MEDICAL UNIVERSITY OF VIENNA

Wiener Biometrische Sektion
der Internationalen Biometrischen Gesellschaft
Region Österreich – Schweiz

# Please join the Biometric Colloquium


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## BASKET TRIAL DESIGNS BASED ON POWER PRIORS

## October 5th, 2022 at 9:00 am

Seminarraum 88.03.513
Medizinischen Universität Wien, Spitalgasse 23, 1090 Wien

Or alternatively via webex:
https://meduniwien.webex.com/meduniwien/j.php?MTID=ma0593031baf9a297e40728f27e5f47a2

**HOST:** Elias Laurin Meyer

### ABSTRACT


In a basket trial a new treatment is tested in several subgroups, the so-called baskets. They are currently mostly used in oncology, where the baskets usually comprise patients with different locations of the primary tumor, but a common biomarker. Most basket trials are uncontrolled phase II studies, where tumor response is the primary endpoint. Naïve approaches for the analysis of such trials are to either analyze each basket individually, or to pool the data of all baskets before the analysis is conducted. Many of the recently proposed designs utilize Bayesian tools to partly share information between baskets depending on the similarity.
One such tool that can be used to design basket trials is the power prior, which was proposed to borrow information from historical data. We apply an empirical Bayes variation of the power prior approach to basket trials, which results in closed-form Beta posterior distributions for the response rates, where the shape parameters are found by calculating weighted sums of the number of responders and non-responders in the different baskets. We discuss different approaches to calculate the weights.
Power prior designs allow very flexible borrowing between baskets and are computationally cheap compared to other Bayesian basket trial designs. For certain weight-functions analytical computation of operating characteristics such as the type 1 error rate, power and expected sample size is feasible for a moderate number of baskets. We compare the performance of power prior designs to other competitive basket trial designs in terms of the expected number of correct decisions under different scenarios.