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# Molecular pathology for identifying biomarker for diagnosis and therapy

**Abstract:**

Importantly, diagnostic biomarkers that are able to distinguish between human uterine leiomyosarcoma (Ut-LMS) and uterine leiomyoma (LMP) are not yet established. The mice with a targeted disruption of proteasome subunit beta type (PSMB) 9/β1i, (also called as LMP2/ 2i), which is interferon- (IFN-γ)-inducible proteasome beta subunit, exhibited a defect in tissue- and substrate-dependent proteasome function, Hayashi's research group reports that PSMB9/β1i-deficient mice exhibit spontaneous development of human uterine LMS, with a disease prevalence of ~37% by 12 months of age. The current focus of Hayashi's research is to probe the loss of PSMB9/β1i expression in human uterine LMS, as well as the detectable expression of the protein in human LMA. Defective expression of PSMB9/β1i is likely to be one of the risk factors for the development of human uterine neoplasms, as it is in the PSMB9-deficient mouse. The clinical research conducted by multi-facility medical institution reveals a potential biomarker for human uterine mesenchymal tumours. Thus, PSMB9/β1i is useful as a novel diagnostic biomarker for human uterine LMS, and Hayashi's research group have been trying to establish a novel diagnostic biomarker with PSMB9/β1i, which can distinguish the human uterine LMS from other human uterine mesenchymal tumours including LMA under the SIGMA-Aldrich Collaboration Laboratory Project.

## Biography

**Dr. Takuma Hayashi** is a doctor specializing in cancer treatment and emerging infectious diseases. Dr. Hayashi is professor at Shinshu University Graduate School of Medicine since 2002, and also Section Head, National Hospital Organization Kyoto Medical Center, Japan. He received his MBBS/Ph.D. from Inst. for Medical Science, University of Tokyo in 1994. He was research training as a resident staff at National Cancer Center, Tokyo Japan for 3 years until 1994 and joined Mass.Inst.Tech.(M.I.T.) that year, and also was a research member of USA Project of AIDS vaccine development (Project Leader: Dr. David Baltimore, Nobel Laureate, Cal.Tech.). After postdoctoral training, he got faculty position Lecture, Harvard Medical School (HMS) in 1997. He has been studying the antigen presentation system by MHC class I with LMP2-deficient mice, under the cooperation of Dr. Susumu Tonegawa (Nobel Laureate, M.I.T.). He identifies diagnostic biomarkers, LMP2 and Cyclin E, for malignant tumor, i.e. uterine leiomyosarcoma, current research focus: molecular approach of tumorigenesis of uterine leiomyosarcoma and ovarian cancer.