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A pan-cancer landscape of interactions between tumors and infiltrating immune cells

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Throughout their development, tumors are challenged by the immune system and acquire features to evade its surveillance. A systematic view of these traits is still lacking. We recently performed a computational-based study in which we identified genomic and transcriptomic traits associated to the immune-phenotype of 9,403 tumors of 29 solid cancers. In highly cytotoxic immune-phenotypes we found tumors with low clonal heterogeneity enriched by alterations of genes involved in epigenetic regulation, ubiquitin mediated proteolysis, antigen-presentation and cell-cell communication, which may drive resistance. Tumors with immune-phenotypes with mid cytotoxicity present an over-activation of processes involved in invasion and remodeling of neighboring tissues that may foster the recruitment of immune-suppressive cells. Tumors with poor cytotoxic immune-phenotype tend to be of more advanced stages and present frequent alterations in cell cycle, hedgehog, beta-catenin and TGF-beta pathways, which may drive the immune depletion. These results may be exploited to better understand the outcome of immunetherapies and develop novel combinatorial targeting strategies