Accelerated Development of multiple-stress tolerant Potato

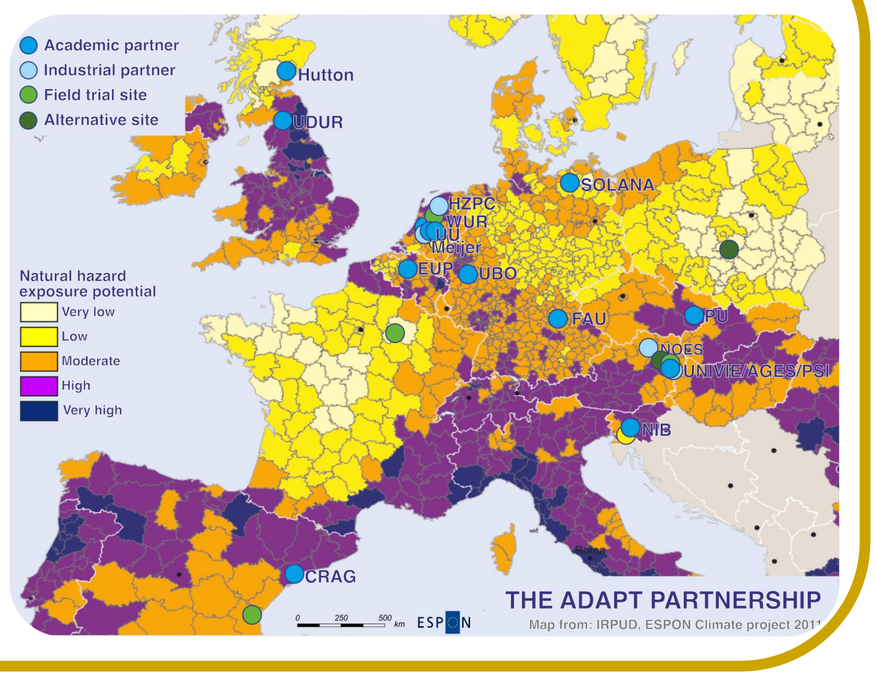
Alexandra Ribarits[1], Philipp von Gehren[1], Svenja Bomers[1], Noémie Prat[1], Tanja Tripolt[2] und Josef Söllinger[3]
[1] AGES, Spargelfeldstraße 191, 1220 Vienna; [2] AGES, Zinzendorfgasse 27/1, 8010 Graz; [3] AGES, Wieningerstraße 8, 4020 Linz

The overall approach is based on the combination of molecular biology, stress physiology, systems biology and analytics with engineering and molecular breeding

- **Objective**: Determine the molecular and phenotypical responses of potatoes to combined environmental stress conditions such as heat, drought and flooding
- **Funding:** European Union's Horizon 2020 research and innovation program (GA 2020 862-858)
- **Duration of the project**: 07/2020 – 06/2024
- **Coordinator:** Markus Teige, Department of Biochemistry & Cell Biology and Department of Molecular Systems Biology, University of Vienna

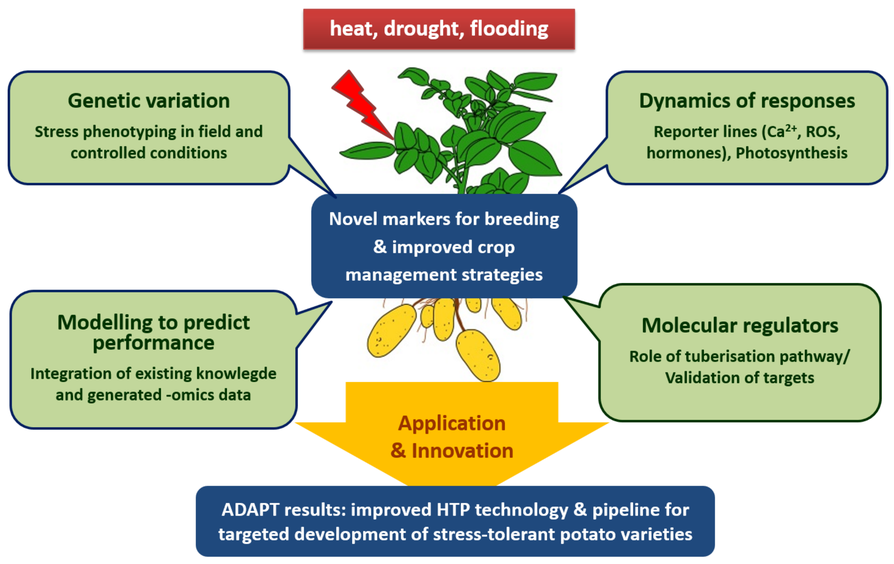
17 Project partners:

- 10 universities
- 4 potato breeders
  - Meijer potato B.V.
  - HZPC Holland
  - Solana Research GmbH
  - NOES
- 1 screening technology developer (PSI)
- Europatat
- AGES



Workpackages (for details please visit: https://adapt.univie.ac.at/)

- WP1: Field phenotyping
- WP2: Physiological profiling
- WP3: Tuberisation signalling
- WP4: Molecular signalling
- WP5: Data integration and modelling
- WP6: Pathways to impact
- WP7: Project management
- WP8: Ethics requirements



Workpackage 6: Pathways to impact

Workpackage leader: AGES (Alexandra Ribarits)

Validate generated research results

- Validation of potential target genes from previous work packages
- Develop a pipeline for marker development and direct implementation in breeding programs

Exploitation and implementation

Goals:
- Develop recommendations for phenotypic traits that should be included in VCU protocols to determine abiotic stress tolerance in potato varieties
- Select and validate interesting, easily scorable phenotypic traits that were explored in previous work packages
- Incorporate selected traits for the evaluation of abiotic-stress tolerance into standard VCU protocols

Engagement with end-users

➢ Farmer's perception survey: What are the needs of European potato growers?

Goal: Investigate local needs and constraints for variety choice regarding climate change-related abiotic stresses
Multilingual online survey in English, German, French, Dutch, Polish; Nov. 2020 – Jan. 2021

➢ Field days and workshops

Goal: Connect farmers, breeders and researchers; Consider and discuss future needs and concerns

➢ Improvement of AGES Variety finder

Goal: Incorporate traits indicating abiotic stress tolerance or sensitivity into variety descriptions

Expected Results

1. Identification of potato farmers needs and perception of changing climatic conditions
2. New insights into molecular and phenotypic responses to abiotic stress conditions
3. Recommendations for adapted VCU protocols that include traits related to abiotic stress tolerance
4. Improvement of AGES Variety finder by incorporating traits indicating abiotic stress tolerance into variety descriptions

DI Dr. Alexandra Ribarits I Institut für Saat- und Pflanzgut, Pflanzenschutzdienst und Bienen
Spargelfeldstraße 191, 1220 Wien I alexandra.ribarits@ages.at
AGES – Austrian Agency for Health and Food Safety

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No GA 2020 862-858

www.ages.at