

Full search strategy

A PubMed search was conducted using the following search strategy:

("Microbiota" [Mesh] OR "Proton Pump Inhibitors" [Mesh]) OR ("proton pump inhibitor" OR "proton pump inhibitors" OR PPI OR PPIs OR Microbiota OR microbiome) OR (esomeprazole OR omeprazole OR pantoprazole OR lansoprazole OR dexlansoprazole OR tenatoprazole OR Rabeprazole OR Ilaprazole)) AND

((Neoplasms OR neoplasm OR carcinoma OR Cancer OR leukemia OR lymphoma OR melanoma OR malignancy OR malignancies OR tumor OR tumors) OR ("Neoplasms" [Mesh] OR "Carcinoma" [Mesh])) AND

(Immune Check point Inhibitor OR Immune Check point Inhibitors OR immune therapy OR immunotherapy OR cytotoxic T-lymphocyte associated antigen-4 OR CTLA-4 OR programmed cell death protein-1 OR programmed cell death protein OR programmed cell death-Ligand 1 OR PD-1 OR OR PD-L1 OR Ipilimumab OR tremelimumab OR nivolumab OR pembrolizumab OR atezolizumab OR durvalumab OR avelumab OR cemiplimab OR toripalimab OR sintilimab OR Camrelizumab OR

SHR-1210 OR Tislelizumab)

An EMBASE search was conducted using the following search strategy:

('microflora'/exp OR 'proton pump inhibitors'/exp OR 'proton pump inhibitor' OR 'proton pump inhibitors' OR ppi OR ppis OR microbiota OR microbiome) OR (esomeprazole OR omeprazole OR pantoprazole OR lansoprazole OR dexlansoprazole OR tenatoprazole OR rabeprazole OR ilaprazole)) AND

('neoplasm'/exp OR neoplasms OR neoplasm OR carcinoma OR cancer OR leukemia OR lymphoma OR melanoma OR malignancy OR malignancies OR tumor OR tumors) AND

('immune checkpoint inhibitor' OR immunotherapy OR 'cytotoxic t lymphocyte antigen 4' OR 'ctla 4' OR 'programmed cell death protein' OR 'pd 1' OR 'programmed cell death-ligand' OR 'pd l1' OR ipilimumab OR tremelimumab OR nivolumab OR pembrolizumab OR atezolizumab OR durvalumab OR avelumab OR cemiplimab OR toripalimab OR sintilimab OR camrelizumab OR 'shr 1210' OR tislelizumab OR 'immune therapy' OR immunotherapy).