



## Differential expression of resistance to powdery mildew at the early stage of development in wheat line N0308

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**ABSTRACT.** Powdery mildew, caused by *Blumeria graminis* f. sp. *tritici* (*Bgt*) is one of the devastating diseases of wheat and causes yield losses in temperate wheat growing regions. A wheat line, N0308 with resistance to powdery mildew was used in this study. A suppression subtractive hybridization cDNA library was constructed from the wheat leaves inoculated by *Bgt* at the two-leaf stage. The differentially expressed genes in response to *Bgt* infection in wheat were identified, and a total of 175 positive clones from the library were sequenced, and 90 expressed sequence tags (ESTs) were subjected to clustering, BLAST alignment, functional annotation, and classification into different categories. By comparing the EST sequences among the SSH-cDNA libraries, we analyzed gene expression patterns of 7 ESTs associated with the resistance reaction of powdery mildew by using semi-quantitative reverse transcription-polymerase chain reaction. The expression of 5 genes (sulfatase, pathogenesis-related protein 17, betacarboxic anhydrase 2, thioredoxin h-like protein, and coronatine-insensitive) transcripts was induced, and the transcript levels of these

genes were the highest at 72 h after *Bgt* infection, while those of 2 genes (violaxanthin de-epoxidase and gag-pol-polyprotein) were the highest level at 12 and 18 h post-infection, respectively. These findings suggest that these genes are induced at an early stage of infection and are transcriptionally activated for the host defense response.

**Key words:** Expressed sequence tags; Wheat; Powdery mildew; Suppression subtraction hybridization