# Project proposal

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| *Project title* | Investigation of the potential for early diagnosis of type 2 diabetes utilising a glucosefructose tolerance test for determining rates of denovo lipogenesis. |
| *First Supervisor* | Dr Liz Opara |
| *Second Supervisor* | Dr Michael Stolinski |
| *School* | Life Sciences |
| *Other member of supervisory team (no more than three KU supervisors in total)* | Dr Hilda Mulrooney, Dr Pedro Barra |
| *Specific requirements beyond 2:1 degree* | |

Project summary

**(max 4,000 characters)**


MSc by Research

Obesity is prevalent in our society and is known to predispose individuals to insulin resistance and Type 2 Diabetes. Parallel to the development of insulin resistance is a strong association with fat accumulation in the liver. A distinguishing feature of a fatty liver is a higher conversion of sugars into fat and an increased rate of *de novo* lipogenesis (DNL). This is thought to be a key factor in the accumulation of excess liver fat and the dysregulation of liver metabolism.

Dietary fructose, a major component of processed foods, including soft drinks, is a potent stimulator of DNL. This project will evaluate a novel glucose-fructose tolerance test to measure rates of DNL. The project's aims are to determine the validity of this simple test as a means for measuring metabolic health in relation to markers of insulin sensitivity, hepatic dysfunction and plasma lipid profiles.

The project will build upon preliminary work showing that changes in DNL can be measured using this protocol. Measures of DNL will be compared to those derived by the more expensive and time consuming, gold standard technique using non-radioactive stable isotopes. Techniques trained will include; lipid purification, ultracentrifugation, GC-MS and the handling of blood samples.