OMICS International
conferenceseries.com

Jian Zhou et al., J Cell Sci Ther 2016, 7:1 (Suppl)
http://dx.doi.org/10.4172/2157-7013.C1.035

6th World Congress on
Cell & Stem Cell Research
February 29-March 02, 2016 Philadelphia, USA

Wnt3a and BMP7 induced dental pulp and dentin regeneration by cell homing

Jian Zhou[1,2], **Mo Chen**[2], **Martin Kim**[2], **Deng Sheng Xia**[1], **Hao Wang**[1], **Songling Wang**[1] and **Jeremy Mao**[2]
[1]Capital Medical University, China
[2]Columbia University College of Dental Medicine, USA

New endodontic therapies that attempt to regenerate dental pulp and dentin may provide alternative solutions to traditional procedures. Previously, we have reported that odontogenesis factors, BMP7 and Wnt10a are highly expressed by odontoblasts. Consistently, BMP and canonical Wnt signaling pathways synergistically promote odontogenesis *in vitro*. To examine Wnt and BMP mediated dental pulp regeneration, we delivered the two factors into endodontically treated porcine incisors. The regenerated dental pulp and dentin were assessed by histological analysis, micro-CT, scanning electronic microscope (SEM) and hardness tests by nanoindentation. The present study aimed to quantify the regenerated dentin using histological analysis and micro-CT, to measure mechanical parameters of regenerated dentin and to assess the microstructure of the regenerated dentin by scanning electronic microscope (SEM). We regenerated dentin and dental pulp in endodontically treated teeth by homing and inducing endogenous periapical cell migration and differentiation into dental pulp cells. Our results demonstrate that the two factors induce dentin regeneration and that the mechanical character and mineral density of regenerated dentin is comparable to the native dentin. This research supports a new approach to endodontic therapy as regenerative pulp and dentin have been shown to function like the native tooth.

Biography

Jian Zhou has completed his PhD from Capital Medical University, School of Stomatology, Beijing, China and Postdoctoral studies in the field of Stem Cell Biology and Regenerative Medicine from Columbia University School of Dental Medicine. He is an Associate Professor and works as a General Dentist in the Department of General Dentistry, Beijing Stomatological Hospital, Capital Medical University. He has published more than 25 papers in reputed journals and won several competition awards from international conferences and forums.

zhoujian5010@hotmail.com

Notes: