EID on the advanced science and technology of rat models for neurodegenerative diseases

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Name of Fellow
Institution
Funder

European Commission FP7-Seventh Framework Programme

Contact information of fellow
Country

EC

Title of project/programme

EID on the advanced science and technology of rat models for neurodegenerative diseases

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01/11/12

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The project/programme is most relevant to:

Neurodegenerative disease in general

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neurodegenerative disease | animal model | rat | technologies and tools for advanced behavioural testing | home cage testing | bioinformatics | gene therapy

Research Abstract

One of the most important bottlenecks for finding more effective drugs for brain disorders is the development of model systems that translate to human pathology and are predictive of clinical efficacy. To address this bottleneck PhenoRat will focus on the generation, characterisation and

validation of transgenic rat models of two neurodegenerative diseases: Huntington disease (HD) and spinocerebellar ataxia type 17 (SCA17). For this purpose we have assembled a unique consortium in which industry (Noldus Information Technology and Delta Phenomics), academia (University of Tuebingen), and a university-related foundation for entrepreneurship (StartLife) will work closely together to achieve both organization of an excellent training program and excellent research projects with a pronounced focus on intersectoral doctoral education and transfer of knowledge. Two rat models, one already established model for SCA17 and one to be newly generated knock-in rat model of HD, will be behaviourally characterized using a unique integrated system based on video tracking and operant testing in a home cage situation. In addition, innovative behavioural paradigms will be developed to test for the cognitive and emotional impairments typically seen in SCA17 and HD. These findings will be extended with more sophisticated methods to assess fine motor coordination and gait abnormalities. Besides traditional methods of analysis of behavioural data, new statistical methods will be developed to enable behavioural classification of transgenic and wild type animals. This will enable the detection of early onset of specific symptoms and provide read-out parameters in pre-clinical studies applying novel substances for the treatment of HD and SCA17. Last but not least these read-outs will be validated in a gene therapy study with SCA17 rats using Antisense Oligonucleotides (AONs) against the PolyQ stretch of TBP.

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