This study aimed to determine prognostic significance of catalytic subunit of DNA polymerase delta (POLD1) expression in clear cell renal cell carcinoma (ccRCC) and colorectal cancer (CRC). Paired tissue sections of the tumoral and unchanged tissues were obtained from postoperative material and subjected to immunohistochemical (IHC) analysis to determine the level of POLD1 expression in cancer cells and matched unchanged epithelia. POLD1 immunoreactivity localization and score in the analyzed sections was determined by the pathologist. The study included also analysis of *POLD1* mRNA expression in 599 patients with CRC derived from The Cancer Genome Atlas (TCGA) databases. POLD1 immunoreactivity was significantly higher in ccRCC cells as compared to the proximal convoluted tubule epithelial cells. High level of POLD1 immunoexpression in ccRCC cells was correlated with longer overall survival, indicating potential usefulness of POLD1 as a marker associated with better prognosis in the patients with this malignancy. In CRC patients the average immunoexpression of POLD1 was lower in cancer cells as compared to the enterocytes of unchanged large intestine. However, the expression levels of POLD1 in CRC did not correlate with clinicopathological nor survival of the patients. In the summary, the results of our experimental studies and previously published articles on the potential role of POLD1 in human malignancies as prognostic and predictive biomarker were reviewed. In addition, the ‘cancer in a polyp’ of the large intestine decision problem was described and the review of relevant literature was included.