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### **Stem cells, cell-material integration, and mesoscopic sciences**

Pluripotent stem cells such as embryonic stem (ES) and induced pluripotent stem (iPS) cells have become important and versatile tools for biological research and application in medicine and drug discovery. We have been working on many aspects of stem cell research including genetic modification of human ES/iPS cell lines for production of neurodegenerative disease model cells to study disease mechanisms and for drug discovery application. Also, we have screened and developed chemical compounds that can control stem cell differentiation into specific lineages such as cardiomyocytes. One of the most exciting research frontiers is innovative research for integration of living cells and rapidly advancing material sciences which can produce numerous kinds of smart functional chemical compounds. Our institute, iCeMS, is aiming at creation and development of such integrated cell-material sciences which are going to break the boundary of life and material by bridging two worlds in the mesoscopic domain.

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### **References**

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### **CV**

1977     Doctor of Science, Graduate School of Science, Kyoto University  
1977 – 1982     Postdoctoral positions at MIT, George Washington U, MRC Mammalian Dev Unit  
1983 – 1990     Division Head, Meiji Institute of Health Science, Japan  
1991 – 1998     Professor, National Institute of Genetics, Japan  
1999 – present    Professor, Institute for Frontier Medical Sciences, Kyoto University, Japan  
2003 – 2007     Director, Institute for Frontier Medical Sciences, Kyoto University  
2007 – present    Director, Institute for Integrated Cell-Material Sciences, Kyoto University