

## **Kolloquium „Statistische Methoden in der empirischen Forschung“**

Wann: 14. Februar 2023, 17:00 – 18:30 Uhr

Wo: FU Berlin | FB Wirtschaftswissenschaft | **Hörsaal 108a** | Garystr. 21, 14195  
Berlin | U3, Freie Universität (Thielplatz) | S1, Lichterfelde West

Online-Übertragung: der Link wird auf der [Website](#) zur Verfügung gestellt

### **Hannes Buchner & Laura Schlieker (Staburo GmbH München)**

#### **Applied biomarker analyses in drug development. Lasso, Random Forest, longitudinal biomarker analyses**

In most clinical studies, especially in oncology, a mixture of different biomarkers, such as traditional clinical parameters, cytokines or deregulated pathways are collected for the evaluation of multiple objectives. These biomarker are usually derived by immunohistochemistry, NGS or flow-cytometry based techniques. The objectives assessing those biomarker range from, e.g., finding predictive or prognostic biomarkers to evaluating the pharmacodynamic potential of the investigated parameters. In our talk we show how we apply random forests, (IPF-) Lasso, mixed models and sliding regressions to help answering the most pressing of these objectives.

We present our current best practices in analysing high dimensional biomarker data in the framework of clinical studies. In particular, we illustrate how we apply training and test data principles, subsampling methods, as well as permutation concepts (knockoff variables for variable importance) to investigate the predictive and prognostic potential of biomarkers.

Furthermore, we show applications of mixed models on longitudinal biomarker data for the analyses of pharmacodynamic biomarkers, as those parameters can be very helpful for proof of concept studies and provide a better understanding of the mode of action of a drug. Moreover, we use the concept of sliding regressions to relate longitudinal biomarkers with each other or with efficacy time-to-event endpoints.