

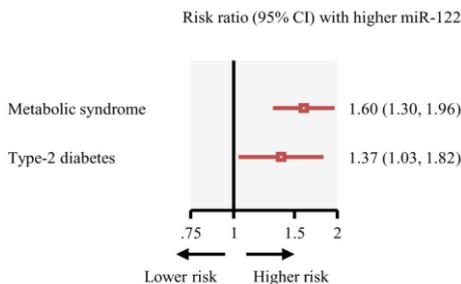
Circulating miR-122 as a biomarker to predict risk of metabolic diseases

Reference Number TO 42-00007

Challenge

The number of people diagnosed with type 2 diabetes (T2D) and metabolic syndrome represents a large percentage of the general population and is estimated to increase rapidly. For example, in 2015, approx. 34% of US adults were ill with prediabetes. However, 90% of this group remain undiagnosed due to the lack of early symptoms which first manifest only years later. Once T2D is diagnosed, irreversible complications may already have developed. Moreover, it is estimated that 20 – 25% of the world's adult population suffer from metabolic syndrome. Here, too, current diagnosis is cumbersome. Accordingly, there is a need for a simple and sensitive test for identifying patients at risk of diabetes and metabolic syndrome before glucose levels rise and irreversible damage occurs. Early screening would allow for targeted intervention to prevent disease progression and future complications.

Development of new-onset disease over 15 years



MicroRNA-122 association with disease risk (Willet et al. 2017)

Technology

Use of miR-122 as a novel prognostic biomarker enables the early identification of T2D and metabolic syndrome. Notably, miR-122 association was independent of obesity status, which is a commonly used determinant of cardiometabolic risk. Analysis of miR-122 can also be used to monitor the success of treatments for T2D and/or metabolic syndrome.

Advantages:

- Simple, blood-based screening for metabolic diseases and monitoring of therapy efficacy
- Allows for early intervention to prevent onset of disease and long lasting damage

Commercial Opportunity

The technology is available for in-licensing or collaboration for further development.

Developmental Status

Circulating miR-122 was identified in a large five-year, population-based study as a novel biomarker for the development of new-onset metabolic syndrome and T2D. In a study of over 14,000 patients, miR-122 levels were also markedly reduced in patients administered with a cholesterol lowering medication compared to those only receiving a placebo. Data available in the publication listed below (Willeit et al. 2017).

Numerous independent studies have demonstrated an association of miR-122 with a metabolic phenotype, including positive correlation with obesity, insulin resistance and non-alcoholic fatty-liver disease.

Patent Situation

Patent application PCT/EP2016/076631, nationalized in US, EP, and JP.

Further Reading

Willeit P et al. (2016) Liver microRNAs: potential mediators and biomarkers for metabolic and cardiovascular disease? *Eur Heart J.* 14;37(43):3260-3266.

Willeit P et al. (2017) Circulating MicroRNA-122 Is Associated With the Risk of New-Onset Metabolic Syndrome and Type 2 Diabetes. *Diabetes.* 66(2):347-357.