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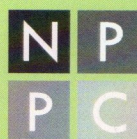
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Review

THE ROLE OF MICRORNAS IN RABBIT PREIMPLANTATION EMBRYOS AND PLURIPOTENT STEM CELLS

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ABSTRACT

Although several groups are able to generate rabbit embryonic stem cells (ESCs) and induced pluripotency cells (iPS) cell lines using different derivation methods, it is still difficult to establish it, and the pluripotent lines, therefore, remain poorly characterized. Since ESCs are derived from early blastocysts, they can reflect the potential characteristics of their embryonic founder population. Therefore, it is important to compare the expression pattern of both miRNAs and proteins known to play regulatory roles during early lineage specification. Our group aimed to explore ESC-specific miRNA expression pattern from early embryonic stages to rabbit embryonic stem-like (ES-like) cell for the first time to get more insight into their potential regulatory mechanism during embryonic development and in stem cell properties.

Key words: rabbit; embryo; epiblast; hypoblast; stem cell; microRNA

INTRODUCTION

Overview of rabbit embryonic stem cell derivation

Human ESCs are potential source for regenerative medicine, tissue engineering, cell-based transplantation, disease pathology and drug discovery (Thomson *et al.*, 1998). In spite of their great medical potential, human ESCs generation requires the destruction of developing human embryos which restrict their intended application ethically. By generation of iPSCs from human somatic cells, it was expected to overcome the ethical controversy associated with human ESCs research (Takahashi *et al.*, 2007; Park *et al.*, 2008). To overcome the limitations

associated with human ESCs, many efforts have been put to generate the stable animal ESC lines in order to use in regenerative medicine. The rabbit ESCs represent an alternative animal model to study human diseases since rabbit ESCs resemble primate ESCs more closely than mouse ESCs (Wang *et al.*, 2007). The establishment of rabbit ESCs has been reported by several groups (Honda *et al.*, 2009), (Catunda *et al.*, 2008; Intawicha *et al.*, 2009). Although there are reports indicating that rabbit ESCs might be passaged for longer period over 20 passages (Intawicha *et al.*, 2013), but it needs to be maintained manually and pick the only colonies which still keep the typical ESC morphology and stayed undifferentiated (Honda, 2013; Osteil *et al.*, 2013;

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