



- Master Thesis for 6 months -

## **Analytical Biophysical Tools To Gain Insights into Interactions between Covid-19 Spike Protein and Blood Cells**

The novel Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2 or Covid-19), originated in December 2019 is affecting >200 countries, remaining the leading causes of death.

A coronavirus contains spike proteins that recognize angiotensin-converting enzyme 2 (ACE2) on lung cells. A study involving a predominantly minority patient population showed that hospitalized patients with COVID-19 are at risk for developing thrombotic complications, such as VTE, stroke, and limb ischemia.<sup>1</sup> However, the role of Covid-19 virus in thrombosis complication is unknown.

**Aims:** This project focuses on gaining insights into interactions between Covid-19 spike protein and blood cells such as platelets and endothelial cells using analytical biophysical tools.

### **Work packages:**

- Testing if target plasma proteins enhance binding of Covid-19-spike to blood cells.
- Identification of the role of Covid-19-spike in inducing platelet activation in the presence of several involving plasma proteins.

Methods: Atomic force microscopy (AFM), Quartz Crystal Microbalance (QCM), *Surface plasmon resonance* (SPR) spectroscopy, Confocal laser scanning microscopy (CLSM), and Flow cytometry.

**Profile of qualification and further requirements:** Students of biophysics, chemistry, biology, biochemistry, or biotechnology are welcome to apply. Mater students will be financially supported by iba. **The deadline for the application is 31.03.2021.**

### **Contacts**

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### **References**

Hanif, A.; Khan, S.; Mantri, N.; Hanif, S.; Saleh, M.; Alla, Y.; Chinta, S.; Shrestha, N.; Ji, W.; Attwood, K.; Adrish, M.; Jain, K. R., Thrombotic complications and anticoagulation in COVID-19 pneumonia: a New York City hospital experience. *Ann Hematol* 2020, 99 (10), 2323-2328.