

# NOX enzymes as mediators of inflammation-triggered neurodegeneration: modulating NOX enzymes as novel therapies

<https://neurodegenerationresearch.eu/survey/nox-enzymes-as-mediators-of-inflammation-triggered-neurodegeneration-modulating-nox-enzymes-as-novel-therapies/>

## Principal Investigators

### Institution

### Contact information of lead PI

### Country

European Commission

## Title of project or programme

NOX enzymes as mediators of inflammation-triggered neurodegeneration: modulating NOX enzymes as novel therapies

## Source of funding information

European Commission FP7-Seventh Framework Programme

## Total sum awarded (Euro)

€ 11,425,095

## Start date of award

01/01/2012

## Total duration of award in years

5.0

## The project/programme is most relevant to:

Neurodegenerative disease in general

## Keywords

### Research Abstract

NEURINOX aims at elucidating the role of NADPH oxidases (NOX) in neuroinflammation and its progression to neurodegenerative diseases (ND), as well as evaluating the potential of novel ND therapeutics approaches targeting NOX activity. NOX generate reactive oxygen species (ROS) and have emerged as regulators of neuroinflammation. Their role is complex: ROS generated by NOX lead to tissue damage in microglia-mediated neuroinflammation, as seen in amyotrophic lateral sclerosis (ALS), while absence of ROS generation enhances the severity of autoimmune-mediated neuroinflammation, as seen for e.g. in multiple sclerosis (MS).

The objective of the 5 years NEURINOX project is to understand how NOX controls neuroinflammation, identify novel molecular pathways and oxidative biomarkers involved in NOX-dependent neuroinflammation, and develop specific therapies based on NOX modulation. The scientific approach will be to: (i) identify NOX-dependent molecular mechanisms using dedicated ND animal models (ii) develop therapeutic small molecules either inhibiting or activating NOX and test their effects in animal models (iii) test the validity of identified molecular pathways in clinical studies in ALS and MS patients.

NEURINOX will contribute to better understand brain dysfunction, and more particularly the link between neuroinflammation and ND and to identify new therapeutic targets for ND. A successful demonstration of the benefits of NOX modulating drugs in ALS and MS animal models, and in ALS early clinical trials will validate a novel high potential therapeutics target for ALS and also many types of ND. NEURINOX has hence a strong potential for more efficient ND healthcare for patients and thus for reducing ND healthcare costs.

This multi-disciplinary consortium includes leading scientists in NOX research, ROS biology, drug development SMEs, experts in the neuroinflammatory aspects of ND, genomics and proteomics, and clinicians able to translate the basic science to the patient.

### **Lay Summary**

**Further information available at:**

#### **Types:**

Investments > €500k

#### **Member States:**

European Commission

#### **Diseases:**

Neurodegenerative disease in general

#### **Years:**

2016

#### **Database Categories:**

N/A

#### **Database Tags:**

N/A