

Systematic Design in Synthetic Biology

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The approach to synthetic biology is one of the systematic design of parts and devices. This is done according to the design, test, build cycle – which often requires multiple iterations of the process. Design is carried out by applying the engineering principles of standardisation, modularity and characterisation. A standardised workflow will be described for the design of BioParts and genetic circuits. This has involved the development of a web-based information system for synthetic biology (SynBIS) and the creation of standard electronic datasheets. The datasheets are viewed via SynBIS and comprise multiple pages consisting of laboratory data, the results of data processing and detailed metadata of the protocols. Examples will be given of the application of the approach to practical design of devices.