

European multidisciplinary ALS network identification to cure motor neuron degeneration (EURO-MOTOR)

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Title of project or programme

European multidisciplinary ALS network identification to cure motor neuron degeneration (EURO-MOTOR)

Principal Investigators of project/programme grant

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Source of funding information

European Commission

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8994362

Start date of award

01-02-2011

Total duration of award in months

60

The project/programme is most relevant to

- Motor neurone diseases

Keywords

Research abstract in English

Amyotrophic Lateral Sclerosis is one of the most devastating diseases in neurology affecting in Europe 50,000 individuals at any time, and causing around 10,000 deaths each year. ALS is characterized by progressive degeneration of motor neurons in brain and spinal cord leading to muscle weakness. ALS affects otherwise healthy people at any time in adulthood. The patient becomes paralyzed and dies as the result of respiratory failure on average 3 years after onset of symptoms. There is no cure for ALS. The only available drug (Riluzole) is marginally effective in extending the lifespan of ALS patients with 3 to 6 months. Despite recent scientific breakthroughs in the discovery of (1) multiple ALS associated genes, (2) evidence for metabolic dysregulation, (3) environmental risk factors, and (4) the protein TDP43 in aggregates of 95% of ALS patients, mechanistic models applicable to patients are still unknown. This shows that ALS can best be tackled through a systems biology approach which can only be achieved in a large integrative effort at the European level. Euro-MOTOR unites a multidisciplinary partnership of world-leading experts of clinicians, basic scientists and bioinformaticians, and is able to exploit excellent infrastructures for patient sampling, -omics platforms, disease modelling and bioinformatics. Euro-MOTOR will integrate large quantitative -omics data sets from new functional models and from patients in two prospective European, population-based inception cohorts. By leveraging on the variation in the multilevel -omics data, Euro-MOTOR aims to detect key genetic drivers of disease susceptibility/progression, while parametric modelling of the causal connections in identified molecular networks will generate a model of disease. Major findings will be validated in a second prospective patient cohort and adequate functional models, resulting in robust targets that pave the way for novel therapeutic interventions for this disabling and fatal disease.

Lay summary