

## **Molecular genetic analysis of microorganisms with intraepithelial invasion isolated from patients with colorectal cancer**

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### **Abstract**

© 2016, Allerton Press, Inc. The facultative aerobic bacteria isolated from the mucosa of rectum in the zone of malignant tumor and neighboring normal mucosa in patients with colorectal cancer were studied using molecular genetic methods. The species attribution of bacteria was implemented using the cultural morphological analysis and sequencing of the 16S rRNA locus. The microorganisms with intraepithelial invasion to rectal mucosa were identified as the representatives of adherent-invasive (AIEC) subgroup of *Escherichia coli* and species *Klebsiella pneumoniae*. The molecular analysis by genetic determinants controlling adhesive, hemolytic, and toxigenic activity revealed that some bacterial isolates were able to produce toxins with potential cancerogenic activity (e.g., colibactin and cytotoxic necrotizing factor 1). Certain bacterial species isolated from malignant and normal rectal epithelium of the same patient demonstrated no difference between analyzed factors of toxigenicity.

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### **Keywords**

colibactin, colorectal cancer, cytotoxic necrotizing factor 1, *Escherichia coli*, identification, *Klebsiella pneumoniae*, PCR, sequencing