

## **New tools and fast-growing strains for engineering biology in cyanobacteria**

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Recent advances in engineering/synthetic biology-based tools have spurred a prolific increase in fundamental cyanobacterial research and biotechnological exploitation. Nevertheless, even in the most widely studied species, *Synechocystis* sp. PCC 6803 (*Synechocystis*), only ~30% of the predicted gene coding sequences have an assigned function. I will firstly overview our work to develop the CyanoGate modular cloning kit for rapid plasmid assembly and transformation/transconjugation in cyanobacteria. I will then discuss our ongoing collaborative efforts to develop CyanoSource (<https://cyanosource.ac.uk>), a publicly available barcoded *Synechocystis* mutant library and plasmid resource for the research and biotechnology communities. Lastly, I will outline a suite of new CyanoGate-compatible molecular tools that we have developed to help unlock the engineering potential of the fast-growing marine cyanobacterial strain *Synechococcus* sp. PCC 11901. We hope that these tools will lay the foundations for further adoption of PCC 11901 as a robust model strain for engineering biology and green biotechnology.