

Master thesis announcement: Analysing the effect of soil pH and tungsten in root tissue and nodule formation



Root nodules are organized round structures built by leguminose roots after infection with host-specific bacteria. This symbiosis of plants and bacteria is highly valuable for both partners and of particular interest to scientists due to the fixation of atmospheric nitrogen by bacteria in crop plants like soy bean, pea or lotus.

The root nodule itself is mainly built by the plant which has incorporated bacteria like *Bradyrhizobium japonicum* during root hair development. Preliminary studies showed a great influence of the soil pH on the number and biomass of root nodule as well as on tungsten toxicity for the plants. Here, we want to have a closer look at the combined effect of pH and tungsten contamination.

The aim of this study is the investigation of root nodule and root morphology of soy (*Glycine max*) grown on tungsten contaminated soils. The effect of soil pH dependent tungsten phytoavailability on nodule formation and morphology will be assessed and nitrogen fixation activity shall be tested with antibodies against the N₂ fixing enzyme nitrogenase. The work is closely linked to ongoing investigations in tungsten toxicity and environmental safety.

Methodical work includes the cultivation of soy bean plants in the green house as well as harvesting, fixation and preparation of root nodules for sectioning, staining and microscopic observation.

Duration: approximately 6 months

Supervisors: Dr Eva Oburger, Ao Prof Dr Ingeborg Lang

Location: Cell Imaging & Ultrastructure Research, Faculty of Life Sciences, University of Vienna, Althanstraße 14, A-1090 Wien

If you are interested, please contact: eva.oburger@univie.ac.at, ingeborg.lang@univie.ac.at

