Masters project

Structural basis of immune recognition by IL26

Are you interested in understanding the function of proteins by NMR spectroscopy?

NMR spectroscopy is a powerful method that can be use to determine both structural and dynamics aspects of biomolecules in solution at atomic resolution.

We are interested in understanding the mechanism of innate immune recognition from a structural perspective by investigating interleukin 26 (IL26). IL26 is an anti-microbial that kills bacteria by pore formation. It interacts with bacterial DNA and forms a complex that initiates subsequent immune responses[1].

We are seeking highly motivated masters students who are interested in structural biology and biophysics to study the IL26-bacteria DNA interaction, IL26-E.coli cell extract interaction, and IL26-lipid bilayer interaction. Further we will look for the minimal unit of IL26 that can initiate immune response in collaboration with immunologist working on host-immune responses.

Successful students will at the end of this project be able to understand the fundamental basis of protein NMR spectroscopy, assign and calculate protein structures, understand/determine the origin of protein dynamics and its implications for protein function. With these experiments we will be able to determine the structural basis on how IL26 neutralized pathogens.

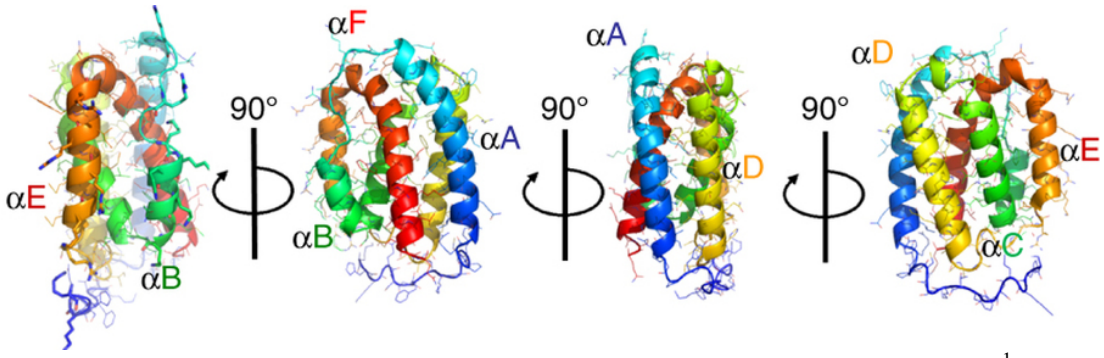

Figure 1). Model of Il26 obtained by homology modeling using IL22 and IL10[1].

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(1) Meller, S.; Domizio, J. D.; Voo, K. S.; Friedrich, H. C.; Chamilos, G.; Ganguly, D.; Conrad, C.; Gregorio, J.; Roy, D. L.; Roger, T.; Ladbury, J. E.; Homey, B.; Watowich, S.; Modlin, R. L.; Kontoyiannis, D. P.; Liu, Y.-J.; Arold, S. T.; Gilliet, M. *Nature immunology* **2015**, *16*, 970.