CV PD Dr. Hans-Peter Mock

Leibniz Institute of Plant Genetics and Crop Plant Research (IPK)
Corrensstrasse 3
D-06466 Gatersleben, Germany
phone: (49) 39482-5506
fax: (49) 39482-5524
mock@ipk-gatersleben.de

Education and scientific work career

Since 2007	Lecturer at the University of Halle
2001-2006	Lecturer at the University of Braunschweig
2001	Habilitation at the faculty of Botany, Technical University of Braunschweig; Topic: "Cellular responses of plants to tetrapyrrole-induced oxidative stress"
since 1998	Leader of the applied biochemistry group at the IPK Gatersleben
since 1992	Research Associate, Institute of Plant Genetics and Crop Plant Research, Gatersleben
1989 - 1992	Post-Doc at the Institute for Pharmaceutical Biology, Technical University of Braunschweig
1987 - 1989	High School teaching
1983 - 1986	PhD in Plant Physiology, Institute of Botany, Tübingen
1976 - 1982	Study of biology and physics, Eberhard-Karls-University, Tübingen

Research interests and expertise

My current research group at the IPK focuses on the role of plant secondary metabolites in the defense against biotic and abiotic stresses, but also their impact on human health as being part of the daily diet. Research on the latter aspect is performed in collaboration with several groups in Europe joining the disciplines of plant biology and medicine in elucidating the potential protective role of anthocyanins as part of the human diet.

The role of the trichomes and the epidermal layer within the response network of plants against biotic and abiotic stresses is currently investigated using molecular and biochemical methods. As a major novel approach, the group has established a proteomics platform at the IPK and current projects aim at the study of plan stress defense responses and at a better insight into the interaction of secondary and primary metabolism in plants. Furthermore research on seed development is another major topic. Laser capture micro-dissection has been applied to obtain defined tissue sections of seeds, and suitable label-free LC-MS based techniques were introduced for the proteome analysis of minute sample amounts. Spatial distribution of metabolites and proteins within seed tissue sections is analysed by MALDI MS imaging.

Collectively, using proteomics and other functional genomics approaches, the group aims at the identification of new traits to enhance the tolerance of plants towards stresses and to improve the nutritional quality of crop plant products.

Selected publications:

1. Amme S, Rutten T, Melzer M, Sonsmann G, Vissers JPC, Schlesier B, Mock H-P, 2005. A proteome approach defines protective functions of tobacco leaf trichomes. Proteomics 5, 2508-2518.
2. Schlesier B & Mock H-P, 2006. Protein isolation and 2-D electrophoretic separation. In: J Salinas & JJ Sanchez-Serrano (Eds): Arabidopsis protocols, 2nd ed. Humana Press, Totowa/USA, pp 381-391.
3. Amme S, Matros A, Schlesier B, Mock H-P, 2006. Proteome analysis of cold stress response in Arabidopsis thaliana using DIGE – technology. J Exp Botany 57, 1537-1546.
4. Witzel K, Surabhi GK, Jyothsnakumari G, Sudhakar C, Matros A, Mock HP (2007) Quantitative proteome analysis of barley seeds using ruthenium(II)-tris-(bathophenanthroline-disulphonate) staining. Journal of Proteome Research 6: 1325-1333

5. Brumbarova T, Matros A, Mock HP, Bauer P, 2008. A proteomic study showing differential regulation of stress, redox regulation and peroxidase proteins by iron supply and the transcription factor FER. Plant Journal 54, 321-334.
6. Butelli E, Titta L, Giorgio M, Mock HP, Matros A, Peterek S, Schijlen E, Hall RD, Bovy AG, Luo J, Martin C, 2008. Enrichment of tomato fruit with health-promoting anthocyanins by expression of select transcription factors. Nature Biotechnology 26, 1301-1308.

Selected important publications:

Amme S, Rutten T, Melzer M, Sonsmann G, Vissers JPC, Schlesier B, Mock HP (2005) A proteome approach defines protective functions of tobacco leaf trichomes. Proteomics **5:** 2508-2518

Butelli E, Titta L, Giorgio M, Mock HP, Matros A, Peterek S, Schijlen E, Hall RD, Bovy AG, Luo J, Martin C (2008) Enrichment of tomato fruit with health-promoting anthocyanins by expression of select transcription factors. Nature Biotechnology **26:** 1301-1308

Kaspar S, Weier D, Weschke W, Mock HP, Matros A (2010) Protein analysis of laser capture micro-dissected tissues revealed cell-type specific biological functions in developing barley grains. Analytical and Bioanalytical Chemistry **398:** 2883-2893

Mock HP, Keetman U, Kruse E, Rank B, Grimm B (1998) Defense responses to tetrapyrrole-induced oxidative stress in transgenic plants with reduced uroporphyrinogen decarboxylase or coproporphyrinogen oxidase activity. Plant Physiology **116:** 107-116

Witzel K, Weidner A, Surabhi GK, Borner A, Mock HP (2009) Salt stress-induced alterations in the root proteome of barley genotypes with contrasting response towards salinity. Journal of Experimental Botany **60:** 3545-3557