Singapore Immunology Network
A*STAR

SIgN Immunology Seminar

Prof Bharat Aggarwal

Chief, Cytokine Research Laboratory
The University of Texas
M. D. Anderson Cancer Center
Houston, TX

Host:	Dr Subhra Biswas Singapore Immunology Network, A*STAR
Date:	Monday, 28th November 2011
Time:	11am – 12pm
Venue:	SIgN Seminar Room, Immunos Building Level 4, Biopolis

TNF and Its Superfamily, 25 Years Later: A Golden Journey.

Although activity that induced tumor regression was observed and termed tumor necrosis factor (TNF) as early as the 1960s, the true identity of TNF was not clear until 1984, when Aggarwal and coworkers reported for the first time the isolation of two cytotoxic factors. One, derived from macrophages (molecular mass 17 kDa), was named TNF, and the second, derived from lymphocytes (20 kDa), was named lymphotoxin. Because the two cytotoxic factors exhibited 50% amino acid sequence homology and bound to the same receptor, they came to be called TNF-α and TNF-β. Identification of the protein sequences led to cloning of their cDNA. Based on sequence homology to TNF-α, now a total of eighteen members of the TNF superfamily have been identified, along with twenty-eight interacting receptors, and several molecules that interact with the cytoplasmic domain of these receptors. The roles of the TNF superfamily in inflammation, apoptosis, proliferation, invasion, angiogenesis, metastasis, and morphogenesis have been documented. Their roles in immunological, cardiovascular, neurological, pulmonary, and metabolic diseases are becoming apparent. TNF superfamily members are active targets for drug development, as indicated by the recent approval and expanding market of TNF blockers utilized to treat rheumatoid arthritis, psoriasis, Crohn's disease, and osteoporosis, with a total market of over US$20 billion. As we learn more about this family, more therapeutics are likely to emerge. In this review we will summarize the initial discovery of TNF-α, and the insights gained regarding the roles of this molecule and its related family members in normal physiology and disease.