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MicroRNA expression in dental pulp stem cells**Karl Lee Kingsley**
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Introduction: Dental pulp stem cells (DPSCs) are non-embryonic, mesenchymal stem cells that may have significant potential for therapeutic and regenerative biomedical applications. MicroRNAs are small non-coding RNA molecules that can act as transcriptional activators and repressors in many types of mesenchymal stem cells. To date, few studies have evaluated the expression or activity of microRNAs among dental pulp stem cells.

Methods: Using eight previously isolated and characterized DPSC lines, RNA was extracted and examined using PCR to determine expression of several key miRNAs, including miR-16, miR-27, miR-124, miR-135, miR-143 and miR-218.

Results: These data demonstrated that at least four of these microRNAs are active among some of these DPSC isolates, including miR-16, miR-27, miR-124 and miR-218.

Discussion: Although the transcriptional targets of these miRNAs are not yet known, it is evident that the differential expression of some of these miRNAs (miR-27, miR-124, miR-218) may correlate (or even contribute) to differentiation status of these isolates. More research will be needed to determine the precise function and targets of these microRNAs to determine their effects on DPSC differentiation, which may foster biotechnology applications for DPSC bioengineering applications.

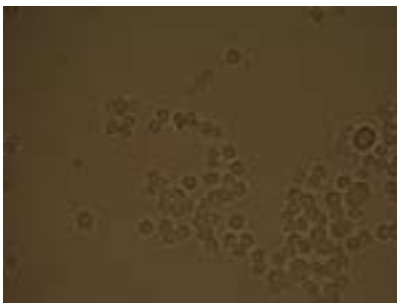


Figure 1: Dental pulp stem cells (DPSC) isolated from extracted teeth

Recent Publications

1. Whiting M and Kingsley K (2018) Expression of microRNA among dental pulp stem cell (DPSC) isolates. *Current Research in Dentistry* 9:12-18.
2. Agari K, Lin W and Kingsley K (2018) Folic acid-modulated growth of dental pulp stem cells (DPSCs). *J Med Discov.* 3(3):jmd18024.
3. Cinelli J, Nguen E and Kingsley K (2018) Assessment of dental pulp stem cell (DPSC) biomarkers following induction with bone morphogenic protein (BMP-2). *Journal of Advances in Biology and Biotechnology* 19(2):1-12.

4. Tomlin A, Nelson B and Kingsley K (2018) Dental pulp stem cell biomarkers for cellular viability following long-term cryopreservation. *Int J Cell Sys Dev Biol.* 1(1):1-6.
5. Tomlin A, Sanders M B and Kingsley K (2016) The effects of cryopreservation on human dental pulp-derived mesenchymal stem cells. *Biomaterials and Biomedical Engineering* 3(2):103-112.

Biography

Karl Lee Kingsley teaches Microbiology and Immunology, Biostatistics and Epidemiology and research methods in the Department of Biomedical Sciences at UNLV School of Dental Medicine (DMD) program. His research focuses on oral cancer and oral biology, including dental pulp stem cells.

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