

Biology of Ageing e-Science, Integration and Simulation (BASIS)

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Ageing is highly complex involving multiple biochemical and cellular mechanisms affecting multiple tissues within an organism. This inherent complexity means that although work on the biology of ageing is now advancing fast, information remains highly fragmented. BASIS is a web-based system serving the biology-of-ageing research community by helping to integrate data and hypotheses from diverse biological sources. Ageing is the accumulated result of diverse, often random processes with time. Therefore, we have developed a stochastic simulation tool for the dynamic simulation of biological systems described in SBML, the standard format in systems biology modelling research. BASIS consists of a public database for storing SBML models and their simulated results, together with a stochastic simulator and a website on which these can be explored and made publically available. The simulator and database can be accessed via the BASIS website (www.basis.ncl.ac.uk), which also contains tools for SBML model construction and visualisation, and the visualisation of simulation output. A full set of web-services for interacting with BASIS programatically are also provided. These expose BASIS tools for direct use by other applications.