

GS02-1 **Analyses of TRIM28 and SETDB1 dynamics on chromatin during DNA replication**

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In order to maintain gene expression patterns and phenotype even after division of cells, it is necessary to accurately copy the histone modification pattern to daughter cells as well as DNA sequence. However, little is understood about the molecular mechanism of maintaining the histone modification pattern in cooperation with DNA replication. We focused on SUMO-E3 ligase TRIM 28 (Tripartite motif protein 28) and its related factors and analyzed the maintenance mechanism of histone modification. It is known that TRIM 28 binds to the enzyme SETDB 1 (SET domain bifurcated 1) which trimethylates Lys-9 of histone H3 (H3K9me3) via self-SUMOylation of TRIM28 and also interacts with HP1 which recognizes H3K9me3. We analyzed the behavior of TRIM28 and SETDB 1 during DNA replication using a cell-free system derived from *Xenopus* unfertilized eggs. As a result, it was found that TRIM 28 binds to chromatin at the beginning of S phase, and then it is SUMOylated. We also clarified that TRIM28 is essential for chromatin binding of SETDB1 in S phase. Furthermore, the recruitment mechanism of SETDB1 by TRIM 28 was SUMO-independent and DNA replication is not required for this mechanism.