

IMEG Seminar Series

The road to global science

Dr. Devanshi Jain

Assistant Professor, Department of Genetics, Rutgers University, USA

January 13th, 2023, 9:00-10:00

Regulation of meiosis by the conserved RNA helicase YTHDC2



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!

The meiotic cell division program is driven by a specialized transcriptome, which supports complex chromosome behaviors that are integrated with cell cycle progression. Although general meiotic principles are conserved, those driven by mammalian-specific or poorly conserved genes are challenging to identify and have limited our understanding of mammalian meiosis. We employed a phenotype driven forward-genetics screen in mouse to explore the genetic basis of mammalian meiotic processes and isolated several novel mutants with diverse and dramatic meiotic phenotypes. I will present our screen along with studies characterizing one affected gene, encoding the RNA helicase YTHDC2. We and others identified YTHDC2 to be a critical regulator of meiotic entry in the mouse germline, and demonstrated that YTHDC2, along with its binding partners, constitutes a post-transcriptional control pathway that switches cells from mitotic to meiotic gene expression programs. However, how this critical cell fate change is accomplished was unknown. I will present our surprising findings into the mechanisms of how the YTHDC2 pathway shapes the RNA landscape during gametogenesis to regulate both entry into and progression through the meiotic cell cycle.