

TCS/17/28 – Development and validation of a screening test to predict the likelihood of fertilisation failure caused by sperm ion channel dysfunction (ICD)

5-7% of In Vitro Fertilisation (IVF) treatment using apparently normal sperm is affected by no or low fertilisation. This causes significant patient distress and considerable financial loss. Up to 30% of these cases may be caused by sperm with unknown molecular defects. By assessing sperm used in IVF, and related treatment outcomes, we have previously shown that up to 10% of total failed fertilisations are caused by defective pores in the sperm cell membrane, or 'ion channel dysfunction' (ICD). This suggests that a routine standardised screening test for (ICD) could determine clinical decisions and reduce IVF treatment failure. The purpose of this study is to i) develop a screening test for sperm ICD, ii) prove it has predictive value for poor/failed IVF outcomes in a large patient group iii) work with (inter) national partner clinics to assess the feasibility of using the screen in clinical practice and iv) study the characteristics of sperm with ICD and use that knowledge to discover new drugs that could rescue defective sperm function. These novel tests offer the prospect of enhancing clinical decision making in order to reduce the number of failed assisted conception cycles.