Asociación Española de
ANEMIA DE FANCONI

Tercer Simposium Nacional sobre Anemia de Fanconi.
Isla de La Palma 18 y 19 de noviembre 2.005.

Polimerasa μ, un nuevo factor implicado en reparación de DNA.

Antonio Bernad.
Centro Nacional de Biotecnología. Madrid.

DNA polymerase μ (Polμ) is one of the novel members of PolX family of DNA polymerases; due to its expression in secondary lymphoid organs, its similarity with the terminal transferase protein (42% homology) and its error-proneness it was proposed to be one of the mutator factors in the process of somatic hypermutation (SHM) of immunoglobulin genes. Polμ deficient centroblasts (the hypermutating B cells) accumulates in secondary lymphoid organs upon immunization, thus revealing a partial blockade/ralentization in SHM. It was also speculated that Polμ could be one of the ancillary factors during double strand breaks repair. Analysis of Polμ deficient mice revealed a severe impairment in hematopoiesis, with a 40% reduction in bone marrow cells; this deficiency affects equally to all hematopoietic lineages. By using clonogenic and serial transplantation assays we have tracked this deficiency to the progenitor stage of development. Polμ deficient progenitors proliferate slower and are more sensitive to DSB inducing agents. These data suggest that certain forms of DSB repair in which Polμ participates could be critical for progenitor/hematopoietic stem cell maintenance and differentiation. These results also provide support to the theory that DNA repair would be critical for maintenance of stem cell potential.