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JCS PRIZE

2020 winner: Tadayoshi Murakawa

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We are pleased to announce that the winner of the 2020 JCS Prize is Tadayoshi Murakawa for his paper entitled 'An autophagy-dependent tubular lysosomal network synchronizes degradative activity required for muscle remodeling' (Murakawa et al., 2020).

The prize of $1000 is awarded annually to the first author of the paper that is judged by the Editors to be the best eligible paper published in the Journal of Cell Science that year. To be considered for the prize, the first author must be a student or a postdoc of no more than five years standing.

Tadayoshi Murakawa was born in Gifu and raised in Kanagawa, Japan. At 12 years old, he was interested in the software programming for robots that behaved like living organisms. To understand this, he thought it was helpful to study molecular biology because living organisms are also programmed. As he studied molecular biology, he was impressed at the behaviour of biomolecules in, for example, DNA replication, transcription and translation. Therefore, he decided to enter the Department of Biology of the Faculty of Science of Tohoku University after high school graduation.

When he was a second-year undergraduate student there, he joined the laboratory of Prof. Kenji Inaba, an expert in protein folding and structural biology, where he was involved in a project related to co-translational disulfide bond formation in newly synthesized proteins for 2 years. Then, he joined the laboratory of Prof. Mitsunori Fukuda, also at Tohoku University, an expert on Rab GTPases, as an undergraduate research student, to study how proteins function in membrane trafficking in cells. He worked in his laboratory for 3 years, with the assistance of the Morinokuni Scholarship Foundation. There, Tadayoshi's research focused on mechanisms of muscle remodelling in *Drosophila* under the supervision of assistant professor Naonobu Fujita. In *Drosophila*, a subset of larval muscle cells survives and is remodelled into adult muscle cells. Tadayoshi found that the morphology of lysosomes changed from spherical structures to tubular networks during the muscle remodeling during metamorphosis. The formation of the tubular network depended on autophagy, and the network had characteristics of autolysosomes; hence, the group named it a tubular autolysosomal (tAL) network. Furthermore, Tadayoshi and colleagues revealed that the tAL network synchronizes the degradative activity required for muscle remodelling.

Since 2020, Tadayoshi has been a graduate student at the Department of Life Science and Technology of Tokyo Institute of Technology (Tokyo Tech) under the supervision of Naonobu Fujita, who is now an associate professor in Tokyo Tech. There, he has been using the technique of single-cell RNA-seq to identify the genes required for the tAL network formation during muscle remodelling. His work also encompasses the physiological significance of autophagy and tAL network-mediated muscle cell remodelling during metamorphosis in *Drosophila*.

Tadayoshi Murakawa

Reference

Murakawa, T., Kiger, A. A., Sakamaki, Y., Fukuda, M. and Fujita, N. (2020). An autophagy-dependent tubular lysosomal network synchronizes degradative activity required for muscle remodeling. *J. Cell Sci.* **133**, jcs248336. doi:10.1242/jcs.248336

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