

Challenging Master's internship: "Applying nanobodies for the treatment of C3 glomerulopathy"

We are looking for an enthusiastic and devoted student who likes to dive into the molecular mechanisms underlying the pathophysiology of complement-mediated kidney diseases to test novel treatment strategies.

Are you a bioscience student with perseverance, enthusiasm, a curious attitude, scientific insight in pathological mechanisms and with basic but accurate laboratory skills? Please continue reading!

Practical details of the internship:

- Master student from Medical Biology/Molecular Life Sciences/Molecular Mechanisms of Disease/Biomedical Sciences
- Full time; for at least 6 months
- Combination with literature thesis is possible
- Dept. of Pediatric Nephrology/Translational Metabolic Laboratory (translation between lab and clinic)

Background:

As a part of innate immunity, the complement system is an important defense mechanism against invading pathogens and dangerous host cells. Normally, this system is strictly regulated to prevent damage to healthy tissues. When the complement pathways, especially the alternative pathway, become overactivated, this can lead to severe kidney diseases, such as C3 glomerulopathy (C3G). Such hyperactivity of the complement alternative pathway can be due to mutations in the genetic material or due to autoantibodies against complement components. In the majority of C3G patients C3 nephritic factors are found, which are autoantibodies stabilizing the key enzyme of complement: the C3 convertase. Targeted therapies for C3G are currently missing. We therefore aim to investigate if complement-directed nanobodies can be used to normalize the complement convertase overactivity in patients with C3G.

Aim:

Investigate if nanobodies are effective for the normalization of convertase activity in patients with C3 glomerulopathy.

Methods:

At the lab, there is a sophisticated method available to measure complement convertase activity and stability in patient serum. This assay allows the detection of factors causing convertase overactivity such as C3 nephritic factors. This assay will also be mainly used for the investigation of the effect of different nanobodies on the convertase activity. Besides, multiple ELISA assays are available to measure complement proteins and complement activation markers in patient material.

If you are interested, please send me a short motivation and CV and come by to visit us!

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