



Yuchen Lin

Phone: +49 3641 532-1529 Email: yuchen.lin@leibniz-hki.de

Role of human regulatory proteins of the complement system in health and disease

Complement is the central host defense system that clears invading microbes and balances homeostasis. Complement regulators control the spontaneously activated complement cascade and any disturbances in this delicate balance can result in damage to tissues and in autoimmune disease.

Pathogenic microbes such as *Candida albicans* have to breach this efficient immune defense layer in order to propagate within the host and to establish an Infection. *C. albicans* Is a medically important fungus that can cause a wide range of diseases ranging from superficial infections to disseminated disease. In order to define new targets for combating fungal disease, there is a need to understand the immune evasion strategies of *C. albicans* and how certain complement proteins respond to microbial invaders in detail. Increased knowledge about the function of complement proteins will help to understand the host defense against microbes and fungal pathogenesis.

Preliminary data about a protein named age-related maculopathy susceptibility protein 2 (ARMS2) show that ARMS2 is involved in complement activation and thus may play a role in immune defence reactions to *C. albicans*. A mutation in ARMS2 is highly correlated with the neurological disease agerelated macular degeneration (AMD). AMD is a leading cause of blindness in aged individuals in developed nations. Defining the function of ARMS2 in the immune reactions will thus shed light on the underlying

pathomechanism of AMD and likely the immune response to pathogenic microbes.

There is an increasing evidence that AMD is a disease of complement dysregulation, and therefore, the complement system has a key role in the pathogenesis of the disease. ARMS2 is found to be associated with AMD, so the aim of my work is to identify the biological function of this protein.

Publications

Micklisch S, Lin Y, Jacob S, Karlstetter M, Dannhausen K, Dasari P, von der Heide M, Dahse HM, Schmölz L, Grassmann F, Alene M, Fauser S, Neumann H, Lorkowski S, Pauly D, Weber BH, Joussen AM, Langmann T, Zipfel PF, Skerka C (2017) Age-related macular degeneration associated polymorphism rs10490924 in ARMS2 results in deficiency of a complement activator. *J Neuroinflammation* 14(1), 4. [Details](#) [PubMed](#)

Supervisor

[Christine Skerka](#)

Co-Supervisors

[Ilse Jacobsen](#)

Start of PhD

March 1, 2013

Doctoral Disputation

February 12, 2018