Background & Aims: Inflammation is a major risk factor for development of colorectal cancer (CRC). Prostaglandin synthase cyclooxygenase-2 (COX-2) encoded by the PTGS2 gene is the rate limiting enzyme in prostaglandin synthesis and therefore plays a distinct role as regulator of inflammation. Methods: PTGS2 mRNA levels were determined in intestinal tissues from 85 intestinal adenoma cases, 115 CRC cases, and 17 healthy controls. The functional PTGS2 polymorphisms A-1195G (rs689466), G-765C (rs20417), T8473C (rs5275) were assessed in 200 CRC cases, 991 adenoma cases and 399 controls from the Norwegian KAM cohort. Results: PTGS2 mRNA levels were higher in mild/moderate adenoma tissue compared to morphologically normal tissue from the same individual (P...