

Prof. Dr. Frank Ordon

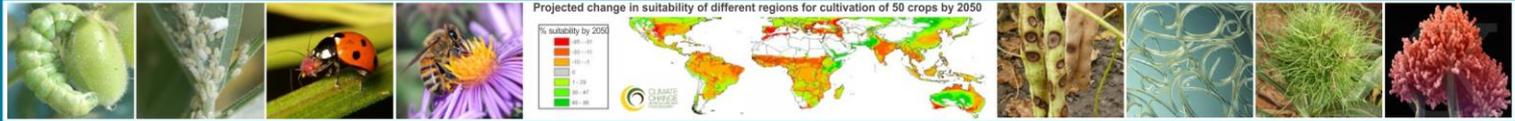
Head of Institute Julius Kühn-Institute (JKI),
Federal Research Centre for Cultivated Plants,
Erwin-Baur-Str. 27, 06484 Quedlinburg, Germany
E-mail: frank.ordon@julius-kuehn.de

Biography – Dr. Frank Ordon

Prof. Dr. Frank Ordon is president of the JKI and honorary professor for “Molecular resistance breeding” at the Martin-Luther-University, Halle-Wittenberg, Germany. He studied agricultural science at the Justus Liebig University in Giessen, Germany, where he also got his PhD and state doctorate (Dr. habil.). He is the editor in chief of “Plant Breeding” and is a member of several editorial boards, e.g. “Theoretical and Applied Genetics”, “Journal of Applied Genetics,” and scientific advisory boards. He is chair of the Research Committee of the Wheat Initiative.

Frank has a basic background in classical and molecular plant breeding with special emphasis on breeding for resistance against viral and fungal pathogens in barley and wheat. His primary contribution includes genetic analyses of resistance and the development of molecular markers for major resistance genes and QTL, especially against virus diseases, up to gene isolation. Besides this, he is working on improving tolerance to abiotic stress in several crop species. Frank has published the results of his studies in more than 130 papers in peer reviewed journals.

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Presentation title:

Genomics based breeding for resistance in cereals – a prerequisite for sustainable plant protection and adaptation to climate change

Abstract:

Wheat and barley are of special importance for feeding the earth's growing population. However, both are hit by many pathogens causing severe yield losses and both suffer from increasing drought, worldwide. Therefore, in order to ensure a sufficient cereal production, improving resistance to biotic and abiotic stress by breeding is of prime importance. In this respect, genetic resources are a valuable treasure trove to cope with these challenges. For using the genetic diversity present in gene banks, it is of prime importance (i) to screen genetic resources for traits of interest, (ii) develop molecular markers for these traits and (iii) use these for an enhanced introgression into adapted cultivars. Today molecular tools are available facilitating an efficient use of these genetic resources in breeding. While in the past marker development was time consuming and laborious, today genomic resources like the Infinium iSelect genotyping bead chips, genotyping by sequencing (GBS) and the availability of reference sequences in barley and wheat facilitate efficient marker development for major genes and quantitative trait loci (QTL) and pave the way for enhanced gene isolation. The isolation of genes involved in these traits will transfer breeding to the allele level and will facilitate the sequenced based identification of novel alleles in large gene bank collections and their directed use in plant breeding as well as site directed mutagenesis. Examples of using these genomic tools to improve resistance to fungal and viral pathogens as well as to insects and for improving drought stress tolerance in wheat and barley are given.

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