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### In Vivo and Ex Vivo Virtual Biopsy of the Liver with Near-Infrared, Reflectance Confocal Microscopy

*Campo-Ruiz V, Lauwers GY, Anderson RR, Delgado-Baeza E, González S. ; Mod Pathol. Feb 2005; 18(2):290-300. DOI 10.1038/modpathol.3800303.*

#### **ABSTRACT**

The assessment of liver architecture is an essential part of the understanding of its physiology and pathology. Current fluorescence confocal microscopy methods face numerous drawbacks, such as cytotoxicity, quenching effect, potential negative ino- and chrono-tropic effects and leaking of fluorescent agents through the sinusoid fenestrations. The recently developed, near-infrared reflectance confocal microscopy allows high-resolution optical sectioning through intact tissues, without employing fluorescent stains, while contrast between structures is provided by the natural refractivity of the tissue. The aim of this study is to assess the utility of near-infrared reflectance confocal microscopy in the evaluation of the hepatic microscopic architecture in vivo and ex vivo. Rat livers were noninvasively examined in vivo and ex vivo with near-infrared reflectance confocal microscopy. Two experimental contrast agents were subsequently used to enhance particular structures. Parenchymal and vascular structures are readily identified, as well as some intracellular details. Differences between in vivo and ex vivo states were also observed. The use of contrast agents also highlights certain morphologic structures. In conclusion, near-infrared reflectance confocal microscopy stands as a useful adjunct technique to the study of hepatic parenchyma offering details equivalent to, if not surpassing traditional light microscopy.