
Identifications of Signaling Factors for Root Formation and Factor Controlling It

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Citation

B Rai. *Identifications of Signaling Factors for Root Formation and Factor Controlling It*. The Internet Journal of Dental Science. 2006 Volume 5 Number 1.

Abstract

The ability to create in the laboratory teeth that can be harvested and implanted in to the patients to restore extracted or lost teeth has been a goal for dental research. The growth and formation of new teeth has been partially successful, because only small parts of tooth structures have been created. Research efforts in adult stem cell biology offer additional approaches to the engineering of individual dental tissues as well as whole teeth. Cells within adult periodontal ligament (PDL) contain or population of stem cells that, when triggered appropriately, are capable to differentiating forward cementoblast/osteoblast like cells and of secreting osteoblast cementum PDL like tissues. This, regeneration of cementum bone, and a functional PDL has been tried opening an area of periodontal regeneration therapy. There has been limited success with regard to forming the “complete tooth complex”. The initiation of root formation is still quite a mysterious events. Root dentin and

cementum may be stimulated by signals from epithelial root sheath (ERS), however, signaling factors necessary for root development are not known/yet to be identified.

I suggest further studies on required signaling factors, which necessary for root formation and identification of factors controlling root development. This study would be great help in initiation of root formation. An effort will be to examine putative ERS and cementoblasts and any surrounding follicle tissue or bone (when formed) for signals (BMPs, Msx) and matrix proteins known to be expressed during root formation. Knowledge, thus gained would help in culturing whole tooth. Finally, under studying the mechanism of tooth development will be applied in dental tissue engineering for dental tissue formation. In future tissue engineer would be approached for live implants with morphology characteristics to individual need.

References

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