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COMMENTS

Comments on "Determination of heterozygosity for avirulence/virulence loci through sexual hybridization of *Puccinia striiformis* f. sp. *tritici*"

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Over the past decades *Puccinia striiformis* f.sp. *tritici* (*Pst*) has developed into one of the most, if not the most important fungal pathogen in wheat production worldwide. In China, *Pst* has caused numerous epidemics with partially devastating yield losses[1]. The occurrence of the "warrior" race in Europe in 2011 also caused significant problems[2]. *Pst*, like other obligate biotrophs, is characterized by a high degree of genetic variability, especially with respect avirulence/virulence development on specific host varieties. This variability may be caused by mutations, somatic recombination, or recombination during the sexual stage of the fungus. The discovery of the hitherto unknown alternate host for *Pst* in 2010[3] put a new focus on the role of sexual recombination in this variability[4,5]. With now 35 barberry species identified as potential alternate host for *Pst* in one of China's bread baskets (Gansu, Sichuan, Shaanxi, Yunnan and Tibet)[6,7], elucidating the role of the sexual cycle of *Pst* has become even more important. The work entitled "Determination of heterozygosity for avirulence/virulence loci through sexual hybridization of *Puccinia striiformis* f. sp. *tritici*" by Yuan TIAN, Gangming ZHAN, Xia LU, Jie ZHAO, Lili HUANG, and Zhensheng KANG, in this issue (DOI: 10.15302/J-FASE-2016114), is an important work in the light of giving breeders some indication as to which wheat varieties to use for future crosses. From the 25 wheat varieties tested, 17 turned out to carry resistance genes for which the corresponding *Pst* avirulence/virulence genes turned out to be heterozygous. Such lines should be excluded from future breeding programs as chances are high that resistances generated in the new cultivars will be rapidly overcome. As such this paper constitutes a major advance in understanding the intricate interaction of *Pst* and its host wheat, and at the same time provides practical cues for future breeding programs.

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Ralf T. Voegele, received his Diploma in Biology from the University of Konstanz, Germany, in 1989. He obtained his doctoral degree also from the University of Konstanz, Germany, in 1993 with work on "The Glycerol Facilitator from the Bacterium *Escherichia coli*." He continued his career with a postdoc at the University of Guelph, Canada, from 1993 to 1995, where he worked on the osmosensor ProP from *E. coli* with a fellowship provided by the Deutsche Forschungsgemeinschaft. He added another postdoc at McMaster University in Canada from 1996 to 1997, founded by the National Sciences and Engineering Research Council of Canada, working on phosphate transporters and malic enzymes in the PGPR *Sinorhizobium meliloti*. In 1998 he returned to the University of Konstanz and focused his work on rust fungi and the elucidation of the molecular details determining the interaction of these obligate biotrophs with their host plants. During this time he published several seminal articles on nutrient acquisition, metabolism and suppression of plant resistance mechanisms in rust fungi. He habilitated in 2008 at the University of Konstanz with the monograph "The Role of Haustoria in the Biotrophic Interaction of the Rust Fungus *Uromyces fabae* and Its Host Plant *Vicia faba*". He obtained the *venia legendi* for Phytopathology and Microbiology. Since 2010 he is Chair for Phytopathology at the Institute of Phytomedicine, Faculty of Agricultural Sciences of the University of Hohenheim, Germany. From 2010 to 2014 he was CEO of the Institute of Phytomedicine, and since 2014 he is Deputy-CEO of this institute. In 2015 he was elected Dean of the Faculty of Agricultural Sciences of the University of Hohenheim. Ralf Voegele is member of the Vereinigung für Allgemeine und Angewandte Mikrobiologie (VAAM), the American Society for Microbiology (ASM), the International Society for Molecular Plant-Microbe Interactions (IS-MPMI), the American Phytopathological Society (APS), and the Deutsche Phytomedizinische Gesellschaft (DPG). Since 2014 he is director of the working group "Host-Parasite Interactions" of the DPG. Over the past 25 years Ralf Voegele published more than 50 peer reviewed scientific articles and has numerous collaborators in the US, Brazil, Europe, Africa, Australia, New Zealand, and China.