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The effects of cAMP-dependent pathway on Cx43 transcription and compaction in preimplantation mouse embryo

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Gap junctional communication between blastomeres is important for compaction of preimplantation mouse embryo. Several kinds of connexin proteins expressed in different tissues, but only Cx43 was known to be engaged in gap junction formation in preimplantation mouse embryo. In general it was reported that gap junction in other somatic cells constructed by Cx43 is controlled by intracellular cAMP. However, it is unrevealed that expression of Cx43 in mouse early embryo is regulated by the same pathway. This study was aimed to verify involvement of cAMP-dependent pathway on Cx43 transcription and compaction in preimplantation mouse embryo. Cx43 mRNA was first detected at early 4-cell stage by RT-PCR. The effects of H8 (PKA inhibitor), Rp-cAMP (cAMP antagonist), forskolin (adenylate cyclase activator), and 8-Br-cAMP (cAMP analogue) on interblastomeric communication of mouse early embryo were examined. These chemicals showed the different effects on the compaction and development of preimplantation mouse embryo. These results suggest that Cx43 is expressed from early 4-cell stage onward increasingly and compaction is under the control of cAMP-dependent pathway.

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Plant Regeneration via Organogenesis of *Brassica rapa* L. ssp. *compestris* (Turnip)

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In order to establish an efficient regeneration system of *Brassica rapa* (Turnip), cotyledon and hypocotyl explants from 6-day-old seedlings were cultured *in vitro*, and their responses to MS medium supplemented with various combinations of plant growth regulators and AgNO₃ were compared. In cotyledons, high frequency (45-53%) of shoot induction was obtained on the medium containing 0.5 mg/L NAA, 3 mg/L BAP and 5-10 mg/L AgNO₃ after 3-4 weeks and occurred only on cut end of the petiole. In hypocotyls, high frequency (35-40%) of shoot induction was obtained on the medium containing 0.1 mg/L NAA, 1 mg/L BAP and 5-10 mg/L AgNO₃ after 3-4 weeks. Addition of AgNO₃ was found to be an absolute requirement for efficient shoot induction in both explants. Shoots induced from cotyledons and hypocotyls were transferred to MS media containing 0.0025 mg/L BAP for the shoot elongation. After 1-2 weeks, elongated shoots rooted on MS medium containing 2.0 mg/L indole-3-butyric acid. The result showed that this system was a rapid and efficient regeneration system.