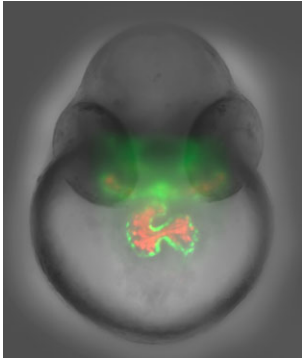
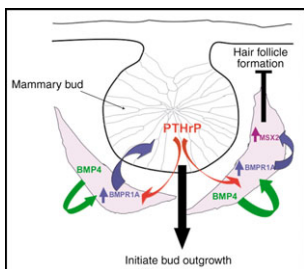


# Development



**Cover:** Anterior view of a 2-day-old transgenic zebrafish highlighting the heart. In the SPIM movie used to generate this image, the fluorescence in the endocardium/endothelium (green) and in the blood (red) was exclusively excited in a thin optical section around the atrioventricular valve so as to visualize its morphogenesis and function. See research article by Scherz et al. on p. 1179.



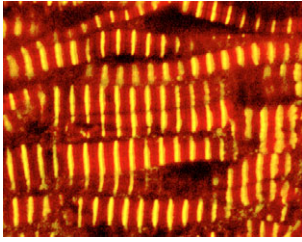
Mammary gland development is unusual in that it occurs during embryonic, pubertal and adult life. As Christine Watson and Walid Khaled discuss, recent discoveries have shed light on the morphogenesis and lineage commitment events that occur during each stage, which have important implications for both developmental and breast cancer research. See review on p. 995.

## REVIEW

- 995** Mammary development in the embryo and adult: a journey of morphogenesis and commitment  
Watson, C. J. and Khaled, W. T.

## RESEARCH ARTICLES

- 1005** Diaphanous regulates myosin and adherens junctions to control cell contractility and protrusive behavior during morphogenesis  
Homem, C. C. F. and Peifer, M.
- 1019** Sustained epithelial  $\beta$ -catenin activity induces precocious hair development but disrupts hair follicle down-growth and hair shaft formation  
Närhi, K., Järvinen, E., Birchmeier, W., Taketo, M. M., Mikkola, M. L. and Thesleff, I.
- 1029** Wnt3a-mediated chemorepulsion controls movement patterns of cardiac progenitors and requires RhoA function  
Yue, Q., Wagstaff, L., Yang, X., Weijer, C. and Münsterberg, A.
- 1039** A translational block to HSPG synthesis permits BMP signaling in the early *Drosophila* embryo  
Bornemann, D. J., Park, S., Phin, S. and Warrior, R.
- 1049** R-spondin 2 is required for normal laryngeal-tracheal, lung and limb morphogenesis  
Bell, S. M., Schreiner, C. M., Wert, S. E., Mucenski, M. L., Scott, W. J. and Whitsett, J. A.
- 1059** Runx1 modulates developmental, but not injury-driven, hair follicle stem cell activation  
Osorio, K. M., Lee, S. E., McDermitt, D. J., Waghmare, S. K., Zhang, Y. V., Woo, H. N. and Tumber, T.
- 1069** *C. elegans* Rab GTPase 2 is required for the degradation of apoptotic cells  
Lu, Q., Zhang, Y., Hu, T., Guo, P., Li, W. and Wang, X.
- 1081** In vivo regulation of Yorkie phosphorylation and localization  
Oh, H. and Irvine, K. D.
- 1089** Auxilin is essential for Delta signaling  
Eun, S. H., Banks, S. M. L. and Fischer, J. A.
- 1097** Notochord-derived Shh concentrates in close association with the apically positioned basal body in neural target cells and forms a dynamic gradient during neural patterning  
Chamberlain, C. E., Jeong, J., Guo, C., Allen, B. L. and McMahon, A. P.
- 1107** The endocytic pathway acts downstream of Oskar in *Drosophila* germ plasm assembly  
Tanaka, T. and Nakamura, A.
- 1119** BMP type I receptor complexes have distinct activities mediating cell fate and axon guidance decisions  
Yamauchi, K., Phan, K. D. and Butler, S. J.
- 1129** Distinct cellular and molecular mechanisms mediate initial axon development and adult-stage axon regeneration in *C. elegans*  
Gabel, C. V., Antonie, F., Chuang, C.-F., Samuel, A. D. T. and Chang, C.
- 1137** Precision of the Dpp gradient  
Bollenbach, T., Pantazis, P., Kicheva, A., Bökel, C., González-Gaitán, M. and Jülicher, F.



Muscle fibres in a wild-type 96 hpf zebrafish embryo (yellow marks the Z-disc where signals for  $\alpha$ -Actinin and phalloidin are merged), from a study that reveals a surprisingly specific developmental role for a single *hsp90* gene in a regulatory pathway that controls late sarcomere assembly. See research article on p. 1147.

- 1147** The ATPase-dependent chaperoning activity of Hsp90a regulates thick filament formation and integration during skeletal muscle myofibrillogenesis  
**Hawkins, T. A., Haramis, A.-P., Etard, C., Prodromou, C., Vaughan, C. K., Ashworth, R., Ray, S., Behra, M., Holder, N., Talbot, W. S., Pearl, L. H., Strähle, U. and Wilson, S. W.**
- 1157** Atrial myocardium derives from the posterior region of the second heart field, which acquires left-right identity as *Pitx2c* is expressed  
**Galli, D., Domínguez, J. N., Zaffran, S., Munk, A., Brown, N. A. and Buckingham, M. E.**
- 1169** Alternative promoter use in eye development: the complex role and regulation of the transcription factor MITF  
**Bharti, K., Liu, W., Csermely, T., Bertuzzi, S. and Arnheiter, H.**
- DEVELOPMENT AND DISEASE**
- 1179** High-speed imaging of developing heart valves reveals interplay of morphogenesis and function  
**Scherz, P. J., Huisken, J., Sahai-Hernandez, P. and Stainier, D. Y. R.**
- 1189** Interaction of amyloid precursor protein with contactins and NgCAM in the retinotectal system  
**Osterfield, M., Egelund, R., Young, L. M. and Flanagan, J. G.**