



Mitsugu MAENO, Ph.D.

Professor

Program: Life and Food Sciences

Area: Life Sciences

Undergraduate: Dept. of Biology

maenobio@bio.sc.niigata-u.ac.jp

<http://www.sc.niigata-u.ac.jp/biologyindex/maeno/maeno.title.html>

Professional Expertise

Dr. Maeno graduated Hokkaido University. He's PhD thesis was "Ontogenic Aspects of the Immune System in the Clawed Frog, *Xenopus laevis*". In his career, he worked on the molecular biology of hepatitis viruses, the signal transduction, and the embryonic development. At present, he is engaged in the molecular mechanisms on the leukocyte differentiation in frog embryo.

Research Fields of Interest

- Axis formation in development of *Xenopus* embryo
- Development of ventral blood islands in *Xenopus* embryo
- Differentiation of myeloid and lymphoid cells in *Xenopus* embryo
- Generation of transgenic *Xenopus* as a useful tool for recombinant protein expression

Employment

2012-present: Professor, Graduate School of Science and Technology, Niigata University

1994-2012: Associate Professor, Faculty of Science, Niigata University

1992-1994: Postdoctoral Fellow, NCI-FCRDC, Frederick, MD, USA

1986-1992: Assistant Professor, School of Medicine, Nihon University

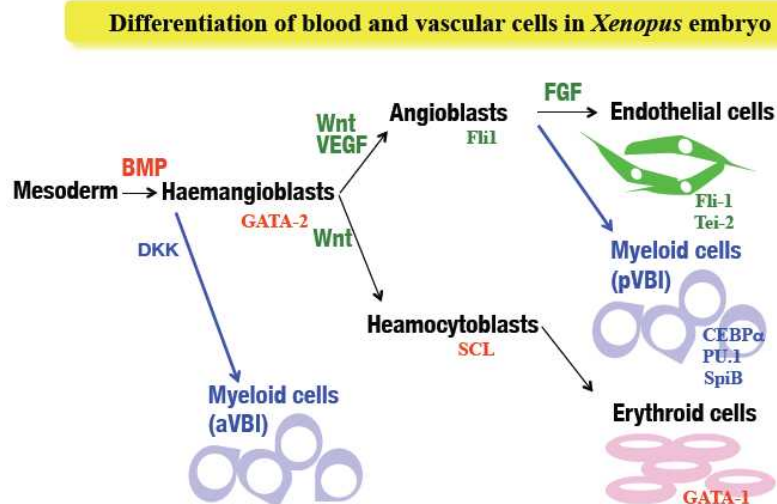
Education

1987: Ph.D. in Biology, Graduate School of Science, Hokkaido University

1984: M.S. in Biology, Graduate School of Science, Hokkaido University

1982: B.S. in Biology, Department of Zoology, Hokkaido University

Research topics



Primitive myeloid cells in *Xenopus* embryo differentiate before the blood circulation starts. We identified two distinct myeloid lineages that are regulated distinctly each other. One is from anterior blood islands (aVBI) and the other is from posterior blood islands (pVBI). We attempt to elucidate the molecular mechanisms of determination and specification of myeloid cells in aVBI and pVBI.

Major Publications

- [1] Sanada, T., Park, M. J., Araki, A., Gotoh, M., Izutsu, Y. and Maeno, M.: A BMP-4-dependent transcriptional control element in the 5' flanking region of *Xenopus SCL* gene. Biochem. Biophys. Res. Commun. 310: 1160-1167, 2003.
- [2] Suzuki, M., Takamura, Y., Maeno, M., Tochinai, S., Iyaguchi, D., Tanaka, I., Nishihira, J. and Ishibashi, T.: *Xenopus* macrophage migration inhibitory factor is essential for axis formation and neural development. J. Biol. Chem. 279: 21406-21414, 2004.
- [3] Takeda, M., Kurauchi, T., Yamazaki, T., Izutsu, Y. and Maeno, M.: Neptune is involved in posterior axis and tail formation in *Xenopus* embryogenesis. Dev. Dyn. 234: 63-73, 2005.
- [4] Tashiro, S., Sedohara, A., Asashima, M., Izutsu, Y. and Maeno, M.: Characterization of myeloid cells derived from the anterior ventral mesoderm in the *Xenopus laevis* embryo. Dev. Growth Differ., 48:499-512, 2006.
- [5] Shibata, T., Takahashi, Y., Saito, Y., Tasaki, J., Izutsu, Y. and Maeno, M.: A role of D-domain-related proteins in differentiation and migration of embryonic cells in *Xenopus laevis*. Mech. Dev. 125: 284-298, 2008.
- [6] Saito, Y., Gotoh, M., Ujiie, Y., Izutsu, Y. and Maeno, M.: Involvement of AP-2rep in morphogenesis of the axial mesoderm in *Xenopus* embryo. Cell Tissue Res., 335: 357-369, 2009.
- [7] Mukaigasa, K., Hanasaki, A., Maeno, M., Fujii, H., Hayashida, S., Itoh, M., Kobayashi, M., Tochinai, S., Hatta, M., Iwabuchi, K., Taira, M., Onoé, K. and Izutsu, Y.: The keratin-related Ouroboros proteins function as immune antigens mediating tail regression in *Xenopus* metamorphosis. Proc. Natl. Acad. Sci. USA 106: 18309-18314, 2009.
- [8] Saito, Y., Takahashi, Y., Izutsu, Y. and Maeno, M.: Identification and expression of Ventrally associated leucine-zipper (VAL) in *Xenopus* embryo. Int. J. Dev. Biol., 54: 203-208, 2010.
- [9] Kurauchi, T., Izutsu, Y. and Maeno, M.: Involvement of Neptune in induction of the hatching gland and neural crest in the *Xenopus* embryo. Differentiation, 4/5: 251-259, 2010.
- [10] Hosoya, J., Tamura, K., Muraki, N., Okumura, H., Ito, T., Maeno, M.: A novel approach for a toxicity prediction model of environmental pollutants by using a quantitative structure-activity relationship method based on toxicogenomics. ISRN Toxicology Article ID 515724, 9 pages, 2011.
- [11] Maeno, M., Komiyama, K., Matsuzaki, Y., Hosoya, J., Kurihara, S., Sakata, H., Izutsu, Y.: Distinct mechanisms control the timing of differentiation of two myeloid populations in *Xenopus* ventral blood islands. Dev. Growth Differ. 54: 187-201, 2012.