## 2018 Talent Development Competition Awardees

**Title:** The impact of nicotine metabolite ratio and nicotine expectancy on risk of relapse following nicotine replacement therapy use: A laboratory study

**Hera Schlagintweit**

**Supervisor:** Christian Hendershot

**Abstract:** While nicotine replacement therapies (NRTs), such as the nicotine inhaler, double the odds of successfully quitting smoking compared to unaided cessation attempts, the majority of smokers relapse into smoking even if they use NRTs. The effectiveness of NRTs may be impacted by individual genetic and psychological differences. Identifying individual differences that influence responses to NRTs may contribute to the development of personalized cessation strategies, which could help smokers quit more effectively. This could reduce the harms (eg. stroke, heart disease, cancer, death) associated with long-term smoking. The goal of this research is to examine how individual genetic and psychological differences impact laboratory-based measures of smoking relapse (cigarette craving, withdrawal symptoms, and smoking behaviour) following nicotine inhaler use. Genetic differences will be assessed with the nicotine metabolite ratio (NMR), which is an index of individual genetic variations that determine speed of nicotine metabolism. Psychological differences will be measured by manipulating participants' expectations about the nicotine content of the nicotine inhalers used in the study. NMR is arguably the most promising biomarker in the development of personalized smoking cessation strategies, and varying expectations about the nicotine content of NRTs have been demonstrated to impact smoking relapse, and the likelihood of successfully quitting smoking when using NRT. Despite this, no research to date has examined how individual differences in NMR and nicotine content expectations interact to influence responses to NRTs. Results of this research could help inform the development of new smoking cessation strategies that can be tailored based on individual differences (eg. genetics, expectations) in order to maximize the likelihood that individuals will be able to successfully quit smoking.