

The *Drosophila* Innate Immune system, a flying history



Jean-Marc Reichhart defended a PhD in Embryology at the University Louis Pasteur of Strasbourg in 1977 and started a small group working on the immune system of Insects in 1985. In 1991, he was appointed Professor in Developmental Biology at the University of Strasbourg and in 1996, his interest in the mechanisms of early development led to the discovery of the implication of the Toll pathway (already known for its role in the setting up of the dorso-ventral axis in the *Drosophila* embryo) in the antifungal response of the adult fly. This work was the breakthrough that led to the discovery of the human homologues of Toll, the Toll-Like-Receptors (TLRs). In 1998-1999, during a sabbatical leave in the Department of Genetics of Cambridge (UK), he discovered that a mutation called “necrotic”, in a serine protease inhibitory protein (a serpin) leads to constitutive activation of the Toll pathway. This work indicated that the Toll receptor in the fly is engaged, as in the early embryo, by an endogenous ligand and led to the discovery of Danger signals in flies.

He was head of the CNRS research Unit UPR 9022 from 2006 to 2016 and since 2000 his group studies the Innate Immune System in an evolutionary perspective, using the fruit fly as a model system and focusing on host-pathogen interactions. He was nominated at the “Institut Universitaire de France” in 2008 and elected EMBO member in 2009. Currently, he is Professor Emeritus from the University of Strasbourg.

For JM Reichhart, « *basic research, using model systems such as the fruit fly, has led to tremendous advances in many fields. It has completely changed our view of the human immune system and has opened new perspectives in the field of modern medicine* ».