

# Involvement of Cyclic Adenosine 3',5'-Monophosphate in Methylation during 1-Methyladenine Production by Starfish Ovarian Follicle Cells

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Resumption of meiosis in starfish oocytes is induced by 1-methyladenine (1-MeAde) produced by ovarian follicle cells under the influence of a gonad-stimulating substance (GSS). With respect to 1-MeAde production, the effect of GSS on follicle cells results in the receptor-mediated formation of cyclic AMP (cAMP). It has also been reported that methylation is involved in 1-MeAde production by GSS. This study was undertaken to determine whether cAMP is the agent responsible for mediating methylation in 1-MeAde biosynthesis by isolated follicle cells of the starfish *Asterina pectinifera*. Methionine and selenomethionine enhanced 1-MeAde production by GSS in follicle cells. These stimulatory effects were dependent on the GSS concentration. Production of 1-MeAde by GSS was inhibited by ethionine and selenoethionine, competitive inhibitors of methionine. Like GSS, 1-MeAde production induced by concanavalin A, trypsin, and 3-isobutyl-1-methylxanthine (IBMX), which stimulated cAMP accumulation in follicle cells, was influenced by methionine and its related compounds. In contrast, although 1-methyladenosine (1-MeAde-R) induced 1-MeAde production by follicle cells without increasing cAMP levels, methionine and its related compounds had no effect. Use of [*methyl*-<sup>14</sup>C] methionine showed that a radiolabel was incorporated into 1-MeAde during incubation with GSS and IBMX, but not with 1-MeAde-R. These results strongly suggest that cAMP plays an important role in the process of methylation during 1-MeAde biosynthesis induced by GSS.

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