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Titel des Beitrags: Towards clinically translatable NIR fluorescence molecular guidance for colonoscopy.

Abstract: White-light surveillance colonoscopy is the standard of care for the detection and removal of premalignant lesions to prevent colorectal cancer, and the main screening recommendation following treatment for recurrence detection. However, it lacks sufficient diagnostic yield, exhibits unacceptable adenoma miss-rates and is not capable of revealing functional and morphological information of the detected lesions. Fluorescence molecular guidance in the near-infrared (NIR) is expected to have outstanding relevance regarding early lesion detection and heterogeneity characterization within and among lesions in these interventional procedures. Thereby, superficial and sub-surface tissue biomarkers can be optimally visualized due to a minimization of tissue attenuation and autofluorescence by comparison with the visible, which simultaneously enhance tissue penetration and assure minimal background. At present, this potential is challenged by the difficulty associated with the clinical propagation of disease-specific contrast agents and the absence of a commercially available endoscope that is capable of acquiring wide-field, NIR fluorescence at video-rates. We propose two alternative flexible endoscopic
fluorescence imaging methods, each based on a CE certified commercial, clinical grade endoscope, and the employment of an approved monoclonal antibody labeled with a clinically applicable NIR fluorophore. Pre-clinical validation of these two strategies that aim at bridging NIR fluorescence molecular guidance to clinical translation is demonstrated in this study.