

## At the heart of the matter

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## Propositions

1. Alterations in cardiac metabolism in prediabetes and pericardial fat volume are closely linked to diastolic function. (*Chapter 2 and Chapter 4, this thesis*)
2. Pre-clinical diastolic dysfunction in patients with diabetes mellitus is independently associated with subsequent heart failure and mortality. (*Adapted from From, JACC 2010*)
3. The *in vivo* cardiac energy status (PCr/ATP) does not directly reflect *ex vivo* mitochondrial respiratory capacity. (*Chapter 3, this thesis*)
4. Volunteers with prediabetes have a lower myocardial energy status compared to healthy overweight and obese volunteers, while their cardiac function is normal. (*Chapter 5, this thesis*)
5. Stimulating fatty acid oxidation decreases insulin-stimulated glucose uptake in the liver and the heart. (*Chapter 6, this thesis*)
6. The risk of cardiovascular disease increases continuously with rising fasting plasma glucose levels, even before reaching glucose levels sufficient for a diabetes diagnosis. (*WHO, Global report on diabetes, 2016*)
7. To tackle the diabetes problem, we should not accept a prediabetic state but should try to convert prediabetes to a normal glucose state. (*Adapted from Tuso, Perm J. 2014*)
8. Cardiac energy status, measured by  $^{31}\text{P}$ -MRS, can be used to estimate increased cardiovascular disease risk in patients with prediabetes. (*Impact paragraph, this thesis*)
9. Interdisciplinary collaborations are important in the interests of integrating knowledge from diverse points of the scientific compass. (*Richard Woolley*)
10. It is an integral part of good doctoring to ask not only, ‘What is the diagnosis, and what is the treatment?’ but also, ‘Why did this happen, and could it have been prevented?’ (*Geoffrey Rose*)
11. Nobody has ever measured, not even poets, how much the heart can hold. (*Zelda Fitzgerald*)