BIOGRAPHICAL SKETCH

NAME: Park, Joo Cheol E-mail: jcapark@snu.ac.kr

POSITION TITLE: Professor, Department of Oral Histology-Developmental Biology, Seoul National University Dental School, Seoul, Korea

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Chosun University, Gwang-Ju, Korea	D.D.S	02/1987	Dentistry
Chosun University Dental Hospital, Gwang-Ju, Korea	Residency	02/1990	Oral Pathology
Seoul National University, Seoul, Korea	Ph.D.	08/1996	Oral Anatomy-Histology
Okayama Medical School, Okayama, Japan	Postdoc	02/1999	Molecular Biology and Biochemistry

A. Personal Statement

I am a Professor of School of Dentistry at Seoul National University (SNU) in South Korea. I have the expertise, training, and motivation necessary to successfully carry out the proposed research project. I have a broad background in pulp biology and dentin regeneration, with specific expertise in odontoblast differentiation via epithelial-mesenchymal interactions using preameloblast-derived factors. My own expertise has been in the area of differentiation and regeneration of tooth enamel, dentin, and cementum, the materials that make the teeth the hardest tissue of our body. As a dentist and a basic science researcher, my peers consider me an expert in the field. In the past 10 years, I have published over 60 scientific articles about tooth formation and regeneration. My contributions have been presented in national meetings and published in the most prestigious journals in the field including Journal of Dental Research, Biomaterials, Journal of Biological Chemistry, American Journal of Human Genetics, Stem Cells, and Journal of Periodontology.

1. Lee JH, Lee DS, Choung HW, Shon WJ, Seo BM, Lee EH, Cho JY, Park JC*. Odontogenic differentiation of human dental pulp stem cells induced by preameloblast-derived factors. Biomaterials 2011; 32(36):9696-9706. PMID: 21925730.
2. Lee HK, Lee DS, Park SJ, Cho KH, Bae HS, Park JC*. Nuclear factor I-C (NFIC) Regulates Dentin Sialophosphoprotein (DSPP) and E-cadherin via control of Krüppel-like factor 4 (KLF4) during dentinogenesis. J Biol Chem. 2014; 289:28225-28236. PMID: 25138274.
3. Oh HJ, Choung HW, Lee HK, Park SJ, Lee JH, Lee DS, Seo BM, Park JC*. CPNE7, a preameloblast-derived factor, regulates odontoblastic differentiation of mesenchymal stem cells. Biomaterials 2015:7:208-217. PMID: 25453951.
4. Choung HW, Lee J-H, Shon WJ, Lee JH, Y. Ku, Park JC*. Tertiary dentin formation after indirect pulp capping using protein CPNE7. J Dent Res. 2016; 5(8):906-912. PMID: 27013639.

B. Positions and Honors

Positions and Employment

1990-1993 Military service in Korean Army
1995-1997 Assistant Professor, Department of Oral Histology, Chosun University Dental School, Korea

1999-2007	Associate Professor, Professor, Department of Oral Histology, Chosun University Dental School, Korea
2003-2004	Research Associate Professor, Department of Oral Biology, SUNYU at Buffalo, NY
2007-2012	Associate Professor, Department of Oral Histology-Developmental Biology, Seoul National University Dental School, Seoul, Korea
2013-2014	Associate Dean for Research Affairs, Seoul National University Dental School, Seoul, Korea
2017-2018	Director, Dental Research Institute, Seoul National University, Seoul Korea
2013-	Professor, Department of Oral Histology-Developmental Biology, Seoul National University Dental School, Seoul, Korea

Other Experience and Professional Memberships

1995-	Member, International Association of Dental Research
2007-	Member, Korean Society of Molecule and Cell Biology
2008-	Member, Korean Society for Stem Cell Research
2016-2018	President, Korean Academy of Oral Anatomy

Honors

2005	Otto Zietzschmann Prize for the promotion of research in Veterinary Embryology, Germany
2016	Award for Best in Dental Research, Korean Dentist's Association

C. Contribution to Science

1. Role of Nuclear Factor I-C (NFI-C) in odontoblast differentiation and dentin formation: In early 2000s, *nfic*-deficient mice demonstrated normal molar crown formation but aberrant odontoblast differentiation during root formation as well as short root formation by Dr. Gronostajski RM group. I was the first to demonstrate the essential role of NFI-C protein in odontogenic cell proliferation, crosstalk with TGF-β, DSPP regulation via klf4 and control of osterix expression using NFI-C knockout mouse model. These findings are of importance in terms of understanding the underlying mechanisms of NFI-C function in odontoblasts. The following are the representative papers:

a) Lee DS, Park JT, Kim HM, Ko JS, Son HH, Gronostajski RM, Cho MI, Choung PH, Park JC*. NFI-C is essential for odontogenic cell proliferation and odontoblast differentiation during tooth root development. J Biol Chem. 2009; 284(25):17293-17303. PMID: 19386589.
b) Lee DS, Yoon WJ, Cho ES, Kim HJ, Gronostajski Richard M, Cho M-I, Park JC*. Crosstalk between nuclear factor I-C and transforming growth factor-β1 signaling regulates odontoblast differentiation and homeostasis. PLoS One 2011; 6(12):e29160. PMID: 22195013.
c) Lee HK, Lee DS, Park SJ, Cho KH, Bae HS, Park JC*. Nuclear factor I-C (NFIC) regulates dentin sialop hosphoprotein (DSPP) and E-cadherin via control of Krüppel-like factor 4 (KLF4) during dentinogenesis. J Biol Chem. 2014; 289:28225-28236. PMID: 25138274.
d) Lee DS, Choung HW, Kim HJ, Gronostajski RM, Yang YI, Ryoo HM, Lee ZH, Kim HH, Cho ES, Park JC *. NFI-C regulates osteoblast differentiation via control of Osterix expression. Stem Cells 2014; 32:2467 -2479. PMID: 24801901.

2. Preameloblast-derived factors and odontoblast differentiation: Epithelial-mesenchymal interactions are important mechanisms occurring during the development of tooth. My team was the first to show that preameloblast-derived factors induce the odontogenic differentiation of hDPSCs and promote dentin formation. These results suggest that preameloblast-derived factors could be valuable in not only odontoblast differentiation but also repair and regeneration of the dentin-pulp complex. We had the following example articles:

a) Lee JH, Lee DS, Choung HW, Shon WJ, Seo BM, Lee EH, Cho JY, Park JC*. Odontogenic differentiati on of human dental pulp stem cells induced by preameloblast-derived factors. Biomaterials 2011; 32(3 6):9696-9706. PMID: 21925730.
b) Choung HW, Lee JH, Lee DSM Chough PH, Park JC*. The role of preameloblast-conditioned medium in dental pulp regeneration. J Mol Histol. 2013; 44:715-721, PMID: 23673900.

c) Yoo YJ, Lee WC, Cho YA, Park JC, Shon WJ, Baek SH*. Effect of conditioned medium from preameloblast on regenerative cellular differentiation of the immature teeth with necrotic pulp and apical periodontitis. J Endod. 2014; 40 (9): 1355-1361. PMID: 25146015.
d) Choung HW, Lee DS, Lee HK, Son WJ, Park JC*. Preameloblast-derived factors mediate osteoblast differentiation of human bone marrow mesenchymal stem cells via Runx2-Osterix-BSP signaling. Tissue Eng Part A. 2016; 22:93-102, PMID: 26413977.

3. CPNE7, a preameloblast-derived factor, regulates odontoblast differentiation: Our group has uncovered an interesting candidate factor, CPNE7, an ameloblast-derived soluble protein that may regulate odontogenic differentiation of hDPSC and promote dentin formation in vivo and the odontogenic differentiation of hDPSCs and promote dentin formation. In addition, we also investigate that CPNE7 induces the regeneration of physiologic reactionary dentin with dentinal tubule structures in vivo indirect pulp capping model. These findings are of great importance in terms of setting the directions for dentin regeneration research using a specific odontoblast differentiation factor. The following are the representative papers:

a) Oh HJ, Choung HW, Lee HK, Park SJ, Lee JH, Lee DS, Seo BM, Park JC*. CPNE7, a preameloblast-derived factor, regulates odontoblastic differentiation of mesenchymal stem cells. Biomaterials 2015:7:208-217. PMID: 25453951.
b) Choung HW, Lee J-H, Shon WJ, Lee JH, Y. Ku, Park JC*. Tertiary dentin formation after indirect pulp capping using protein CPNE7. J Dent Res. 2016; 5(8):906-912. PMID: 27013639.
c) Seo YM, Park SJ, Lee HK, Park JC*. Copine-7 binds to the cell surface receptor, nucleolin, and regulates ciliogenesis and Dspp expression during odontoblast differentiation. Sci Rep 2017:7(1):11283. PMID: 28900213
d) Park SJ, Lee HK, Seo YM, Son C, Bae HS, Park JC*. Dentinsialophosphoprotein expression in enamel is regulated by Copine-7, a preameloblast-derived factor. Arch Oral Biol. 2018:86:131-137. PMID: 29223640

4. Other molecules related to odontoblast differentiation: We are the first to demonstrate that the role of ODAM in odontoblast differentiation and tertiary dentin formation. The following are the example papers related to this area of contribution:

a) Yang IS, Lee DS, Park JT, Kim HJ, Son HH, Park JC*. Tertiary dentin formation following direct pulp capping with odontogenic ameloblast-associated protein (ODAM) in rat teeth. J Endod. 2010; 36:1956–1962, (Cover page) PMID: 21092812.
b) Lee H-K, Park S-J, Oh H-J, Kim J-W, Bae HS, Park JC*. Expression pattern, subcellular localization, and functional implications of ODAM in ameloblasts, odontoblasts, osteoblasts, and various cancer cells. Gene Expr Patterns 2012; 12:102–108, 2012. PMID: 22387195.

Complete List of Published Work in MyBibliography:
https://www.ncbi.nlm.nih.gov/sites/myncbi/1dUdbhXqcNSk0/bibliography/52935244/public/?sort=date&direction=descending