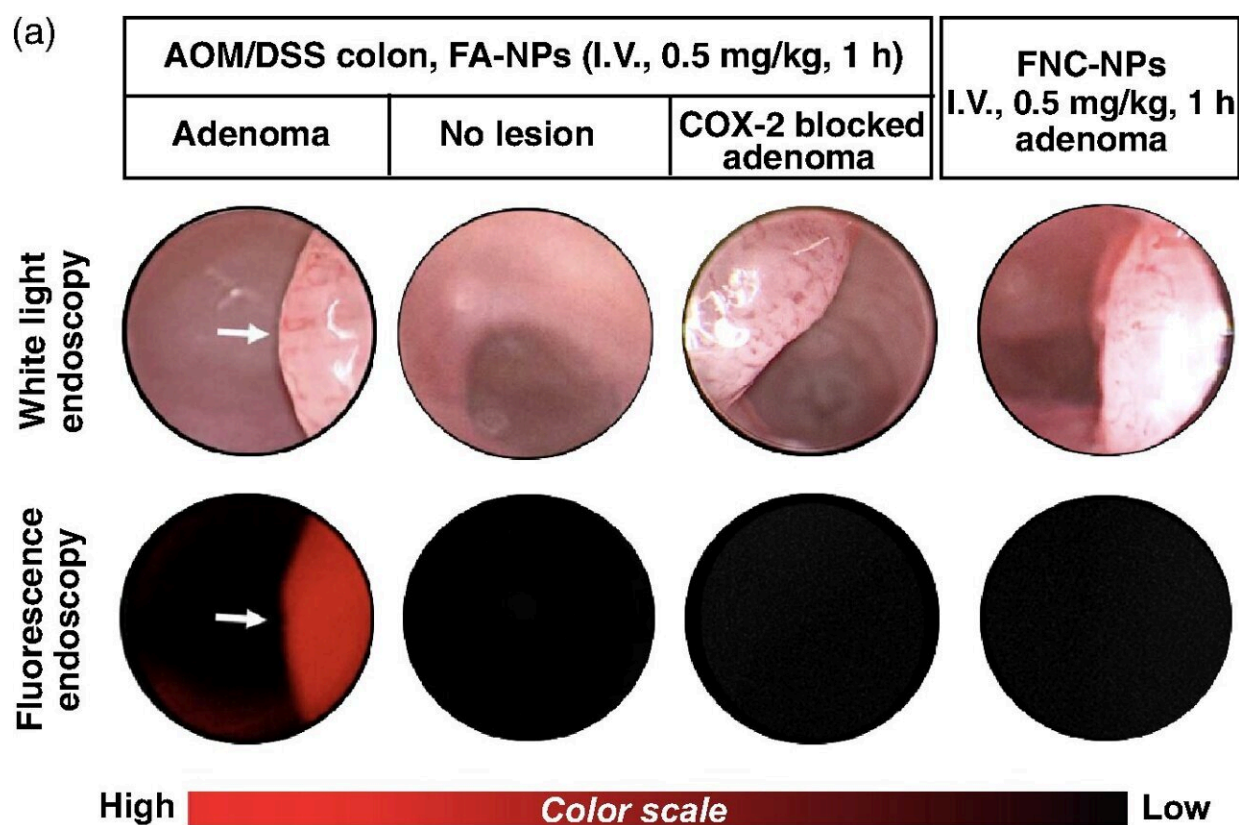


Better adenoma detection using a molecular marker for fluorescent imaging

May 5 2023, by Sarah E. Glass



(a) Representative white light and corresponding fluorescence colonoscopy images (static) of B6;129 mice bearing either colorectal adenomas or normal colon injected with Pluronic micellar nanoparticles of fluorocoxib A (FA-NPs, 0.5 mg/kg) or Pluronic micellar nanoparticles of fluorocoxib negative control (FNC-NPs, 0.5 mg/kg) via tail vein injections. In the COX-2 blocking control experiment, tumor bearing B6;129 mice received FA-NPs (0.5 mg/kg) 1 h after an intraperitoneal injection of celecoxib (10 mg/kg) to block binding of FA to the COX-2 active site. (b) ImageJ software was used for quantification of

fluorescence intensity at the ROI of colonic adenomas versus adjacent normal colon epithelium (N.S., not significant). (c) COX-2 immunohistochemical staining of well-differentiated adenoma and adjacent normal colon. Credit: *Journal of Biomedical Optics* (2023). DOI: 10.1117/1.JBO.28.4.040501

Detecting adenomas by colonoscopy remains one of the main preventative measures for colorectal cancer (CRC). Unfortunately, using white-light colonoscopy without probing for a particular molecular marker of adenomas can lead to 30% of lesions going undetected.

Md. Jashim Uddin, Ph.D., Larry Marnett, Ph.D., and colleagues chose to use COX-2, an enzyme that increases inflammation and is upregulated in preneoplastic lesions and CRC, as a marker for developing a fluorescent imaging agent to increase adenoma detection.

The researchers discovered that a fluorescent inhibitor of COX-2 administered before [colonoscopy](#) allowed for clear identification of adenomas in mice, whereas normal colons were not labeled by this fluorescent compound. They used an FDA-approved polymer to ensure formation of COX-2 inhibitor-containing nanoparticles for easy administration and translation to clinical use.

This work, reported in the *Journal of Biomedical Optics*, signifies an advance in adenoma detection by colonoscopy, which could reduce the number of CRC diagnoses.

More information: Md. Jashim Uddin et al, Development of Pluoronic nanoparticles of fluorocoxib A for endoscopic fluorescence imaging of colonic adenomas, *Journal of Biomedical Optics* (2023). [DOI: 10.1117/1.JBO.28.4.040501](https://doi.org/10.1117/1.JBO.28.4.040501)

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