International Workshop on Control Engineering and Synthetic Biology, Royal Academy of Engineering – Prince Philip House, London, U.K. 17-18 July 2017

Dear Friends and Colleagues,

We are delighted to welcome you to the International Workshop on "Control Engineering and Synthetic Biology: What's next?"

Control engineering has revolutionised the way we understand, design and develop advanced man-made systems from autonomous vehicles and robots, to coordinated groups of such interacting systems, to large interconnected power and information networks. Inspired by such progress for physical systems, it is only natural to wonder if the same can be achieved for biology. This is what motivated us to organise this event.

Rational engineering and control of biological systems is widely recognised as one of the most exciting and challenging problems of this Century. In particular, *de novo* rational design, implementation and control of novel biomolecular systems that can robustly perform pre-determined tasks with guaranteed performance under changing and unpredictable conditions is a key open problem that is currently hindering progress and applications in this area. Through this event, we aim to explore some of the latest advances at the intersection of control engineering and synthetic biology and how these pave the way towards some solutions to these questions.

An event like this would not have been possible without your contributions and supporting sponsorship. First of all, we would like to thank the main sponsor for this event: UK's Engineering and Physical Sciences Research Council (EPSRC). We are indebted to them for their strategic farsightedness in supporting events such as this one through the EPSRC Fellowship for Growth Programme under projects EP/M002187/1 and EP/M002454/1. We would also like to thank the Royal Academy of Engineering and the staff at Prince Philip House, who have given us the opportunity to organise this meeting in such an exciting venue at the heart of London. Additionally, we would like to thank all those who have worked hard in the background to make this event the success that we know it will be. In particular, we would like to thank our colleagues at Imperial College London, Nazib Ahmed who helped us greatly with the financial, organisational and logistics aspects of the meeting, Jenna Stevens-Smith who shared with us her experience and knowledge in organising similar events, and our Masters students, Vasily Shenshin and Joaquin Gutierrez who provided support in getting the logistics ready and welcoming delegates.

Finally, our thanks go to you, the delegates. Thank you for coming to the Royal Academy of Engineering and for contributing your time and energy to this event. We invite you to participate fully, enjoy the fantastic talks and take full advantage of these two days by meeting and actively interacting with past, current and future collaborators and friends, and by forging new networks. We are looking forward to a memorable set of talks, posters and stimulating discussions.

As you listen to the talks, explore and discuss the posters, and interact with colleagues, we invite you to reflect on the following overarching questions:

- **What are the Grand Challenges in Synthetic Biology?**
- **What can control engineering do to help tackle them?**
- **What resources do we need, theoretical/computational/technological, to achieve this?**
- **Where could we go from where we are now by solving these Grand Challenges?**

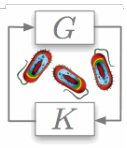
We look forward to meeting you all and to welcoming you to the next event: September 2019, Oxford. So stay tuned!

Guy-Bart Stan, Antonis Papachristodoulou and Filippo Menolascina

If you use Twitter, please label your tweets with the **#synbiocontrol2017** hashtag for easy searching and sorting.

This event follows up from a similarly-themed event we organised in 2014: http://sysos.eng.ox.ac.uk/wiki/index.php/Workshop_on_Control_Engineering_and_Synthetic_Biology, for which we received enthusiastic feedback and requests for follow-on meetings.

control engineering synthetic biology



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