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Raman Spectroscopy Study of Prostatic Adenocarcinoma Bulk Tissues S. DEVPURA, H. DAI, J.S. THAKUR, R. NAIK, A. CAO, A. PANDYA, G.W. AUNER, Wayne State University, F. SARKAR, W. SAKR, Karmanos Cancer Institute, V. NAIK, University of Michigan-Dearborn — Prostate cancer is one of the most common types of cancer among men. The mortality rate for this disease can be dramatically reduced if it can be diagnosed in its early stages. Raman spectroscopy is one of the optical techniques which can provide fingerprints of a disease in terms of its molecular composition which changes due to the onset of disease. The aim of this project is to investigate the differences in the Raman spectra to identify benign epithelium (BE), prostatic intraepithelial neoplasia (PIN) and adenocarcinoma of various Gleason grades in archived bulk tissues embedded in paraffin wax. For each tissue, two adjacent tissue sections were cut and dewaxed, where one of the sections was stained using haematoxylin and eosin for histological examination and the other unstained adjacent section was used for Raman spectroscopic studies. We have collected Raman spectra from 10 prostatic adenocarcinoma dewaxed tissue sections using Raman microscope (785 nm excitation laser). The data were analyzed using statistical methods of principal component analysis and discriminant function analysis to classify the tissue regions. The results indicate that Raman Spectroscopy can differentiate between BE, PIN and Cancer regions.

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