

***Observation of cellular events in live HeLa cells
using FTIR microspectroscopy***

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We report efforts to design and implement a live cell chamber that allows for the acquisition of infrared spectral information of individual live HeLa cells while maintaining the appropriate environment for sustaining cellular life. Feasibility for this project and background information are based on previous dry (fixed)^{1,2} cell studies and aqueous cell studies^{3,4} and also previous studies on induced apoptosis^{5,6}. The main focus of this research is to observe biochemical changes experienced by a live HeLa cell during apoptosis induced by a known DNA topoisomerase I inhibitor, camptothecin⁷. Preliminary results on fixed, cultured HeLa cells and early work toward overcoming obstacles related to the effect of interference caused by strong water vibrations³ are included. The subtle, but distinct biochemical changes within cells undergoing apoptosis can be seen using multivariate methods of analysis, for example Principal Component Analysis.²

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