

TWINCORE - Lecture

Wednesday June 3rd, 2015, 1 p.m.
TWINCORE Lecture Hall

„Development of a Prophylactic Vaccine and Therapeutic Antibodies against Hemolytic Uremic Syndrome using Protein and Antibody Engineering“



Prof. Fernando Goldbaum

The striking feature of EHEC infection is the production Shiga toxins (Stx) implicated in the development of the life-threatening hemolytic-uremic syndrome (HUS). Presently there is no licensed effective therapy available for human use. One of the challenges is to develop an effective and safe immunogen to ensure non toxicity but also a strong input to the immune system to induce long-lasting, high affinity antibodies with anti-Stx neutralizing capacity. The enzyme lumazine synthase from *Brucella* spp. (BLS) is a highly stable dimer of pentamers and a scaffold for the display of foreign antigens on its structure. Taking into account BLS advantages and the potential capacity of B subunit of Stx (StxB) to induce antibodies that prevent Stx2 toxicity, we engineered a new immunogen by inserting Stx2B at the amino termini of the BLS gene. This chimera demonstrated a strong capacity to induce long-lasting humoral immune responses. Llama single domain antibodies with high neutralizing capacity for Stx have been tested in preclinical studies in animals, showing protective effects at picomolar concentrations. Phase I clinical trials in adult healthy humans and phase II clinical trials in children suffering EHEC infections are being planned.

Who is Fernando Goldbaum?

- President of the National Agency of Science and Technology, Ministry of Science Argentina since 2013.
- Director of the Molecular Immunology and Microbiology Laboratory, Leloir Institute Buenos Aires.
- Governor of the International Center for Gen. Engineering and Biotechnology.

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