

# Technology Offer: K@Home

POTASSIUM HOME MONITORING SYSTEM for Patients with Chronic Heart Failure or Chronic Renal Insufficiency

## CONTACT

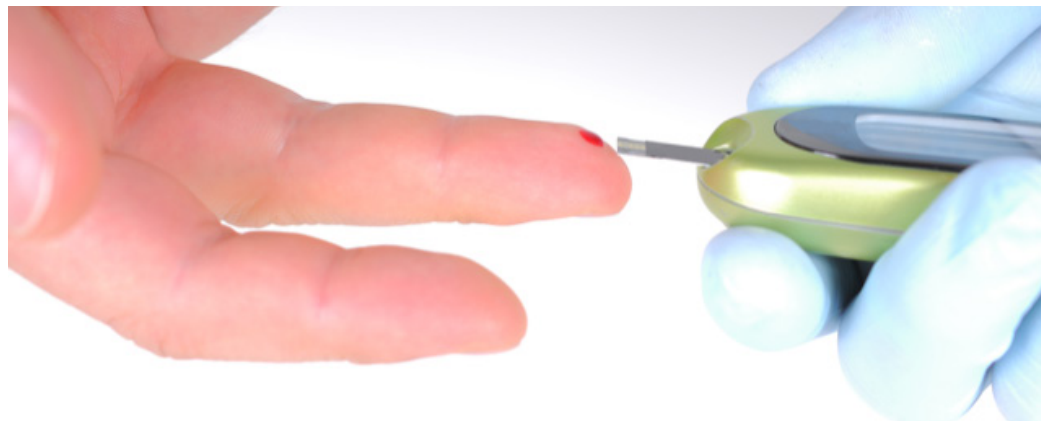
JOANNEUM RESEARCH  
Forschungsgesellschaft mbH

**HEALTH**  
Institute for Biomedicine  
and Health Sciences

**Dr Martin Hajnsek**

Neue Stiftingtalstrasse 2  
8010 Graz, Austria

Phone +43 316 876-41 23  
martin.hajnsek@joanneum.at  
www.joanneum.at/en/health



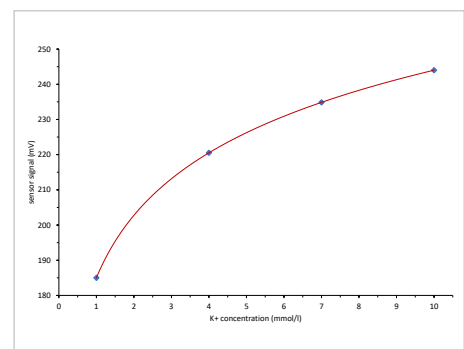
## Background

Patients with **chronic heart failure or chronic renal insufficiency** need regular blood potassium tests that require a visit at a doctor's office or at a hospital ambulance. Owing to the large time intervals between those visits, changes in the patients' electrolyte balance and cardiac decompensations are often not diagnosed in time which results in emergency admissions to the hospital and prolonged intensive treatment periods.

**We developed a potassium sensor in a test strip design for daily blood potassium home monitoring with the aim to reduce or even prevent those emergency admissions to the hospital.**

## Concept

We will offer patients with cardiac insufficiency or renal insufficiency the opportunity to monitor their blood potassium levels like diabetes patients monitor their blood glucose levels by test strip measurements from a drop of capillary blood derived from a finger prick. The **daily blood potassium home monitoring** enables a safe and self-reliant adaptation of the diuretics medication by the patients themselves and additionally allows determination of optimal time intervals for hemodialysis for patients with renal failure. In addition, the data can be made available to the doctor and hospital in an IHS (integrated healthcare system) which could **increase quality of treatments** by intensive evaluation of the data, which can reduce emergency admissions to the hospital. **This will significantly reduce health care costs and visits at a doctor's office or at a hospital ambulance leading to a more independent living of the patient.**



## Advantages

- First patient selftest for blood potassium
- Potassium value from a drop of capillary blood
- Patient safety by integrated hemolysis detection
- Possibility of smartphone based measurement
- Low sample volume
- Fast measuring time

## Stage of development

The prototype measurement system is based on specially developed single-use potassium test strips using a potentiometric potassium sensor including a haemolysis detection system for safe use by the patients themselves. Only a dedicated measurement device is needed for the test strip readout, but an additional innovative electronic microchip will also allow direct test strip readout by NFC wireless communication with a smartphone. Technology Readiness Level is 5.

## Market Potential

In the EU and the US, approximately 190 million people suffering from different diseases could benefit from a potassium home monitoring system due to reduced emergency situations and hospital stays and thus better quality of life. If only 1% of those patients uses the potassium monitoring system and performs a daily blood potassium test, the market volume is approximately 690 million test strip sensors per year.

## IP Situation

Patent pending

## Publications



Kollegger C. et al., Elektrotech. Inftech. (2018)

## Business Proposal

We are looking for an industrial partner who brings the developed technology to the European and/or the US market. The preferred option of cooperation is a license agreement. We will support technology transfer and further development in service for fee projects and/or joint product development in funded projects.