

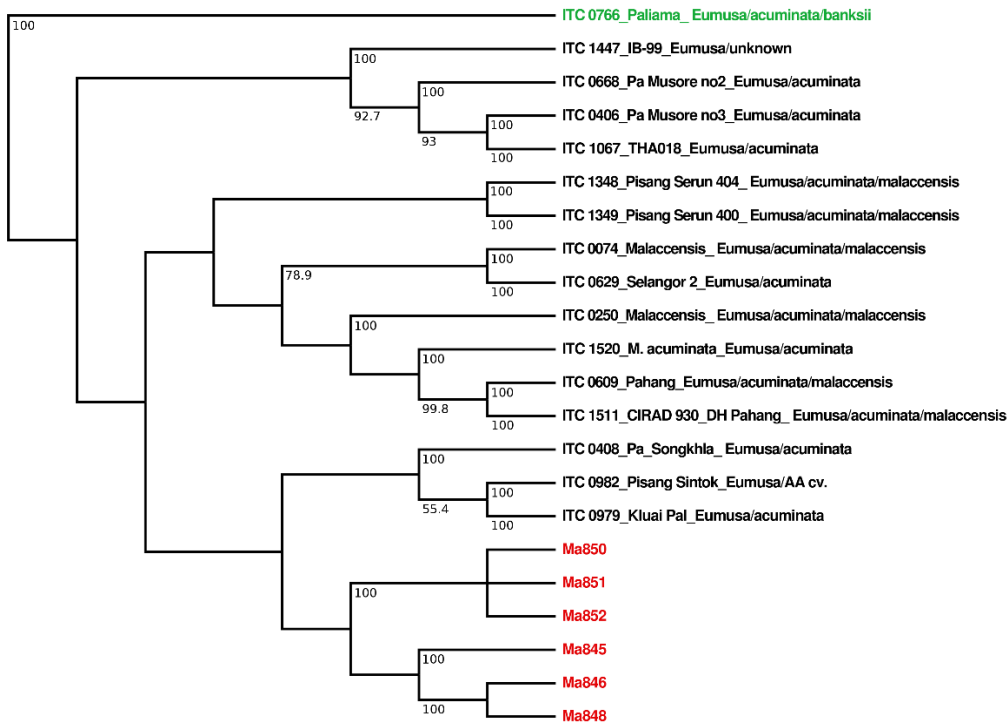
# Identification of a major QTL controlling resistance to the Subtropical Race 4 of *Fusarium oxysporum* f. sp. *cubense* in *Musa acuminata* ssp. *malaccensis*.

## Supplementary Data

Figure S1.

Table S1.

Table S2.



**Figure S1.** UPGMA analysis of ‘Ma845’, ‘Ma846’, ‘Ma848’, ‘Ma850’, ‘Ma851’, ‘Ma852’ using SSR genotyping and *M. acuminata*, ssp. *malaccensis* accessions from the *Musa* core collection. Bootstrap support values higher than 50% are marked below the corresponding branches. The accessions used in this study are highlighted in red. The *M. a.* ssp. *banksii* used as an outgroup to anchor the whole group is highlighted in green.

**Table S1.** Annotated effects in Sequence Ontology (SO) terms associated with the variants detected in the ‘SnEff’ analysis. The SO numbers are listed next to the terms. The up- and down- stream regions define a 5 Kb sequence extending from the respective 3’ and 5’ UTRs. The splice\_region\_variant corresponds to a region within 1-3 bp of the exon and 3-8 bp of the intron. The transcript\_variant is associated with non-coding transcript variants. The gene\_variant is associated with gene fusion variants. Count and percent show the total number of effects and a percentage associated with these terms, respectively.

Effect Seq. Ontology (SO)	Count	Percent
intergenic_region (0000605)	2,083,710	29.37
upstream_gene_variant (0001631)	1,805,574	25.45
downstream_gene_variant (0001632)	1,797,363	25.33
intron_variant (0001627)	1,004,165	14.15
exon_variant (0001791)	263,738	3.72
3_prime_UTR_variant (0001624)	65,819	0.93
5_prime_UTR_variant (0001623)	53,746	0.76
splice_region_variant (0001630)	20,030	0.28
splice_donor_variant (0001575)	642	0.01
splice_acceptor_variant (0001574)	506	0.01
transcript_variant (0001576)	407	0.01
gene_variant (0001564)	10	0

**Table S2.** A list of putatively defined candidate genes with potential roles in *Foc* STR4 resistance. The genes are retrieved from the DH-Pahang v4.3 assembly. RLK: receptor-like Kinase; RLP: receptor-like protein; NBS: nucleotide binding site; NBS-LRR: nucleotide binding site and leucine-rich repeat; STK: serine/threonine kinase; ERL2: ERECTA-like 2; GSO1: GASSHO1; CEPR2: C-terminally encoded peptide receptor 2; TMK1: transmembrane kinase 1; EIX2: ethylene-inducing xylanase 2; CC: coiled-coil; NB-ARC: nucleotide-binding adaptor shared by APAF-1, R proteins and CED-4; RPP13: recognition of *Peronospora parasitica* (a.k.a *Hyaloperonospora arabidopsidis*) 13; RGA: resistance gene analog; BTB/POZ: broad complex, tramtrack and bric-à-brac/poxirus and zinc finger; AC: adenyl cyclase; ANK: ankyrin repeats; NPR1: Nonexpressor of pathogenesis-related genes 1. An asterisk (\*) next to the gene name denotes the presence of exon SNP variants detected from 'ANNOVAR'. The ^ symbol denotes gene accessions associated with the enriched GO:0043531 (ADP binding) in the GO category of Molecular Function.

Gene Name	Description	Category
Macma4_03_g25720.1	Calcium/calmodulin-regulated receptor-like kinase 1	RLK
Macma4_03_g29370.1	Cysteine-rich receptor-like protein kinase 2	RLK
Macma4_03_g31620.1	Cysteine-rich receptor-like protein kinase 6	RLK
Macma4_03_g31330.1	Cysteine-rich receptor-like protein kinase 6	RLK
Macma4_03_g31510.1	Cysteine-rich receptor-like protein kinase 6	RLK
Macma4_03_g31480.1	Cysteine-rich receptor-like protein kinase 6	RLK
Macma4_03_g31540.1*	Cysteine-rich receptor-like protein kinase 6	RLK
Macma4_03_g25670.1	G-type lectin S-receptor-like serine/threonine kinase At1g11330	RLK
Macma4_03_g32260.1*	Leaf rust 10 resistance locus receptor-like kinase-like 1.2	RLK
Macma4_03_g32230.1*	Leaf rust 10 resistance locus receptor-like kinase-like 1.2	RLK
Macma4_03_g32280.1	Leaf rust 10 resistance locus receptor-like kinase-like 1.2	RLK
Macma4_03_g32270.1*	Leaf rust 10 resistance locus receptor-like kinase-like 1.3	RLK
Macma4_03_g32220.1	Leaf rust 10 resistance locus receptor-like kinase-like 2.1	RLK
Macma4_03_g32240.1	Leaf rust 10 resistance locus receptor-like kinase-like 2.1	RLK
Macma4_03_g26300.1*	Leaf rust 10 resistance locus receptor-like kinase-like 2.3	RLK
Macma4_03_g26540.1	LRR receptor-like serine/threonine-protein kinase ERL2	RLK
Macma4_03_g31350.1*	LRR receptor-like serine/threonine-protein kinase GSO1	RLK
Macma4_03_g31320.1*	LRR receptor-like serine/threonine-protein kinase GSO1	RLK
Macma4_03_g29270.1	Receptor-like serine/threonine-protein kinase At3g01300	RLK
Macma4_03_g24460.1	Receptor protein-tyrosine kinase CEPR2	RLK
Macma4_03_g25180.1	Receptor protein kinase TMK1	RLK
Macma4_03_g28830.1	Protein kinase domain-containing protein	RLK
Macma4_03_g29810.1*	Protein kinase domain-containing protein	RLK
Macma4_03_g30040.1	Protein kinase domain-containing protein	RLK
Macma4_03_g30400.1	Protein kinase domain-containing protein	RLK
Macma4_03_g30950.1	Protein kinase domain-containing protein	RLK

Macma4_03_g31060.1	Protein kinase domain-containing protein	RLK
Macma4_03_g31640.1*	Receptor-like protein EIX2	RLP
Macma4_03_g31660.1*	Receptor-like protein EIX2	RLP
Macma4_03_g31580.1	Receptor-like protein EIX2	RLP
Macma4_03_g31530.1	Receptor-like protein EIX2	RLP
Macma4_03_g31410.1	Receptor-like protein EIX2	RLP
Macma4_03_g31450.1	Receptor-like protein EIX2	RLP
Macma4_03_g31520.1*	Receptor-like protein EIX2	RLP
Macma4_03_g31610.1	Receptor-like protein EIX2	RLP
Macma4_03_g31460.1*	Receptor-like protein EIX2	RLP
Macma4_03_g31630.1*	Receptor-like protein EIX2	RLP
Macma4_03_g32400.1	Receptor-like protein EIX2	RLP
Macma4_03_g31550.1*	Receptor-like protein EIX2	RLP
Macma4_03_g31370.1	Receptor-like protein EIX2	RLP
Macma4_03_g31470.1	Receptor-like protein EIX2	RLP
Macma4_03_g31590.1	Receptor-like protein EIX2	RLP
Macma4_03_g31570.1*	Receptor-like protein EIX2	RLP
Macma4_03_g31500.1	Receptor-like protein EIX2	RLP
Macma4_03_g30450.1^	Disease resistance protein (CC-NBS-LRR)	NBS-LRR
Macma4_03_g30580.1*^	Disease resistance protein (CC-NBS-LRR)	NBS-LRR
Macma4_03_g30500.1*^	Disease resistance protein (CC-NBS-LRR)	NBS-LRR
Macma4_03_g30560.1*^	Disease resistance protein (CC-NBS-LRR)	NBS-LRR
Macma4_03_g30530.1*^	Disease resistance protein (CC-NBS-LRR)	NBS-LRR
Macma4_03_g30590.1^	Disease resistance protein (CC-NBS-LRR)	NBS-LRR
Macma4_03_g30490.1*^	Disease resistance protein (CC-NBS-LRR)	NBS-LRR
Macma4_03_g30510.1*^	Disease resistance protein (CC-NBS-LRR)	NBS-LRR
Macma4_03_g30840.1*^	Disease resistance protein (CC-NBS-LRR)	NBS-LRR
Macma4_03_g30470.1*^	NB-ARC domain-containing protein	NBS
Macma4_03_g30480.1^	NB-ARC domain-containing protein	NBS
Macma4_03_g24770.1*^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24780.1^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24800.1^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24810.1*^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24820.1*^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24830.1*^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24850.1*^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24860.1^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24880.1*^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24890.1^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24910.1^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24930.1^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g30600.1^	Disease resistance RPP13-like protein 1	NBS-LRR
Macma4_03_g24870.1^	Disease resistance protein RGA1	NBS-LRR
Macma4_03_g24920.1*^	Disease resistance protein RGA1	NBS-LRR
Macma4_03_g30570.1^	Disease resistance protein RGA1	NBS-LRR
Macma4_03_g30440.1*^	Disease resistance protein RGA2	NBS-LRR
Macma4_03_g30460.1*^	Disease resistance protein RGA3	NBS-LRR
Macma4_03_g27700.1^	Disease resistance protein RGA4	NBS-LRR
Macma4_03_g30540.1^	NBS-type disease resistance protein	NBS
Macma4_03_g30550.1^	conserved hypothetical protein	NBS
Macma4_03_g24790.1^	Putative disease resistance protein At3g14460	AC
Macma4_03_g28590.1*	BTB/POZ domain and ankyrin repeat-containing protein NPR1	ANK