

## TYPES OF TUMOR MARKERS IN COLORECTAL CANCER

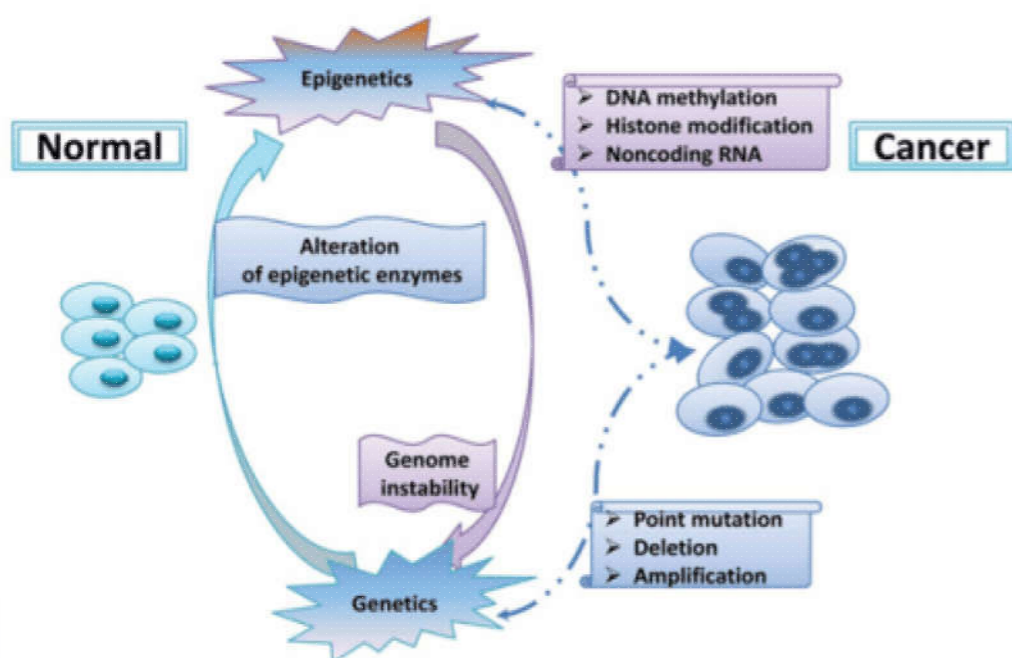
Moisei Ana-Maria, Ursu Alexandr

Scientific researcher: associated professor, Gurghiș Radu

**Introduction:** Colorectal cancer (CRC) is the type of cancer with the highest incidence rate at present. Despite the fact that CRC is histologically homogeneous, each tumor has a unique molecular profile, which is characterized by different genetic and epigenetic changes.

**Purpose:** The early detection of CRC by understanding the genetic changes that occurs in this tumor represents the main purpose nowadays. The role of biomarkers is essential for individual management and monitoring treatment results of patients with CRC, which can lead to a better prognosis and a lower mortality.

**Material and methods:** During 2016-2022, there were selected and analysed 82 articles concerning the subject of „Types of tumor markers in colorectal cancer” using the keywords: „biomarkers”, „colorectal cancer”, „screening”.

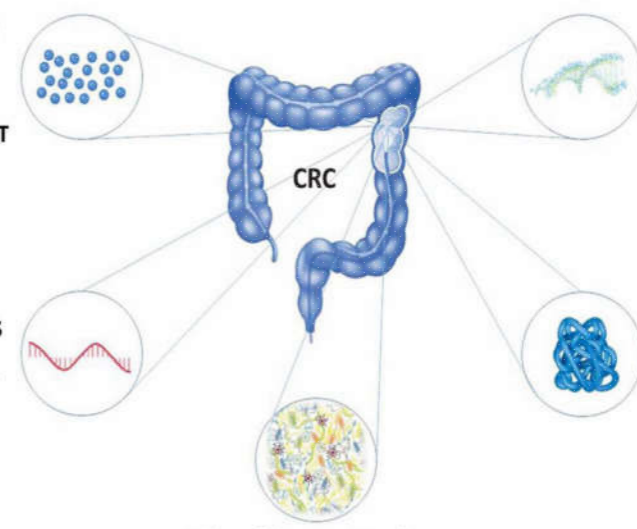


### Inflammatory Markers

MIC-1/GDF15, IL-6, M2-PK, MMP9, ITGB6, IL-8, CCL20, IL-17A, GRObeta, Cytokine/STAT

### Transcriptome Markers

circRNAs, miRNA-186-5p, miRNA-10b-5p, miRNA-21-5p, miRNA-31-5p, miRNA-29b, miRNA-194, miRNA-1290, miRNA-155, miRNA-106a, miR-99b-5p



### Microbiome Markers

Fusobacterium nucleatum  
Lachnoclostridium sp

### Genomic Markers

BM3, NDGR4, TFPI2, SFRP2, Vimentin, mSEPT9, SDC2, IKZF1/BCAT1, WIFI, ALX4, ITGA4, GATA5, SFRP2, SDC2

### Proteomic Markers

CEA, RLR, CA19-9, TP53, CYFRA21-1, NTS, Exosomal CPNE3, Haemoglobin FIT, Haemoglobin FOBT

**Results:** The analysis of the databases selected 82 articles: 25 (30.48%) – dedicated to chromosomal instability and its involvement in colorectal carcinogenesis, 17 (20.73%) – on microsatellite instability and frequency of genomic mutations, 13 (15.85%) – on molecular repair systems, 27 (32.92%) – on polymerase gene mutations. Thus, several molecular genomic biomarkers have been identified, which are currently used for the diagnosis, prognosis and establishment of CRC treatment. The informativeness of many genes that are characterized by high frequency of mutations has been demonstrated (KRAS, NRAS, BRAF, PIK3CA, APC, TP53, SMAD2, SOX9), changes in DNA methylation (MLH1), affected expression at the level of mRNA or proteins and translocations (NAV2/TCF7L1), which contributes to the early confirmation of CRC and the early initiation of treatment for these neoplasms.

**Conclusions:** This review highlights the effectiveness of biomarkers and the importance of individual approaches in the curative management of patients with this type of neoplasia, with a direct impact on morbidity and mortality. Analysing the sources, out of the totality of the tumor markers can be highlighted 2 groups approximately equal: the ones with reference to genetic changes and those determined by antigens (proteins, microbial and inflammatory markers).