

## **LUIS ZAPATA**

### **Detection of Immune-mediated negative selection using dN/dS**

Natural selection shapes the genome of tumours. Despite recent evidence claiming the almost absence of negative selection in tumour evolution, we have developed a method that identifies genes and regions under negative selection using dN/dS. By analysing public exome data, stratifying patients based on their HLA allele status and the amount of immune infiltrates, we demonstrate the presence of immune-mediated negative selection. We observe that selection acts by removal of cancer cells carrying neo-antigens in epitope regions. Our results suggest that this process underlies tumour type specific immuno-editing providing insights into tumour progression and metastasis. Our findings are relevant for the design of personalised immunotherapies since the level of negative selection is a hallmark of immune response in cancer.