



Towards a new generation of plant-inspired growing artefacts

Grant Agreement No. 824074



Post-doctoral Position: Functional biology of vines and lianas: towards a new biomimetic paradigm in soft robotics (one year renewable one year)

We are recruiting a **post-doctoral researcher** who is interested to collaborate with an international consortium of researchers seeking to build robotic artefacts that are **bioinspired from climbing plants**. The principal role of the post is to gather morphological, developmental and biomechanical characteristics of diverse climbing plants – particularly via field observations. In a second step the researcher will communicate with robotics specialists, materials scientists, mathematicians and engineers in order to implement biological know-how into a new paradigm of robotic artefacts.

Our laboratory at **AMAP (Botany and Modelling of Plant Architecture and Vegetation)** combines research at different scales from the organismal level to ecological and regional scales and particularly for tropical environments. The post will be working alongside plant morphologists, anatomists and biomechanics specialists and with a consortium of research labs across Europe on a new H2020 project.

The Project

Biomimetic research has much to offer humanity in the development of new bioinspired technologies in a changing world. The biodiversity of plant structures in natural tropical ecosystems is a rich source for biomimetic research. The post is part of a new and highly innovative H2020 European project “GrowBot”- Towards a new generation of plant-inspired growing artefacts” as part of the FETPROACT-01-2018 – FET proactive: emerging paradigms and communities Research and Innovation Action – Grant Agreement no. 824074. The aim is to develop along with affiliated partner laboratories a new generation of climbing plant inspired robots that can navigate highly heterogeneous terrains without falling or becoming stuck. Our principal roles at AMAP in the context of this initiative are to provide a palette of detailed information on the performance of climbing plants from field and laboratory analyses which can then be implemented in the development of technical robotic artefacts.

The Candidate

We are looking for an open minded and creative, early to mid-stage researcher (0-7 years' experience after Ph.D.) in plant sciences (plant structure function, anatomy, development, ecology). The person must be motivated to pursue a detailed understanding of life-history characteristics of climbing plants via field and laboratory work and collaborate with an international consortium engaged in producing a new concept in soft robotics.

A typical background would preferably include experience in at least one of the following: plant morphology, plant anatomy, electron microscopy, image analysis, plant biomechanics, field work and measurements of plant functional traits and biomechanics. We will be looking for candidates who are especially gifted in communicating with researchers of other disciplines such as physics, chemistry, engineering, maths and robotics. The candidate will work closely with the Plant Biomimetics group in Freiburg, Germany under the direction of Prof. T. Speck.

The candidate will need to communicate with the project consortium in English and contribute to the following tasks: perform measurements on life history traits of climbing plants in the field -tropical, sub-tropical and temperate to Mediterranean regions. Supervise Master 1 and Master 2 projects linked to the project, carry out laboratory analyses: morphology, anatomy and biomechanics of climbing plants; supervise an assistant engineer in our lab also engaged in the project for laboratory work. Help compare and validate initial robotic artefact performance against that of plants; assist in organising international meetings; helping in initiatives to promote and distribute information and news of the project; contribute to scientific publications.

The Laboratory (<http://amap.cirad.fr/fr/index.php>)

AMAP (Botany and Modelling of Plant Architecture and Vegetation) is situated on the outskirts of the city of Montpellier on the south coast of France. Our laboratory is affiliated with the University of Montpellier and numerous research Institutes locally, which make up one of the largest poles of biological research in Europe and is vibrant community for biological research.

The application

Must be written in either French or English and must include:

- A one page motivation letter describing your background and why you would like to be part of our team for this exciting project.

- A CV (maximum of 3 pages).
- Diplomas (Bac, Licence, Master, degree or equivalent) and grades.
- Two signed, written references (one page maximum) from recent employers or education supervisors/mentors.
- Please sent applications by email to Dr. Nick Rowe (n.rowe@cirad.fr) and Dr. Christine Heinz (christine.heinz@umontpellier.fr).

Deadlines and salary

The deadline for the application is 30th April, 2019 at 23:59 (Paris time).

Following the expiry of the deadline, our recruitment managers will select applicants for assessment on the advice of the interview committee. Interviews will take place in May. The post will start on the 1st of June 2019.

The position is financed by the project “GrowBot” and the employment and conditions follow those of the CNRS for early researcher post-doctoral rates of 2555.39 to 3544.91 € per month depending on experience of 1 to 4 years.