

## DURESTrit - mapping NHR-genes from barley secondary gene pool *Hordeum bulbosum*

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As part of the ERA-CAPS program the DURESTrit consortium is an international collaboration between the Julius Kühn-Institut, the Leibniz Institute of Plant Genetics and Crop Plant Research and several national and international partners. Aim is the localization and functional characterization of nonhost resistances from the primary and secondary gene pool in barley.

Nonhost Resistance (NHR) is the resistance plants possess against the majority of pathogens in the environment. Therefore transferring components of NHR to crop plants from related species via introgression lines will give us new tools to protect our crops against pathogens.

Our part of the project is to map new powdery mildew resistance loci for Barley, derived from the secondary gene pool *Hordeum bulbosum*. We use several 2HS and 2HL introgression lines differing in their *H. bulbosum* and *Hordeum vulgare* background. All introgressions bear at least two different resistances against *Blumeria graminis f. sp. hordei*.

For molecular characterization a mapping population will be developed. Phenotyping will be carried out by detached leaf assays with different powdery mildew isolates, checking the spectrum of resistance.

Fine Mapping of the introgressions will be performed by novel marker techniques, e.g. Exome Capture and GBS. Based on the resulting sequence information CAPS, InDel, as well as SNP marker will be constructed for marker assisted selection of the novel resistance loci. Additional transcript information can be used as candidate genes getting closer to resistance loci. Recombinant plants with reduced introgression sizes will be selected with minimized introgression size and linkage drag to increase the value for breeding purposes.