

ANALYSIS OF PLURIPOTENT STEM CELLS USING SYNCHROTRON BASED- FTIR MICROSCPECTROSCOPY

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During the last 5 years there have been major advances in the stem cell research field, essentially by the development of cell programming strategies. These techniques demonstrating the feasibility of generating pluripotency from differentiated cells have revolutionized our concepts of cell biology and opened major perspectives for future cell therapy applications but also for disease modelling and drug discoveries. The tools for the evaluation of stem cell status have been based on the available methodologies, including pluripotency gene markers, pluripotency gene analysis and teratoma induction. We have evaluated the potential use of Synchrotron Based FTIR microspectroscopy to evaluate pluripotency in several models of human and murine induced pluripotent stem cells as well as in embryonic stem cells. The results of our experiments demonstrate consistent changes detectable by FTIR microspectroscopy during reprogramming process and suggest that this technology could be a novel tool to analyze pluripotency.