The Association of the KIT Gene with Colorectal Cancer

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Colorectal cancer is the third most common type of cancer in the US. Additionally, early-onset colorectal cancer has been increasing in incidence, unlike most other types of cancer, by about 1.5% per year. A large database of patient information was used to find a correlation in regulation between specific proto-oncogenes and various types of cancer to predict regulation in colorectal cancer. To do this, p-values of the correlation between high or low expression of the gene and overall survival were analyzed. From this data, the gene KIT was predicted to be upregulated in early-onset colorectal cancer, supported by its chromosomal location, upregulation observed in gastric cancer, and upregulation observed in rectal cancer. A commercially-bought tissue array containing both normal colorectum and early and late-onset colorectal tumor were tested for KIT expression through immunofluorescence and PCR (polymerase chain reaction) processes. Using immunofluorescence, the c-KIT protein was marked with a green fluorescent dye and slides were analyzed using light microscopy. Using PCR, patient RNA samples were tested for KIT expression. A downregulation of the KIT gene in late-onset colorectal cancer was discovered. No significant upregulation of KIT in early-onset colorectal cancer was found. The regulation of c-KIT is predicted to occur between transcription and translation, as no regulation was detected through analyzation of RNA through PCR, while significant protein regulation was discovered through immunofluorescence.