Understanding developmental mechanisms of primate just after implantation

Tomonori Nakamura
Kyoto University, Japan

It has been 15 years since the first human iPSC was established. Since then, various differentiation systems using human PSCs (pluripotent stem cells) have been established, and the PSC derivatives are now expected to be perfect source for regenerative medicine. As you know, mice are excellent mammalian model, and have contributed not only to the elucidation of many evolutionarily conserved phenomena, but also the establishment of the many human PSC differentiation protocols. However, species differences between mice and humans have also become apparent. For example, although BMPs are used in various differentiation systems and the differentiated human PSCs are reported to give rise to trophectoderm lineage, such phenomena has not been seen in mouse model. Such contradictions are caused by the lack of the knowledg of human embryogenesis, especially the molecular mechanisms underlying the human gastrula development which takes place immediately after implanation. To overcome this issue, we have studied primate development using cynomolgus monkeys which are the evolutionaly closest animals among the experimentaly ameneable organisms. In my talk, I will provide an overview about non-human primates from the evolutional aspect, and the recent outcomes of the research which I have done using the cynomolgus monkeys.

Speaker Biography

Tomonori Nakamura has completed his PhD from the Center for iPSC Research and Application (Dr. Shinya Yamanaka lab) at Kyoto University and postdoctoral studies from Graduate School of Medicine (Dr. Mitinori Saitou lab) at Kyoto University. He is now an associate professor of a New Institute for The Advanced Study of Human Biology, and The Hakubi Center for the Advanced Research at Kyoto University. He has been working on pluripotency using stem cells and *in vivo* materials of mouse as well as human and monkey, and published more than 25 papers on those studies in reputed journals.

e: nakamura.tomonori.4v@kyoto-u.ac.jp

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