



## SU2P Staff Exchange

### Case Study:- Frank Gunn-Moore Maciej Antkowiak

#### Title: Optical Transfection applied to Stem Cell Biology

#### Introduction

The aim of the short staff exchange was to investigate the opportunities created by the application of laser mediated optical transfection developed at St Andrews to stem cell biology at Stanford. It was designed to combine the strengths of the optical gene and drug delivery technique developed at St Andrews with the current state-of-the-art research in stem cell biology conducted at Stanford.

#### Project

The main part of the planned work was performed during a 2 month visit in April-June 2012. During this stay Dr. Antkowiak was kindly hosted by the group of Prof. Olav Solgaard at the Ginzton Lab. Dr. Antkowiak also actively participated in the working meetings of the Stem Cell Instrumentation Group lead by Prof. Tom Baer (SPRC) and Prof. Renee Reijo Pera (Stem Cell Institute).

As a result of this collaboration the collaborators have identified an area in which optical transfection is most likely to result in new opportunities and discoveries. Cell selective gene delivery within a large population of cells opens new opportunities in the fundamental research on the process of stem cell differentiation and iPSC reprogramming and is expected to bring new insight into the processes crucial to stem cell based therapies and tissue engineering.

#### Benefit

The momentum created by both visits was confirmed by the recent announcement of a new Scottish-Californian stem cell collaboration by the First Minister of Scotland Alex Salmond. The optical transfection developed at St Andrews is one of the two major themes in this new initiative that will build to a large extent on the outcome of this SU2P Staff Exchange.

