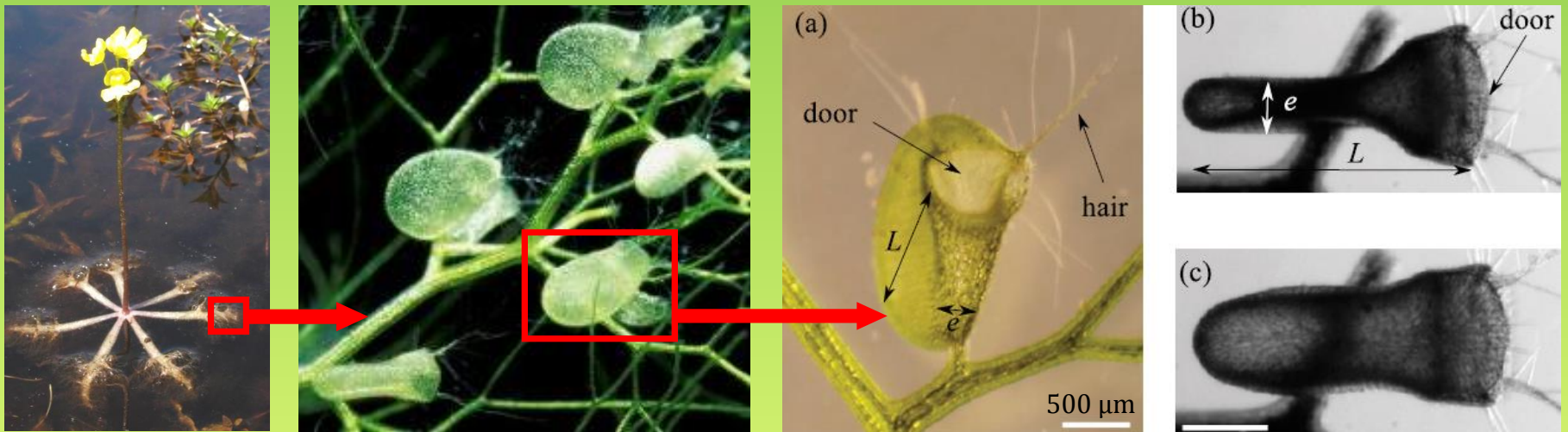


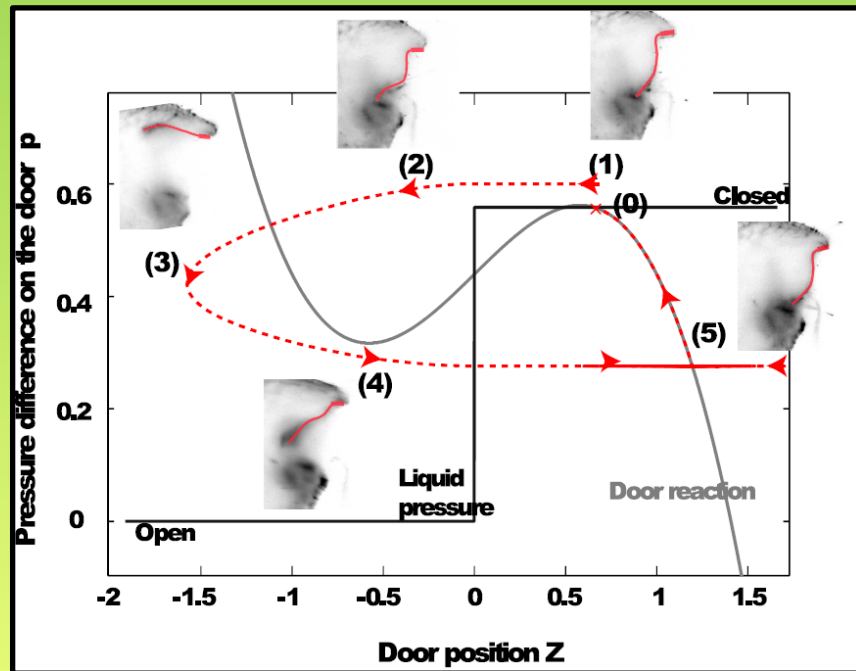
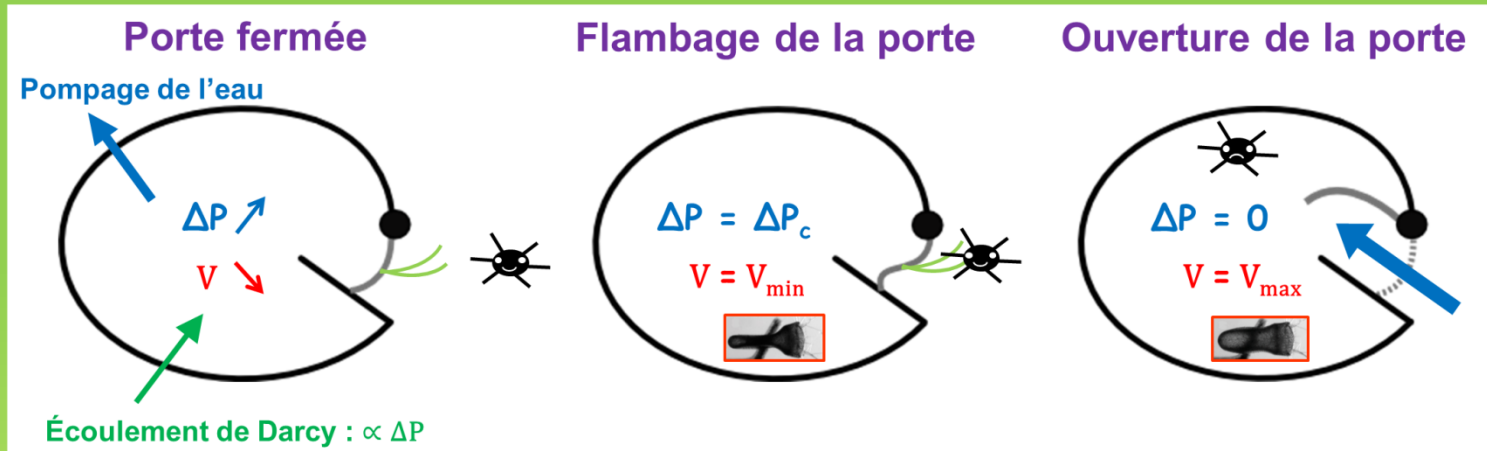
Modèle dynamique du piège de l'Utriculaire

Coraline Llorens

M. Argentina, Y. Bouret, O. Vincent & P. Marmottant



Mécanisme du piège et Modèle



A DYNAMICAL MODEL FOR THE UTRICULARIA TRAP
C. Linares¹, M. Argenteo² & V. Bouret¹
¹Laboratoire de Physique de la Matière Condensée, CNRS UMR 7339, 06100 Nice
Contact: linares@unice.fr, m.arga@unice.fr, v.bouret@unice.fr

Abstract
We propose a model that captures the dynamics of an aquatic carnivorous plant, Utricularia inflata. This plant catches prey with its underwater reticulately closed trap. Outside prey enters the trap, leading to negative pressure difference between the atrium and its surroundings. The trap door is not fully rigid elastic and opens slightly as an extra pressure is generated by the approach of a potential prey. As the door opens, the pressure difference sucks the animal into the trap. We propose here a simple elastic model for the trap door included in a full dynamical model. Our model predicts all the different behaviors of the trap: accessibility leading to fast capture, spontaneous or periodic trapping, and self-healing.

Fast motions in plants

Utricularia and its traps

Trap mechanism

Elastic model for the trap door

Dynamical model for the trap

Trap behaviors

Conclusion

References