



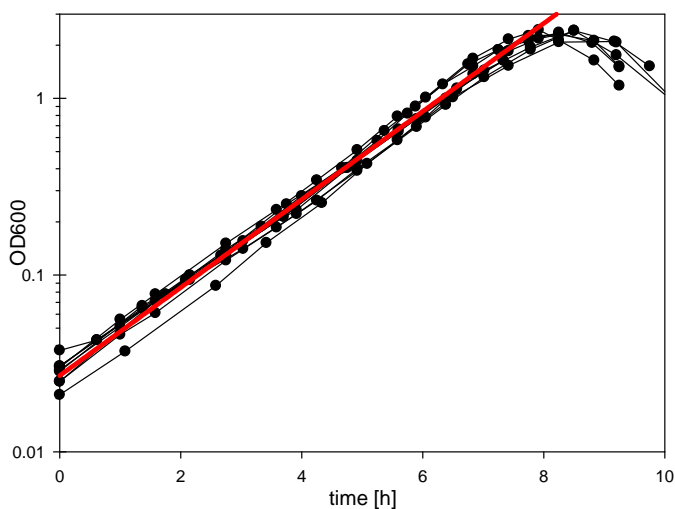
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A pressing need for standardisation in systems-level studies on living cells

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All biological systems are extremely sensitive to their environment. As a consequence, small changes in the growth conditions of living cells – be they human or bacterial cells - may cause large variations in their quantitative cellular responses. Standardisation of procedures for cell handling and cultivation is therefore of the utmost importance for any project addressing cellular functions and responses at the systems level.

The rigorous standardisation of experimental protocols within the BaSysBio programme is a core issue. This is not only allowing partners within the project to produce comparable data sets, but it will also in the future allow scientists from outside the consortium to relate any newly obtained data sets to the ones that are presently generated in BaSysBio. Thus, standardisation at both experimental and data management levels has become an important activity for reducing the fragmentation that has previously existed within the European research area. Standardised bacterial strains, experimental protocols and perturbations to the *Bacillus* cell system have all been developed and recorded in so-called SOPs - *Standard Operating Procedures*. These SOPs are now being implemented in the production of what promises to be not only exciting, but also very useful data. The new data are being stored in standardised formats with the use of the Phyloosopher platform that has been developed by Genedata in Basel, Switzerland. Ultimately, this will allow us to model and predict the behaviour of the bacterium *Bacillus subtilis*, one of the presently best-studied living organisms that is of relevance for ecologically sustainable, environmental, pharmaceutical and biotechnological applications. A notable achievement of the ongoing efforts is that all participating labs in BaSysBio can now cultivate bacteria under standardised conditions yielding close to identical growth parameters.



Highly standardised growth behaviour of *Bacillus* cells, measured as optical density at a wavelength of 600 nm (OD600) as a function of cultivation time in hours. Superimposable growth curves were obtained in the different partners' laboratories.

courtesy of Roelco Kleijn and Uwe Sauer

From Work-Package 2.2 : Standardisation of experiments and data

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