The multidrug and toxin efflux (MATE) protein family comprises multipass membrane transporters that are ubiquitous across evolution. Their common occurrence is accompanied by important functions. They operate in antibiotic resistance and anticancer drug toxicity, or regulate plant fertility via seed and guard-cell chemistry. In Man, the pair of MATEs is most strongly expressed in the kidney, removing cation drugs from the body, but with interesting differential expression of MATE1 and MATE2. In *Arabidopsis*, a large group of approx. 57 duplicated family members is typical of the angiosperms [1]. These representatives have distinct specificities for compounds that range from ions to a hormone, secondary metabolites and xenobiotics. In *Synechocystis,* two MATEs were previously reported to be responsible for efflux of toxic cations, but not a range of other compounds, and one of the pair was reported to be involved in paraquat resistance. One of the pair is a eubacterial NorM-type MATE, and the other is similar to the common bacterial and archaeal DinF-type. Transcription assays revealed a complex expression profile which was regulated by other transporters or xenobiotic application [2]. Meanwhile, our previous findings on flavonoid transport by the *A. thaliana* FFT MATE [3], which is similar in structure to both NorM and eukaroytic MATEs, led us to hypothesise that the cyanobacterial pair might be capable of effluxing cyanobacterial natural products. As well as studying function *in vivo*, a synthetic biology assembly-pipeline has been set up to test these transporters' ability to efflux high-value products from the cell.

[1] Subramanian NM et al. (2022) A systematic phylogenomic classification of the multidrug and toxic compound extrusion transporter gene family in plants. Front Plant Sci 13 doi 10.3389/fpls.2022.774885.

[2] Ongley SE et al. (2016) A multidrug efflux response to methyl viologen and acriflavine toxicity in the cyanobacterium Synechocystis sp. PCC6803. J Appl Phycol doi 10.1007/s10811-016-0816-5.

[3] Thompson EP et al. (2010) An Arabidopsis flavonoid transporter is required for anther dehiscence and pollen development. J Exp Bot 61 doi10.1093/jxb/erp312.