

## Chromosome 3, 76cM

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**BACKGROUND:** Dr. Y. Ji, University of Florida, indicated that there was an introgression associated with Ty4 gene on chromosome 3 near 76-85 cM. Originally, Ty4 was thought to be on chromosome 6 between 40-80 cM. Our UW-team scanned this region at 5-cM intervals and did not find any evidence for an introgression in Gc171, which gives the SCAR marker for Ty4. With this new information and the information from Dr. Ji, our group starting scanning chr. 3 from 66 - 85 cM to check for an introgression. Begomovirus resistant inbred used was G70, which was a selection from Gc171 by a susceptible hybrid. The susceptible germplasm was HUU-VF (lab code, W168, an inbred from Hebrew University of Jerusalem, F. Vidavski and H. Czosnek) and M82.

### Primers

P3-76F2, CAA TGG TGT GCT CGT CGA ATC AGA ATC GGA G

P3-76R2, GTT CCT TTT CAG CAT AGG CAG TAT TCC ATT TCG

Partial Sequence of Gc171, P3-76 F2R2: 936 bp; Gc171 is resistant to begomoviruses in Guatemala and the resistance gene was introgressed from *S. chilense* LA1932

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CAATGGTGTGCTCGTCGAATCGAATCGGAGCATGGAGTCCCATTGTCNACTGNAAAGGGA      60
GGGCTTTGATGTGGCCTCCATATGGCACTGGGCAACATGTAAAGCTTCCTGGTCCTTCTA      120
TTAGGGAACCAAATGTTTACGACTTCGGGCACTCCTTATAAGCAGATGTTTCGATGACCTC      180
CGCCGCAAAGACGTCGAACGTGAAGCCAAAATGTCATTTATGCCTTTTCTAATTATCGTC      240
TCCTTTTGCTAATTCCTTGAACCTCTCTGTGTTTAAAATTTTCGTGTGTCGCTCAATTCAGT      300
TACCATAAATAACCCCTAATATGTGTAGAGTCTGTTATTTGCGCTGCACGAAGTGAATTT      360
AAGGATTTTCCATCTGCTAGGATTTGTATGATCTTCTTGAAGCTTTTGGATGCCTAATAT      420
CCTGTTCTAGTTTCCTTACCTTAATGGACAATTAGCATAATAAAAATCGGAGGAGTTAATG      480
TAAGGGTATTTCATACAAGTATAAATTTTACAAGAACTTCTCGTTTCGTTAGACGCCAATG      540
GAGGTTTCTTTTAGGGAAAAAGTGTCTATCATTATTTCAAATGAGACAGGGGTCTGTAA      600
CAGGATTTCTATGTGTATTTGGAGTTGTTTTATTCTTGCGGATAAAATTTTAGAACTTTGT      660
TTAGTTTTTGACTTCTGAATACGGGTAAAGTTGCATATTTTGGAAATACGAAATTCAAA      720
TGTTCACGCCATGATAATGTGGTGTGTTCCTTTTTCAGGACAAAAGTCACAACCTCCACC      780
GTGTTTCTATGCTTTGAGATGGCTATTATACCTAGAATTGTTGGCAAATATTGCTTTATT      840
TTCAGAATCCTCTGTTTTAATCAAATTAGGGTTGAGCCTCAGTTTCATTTCCAGGTAC      900
AAACGAAATGGAATACTGCCTATGCTGAAAAGGAAC      936
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Partial Sequence of M82 (susceptible), P3-76 F2R2: 915 bp;

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CAATGGTGTGCTCGTCGAATCAGAATCGGAGCATGGAGTCCATTTGTCTACTGAAAAGGG      60
AGGATTTGATGTGGCCTCCATATGGCACTGGGCAACATGTAAAGCTTCCTGGTCCTTCTA      120
TTAGGGAACCAAATGTTTACGACTTCGGGCACTCCTTATAAGCAGATGTTTCGATGACCTCC      180
GCCGCAAAGACGTCGAACGTGAAGCCAAAATGTCATTTATGCCTTTTCTAATTATCGTCT      240
CCTTTTGCTAATTCCTTGAACCTCTCTGTGTTTAAAATTTTCGTGTGTTACTCAATTCAGTT      300
ACCATTAATAACCCCTAATATGTGTAGTGTCTGTTATTTGCGCTGCACGAAGTGAATTTA      360
AGGATTTTCCATCTGCTAGGATTTGAATGATCTTCTTGAAGCTTTTGGATGCCTAATATC      420
CTGTTCTAGTTTTCCTTACCTTAATGGACAATTAGCATAATAAAAATCGGAGGAGTTAATGT      480
AAGGGTATTTCATATAAGTATAAATTTTACAAGAACTTCTCGTTTCGTTAGACGCCAATGG      540
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419 TCCTGTTCTAGTTTCCTTACCTTAATGGACAATTAGCATAATAAAATCGGAGGAGTTAAT
    |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
420 TCCTGTTCTAGTTTCCTTACCTTAATGGACAATTAGCATAATAAAATCGGAGGAGTTAAT

479 GTAAGGGTATTCATATAAGTATAAAATTTTACAAGAACTTCTCGTTTCGTTAGACGCCAAT
    ||||||||||||||||||| ||||||||||||||||||| |||||||||||||||||||
480 GTAAGGGTATTCATACAAGTATAAAATTTTACAAGAACTTCTCGTTTCGTTAGACGCCAAT

539 GGAGGTTTCTTTTTAGGGAAAATGTGTCTATCATTATTTCACATGAGACAGGGGGTCTGT
    ||||||||||||||||||| ||||||||||||||||||| |||||||||||||||||||
540 GGAGGTTTCTTTTTAGGGAAAAAGTGTCTATCATTATTTCAAATGAGACA.GGGGTCTGT

599 AACAGGATTTTCATGTGTATTTGGAGTTGTTTTATTCTTGCGGATAAAATTTTAGCAC.TT
    ||||||||||| ||||||||||||||||||| ||||||||||||||||||| |||
599 AACAGGATTTCTATGTGTATTTGGAGTTGTTTTATTCTTGCGGATAAAATTTTAGAACTTT

658 GTTTAGTTTTTTGACTTCTGAATATGGGTAAAGTTGCATATTCTGGAATACGAAATTCTCA
    ||||||||||||||||||| ||||||||||||||||||| |||||||||||||||||||
659 GTTTAGTTTTTTGACTTCTGAATACGGGTAAAGTTGCATATTTTGGAATACGAAATTCTCA

718 AATGTTCCACGCCATGATAATGTGGTGTGTTCTTTTTCAGGACAAAACGTCACAACCTCC
    ||||||||||||||||||| ||||||||||||||||||| |||||||||||||||||||
719 AATGTTCCACGCCATGATAATGTGGTGTGTTCTTTTTCAGGACAAA.AGTCACAACCTCC

778 ACCGTGTTTCTATACTTTGAGATGGCTG.....ATATTGCTTT
    ||||||||||||||| ||||||||||||||| |||||||||||
778 ACCGTGTTTCTATGCTTTGAGATGGCTATTATACCTAGAATTGTTGGCAAATATTGCTTT

816 ATTTTCAGAATCCTCTTGTTTTAATTCAAATTAGGGTTGAGCCTCAATTTCAATTTCCAG
    ||||||||||||||||||| ||||||||||||||||||| |||||||||||||||||||
838 ATTTTCAGAATCCTCTTGTTTTAATTCAAATTAGGGTTGAGCCTCAGTTTC.ATTTCCAG

876 GTACAAACGAAATGGAATACTGCCTATGCTGAAAAGGAAC
    ||||||||||||||||||| |||||||||||||||||||
897 GTACAAACGAAATGGAATACTGCCTATGCTGAAAAGGAAC

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Blast Search

The sequence matched with 96% to the following:

**SGN-M7043 C2\_At1g73820**  
 Tomato-EXPEN 2000 v52  
 Arabidopsis COSII v44

Summary

The Sequence data for Gc171 was excellent. When a comparison was done between Gc171 (inbred resistant) and either M82 and HUI –VF (susceptible plants), the results showed numerous differences. In the above comparison, the nucleotides shown in red all were differences. The results indicate that there is an introgression in Gc171 at 76 cM.