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Title: Recent advances in type 2 immunity: Damage-associated host DNA and Protective immunoglobulin E

Speaker:

Dr. Thomas Marichal, D.V.M., Ph.D.
Marie Curie Fellow,
Chargé de Recherches F.R.S.- FNRS
Cellular and Molecular Immunology
University of Liege, GIGA-Research B34
Avenue de l'Hôpital 1,
4000 Liège
+32 (0) 4 / 366 95 55
t.marichal@ulg.ac.be

Abstract:

A common feature of allergic disorders, helminth infections and aluminium-adjuvanted vaccination is the type of immune response that is induced, called "type 2 immunity". The research I am undertaking aims to understand *how* type 2 immune responses are induced, and *what* physiological functions they have.

The first part will be dedicated to recent findings indicating that self DNA released from damaged cells can be sensed by the immune system and can act as a potent inducer of type 2 immunity during aluminium-adjuvanted vaccination or rhinovirus-induced asthma exacerbations.

During the second part, I will present you experimental evidence showing that immunoglobulin E antibodies, which are mainly known in the context of deleterious allergic reactions, also enhance host protection against venoms. This novel, beneficial function of IgE supports the "toxin hypothesis", which suggests that allergic reactions represent immunological defense mechanisms against noxious substances.

Relevant publications:

1. Pulendran B, Artis D (2012) *New paradigms in type 2 immunity*. Science 337: 431-435.
2. **Marichal T**, Ohata K, Bedoret D, Mesnil C, Sabatel C, Kobayama K, Lekeux P, Cevaiyr C, Akira S, Ishii KJ, Bureau F, Desmet CJ (2011). *DNA released from dying host cells mediates aluminium adjuvant activity*. Nature Medicine, 17, 996-1002.
3. Profet M (1991) *The function of allergy: immunological defense against toxins*. Q Rev Biol 66: 23-62.
4. Palm NW, Rosenstein RK, Medzhitov R (2012) *Allergic host defences*. Nature 484: 465-472.
5. **Marichal T**, Starkl P, Reber LL, Kalesnikoff J, Oettgen HC, Tsai M, Metz M, Galli SJ (2013). *A Beneficial Role for IgE in Host Defense Against Honeybee Venom*. Immunity 39 (5), 1-13.
Comments in: Bordon Y (2013) *Nat Rev Immunol*, 13 (12), 843.
Gutierrez DA & Rodewald HR (2013), *Immunity*, 39 (5), 803-5.