

博士論文（要約）

**Histone Demethylase KDM4A Regulates**

**Histone Demethylation during Adipogenesis**

（脂肪細胞分化におけるヒストン脱メチル化

酵素 KDM4A によるヒストン脱メチル化の

制御に関する研究）

エコ フジ アリヤント

## Abstract

Previous studies revealed that transcriptional and epigenetic regulation play key roles during adipogenesis. By Chromatin immunoprecipitation (ChIP) sequencing analysis, we and other laboratory found that repressive mark H3K9me2 is enriched on *Pparg* gene locus in preadipocytes and decreased in adipocytes. However, which histone demethylase is responsible for the removal of H3K9me2 from this gene is still not fully understood. Screening by siRNA revealed that KDM4A is important for lipid accumulation during 3T3-L1 adipogenesis. Importantly, knockdown of KDM4A inhibited demethylation of H3K9me2 on *Pparg* and its gene induction. Moreover, transduction of wild-type KDM4A facilitated induction of *Pparg* and lipid accumulation, while transduction of H188A catalytic mutant KDM4A abolished induction of this gene and lipid accumulation. These findings indicate that histone demethylase KDM4A facilitates demethylation of H3K9me2 during adipogenesis.