

Chromosome 3, 75.7cM

Adam Rasmussen and Douglas Maxwell
University of Wisconsin-Madison
February 11, 2009

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

P3-75.7F: GTG GAG AGT AAA TTT GGT G

P3-75.7R: GCA CCC CAT CTT CAT TTG C

Annealing temperature: 53 C.

Partial Sequence of G70 (resistant inbred), p3-75.7

	TTTTATTCAa	120
GGTTAGATGTACCAATTACTCATTCCATCACGCTCCCATCCCTGGAAAACCCTAATGGAA		180
CGCACCCtTTCGTTTCTGTCCCTTGATtTATGCCTCTTCTCAGTATATTCTTCATCTTGT		240
CTGTAGTtAGTTTGTGATTGAATCGAAaTATAGGTCACTAGAATACaTAaCaACTCTTTC		300
CCATTTAGTTTGTACTAGACATGAAGTTTAGTAAAATAAAATAGACCTTTTAATCGGGtGG		360
TCCTCCCTTCGCTATCTTTtGATAACAAGTTATTTCAgTTGATAAAAAATAATCCAAAGAG		420
TACCTTCATCCAAAtGtGGATACATTATTATACTTTATAAACTCTTCGAAAAATAACTT		480
AGGATGTTGACGTTAAAAATTTAATAACACAAACTAaTAAATAAGTAAAACACAATGAAT		540
TGAAAACAGCGGACCATTTTATTTTATCTAGCACTATTTtGATTTGACGGGATAATTTCTTTC		600
ATAGTTGAATGCTTAATCCACTTGAATTGTTGAAAGTTGTTAATTTGGGTAAAATAAAA		660
TTATTTGTTGTATGCGGGTGAAGTCTTTATGTTGAAGTTCATCAAGTAGAATATTCGGTG		720
CTTGCTCTTGGGTtACTTTCACAAGGTTATGCTCTGTTTCGACAATCAATGACTATCAATTG		780
AGAGATATGAATGTAGCCTTAGTATATCCCTTCTTGTTCATAGCTAGAATTTTGGAGT		840
GTGGCGATTTATAAGATTCACGCCAAGAATTTCAAATTTGCAAATCATTTAGCCAGGGC		900
CAGGACTGGAGAAGCATGCTTTCCCTGGAAATCTAGAAATGGAAAAATTAATAACG		960
TGACAAGCTAGAGCCAAGCTCCTGTTATTTTTCTTCTAATAGAATACCTTTTTTTATGAC		1020
CGTGAGGTCGACCTTGACAAATCCACATGGGATACTTGTACCTCCCACCAACAAGGTAT		1080
TCCGTAACCTTAGTCCACCAAAGCTAGGACAGTGGCAAGAATCACCTAATGCTAACAGAAT		1140
ATCCTTTAATtACTAGGAAGGTGAAAATTCAGAAGGTAATAATAGATCAATCACTCTTCG		1200
TGGTTTGGCTGCATGAATTACTCTAATGTTGGGTTTcAGCCTTCACGTAAACCTGGTTATA		1260
TAGGAAAAGAACCAAGGACGGAGCCANGTAGTGCCGACCCCTTCGATAGAAAATACAC		1320
TATTTATGTATGGTTAAAATGTTTTTTTaTGCGGTGTTGAACCTCTTTGTCTTCTTAG		1380
TGAGTTTACCTTTCATATTTCGAATCATCTTAAcAAAAATCTAACTCAGCCACTGTTGAA		1440
AACTGTGTTTTAATAAGTAAAATCTAAGATCTTTATTAGgTtGAATTGGATAAAAATAGC		1500
CCACACTGTTGTCGAT		1516


```

181  TAACAGAATATCCTTTAATTACTAGGAAGGTGGAAATTCAGAAGGTAATAATAGATCAAT
    |||
1022 TAACAGAATATCCTTTAATTACTAGGAAGGTGGAAATTCAGAAGGTAATAATAGATCAAT

241  CACTCTCCGTGGTTTGGCTGCGTGAATTACTGTAATGTTGGGTTTCAGCCTTCACGTAAAC
    |||
1082 CACTCTTCGTGGTTTGGCTGCATGAATTACTCTAATGTTGGGTTTCAGCCTTCACGTAAAC

301  CTGGTTATATAGGAAAAGAACCAAGGACGGAGCCATGTAGTGCCGACCCCTTCGATAG
    |||
1142 CTGGTTATATAGGAAAAGAACCAAGGACGGAGCCATGTAGTGCCGACCCCTTCGATAG

361  AAAATACACTATTTATGTATGGTTGAAATTNTTTTTTTCTGCGGCGTTGAACCCTCTATG
    |||
1202 AAAATACACTATTTATGTATGGTTAAAATTGTTTTTTTATGCGGTGTTGAACCCTCTTTG

421  TCTTCTTCGTGAGTTT

```

Summary

The sequence data for G70 was very good. When a comparison was done between G70 (resistant inbred) and either susceptible plant (M82 or W168), the results showed a number of differences. Between G70 and M82 there were 25 notable differences, mostly single nucleotide polymorphism (SNPs), and between G70 and W168 there were 20 differences, also mostly SNPs. In the above comparison, all the shown gaps (indels) are differences. The results indicate that there is an introgression in G70 at the 75.7 cM.