



## Christoph WINKLER

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### MAJOR RESEARCH INTERESTS

My laboratory uses zebrafish and medaka as vertebrate models to investigate fundamental processes of embryonic development. We furthermore take advantage of several attractive features of fish as experimental system (e.g. genetics, bioimaging) to recapitulate molecular aspects of human diseases. In particular, we are interested in common neurodegenerative disorders caused by defects in RNA metabolism, as well as in osteoporosis and other bone diseases. Our current research topics include:

1. Developmental control of central nervous system formation.
2. Molecular mechanisms of brain and spinal cord patterning.
3. Molecular control and evolution of bone formation in teleost fish.
4. Zebrafish models for Spinal Muscular Atrophy (SMA) and Retinitis Pigmentosa (RP).
5. Fish models for human bone diseases.

### RECENT PUBLICATIONS

1. Liedtke, D. and Winkler, C. (2008). Midkine-b regulates cell specification at the neural plate border in zebrafish. *Developmental Dynamics* **237**, 62-74.
2. Herpin, A., Schindler, D., Kraiss, A., Hornung, U., Winkler, C., and Schartl, M. (2007). Inhibition of germ cell proliferation by the medaka male determining gene *Dmrt1bY*. *BMC Developmental Biology* **7**, 99.
3. To, T.T., Hahner, S., Nica, G., Rohr, K., Hammerschmidt, M., Winkler, C., and Allolio, B. (2007). Pituitary-interrenal interaction in zebrafish interrenal organ development. *Mol. Endocrin.* **21**, 472-485.
4. Schäfer, M., Kinzel, D., and Winkler, C. (2007). Discontinuous organization and specification of the lateral floor plate in zebrafish. *Dev. Biol.* **301**, 117-129.
5. Schild-Prüfert, K., Giegerich, M., Schäfer, M., Winkler, C. and Krohne, G. (2006). Structural and functional characterization of the zebrafish lamin B receptor. *Europ. J. Cell Biol.* **85**, 813-824.
6. Renn, J., Seibt, D., Goerlich, R., Schartl, M., and Winkler, C. (2006). Simulated microgravity upregulates gene expression of the skeletal regulator Core-binding factor *a1/Runx2* in Medaka fish larvae *in vivo*. *Advances in Space Research* **38**, 1025-1031.
7. Sieger, D., Ackermann, B., Winkler, C., Tautz, D., and Gajewski, M. (2006). *her1* and *her13.2* are jointly required for somitic border specification along the entire axis of the fish embryo. *Dev Biol* **293**, 242 – 251.
8. Gajewski, M., Elmasri, H., Girschick, M., Sieger, D., and Winkler, C. (2006). Comparative analysis of *her* genes during fish somitogenesis reveals a mouse/chick-like mode of oscillation in medaka. *Development, Genes and Evolution* **216**, 315-332.
9. Renn, J., Schaedel, M., Volff, J.N., Goerlich, R., Schartl, M., and Winkler, C. (2006). Dynamic expression of *Sparc* precedes formation of skeletal elements in the Medaka (*Oryzias latipes*). *Gene* **372**, 208-218.
10. Bollig, F., Mehringer, R., Perner, B., Hartung, C., Schäfer, M., Schartl, M., Volff, J.N., Winkler, C. and Englert, C. (2005). Identification and comparative expression analysis of a second *wt1* gene in zebrafish. *Developmental Dynamics* **235**, 554-561.
11. Winkler, C., Eggert, C., Gradl, D., Meister, G., Giegerich, M., Wedlich, D., Laggenbauer, B. and Fischer, U. (2005). Reduced RNP assembly causes motor axon degeneration in an animal model for spinal muscular atrophy. *Genes & Development* **19**, 2320-2330.
12. Schäfer, M., Rembold, M., Wittbrodt, J., Schartl, M., and Winkler, C. (2005). Medial floor plate formation in zebrafish consists of two phases and requires trunk-derived Midkine-a. *Genes & Development* **19**, 897-902.
13. Schäfer, M., Kinzel, D., Neuner, C., Schartl, M., Volff, J.N., and Winkler, C. (2005). Hedgehog and retinoid signalling confines *nkx2.2b* expression to the lateral floor plate of the zebrafish trunk. *Mech Dev* **122**, 43-56.