

# Structural and functional characterization of nitric oxide synthases (NOS) of *Klebsormidium nitens*

**Alix MARTINET<sup>1</sup>, Valérie NICOLAS <sup>1</sup>, Sylvain JEANDROZ <sup>2</sup>**

<sup>1</sup>université de Bourgogne, <sup>2</sup> Institut Agro Dijon

Nitric oxide (NO) is a mediator of numerous physiological processes, playing a central role in a variety of organisms. In plants, NO is involved in responses to biotic and abiotic stress, stomatal closure, photomorphogenesis, leaf senescence, flowering and fertilization. In animals, NO synthesis is mainly carried out by Nitric Oxide Synthases (NOS), which catalyse the oxidation of L-Arg to L-citrulline and NO. Although many land plant genomes have been sequenced, no NOS-like sequences have been identified. However, NOS-like sequences have been identified in some twenty species of photosynthetic organisms, including the green alga *Klebsormidium nitens* (Streptophytes) which can be seen as a model for the study of plant adaptation to terrestrial life.

The aim of this thesis is to confirm the presence of transcripts corresponding to the NOS-like genes sequenced in *klebsormidium nitens*. And to characterize the different NOS-like produced.

Also, this thesis aims to study the role of NO in plants according to its production using as a model an enzyme regulated by S-nitrosation, the fructose-1-6-bisphosphatase in *K. nitens*.

This thesis will further our knowledge of the evolution of sources of NO production and its role in plants, as well as generating new insights for the biology of algae.