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► **To cite this version:**

Fanny Calenge, Armelle Faure, Nadège Vallet, Marie-Pierre Joly, Estefania Ruiz, et al.. A QTL analysis reveals two major genomic regions involved in apple resistance to three races of *Venturia inaequalis*. 10.Plant and Animal Genome (PAG), Dec 2002, San Diégo, United States. hal-01601332

HAL Id: hal-01601332

<https://hal.science/hal-01601332>

Submitted on 4 Jun 2020

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Plant, Animal & Microbe Genomes X Conference

January 12-16, 2002
Town & Country Convention Center
San Diego, CA

Poster: Fruit Trees

A QTL ANALYSIS REVEALS TWO MAJOR GENOMIC REGIONS INVOLVED IN APPLE RESISTANCE TO THREE RACES OF *VENTURIA INAEQUALIS*

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Apple scab, caused by the fungal pathogen *Venturia inaequalis*, is one of the most serious diseases of apple. Two new races (6 and 7) of this fungus are able to overcome the complete resistance conferred by the frequently used major resistance gene *Vf* (Bénaouf and Parisi, 2000). Pyramiding major and minor resistance genes could be a way to obtain more durable scab resistant apple varieties. In order to understand the genetic bases of partial resistance to scab, five crosses between varieties carrying different levels of scab resistance were made during the European project D.A.R.E. (Lespinasse et al., 1999). In the present work, we studied a F1 progeny deriving from the cross between the English variety Discovery and the French hybrid TN10-8, both genotypes being partially resistant to scab. We constructed genetic maps of these parents with the JoinMap™ software. Five single-spore isolates, corresponding to the *Venturia inaequalis* races 1, 6 and 7, were chosen to carry out greenhouse pathological tests. Eight resistance QTLs were localized on the maps (LOD>2.5) with the MCQTL software (Jourjon et al., 2000). Two race-specific QTLs were localized on linkage groups (L.G.) 15 and 16 (following the denotation of Maliepaard et al., 1998). Three QTLs detected by three isolates belonging to races 6 and 7 colocalized on L.G. 2; three other QTLs detected by three isolates belonging to races 1 and 6 colocalized on L.G. 17. Both regions are already known to contain QTLs detected in other progenies: a powdery mildew resistance QTL on L.G. 2 (Dunemann et al., 2000) and a scab resistance QTL on L.G. 17 (Durel et al., under publication). Their effectiveness towards natural occurring *Venturia inaequalis* populations and thereby their interest as targets for marker-assisted selection needs to be confirmed.