Cancer Prevention Research

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RESEARCH ARTICLES

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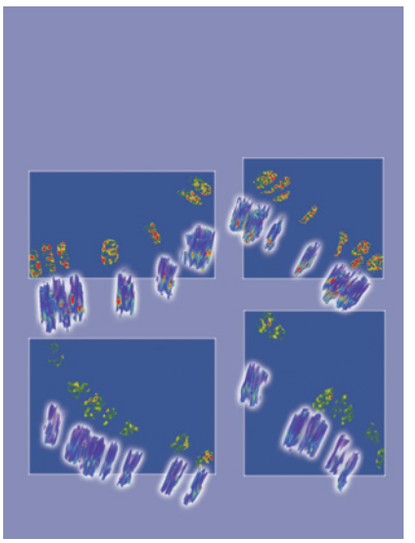
ABOUT THE COVER

Patients with inflammatory bowel disease (IBD) colitis are at an increased risk of developing colorectal cancer and often undergo extensive surveillance colonoscopy. As most IBD patients will not develop cancer, there is an urgent need for a less invasive, objective, cost-effective and clinically applicable risk-surveillance approach to triage IBD colitis patients into low- and high-risk groups. Uttam and colleagues (in a study beginning on page 527) have developed an imaging-based three-dimensional nanoscale nuclear architecture mapping (3D-nanoNAM) approach that builds on the general principles of Fourier-domain optical coherence microscopy to quantify sub-microscopic alterations in aberrant intrinsic nuclear architecture of epithelial cells with nanoscale sensitivity. They objectively assess cancer risk by detecting the presence of colonic neoplasia in patients with IBD colitis via 3D-nanoNAM of normal-appearing rectal biopsies. The cover depicts nanoNAM-based visualization of 3D intrinsic nuclear architecture of histologically normal–appearing epithelial cell nuclei from rectal biopsies of high-risk (top panels) and low-risk (bottom panels) IBD colitis patients. Although at microscopic scale the cell nuclei from both low- and high-risk patients are histologically normal, nanoNAM-based sub-microscopic characterization shows increased structural aberration in nuclear architecture in the high-risk patients (redder values) compared to the low-risk patients. Mean projections of the 3D images are also shown.



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