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Dr. Huang is a board-certified endodontist, currently Professor and former Director for Stem Cells and Regenerative Therapies, Department of Bioscience Research at UTHSC, College of Dentistry. He is the former Chair/Herbert Schilder Professor in Endodontics, at Boston University, also a former Chair in Endodontics at Columbia University. Dr. Huang has published ~180 research articles, abstracts, review articles, including papers in Stem Cells, Stem Cells and Development, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Tissue Engineering, Regenerative Medicine, Infection and Immunity, Human Gene Therapy, Journal of Dental Research, Journal of Endodontics, etc; and 19 book chapters in books such as Ingle's Endodontics, Cohen's Pathways of the Pulp, Endodontic Microbiology, Principles of Regenerative Medicine, Tissue Engineering and Regenerative Dentistry, Tissue-Specific Stem Cell Niche, Material-Tissue Interfacial Phenomena, etc; and co-edited with Dr. Irma Thesleff and wrote chapters for the textbook "Stem cells, craniofacial development and regeneration", in 2013, published by Wiley-Blackwell. He currently an Associate Editor for the journal Stem Cell Research and Therapy. His research has been funded by various sources, including NIH and AAE Foundation. His current research interest is in stem- cells and regenerative medicine. Distinguished Scientist Award, IADR, 2015.

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Presentation title: Cell-based vs cell-free regenerative endodontics: concept, term and progress

Presentation synopsis:

This presentation will clarify the concept of regenerative endodontics and review its progress. There are two categories of clinical approaches to regain vitalization of pulp.

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One is stem-cell based therapy that involves implanting exogenously processed stem cells into the root canal space, termed cell-based regenerative endodontic therapy (CB-RET).

This approach has shown the regeneration of pulp- and dentin-like tissues in the canal space from animal and human clinical trial studies, suggesting potential practice of true “regenerative endodontics” in the future. On the other hand, revitalization or also termed revascularization, that does not involve the delivery of exogenously processed stem cells into the canals therefore is termed cell-free regenerative endodontic therapy (CF-RET).

The various animal and human clinical studies have shown that the tissues developed in CF-RETs are fibrous connective tissue, some resembling periodontal ligament, not pulp-

like, and the mineral tissue as cementum-like or bone, not dentin-like. One outcome regarding revitalization treatment is canal space obliteration by calcification which accounts for a high percentage of such cases.

Learning objectives:

At conclusion, participants should be able to:

1. Describe the definitions of CB-RET and CF-RET.
2. Describe the progress of CB-RET,
3. Describe the progress of CF-RET.