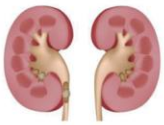
cobra:bio

Part of the **Elimox** Consortium

Developing an innovative and unique bacterial pharmaceutical product for the treatment of a severe and debilitating inherited disease; Primary Hyperoxaluria

The Disease

Primary Hyperoxaluria (PH) is a rare autosomal recessive inborn error of glyoxylate metabolism, with a prevalence of 1-3 per million. The disease is characterised by severe hyperoxaluria, i.e. excessively high levels of oxalate in the urine of the patient and excessively high oxalate levels in the plasma of patients suffering from chronic renal failure.



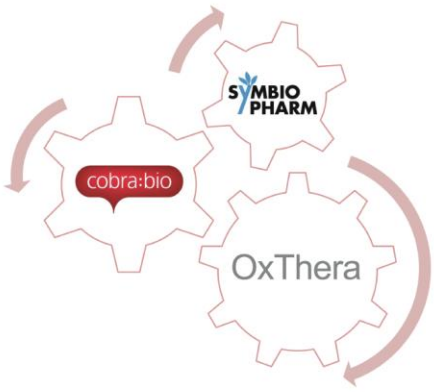
The disease is present at birth, and most patients develop kidney stones and nephrocalcinosis at very young ages, most often under the age of 10. Progression of renal failure is followed by systemic deposition of CaOx and premature death. Overall, the risk of end-stage renal disease (ESRD) is 50% by age 15 and 80% by age 30. The median age at death is around 30. (Hoppe et al., 2009).

There is currently no approved pharmaceutical therapy for this devastating disease. The only curative therapy, applicable for PH type I, is eventually a combined kidney and liver transplantation at end stage renal disease (Hoppe, 2009).

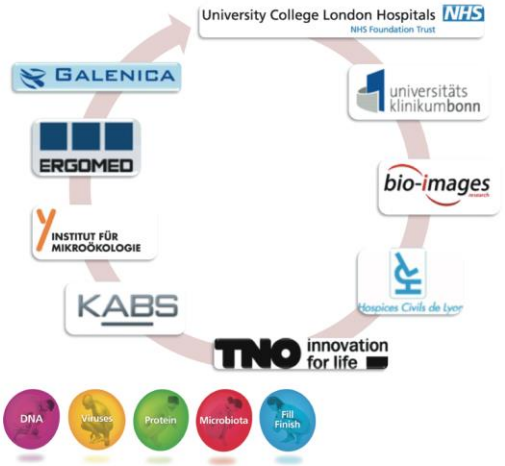
The ELIMOX Partnership

ELIMOX, Biopharmaceutical therapy for treatment of Primary Hyperoxaluria, is a project funded by FP7-SME-2013 Research for the benefit of SMEs program. The project is co-ordinated by OxThera AB, Stockholm, Sweden.

The ELIMOX Consortium has three SME-partners;



Plus nine Research, Technology & Development (RTD) partners;



The project is a truly international project with funding from the European Union´s Seventh Framework Programme managed by REA-Research Executive Agency (FP7/2007-2013) under grant agreement no FP7-SME-2013.

The Project

The use of naturally occurring bacteria from the human gut as pharmaceutical drugs has gained increased interest, as knowledge about the human microbiota and its role in health and disease has advanced considerably with new technology and computational techniques.

The primary aim of the ELIMOX project is to develop an innovative and unique bacterial pharmaceutical product for the treatment of a severe and debilitating inherited disease, Primary Hyperoxaluria (PH).

Our approach is to use the metabolic potential of a naturally occurring microbe, *Oxalobacter formigenes* to eliminate toxic compounds from the blood. The potential clinical applications for such a probiotic drug are many, including treatment of disorders where enteric elimination would be an alternative metabolic pathway as well as for malabsorptive disorders. The SME's in this project will be pioneers in this area of research and technological development.

To achieve this, the following will be implemented:

Stage	Activity
1	The manufacture of an anaerobic bacterial product for administration in the gut.
2	The development of analytical tools to verify the quality, delivery and activity of the bacterial product.
3	The clinical development of the bacterial product to verify clinical efficacy and safety.

The activities are divided into five Work Packages:

1

- OxThera AB, an important player in the hyperoxaluria community with a close relationship with key opinion leaders and researchers in the field, will coordinate the ELIMOX project.
- OxThera has demonstrated success in early clinical studies using experimental drug formulations of O. formigenes.

2

- Cobra Biologics Ltd will be responsible for manufacturing of the drug and will lead this Work Package, outsourcing freeze-drying to KABS Laboratories Inc., and capsule filling, coating, analysis and stability studies to Galenica AB.

3

- SymbioPharm GmbH will lead the identification and quantification of O. formigenes, analysis of changes in the gut microbiota as well as in vitro and in vivo drug release studies.
- The development work relating to identification and quantification of O. formigenes in complex gut samples, together with studies on changes of the gut microbiota will be outsourced to the MVZ Institut für Mikroökologie GmbH.
- In vitro drug release testing will be outsourced to TNO and the in vivo capsule disintegration characterisation to Bio-Images Research Ltd.

4

- OxThera AB is responsible also for clinical development of the product.
- The selected CRO is Ergomed Clinical Research Ltd.
- The clinics that will be contracted are Universitätsklinikum Bonn and Hospices Civils de Lyon and the central laboratories are UCLH NHS Foundation Trust and the Institut für Mikroökologie.

5

- This Work Package is dedicated to the exploitation and dissemination of the results that will emerge from Work Packages 2-4.
- The work will be driven by all three SME partners; Oxthera, Cobra Biologics Ltd and SymbioPharm GmbH.