

IMEG Seminar Series

The road to global science

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Self-organization and coordinated morphogenesis in annual killifish

This seminar series is open to all students and researchers in Kumamoto University.
The Zoom ID and passcode were sent via email. Check your inbox!

Axis formation in fish and amphibians is initiated by a prepattern of maternal gene products in the blastula. The embryogenesis of annual killifish challenges pre patterning models because blastomeres disperse and then re-aggregate to form the germ layers and body axes. This dispersion-aggregation process prompts the question how axis determinants such as *Huluwa* and germ layer inducers such as Nodal function in annual killifish. Here we show in *Nothobranchius furzeri* that *huluwa*, the factor thought to break symmetry by stabilizing β -catenin, is a non-functional pseudogene. Nuclear β -catenin is not selectively stabilized on one side of the blastula but accumulates in cells forming the incipient aggregate. Inhibition of Nodal signaling blocks aggregation and disrupts coordinated cell migration, establishing a novel role for this signaling pathway. These results reveal a surprising departure from classic mechanisms of axis formation: canonical *Huluwa*-mediated pre patterning is dispensable and Nodal coordinates morphogenesis.