

## Master thesis in Mechanical Engineering: “Tool-changing Laparoscope for Reducing the Surgery Duration”

### **Project idea:**

Time is an important factor for patient health in surgery. The required duration of anaesthesia administration represents a burden for the patient's health and is directly correlated to the patient's recovery time. In this context, development of surgical tools that reduce required surgery time would be more than desirable. One approach for reducing surgery time is to reduce the amount of tool changes.

Therefore, this project aims at integrating several commonly used surgical tools in one tool-changing laparoscope. In this way, the laparoscopic tool should remain in place while only the tool inside the laparoscope is changed. This reduces the number of laparoscope insertions and thereby reduces surgery time. At the same time, keeping the laparoscope itself in place spares the surrounding tissue from additional unnecessary damage.



### **Task description:**

The candidate's task will be to develop first possible mechanisms for tool change and insertion, and further on choose the most promising design for detailed design in CAD-software (Solid Works). Then, the first prototype for a tool-changing laparoscope is built and tested.

### **We offer:**

Hands-on experience in surgical device design together with surgeons at the University Hospital Basel.

### **Start of project:**

Summer semester 2019

### **Student background:**

Engineering, Mechanics

Required knowledge: CAD-design

### **Further information:**

Prof. Dr. Georg Rauter

University of Basel, Department of Biomedical Engineering

Gewerbestr. 14, Room 12.03.009, CH-4123 Allschwil, Switzerland

+41 61 207 54 70

[georg.rauter@unibas.ch](mailto:georg.rauter@unibas.ch)

[biromed.dbe.unibas.ch](http://biromed.dbe.unibas.ch)