Professor S. Kurata, Tohoku University and Professor S. Davies, University of Glasgow.

Funding for a collaborative project on novel regulation of innate immunity was provided by the JSPS. Immune function in animals and plants counters detrimental effects of infection. An ancient form of immunity exists in insects (innate immunity), which forms the template for existing human and animal immune systems. Studies conducted in the tiny fruit fly, *Drosophila* (below), have led the way in understanding innate immune function - the 2011 Nobel Prize in Physiology/Medicine was awarded for this work - and have provided key knowledge for human innate immunity, due to the close conservation of these pathways between the fly and ourselves. The project utilised the expertise of Professor Shoichiro Kurata (Graduate School of Pharmaceutical Sciences, Tohoku University, Sendai) in innate immunity, and that of Professor Shireen Davies (College of Medical, Veterinary and Life Sciences, University of Glasgow, Scotland) in cyclic nucleotides and signal transduction, to specifically investigate novel regulation of innate immunity by a receptor guanylate cyclase, which generates cyclic GMP. The collaboration began when Professor Kurata observed the impact of a receptor guanylate cyclase on the innate immune pathway he was investigating and contacted Professor Davies for reagents which would help him unravel the mysteries of cGMP signalling in a context which was not yet documented. At the same time, Professor Davies had also observed novel regulation of innate immunity by cGMP. Encouraged by the findings of both groups, Professor Kurata applied to JSPS for project funding including a collaboration with the Glasgow group, and was successfully awarded 4575000 Yen. Part of this funding allowed four visits for Glasgow, supporting travel, accommodation and meetings.

Fruitfly on a penny, image courtesy of Prof. Julian Dow, University of Glasgow. https://sites.google.com/site/tubulesite/picture-gallery

Both participants have enjoyed, and benefited from, the collaboration. There has been exchange of knowledge, reagents, ideas, and a high impact publication currently under revision. Also, other scientific collaborators with distinct skills also participated in the Kurata/Davies collaboration, including Professor Julian Dow (Glasgow) and Professor Liliane Schoofs (Leuven, Belgium). Finally, visits to Glasgow and to its ancient university also included trips to scenic Loch Lomond, a little shopping and eating out in the city (including acceptable Japanese food)!

After the project ended, Professors Kurata and Davies continued the collaboration via e-mail, although any significant laboratory activity by Professor Kurata's group was curtailed by the unexpected and devastating tsunami in March 2011. Tohoku University suffered serious damage, including much damage to the laboratories. Since then, Professors Kurata and Davies have maintained contact, and have tried to keep a collaborative effort going based on a different, albeit related, strand of work. Royal Society and JSPS funding will be sought to increase and maintain laboratory activities in Sendai and to allow collaborative visits between Sendai and Glasgow. There is significant long-term economic and societal impact from the proposed work in both insect pest control strategies and in biomedicine - as the pathways under investigation impact not only on insect survival but also on human health and disease.