In the news

MONKEYS SHOW THE WAY

The first chimeric non-human primates have been generated in a laboratory in Oregon, USA. The work, which was reported in *Cell*, gave rise to three rhesus monkeys: Chimero and the twins Roku and Hex.

The generation of chimeric mice has been an important tool for understanding normal embryonic development and disease and has indicated that embryonic stem (ES) cells are pluripotent and can give rise to all cell types. By carrying out research in monkeys, the group of Shoukhrat Mitalipov, at the Oregon National Primate Research Center, aimed to determine whether this also applies to primates, including humans, and whether human stem cells will have "potential, especially for regenerative medicine, where they can develop into mature and functional tissues and organs." (*Reuters*, 5 Jan 2012.)

Interestingly, they observed that injection of cultured primate ES cells into blastocysts did not lead to the generation of chimaeras, unlike what is seen with mouse ES cells. Instead, chimaeras could be generated by aggregating cells from multiple four-cell embryos without prior culture. As commented by Mitalipov, "the cells never fuse, but they stay together and work together to form tissues and organs." (*Scientific American*, 6 Jan 2012.)

The work has important implications; as commented by Robin Lovell-Badge, from the National Institute for Medical Research in Mill Hill, UK, "assumptions about the way human embryos develop have always been based on the mouse." (*bbc.co.uk*, 5 Jan 2012.) A related commentary in *Cell* postulates that this discrepancy could be due to differences in developmental status — primate ES cells may be more developmentally advanced than mouse ones. So, it seems that further work is needed in primates to better understand the properties of human ES cells.

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