Four PhD Positions in FWF funded **'Research Group'** - Out of the Water: Algae and Mosses adapt to living on land.

Project Context:
Join an ambitious Austrian research consortium investigating how early plants conquered land. Our interdisciplinary team (led by Andreas Holzinger, University of Innsbruck; Ingeborg Lang, University of Vienna; Notburga Gierlinger, BOKU University and John Dunlop; University of Salzburg) combines cell biology, biochemistry, and biophysics to understand structural and mechanical adaptations to water loss in algae and mosses. The four institutions work closely together, each institution offers one PhD position with specific tasks.

1) *PhD Position:* ***Algal Desiccation Tolerance Mechanisms***

Institution: University of Innsbruck (LFU), Innsbruck

Your work will focus on **experimentally exploring selected algal strains** with different degrees of desiccation tolerance. You will perform **biochemical, structural and ultrastructural** analysis as well as **transcriptomic investigation** of control and desiccated samples. Possibilities for **research stays** in the laboratories of cooperation partners in Germany or Denmark.

Project Tasks:

- Perform **experiments to realistic desiccation scenarios** in streptophyte green algae
- Perform cell wall analysis with different modern approaches (immunolocalization, CoMPP)
- **Transmission electron microscopy** and **3D reconstruction** to visualize and localize cell wall modifications
- **Transcriptomic investigations** in stress treated samples
- **Collaborate closely** with project partners and external cooperation partners

What we offer:

- A fully funded PhD position (3 years) within a high-profile FWF-funded research group.
- Access to cutting-edge imaging facilities.
- Training and networking via the **Innsbruck Doctoral College (IDC) Alpine Biology and Global change** and international collaborations.
- Opportunities to present at international conferences.

Ideal Candidate:

- MSc in **Botany** or **related Biological Sciences**.
- Experience with **cell cultures** and **algal cultivation**.
- Strong interest in **physiological, microscopical** and **transcriptomic investigations**.
- Curiosity about **evolutionary biology** and interdisciplinary research.

Start Date:
from April 2026.

How to Apply:
Send your CV, motivation letter, and **contact details of two referees** via e-mail until **February 15, 2026** to Assoz. Prof. Dr. Andreas Holzinger: Andreas.Holzinger@uibk.ac.at

2) *PhD Position:* ***Desiccation scenarios and drought tolerance in mosses***

Institution: Universität Wien, Department of Functional and Evolutionary Ecology, Vienna

You will **experimentally investigate selected bryophytes** with life forms in water and on land. Your work includes **biochemical, structural and ultrastructural** analyses that lead to **3D reconstructions** of samples during desiccation scenarios. **Research stays** in the laboratories of national and international cooperation partners are expected.

Project Tasks:

- Perform **experiments of realistic desiccation scenarios** in bryophytes
- Perform **cell wall analysis** with different modern approaches (e.g. immunolocalization)
- Apply **Light and electron microscopy** as well as **3D reconstruction** to visualize and localize cell wall modifications
- **Collaborate closely** with project partners and external cooperation partners

What we offer:

- A fully funded PhD position (3 years) within a high-profile FWF-funded research group.
- Access to cutting-edge imaging facilities.
- Training and networking via the **Vienna Doctoral School Ecology and Evolution (VDSEE)** and international collaborations.
- Opportunities to present at international conferences.

Ideal Candidate:

- MSc in **Botany** or **related Biological Sciences**.
- Experience with **handling small samples, sterile cultures** and **bryophyte cultivation**.
- Strong interest in **physiological** and **microscopical investigations**, **3D analysis**.
- Curiosity about **evolutionary biology** and interdisciplinary research.

Start Date:
from April 2026.

How to Apply:
Send your CV, motivation letter, and **contact details of two referees** via e-mail until **February 15, 2026** to ao. Prof. Mag. Dr. Ingeborg Lang (ingeborg.lang@univie.ac.at)

3) *PhD Position:* ***Microchemistry and Nanomechanics of cell walls and surfaces of Early Settlers***

Institution: BOKU University, Institute for Biophysics, Vienna

You will experimentally investigate selected **early settlers (algae and bryophytes)** with life forms in water and on land. Your work includes **microchemical and nanostructural (mechanical)** analyses before, after and during desiccation scenarios. **Research stays** in the laboratories of national and international cooperation partners are expected.

Project Tasks:

- Develop and perform **sample preparation and in-situ measurement approaches** for Raman, Infrared and Atomic force microscopy with an emphasis on correlative microscopy.
- Perform **Raman and Infrared hyperspectral data acquisition** of selected species grown under various environmental conditions and during dessication.
- Analyzing hyperspectral data sets with **multivariate data analysis approaches** to retrieve the microchemistry of cell walls and plant surfaces as well as metabolites within the cell lumen
- Perform **Atomic force microscopy analysis** as well as **electron microscopy analysis** to visualize nanostructure and nanomechanics.
- **Collaborate closely** with project partners and external cooperation partners

What we offer:

- A fully funded PhD position (3 years) within a high-profile FWF-funded research group.
- Access to cutting-edge microspectroscopic instruments as well as microscopic core facilities
- Training and networking via the **BOKU doc schools** and international collaborations.
- Opportunities to present at international conferences.

Ideal Candidate:

- MSc in **Botany, Physics, Chemistry** or **related Biological Sciences**.
- Strong interest in **Microspectroscopy (Raman, Infrared)** and **Atomic Force Microscopy**.
- Experience with **handling small samples** and **Microscopy** appreciated
- Curiosity about **evolutionary biology** and interdisciplinary research.

Start Date:
from April 2026.

How to Apply:
Send your CV, motivation letter, and **contact details of two referees** via e-mail until **February 15, 2026** to Assoc. Prof. Mag. Dr. Notburga Gierlinger (burgi.gierlinger@boku.ac.at)

4) *PhD Position:* ***Biophysical Modelling of Plant Desiccation Mechanics***

Institution:
Paris-Lodron University of Salzburg, Department of Chemistry and Physics of Materials

Your work will focus on **developing computational models to predict shape changes and mechanical stresses during desiccation**, bridging scales from single cells to multicellular tissues.

Project Task:

- Build and refine **biophysical models** of desiccation-induced deformation in plant cells and tissues.
- Use **finite element methods** and scaling analyses to explore how geometry, cell wall properties, and hydration state influence mechanical stability.
- Integrate **real-world data** from advanced imaging (confocal, light-sheet, serial block-face SEM) and nanomechanical measurements.
- Collaborate closely with experimental partners to validate models and generate new hypotheses.

What We Offer:

- A **fully funded PhD position** (3 years) within a high-profile FWF-funded research group.
- Access to cutting-edge imaging and computational facilities.
- Training and networking via the **Doctoral School Materials+** and international collaborations.
- Opportunities to present at international conferences.

Ideal Candidate:

- MSc in **Physics, Biophysics, Mechanical Engineering, or Applied Mathematics**.
- Strong interest in **computational modelling** and **biomechanics**.
- Experience with **FEM software** (COMSOL, Abaqus) or programming (Python, MATLAB).
- Curiosity about **evolutionary biology** and interdisciplinary research.

Start Date:
from April 2026.

How to Apply:
Send your CV, motivation letter, and **contact details of two referees** via e-mail until **February 15, 2026** to Prof. John Dunlop (john.dunlop@plus.ac.at)