京都大学医生物学研究所

「ウイルス学の潮流セミナー」2026

# Measles virus spreads in the brain by relocating its proteins to neurites and calibrating cell-to-cell fusion


## Speaker: Dr. Roberto Cattaneo

Professor of Biochemistry/Molecular Biology
Richard O. Jacobson Professor of Molecular Medicine
Vice-chair for Education, Department of Molecular Medicine, Mayo Clinic


---

**日時** 2026 年 4 月 10 日（金）16:00–17:45

**場所** 3 号館 3 階セミナー室（312）
3F Seminar room A, Bldg. #3
Institute for Life and Medical Sciences (LiMe)

**言語** 英語（Language: English）


## Abstract

The brains of individuals affected by subacute sclerosing panencephalitis (SSPE) bear measles virus (MeV) genomes harboring adaptive mutations that functionally change their cell-to-cell transmission. However, the mechanisms supporting MeV lethal brain adaptation remain unclear. We show here that a matrix (M) protein amino acid change acts as a regulatory node controlling the location of the viral membrane fusion apparatus proteins in neurons. Variants of M protein amino acid Phe50, selected in about half of 38 SSPE cases previously examined, either enhance or restrain receptor-independent cell-to-cell fusion. Variants of the cytoplasmic tails of both viral glycoproteins, almost invariably co-selected with M-Phe50 variants in human brains, also calibrate cell fusion function. Calibration is facilitated by the distribution of mutant alleles across co-replicating genome populations. The two principles of lethal MeV brain adaptation, viral protein relocation and fusion efficiency calibration, may govern neuropathogenesis of other RNA viruses.



**主催** JSPS 研究拠点形成事業 Core-to-Core Program
「ウイルスの二面性の理解・活用のための国際研究拠点形成」
共同利用・共同拠点「ウイルス・幹細胞システム医生物学共同研究拠点」


**世話人** 京都大学医生物学研究所　微細構造ウイルス学分野・RNA ウイルス分野
杉田征彦（Yukihiko Sugita）・朝長啓造（Keizo Tomonaga）

Institute for Life and Medical Sciences, Kyoto University