

P022 Micro-array analysis of MIN6 β -cell gene expression
D.S. Muller, M.J. Carvell, P.M. Jones and S.J. Persaud
 *β -cell Development & Function Group, King's College
London, London SE1 1UL, UK*

Insulin secretion is improved when MIN6 insulin-secreting β -cells are configured in a pseudo-islet (PI) structure, as compared with a monolayer (ML) organization. Interestingly, PI also show reduced proliferation which suggests that entrance of MIN6 cells into a quiescent phase may be responsible for this improved glucose responsiveness. Therefore, we postulated that genes showing altered expression following MIN6 cell conformation as PI could represent potential targets for enhancing β -cell expansion or improving their function. This hypothesis was addressed by gene expression array analysis, and our results showed modified expression of 4,164 genes in PI, with 336 and 445 of them being respectively down- and up-regulated by a factor of 2 or more. *Trp53inp1* and *gas5*, two genes involved in cell cycle regulation, showed two of the highest levels of up-regulation in PI and this corroborated our proliferation data demonstrating a decreased proliferative activity in PI. Our results also indicate that several important functional genes such as *Pax4* and *p8*, which have been proposed as potential molecular targets for β -cell mass expansion and/or maintenance regulation, are highly up-regulated in PI. In conclusion, using our data, we now propose a list of genes that could play key roles in β -cell function and β -cell mass regulation.