

LABORATORY OF

TRANSCRIPTIONAL REGULATION

Development, evolution and development, eye, Pax genes

Zbyněk Kozmik

We are interested in studies of embryonic development and evolution of development (evo-devo). Our focus is on the role of transcription factors and signalling cascades, especially on the role of the Wnt/ β -catenin signalling pathway and transcription factors of *Pax* gene family. We utilize several model systems including fish [zebrafish, medaka], invertebrate chordate amphioxus [*Branchiostoma* sp.], annelid worm [*Platynereis dumerilii*] and cnidarians to study various aspects of evo-devo, especially the evolution of eyes and gene regulatory networks.



Selected publications:

1. Prummel KD, Hess C, Nieuwenhuize S, Parker HJ, Rogers KW, [Kozmikova J](#), Racioppi C, Brombacher EC, Czarkwiani A, Knapp D, Burger S, Chiavacci E, Shah G, Burger A, Huisken J, Yun MH, Christiaen L, [Kozmik Z](#), Müller P, Bronner M, Krumlauf R, Mosimann C (2019) A conserved regulatory program initiates lateral plate mesoderm emergence across chordates. *Not Commun*, **10**:3857. doi: 10.1038/s41467-019-11561-7.
2. [Židek R](#), [Machoň O](#), [Kozmik Z*](#) (2018) Wnt/ β -catenin signalling is necessary for gut differentiation in a marine annelid, *Platynereis dumerilii*. *Evodevo*, **9**:14. doi: 10.1186/s13227-018-0100-7. eCollection 2018.
3. [Pantzartzl CN](#), [Pergner J](#), [Kozmik Z*](#) (2018) The role of transposable elements in functional evolution of amphioxus genome: the case of opsin gene family. *Sci Rep*, **8**:2506. doi: 10.1038/s41598-018-20683-9.
4. [Pergner J](#), [Kozmik Z*](#) (2017) Amphioxus photoreceptors – insights into the evolution of vertebrate opsins, vision and circadian rhythmicity. *Int J Dev Biol*, **61**:665-681. doi: 10.1387/ijdb.170230zk.
5. Marilétaz F, Firbas PN, Maeso I, Tena JJ, Bogdanovic D, Perry M, Wyatt CDR, de la Calle-Mustienes E, Bertrand S, Burguera D, Acemel RD, van Heeringen SJ, Naranjo S, Herrera-Ubeda C, Skvortsova K, Jimenez-Gancedo S, Aldea D, Marquez Y, Buono L, [Kozmikova J](#), Permyer J, Louis A, Albuixech-Crespo B, Le Petillon Y, Leon A, Subirana L, Balwierz PJ, Duckett PE, Farahani E, Aury JM, Manganot S, Wincker P, Albalat R, Benito-Gutiérrez E, Cañestro C, Castro F, D'Aniello S, Ferrier DEK, Huang S, Laudet V, Marais GAB, Pontarotti P, Schubert M, Seitz H, Somorjai I, Takahashi T, Mirabeau O, Xu A, Yu JK, Carninci P, Martinez-Morales JR, Crollius HR, [Kozmik Z](#), Weirauch MT, Garcia-Fernández J, Lister R, Lenhard B, Holland PWH, Escriva H, Gómez-Skarmeta JL, Irimia M (2018) Amphioxus functional genomics and the origins of vertebrate gene regulation. *Nature*, **564**:64-70. doi: 10.1038/s41586-018-0734-6. Epub 2018 Nov 21.



In the picture: 1. Kolková Miroslava | 2. Kozmík Zbyněk | 3. Kozmíkova Iryna | 4. Vávrová Anna | 5. Doderović Jovana | 6. Mrštáková Simona | 7. Macháčová Simona | 8. Nosková Veronika