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PROGNOSTIC IMPACT OF PARK2 IN METASTATIC COLORECTAL CANCER

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Metastatic colorectal cancer (mCRC) is diagnosed in the 30% of the cases and has a critical prognosis with 5-year survival rate of less than 10%. First-line of treatment is based on the combination of fluoropyrimidines and oxaliplatin or irinotecan, but about 50% of the patients present innate or acquired resistance by not fully understood mechanisms. Thus, the aim of this study was to identify genes or/and signaling pathways that justify the resistance to oxaliplatin treatment in mCRC patients. We analyzed the transcriptome profile of 86 mCRC tumours through RNA sequencing. We found patients who respond to oxaliplatin-based chemotherapy were enriched in genes related to oxidative phosphorylation and ribosomal homeostasis whereas non-responders were enhanced in genes associated with glycolysis and inflammation. Furthermore, we demonstrate that *PARK2* is a potent and independent predictor of OS and PFS in mCRC patients. Overall, our results highlight the molecular differences between responders and non-responders mCRC patients to oxaliplatin-based therapy. Moreover, *PARK2*could be considered a biomarker with important prognostic impact, as well as a crucial predictor of the chemotherapy response, although further experiments will be required to unravel its mechanism of action.

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