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Project Title	Chimera formation assay with cynomolgus monkey embryos *in vitro*
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Report

Due to the pandemic of COVID-19 in 2020, importation of wild monkey from China or South-East Asian countries was totally stopped. Therefore, we were unable to purchase new monkey for harvesting embryos at Shiga Medical University this year. In response to this difficult situation, we took our effort for new- and related sub-project, which is "controlling donor cell chimerism and increase it at later developmental stages" to support human-animal chimera formation. This study was pioneered by Toshiya Nishimura at Tokyo University, and many of Stanford University members also joined (see publication below). Our previous study revealed that high donor cell chimerism at early developmental stage result in abnormal development or degeneration in interspecies chimera formation, so that the donor cell chimerism in survived interspecies chimera is always lower than allogenic chimeras. This is especially prominent in human-mouse chimeric embryos. We tried to set donor cell chimerism at low in early development, and then increased at later stages by knocking out Igf1r gene and blocking IGF1 signaling in host animal cells to give growth advantage for donor cells. We successfully showed P.O.C. in allogenic chimeras and rat-mouse chimeras, however, all the pups died right after birth due to the respiratory problem. To solve this problem, we will make IGF1R conditional knockout line to avoid lethality and clarify whether the growth advantage for donor cells would continue after birth, and this system is applicable for donor-cell derived organ generation.