  
Huang, E., Blagg, S. L., Keller, T., Katoh, M., Shaulsky, G. and Thompson, C. R. L.
- 459** *Drosophila* Cornichon acts as cargo receptor for ER export of the TGF $\alpha$ -like growth factor Gurken  
Bökel, C., Dass, S., Wilsch-Bräuninger, M. and Roth, S.
- 471** Hedgehog lipid modifications are required for Hedgehog stabilization in the extracellular matrix  
Callejo, A., Torroja, C., Quijada, L. and Guerrero, I.
- 485** Ras-dva, a member of novel family of small GTPases, is required for the anterior ectoderm patterning in the *Xenopus laevis* embryo  
Tereshina, M. B., Zarsky, A. G. and Novoselov, V. V.
- 495** Neurogenin 2 is required for the development of ventral midbrain dopaminergic neurons  
Kele, J., Simplicio, N., Ferri, A. L. M., Mira, H., Guillemot, F., Arenas, E. and Ang, S.-L.
- 507** Development of the mesencephalic dopaminergic neuron system is compromised in the absence of neurogenin 2  
Andersson, E., Jensen, J. B., Parmar, M., Guillemot, F. and Björklund, A.
- 517** The Sonic hedgehog pathway independently controls the patterning, proliferation and survival of neuroepithelial cells by regulating Gli activity  
Cayuso, J., Ulloa, F., Cox, B., Briscoe, J. and Martí, E.
- 529** Extrinsic cues orient the cell division axis in *Drosophila* embryonic neuroblasts  
Siegrist, S. E. and Doe, C. Q.
- 537** Massive loss of Cajal-Retzius cells does not disrupt neocortical layer order  
Yoshida, M., Assimacopoulos, S., Jones, K. R. and Grove, E. A.



In the absence of extrinsic cues, neuroblast cortical polarity does not form until metaphase. Left, a neuroblast cultured in contact with other cell types at prophase; right, a neuroblast cultured in isolation at prophase. Both are stained for  $\alpha$ -tubulin. **See article by Siegrist and Doe on p. 529.**

- 547** Frizzled5/8 is required in secondary mesenchyme cells to initiate archenteron invagination during sea urchin development  
**Croce, J., Duloquin, L., Lhomond, G., McClay, D. R. and Gache, C.**

#### DEVELOPMENT AND DISEASE

- 559** A dominant-negative form of the E3 ubiquitin ligase *Cullin-1* disrupts the correct allocation of cell fate in the neural crest lineage  
**Voigt, J. and Papalopulu, N.**
- 569** GLI3-dependent transcriptional repression of *Gli1*, *Gli2* and kidney patterning genes disrupts renal morphogenesis  
**Hu, M. C., Mo, R., Bhella, S., Wilson, C. W., Chuang, P.-T., Hui, C.-c. and Rosenblum, N. D.**