

Forschungspraxis

# Group Testing and Information Theory

The concept of group testing (also called pooled testing or pooling) dates back to mathematical ideas for improving the efficiency of syphilis tests developed by Dorfman in 1943 [Dor43]. The idea of Dorfman's method is to combine portions of  $k$  different individual blood samples into one sample in a first stage. If it tested negative then that entire group could be dismissed without further testing. Then, separately retesting the samples of individuals from positive pools in a second stage. For low to moderate infection rates, this strategy has a high throughput since most of the group, when chosen wisely, will be declared negative. Naturally, the efficiency of pooling strategies for the current pandemic has been shown to depend on the prevalence of SARS-CoV-2, patient-pool size and test sensitivity. While the sensitivity needs to be understood on an experimental level, the prevalence needs to be estimated from available test results and the pool size should be optimized with Information Theory models before widespread implementation.

## Prerequisites

Information Theory

## Advisors

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