

Principal Researcher	Yumiko Saga			Number of Researchers	4	
Research Institution · Department · Title	Professor, Genetic Strains Research Center, National Institute of Genetics			Location of Institution	Mishima	
Title of Project	Molecular bases of heart morphogenesis and somite segmentation					
Abstract of Research Project	<p>During mouse development, mesodermal cells generated via gastrulation play important roles on morphogenesis of several tissues and organs. We focus on two types of mesodermal cells; one is cardiac precursor cells specified by expression of a transcription factor Mesp1, the other is paraxial mesodermal cells to generate somites, which give rise to the axial structures such as vertebrae and skeletal muscles. To understand the molecular mechanism of early heart specification and somite segmentation, we are planning to use ES cell manipulation together with transgenic technology. We will generate several knockout or knockin mice to delineate a genetic cascade involved in heart cell fate specification. For somite segmentation, we already have several gene knockout mice implicated in the segmentation. Using genetic analyses of these mice, we will define the genetic cascade leading to the somite segmentation. In addition, we will focus on the transcriptional regulation of one of key genes, Mesp2. The identification of downstream targets of Mesp2 is also critically important to elucidate the mechanism of somite segmentation.</p>					
References	<p>Kitajima, S., Takagi, A., Inoue, T., Saga, Y. MesP1 and MesP2 are essential for the development of cardiac mesoderm. <i>Development</i>. 127:3215-26, 2000.</p> <p>Takahashi, Y., Koizumi, K., Takagi A., Kitajima S., Inoue, T., Koseki, H., Saga, Y. Mesp2 initiates somite segmentation through the Notch signalling pathway. <i>Nat Genet</i>. 25:390-6, 2000.</p> <p>Saga, Y, Takeda, H. The making of the somite: Molecular events in vertebrate segmentation. <i>Nature reviews genet</i>. 2:835-845, 2001</p>					
Term of Project	Fiscal years 2002-2006. (5years)					
Budget Allocation	FY2002	FY2003	FY2004	FY2005	FY2006	TOTAL
(in thousand of yen)	18,300	17,200	17,200	17,200	17,200	87,100
Homepage Address	http://www.nig.ac.jp/labs/MamDev/home-j.html					