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Differences in midgut gene expression between Bt exposed and unexposed Western bean cutworm

Differences in midgut gene expression between Bt exposed and unexposed western bean cutworm
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Control of the western bean cutworm (WBC) by transgenic corn hybrids that express *Bacillus thuringiensis* (Bt) has diminished over the past decade, such that crop damage is routinely observed in some regions of the United States and Canada. The midgut cellular response of WBC Cry1F resistant larvae was investigated at the transcriptional level by comparison of RNA sequencing (RNA-seq) data between full-sibs either exposed or unexposed to a sub-lethal Cry1F dose via toxin overlay bioassay (10,000 ng cm-2). Out of 52,371 assembled transcripts, 104 and 180 were respectively up- and down-regulated. Among these transcripts, the most highly up- and down-regulated genes respectively encode a glycoside hydrolase and a histone H3-like protein. No differential expression was predicted for transcripts from previously identified candidate Bt resistance genes (e.g. ABC transporters, aminopeptidase N, alkaline phosphatase, or cadherin). This information is important for understanding any variance in cellular response of Cry1Fa toxin resistant WBC larvae.