



We are Austria's largest Research and Technology Organisation and an international player in the research areas that we cover. This makes us a leading development partner for industry and a top employer in the scientific community. Applications are invited for a:

PhD Thesis “Development of a toothbrush-compatible point of care device for nutrition, stress and immune-status monitoring in saliva”

Brushing your teeth is a daily routine mainly done in the morning and evening. Coupling this routine to a simple measurement of different health parameters in saliva would enable a continuous monitoring of nutritional-, stress- and immune-status. As a consequence, this will give a personalized profile which detects imbalances in nutrition and style of living at an early stage with the great potential to identify the need to adapt diet and lifestyle. Point of care (POC) testing technology is capable to implement such an idea by the compact and rapid measurement of health parameters enabling decentralized analysis directly at home. Within a team of senior scientists, scientists and technicians this PhD project has the aim to develop such a device, which can be used in combination with a toothbrush. Three groups of lifestyle parameters will be addressed: 1) Nutrition (lipids and vitamins) 2) Stress (hormones) and 3) Immune status (antibodies and inflammation markers). Once the assays are established for saliva and a serum saliva correlation could be shown, some of the tests will be transferred to an electrochemical lateral flow device. After the proof of principle this system will be coupled with a compact saliva sample preparation concept and integrated into a toothbrush-compatible module. This module will be evaluated with saliva samples to show the principle functionality of this toothbrush-based lifestyle monitoring device. The successful implementation of the system will bring continuous information about our current lifestyle (quantified self) and has the great potential to guide healthy living, healthy working and even prevent diseases by early and targeted intervention.

Description

- Assay development (metabolites, hormones and proteins): ELISA, enzymatic assays
- Evaluation of assays with clinical samples and transfer to electrochemical LFD
- Evaluation of sample prep, assay and overall system with saliva samples
- Scientific reporting, conferences, publications in peer reviewed journals

Candidate profile

- Study of molecular biology, biochemistry, biotechnology, biomedical engineering or any related field
- Knowledge in sample prep, assay design, assay development and validation beneficial
- Motivation for (electrochemical) lateral flow devices and saliva-based point of care testing, lifestyle applications and novel quantified-self devices
- Creativity, innovation and strength in unconventional ideas

Duration: 3,5 years

Your compensation:

AT least € 2.045,10 gross for 30 hours per month standard personnel salaries for FWF project proposals

Please submit your application documents, including certificates, to

Maria Leonhard-Maurer, MSc, Head of Human Resources
 maria.leonhard-maurer@ait.ac.at, +43 (0) 50550-2032
 www.ait.ac.at