“Molecular Mechanisms of Oncogenesis” Unit

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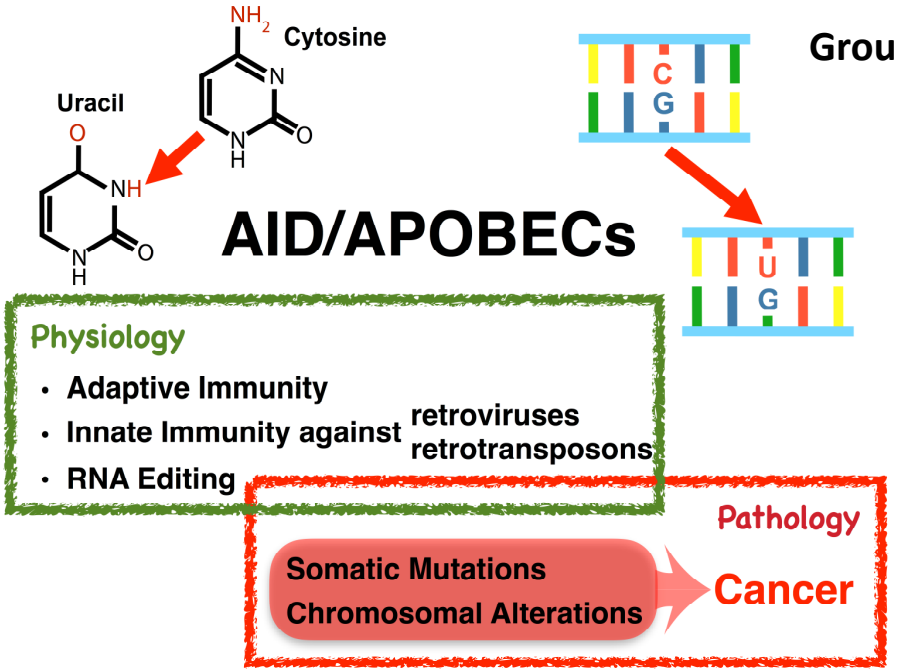

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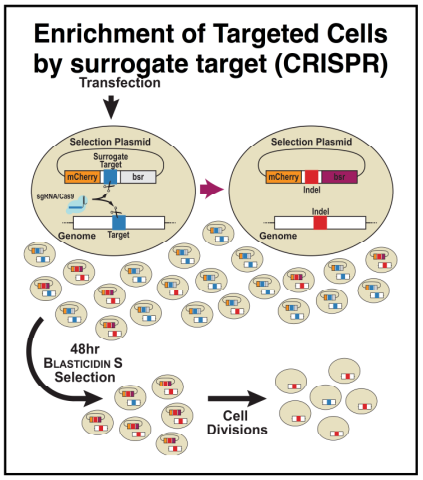
Keywords: DNA/RNA editing, Somatic Hypermutation, Class Switch Recombination, Mutagenesis, Evolution of Large Gene Families, Bioinformatics

We are interested in understanding the role of the AID/APOBECs, a family of DNA/RNA editing enzymes, in physiology and pathology. Whereas organisms have developed a complex machinery to lower the chances of genetic alterations, AID/APOBECs evolved in vertebrate to induce DNA damage through cytosine deamination. These enzymes play central roles in adaptive and innate immunity, but their ability to target the DNA represents a double-edged sword: AID, the trigger of all antigen-driven antibody diversification processes, is the responsible for the mutations and chromosomal translocations found in B-cell lymphomas and leukemias; the mutational signature of the APOBECs can be found in over 60% of all cancers.
Among them, APOBEC1, an RNA editing enzyme can also act as a mutator. We correlated its expression in oesophageal adenocarcinomas with the presence of the APOBEC mutational signature in the genomes from these cancers.
Our approaches are a mix of wet and *in silico* biology: we use bacterial and cellular models to validate observations obtained from bioinformatic analyses. We use gene targeting by CRISPR and TALEN, and we are specialised in mutation analysis.
We are tinkerers. We love to set up our own models and assays. Our latest system increases the frequency of knock-out and knock-in (40-60%) through a surrogate target that provides a transient antibiotic resistance to cells in which CRISPR/Cas9 is active.



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