the cell after stage 5, but not on EB at stage 2. Similar results were obtained for expression of glucagon, except for weak expression in EB at stage 2. Expression of amylase, the exocrine enzyme, was observed not only in the EB but also in the differentiated ES cells.

Conclusions: Taken together, human ES cells can differentiate into pancreatic endocrine cells in vitro culture, supporting that human ES cells can be used as a source for replacement therapy of diabetes mellitus.

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P-21 SPA-1 Functions as a Regulator of Human Embryonic Stem Cells Maintenance and Differentiation

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Background & Objectives: In the present study, we showed a regulator which was interested in our unpublished data and suggested that it could be a key molecule for human embryonic stem cells (hESCs) dynamics. We focused on human spa-1 (signal-induced proliferation-associated gene 1) which encodes a 1042-amino acids polypeptide which contains leucine zipper motif, PDZ and Rap1GAP domains. spa-1 is expressed restrictively in human adult tissues (bone marrow, thymus, and spleen) and involved in intracellular signaling cascade. We hypothesized that spa-1 is a candidate for regulator which is involved in hESCs maintenance/differentiation.

Method: spa-1 and germ layer marker genes (pluripotency, endoderm, mesoderm, and ectoderm) expression profiles were analyzed in differentiated hESCs (7, 14, and 21 days embryoid bodies) using semi-quantitative RT-PCR. Also RNA interference (RNAi) was performed to suppress endogenous spa-1 expression in hESCs.

Results: During hESCs differentiation, spa-1 transcripts were decreased and interestingly, its expression pattern was similar to that of pluripotent marker genes (human oct-3/4 and nanog). siRNA expression vector (pSUPER.retro.puro) against spa-1 was transfected into hESCs, and physiological roles of spa-1 in hESCs are under analyses.

Conclusions: According to findings we observed so far, spa-1 might be a new molecule which is involved in the hESC dynamics, and its roles in related to other pluripotent marker genes such as oct3/4 and nanog remain to be elucidated.