

## Supplemental Information

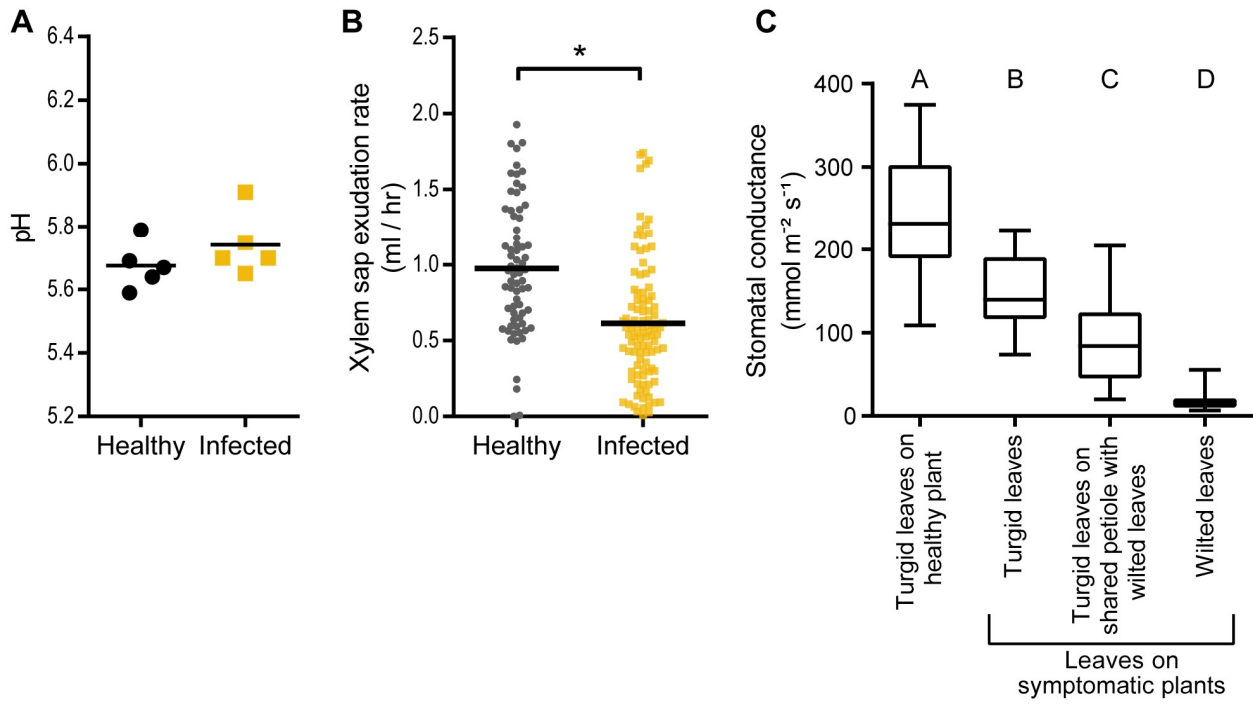


Figure S1. Effect of bacterial wilt disease on tomato xylem sap pH and xylem physiology. (A) Xylem sap pH ( $n=5$ ) and (B) rate of xylem sap exudation from de-topped tomato stems ( $*P<0.0001$   $t$ -test;  $n\geq 69$  plants). Samples are from cv. Bonny Best tomato plants soil-soak inoculated with *R. solanacearum* GMI1000 (Infected) or water (Healthy). Sap was harvested when plants displayed first wilting symptoms. (C) Stomatal conductance of Bonny Best tomato leaves was measured with a Licor Photosynthesis instrument. Turgid leaves from healthy plants and apparently turgid and wilted plants from symptomatic plants soil-soak inoculated with *R. solanacearum* GMI1000 were analyzed;  $n\geq 18$ , letters indicate  $P<0.05$  by ANOVA with Tukey's multiple comparison test.

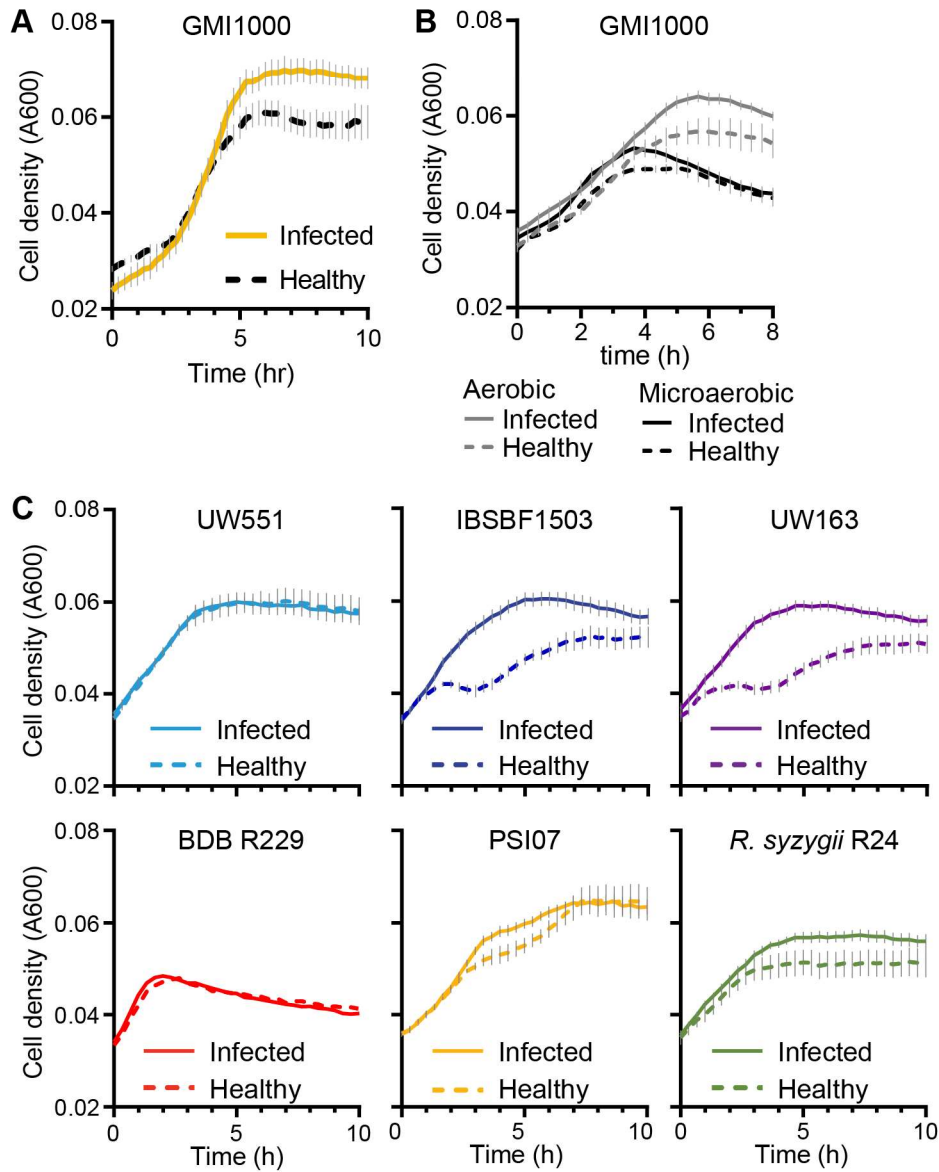


Figure S2. Growth of diverse *R. solanacearum* strains in *ex vivo* xylem sap from healthy tomato plants or from plants infected with *R. solanacearum* GMI1000. (A) Growth of *R. solanacearum* GMI1000 in sap from tomato cv. Money Maker plants resembles growth in sap from GMI1000-infected tomato cv. Bonny Best plants shown in Fig. 1. (B) Aerobic and microaerobic (0.1% O<sub>2</sub>) growth of *R. solanacearum* GMI1000 in xylem sap from tomato cv. Bonny Best tomato plants. (C) Growth of diverse *R. solanacearum* strains (phylogroup IIB UW551, phylogroup IIB IBSBF1503, phylogroup IIB UW163, phylogroup IV Blood disease bacterium (BDB) R229, phylogroup IV PSI07, phylogroup IV *R. syzygii* R24) in xylem sap from tomato cv. Bonny Best plants.  $n \geq 3$  pools of xylem sap for all growth experiments. Data are mean  $\pm$  SEM.

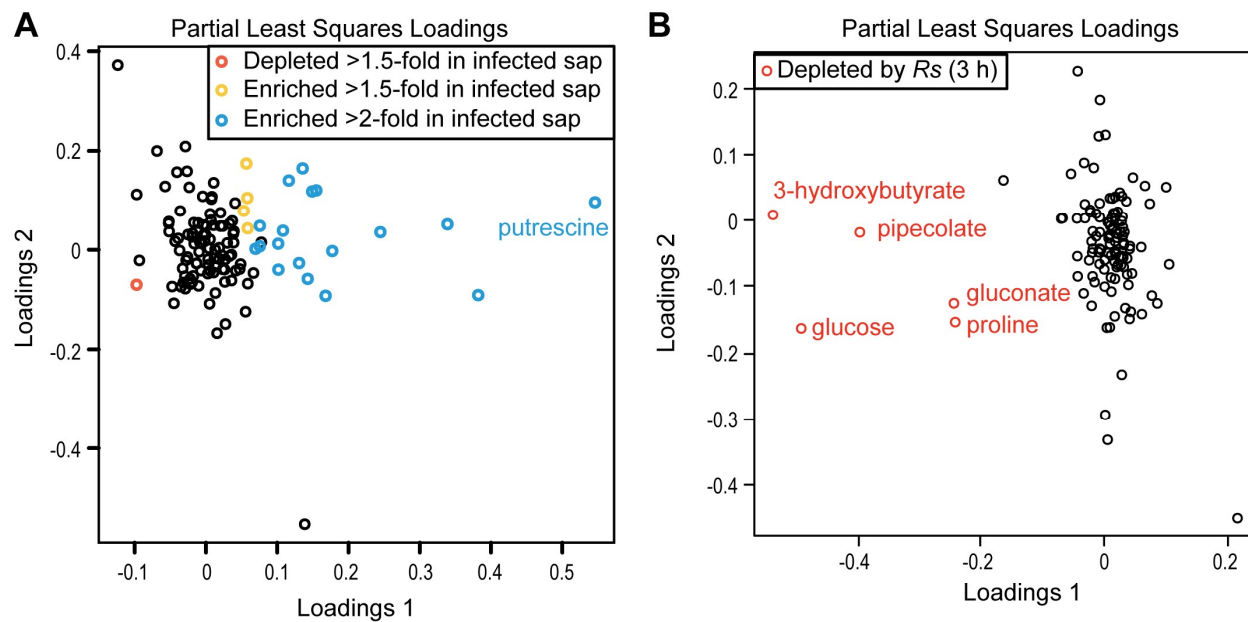


Figure S3. Loadings for partial least squares analyses of metabolomics data. (A) Relative amounts of metabolites from healthy tomato sap vs. *R. solanacearum*-infected sap as detected by untargeted GC-MS analysis. (B) Comparison of metabolomic changes in *ex vivo* sap after 3 h incubation with *R. solanacearum*.

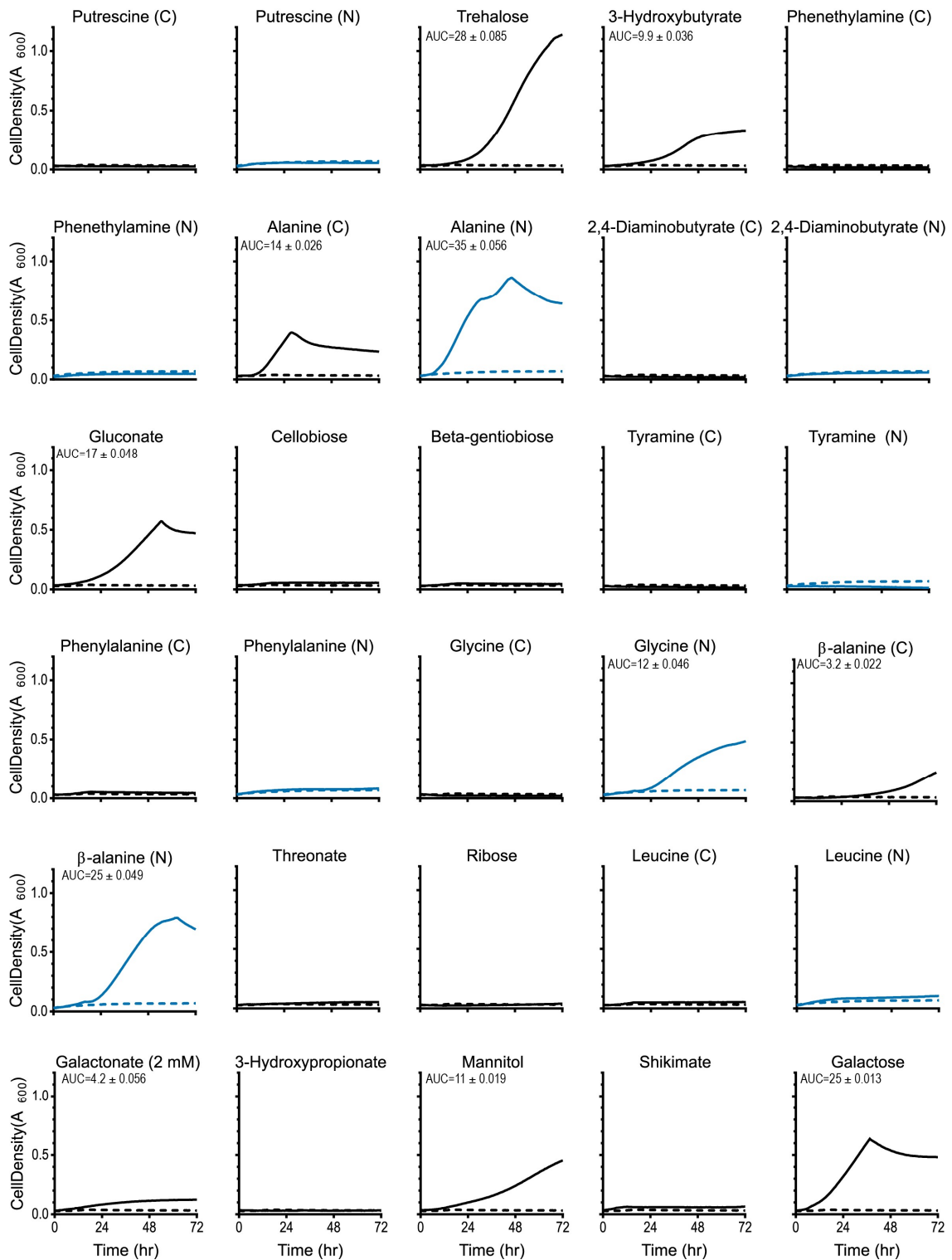


Figure S4. Growth of *R. solanacearum* GMI1000 on metabolites enriched or depleted in xylem sap from *R. solanacearum* GMI1000-infected tomato plants vs. healthy plants. Metabolites (identified as shown in Fig 1) were tested as sole carbon sources (black) and sole nitrogen sources (blue) at 10 mM unless otherwise indicated. Dashed lines show negative controls lacking either carbon or nitrogen sources and solid lines show growth on test metabolites. Area under curve (AUC  $\pm$  standard error) is indicated for metabolites that supported growth. N=3.

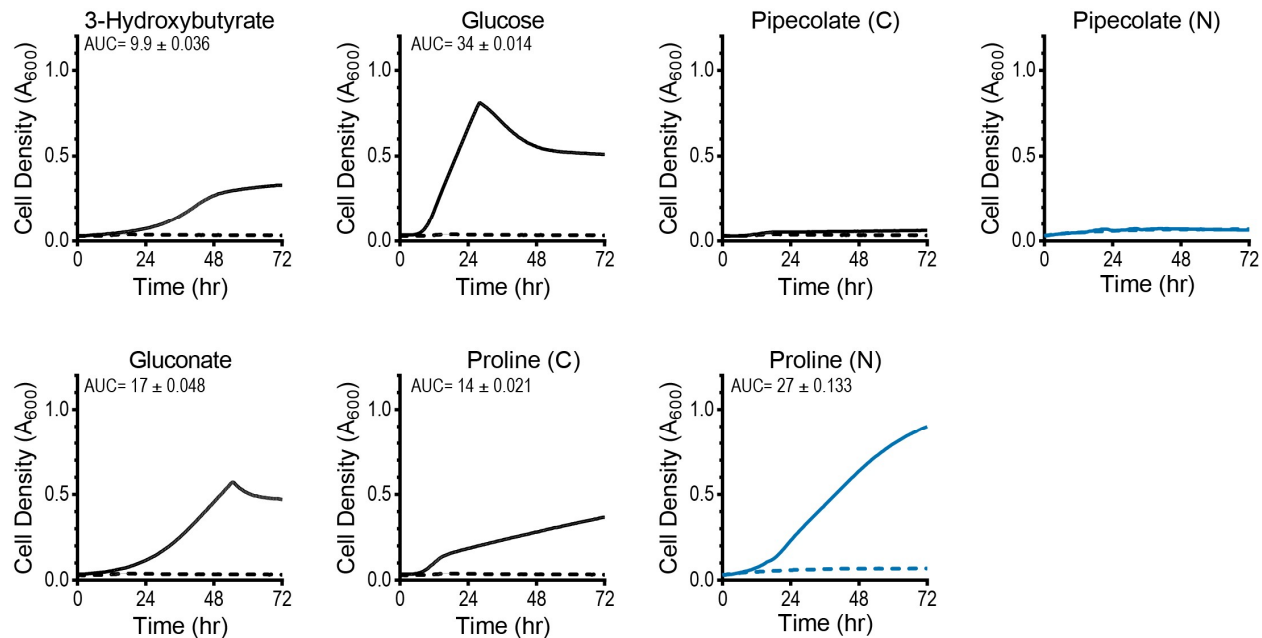


Figure S5. Growth of *R. solanacearum* GMI1000 on metabolites that were depleted in *ex vivo* sap incubated for 3 h with *R. solanacearum*. Metabolites (identified as shown in Fig 2 and S3B) were tested as sole carbon sources (black) and nitrogen sources (blue) at 10 mM in minimal medium unless otherwise indicated. Area under growth curve (AUC  $\pm$  standard error) is indicated for metabolites that supported growth. N=3.

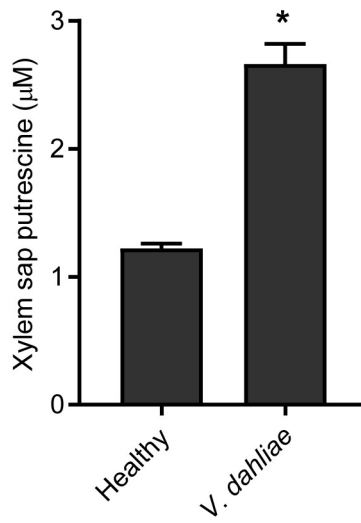


Figure S6. Xylem sap from tomato plants infected with *V. dahliae* has enriched putrescine. Xylem sap was harvested at symptom onset from tomato plants (cv. Money Maker) infected with wilt fungus *Verticillium dahliae*; water-inoculated plants served as controls. Putrescine was measured by LC-MS. Values are mean  $\pm$  SEM. (\* $P < 0.05$  vs. healthy, t-test,  $n \geq 3$  pools).

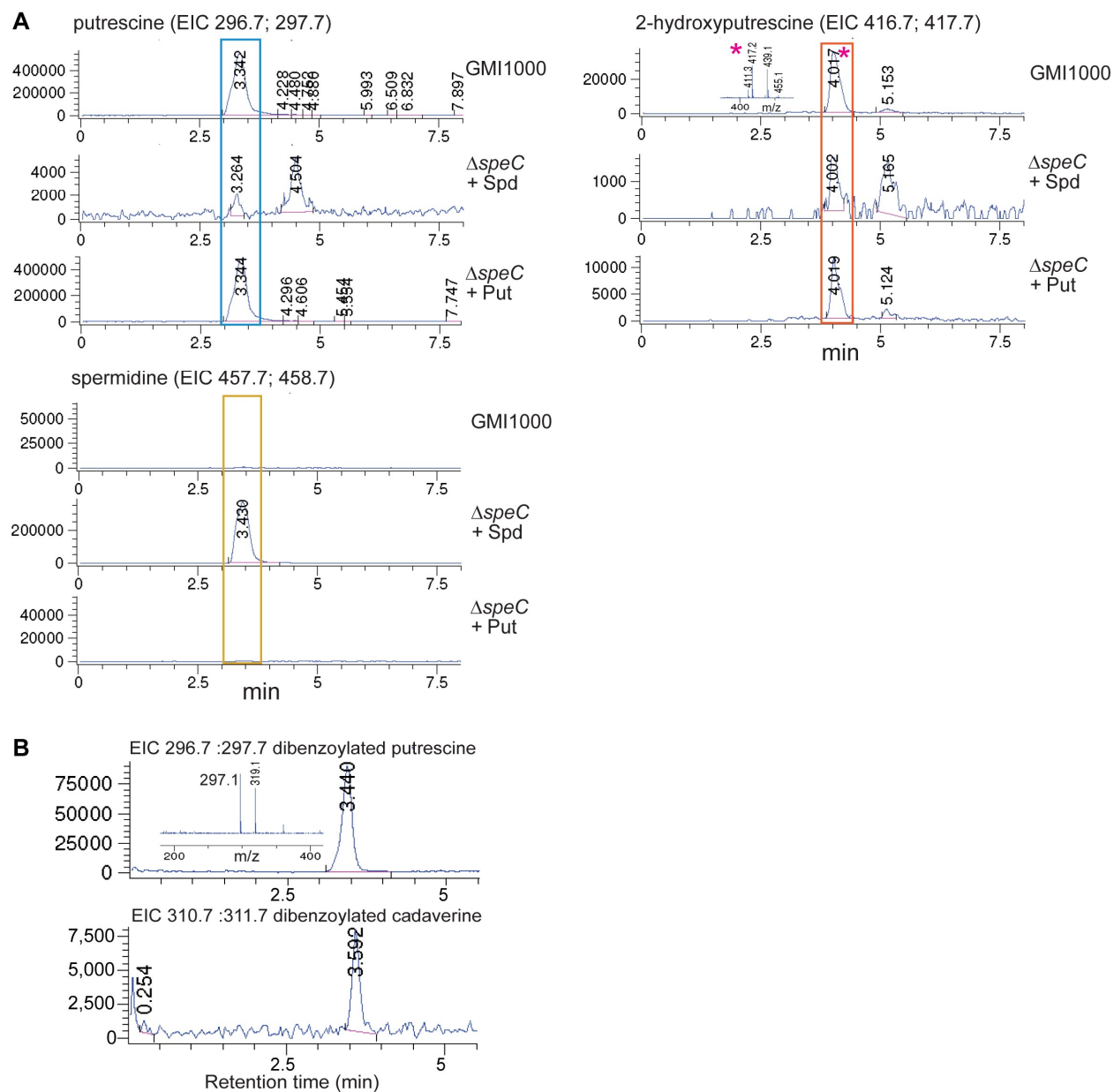


Figure S7. Polyamine profile of *R. solanacearum* cells and substrate specificity of RSc2365 SpeC. (A) Polyamine profile of *R. solanacearum* cell pellets grown in defined medium as determined by LC-MS analysis of the cellular benzoylated polyamines. *R. solanacearum* GMI1000 and  $\Delta$ speC mutant strains were grown in minimal medium with or without 500  $\mu$ M putrescine (Put) or spermidine (Spd). Extracted ion chromatograms are shown for dibenzoylated putrescine (296.7; 297.7); tribenzoylated 2-hydroxyputrescine (416.7; 417.7); tribenzoylated spermidine (457.7; 458.7). The mass spectrum for the 2-hydroxyputrescine peak at 4.017 min is indicated by an asterisk in the GMI1000 sample; a peak of 417.2 (m/z) for 2-hydroxyputrescine is found, along with the sodium adduct at +22 (m/z 439.1). Boxes indicate the peaks corresponding to putrescine, 2-hydroxyputrescine, and spermidine. Representative results from lysates analyzed in triplicate are shown. (B) Substrate specificity of RSc2365 decarboxylase was determined by an ornithine/lysine substrate competition *in vitro* assay using recombinant SpeC. Purified SpeC protein (2  $\mu$ M) was assayed for 1 h at 22°C in the presence of equal amounts (10 mM) of both L-lysine and L-ornithine. After benzoylation of the products, the resulting diamines (putrescine and cadaverine) were detected by LC-MS. Extracted Ion Chromatograms (EIC) for the mass of dibenzoylated putrescine (296.7; 297.7) and dibenzoylated cadaverine (310.7; 311.7) are shown. Identity of the peak for dibenzoylated putrescine (3.440 min) was confirmed by the presence of the corresponding mass (m/z 297.1 and sodium adducted form at m/z 319.1) in the mass spectrum (inset).

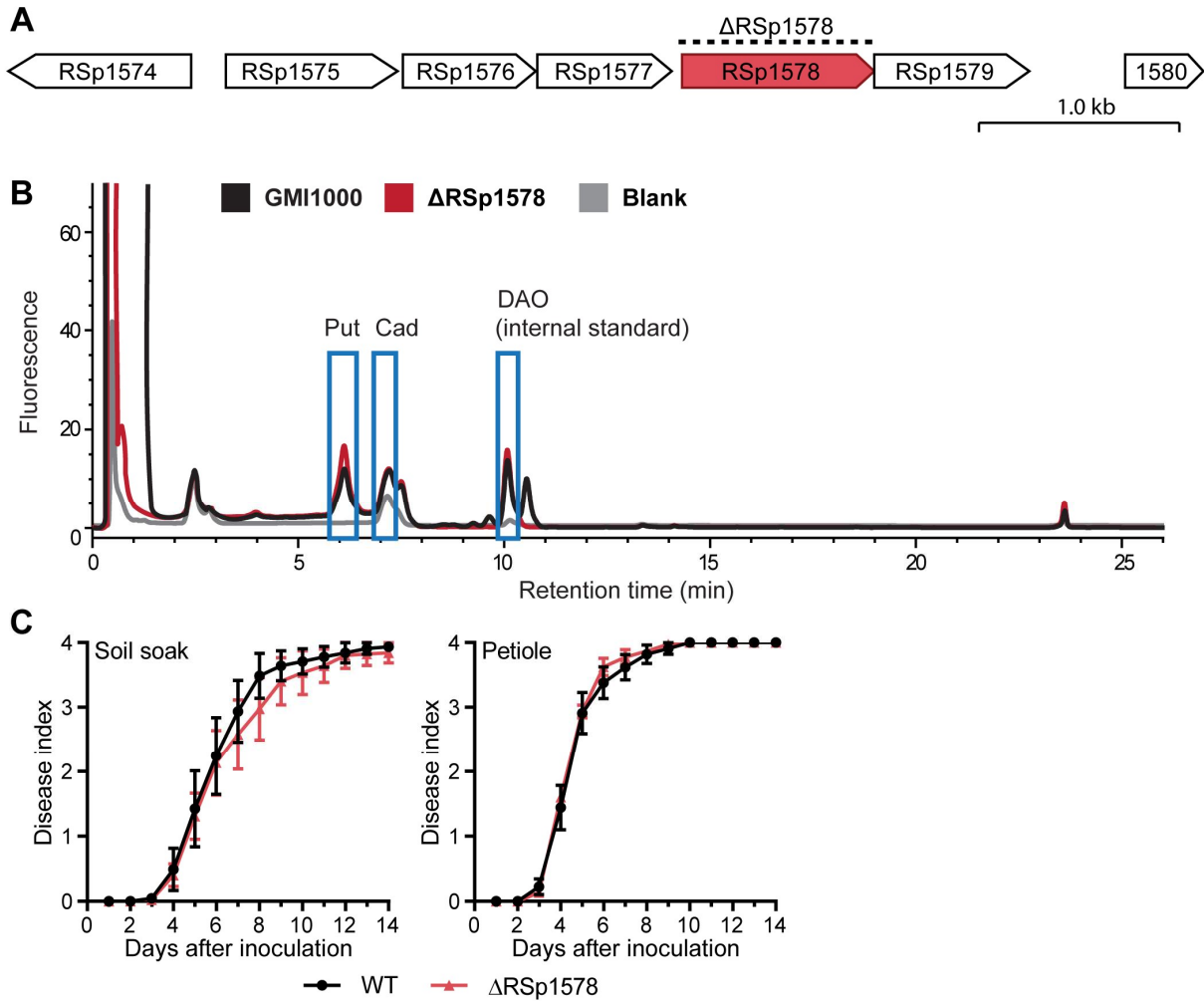


Figure S8. The RSp1578 locus (encoding a putative agmatinase) does not contribute to *R. solanacearum* putrescine production or *R. solanacearum* virulence. (A) Genomic context of RSp1578 in the *R. solanacearum* strain GMI1000 genome. Dashed line indicates region deleted  $\Delta$ RSp1578 mutant. (B) Polyamine profile of GMI1000 and  $\Delta$ RSp1578 mutant. Cell lysate polyamines were derivatized with dansyl chloride. HPLC trace (fluorescence excitation: 333 nm; emission: 518 nm) of representative samples. Peaks corresponding to putrescine, cadaverine, and internal standard 1,8-diaminooctane (DAO). Representative results are shown for lysates analyzed in triplicate. (C) Virulence of the  $\Delta$ RSp1578 mutant on wilt-susceptible tomato cv. Bonny Best after soil soak inoculation ( $5 \times 10^8$  CFU  $g^{-1}$  soil) or stem inoculation ( $10^3$  CFU). Values are mean  $\pm$  SEM ( $n=45$  plants/treatment).



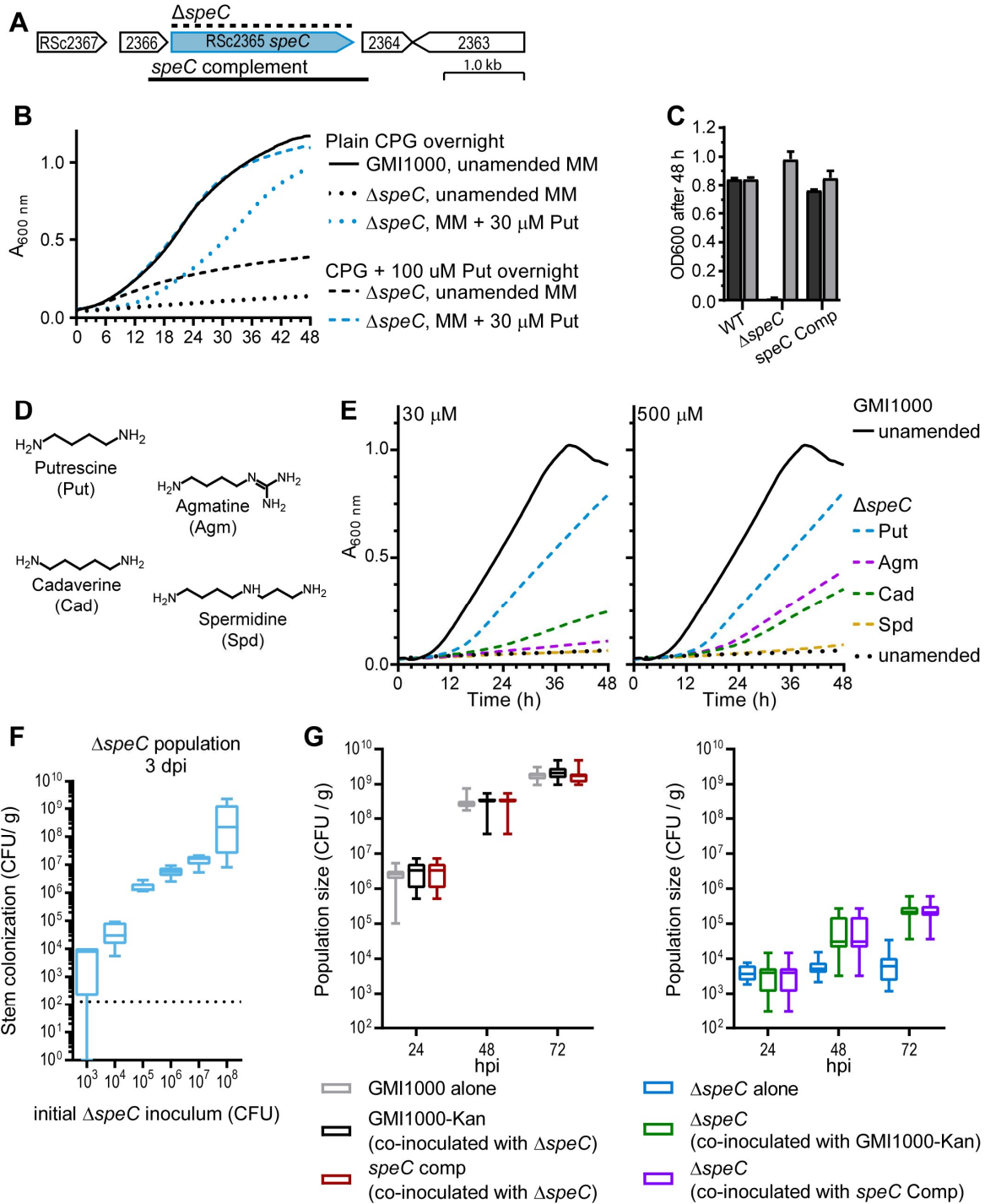


Figure S9. *In vitro* and *in planta* growth of  $\Delta speC$  mutant and its genetic complement. (A) Genomic context of  $speC$  gene (RSc2365). Dashed line indicates the region replaced by the spectinomycin cassette in the  $\Delta speC$  mutant. Solid line indicates the region used to complement the  $\Delta speC$  mutant using the predicted native promoter. (B) Effect of overnight culture conditions on growth of  $\Delta speC$  mutant in minimal medium (MM). Strains were incubated overnight in CPG or CPG with 100  $\mu M$  putrescine, washed, and resuspended in media as indicated in figure ( $n=3$ ). (C) Growth of GMI1000 (WT),  $\Delta speC$  mutant, and the complemented  $\Delta speC$  mutant ( $speC$  Comp) in MM with (grey bars) or without 30  $\mu M$  putrescine (black bars). (D) Structures of putrescine, spermidine, cadaverine, and agmatine, and (E) ability of 30  $\mu M$  or 100  $\mu M$  of these compounds to restore growth of  $\Delta speC$  mutant when added to MM ( $n=3$ ). (F) Stem population sizes of  $\Delta speC$  mutant in tomato cv. Money Maker plants was measured 3 d after stem inoculation with  $10^3$  to  $10^8$  CFU ( $n=5$  plants per condition). (G)

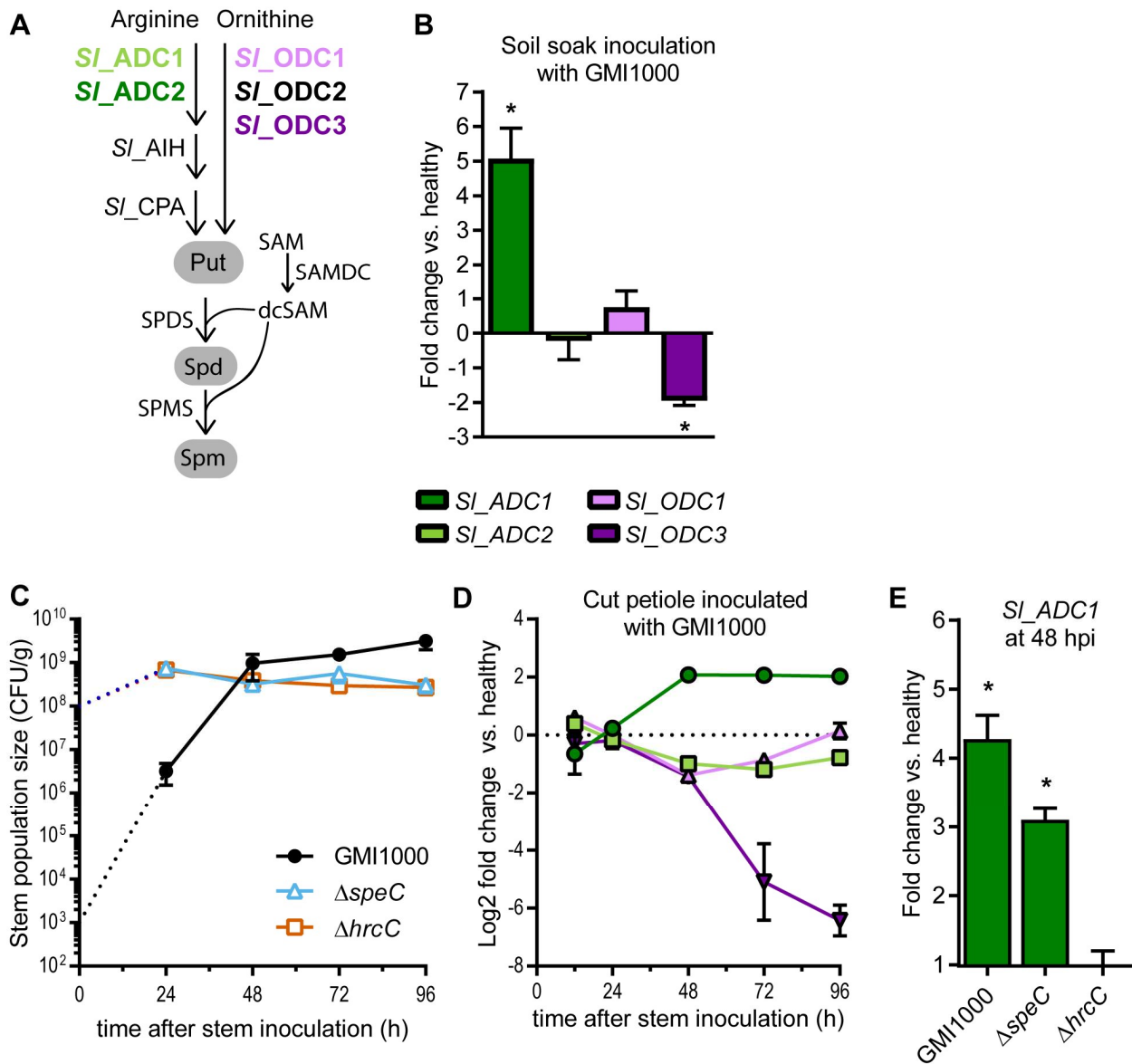


Figure S10. Expression of tomato putrescine biosynthesis genes during bacterial wilt disease. (A) Tomato putrescine biosynthesis pathway. (B) Gene expression of tomato cv. Money Maker after naturalistic soil-soak inoculation with *R. solanacearum* ( $5 \times 10^8$  CFU  $g^{-1}$  soil) or water. Stem RNA was extracted from healthy or symptomatic infected plants and analyzed by RT-qPCR with normalization to *ACTIN*. Values are mean  $\pm$  SEM ( $n=5$ ) \* indicates expression levels differ from healthy plants at  $P < 0.005$ , one-sample t-test. (C-E) Tomato polyamine biosynthesis gene expression after stem inoculation. Polyamine biosynthesis genes are identified by color as indicated. Tomato plants (cv. Money Maker) were cut-petiole inoculated with  $10^3$  CFU *R. solanacearum* GMI1000,  $10^8$  CFU  $\Delta$ *speC* (Put<sup>-</sup>), or  $10^8$  CFU  $\Delta$ *hrcC* (T3SS<sup>-</sup>). (C) Population sizes of the three bacterial strains over time in stems directly below the inoculation site. Dashed lines indicate inoculum density at  $t=0$ . Values are geometric mean  $\pm$  SEM ( $n=3$ ). (D) Time-course expression of polyamine biosynthesis genes in tomato stems infected with *R. solanacearum* GMI1000. (E) Expression of *SI\_ADC1* at 48 hpi in tomato stem tissue with equal bacterial burden of *R. solanacearum* GMI1000,  $\Delta$ *speC* (Put<sup>-</sup>),  $\Delta$ *hrcC* (T3SS<sup>-</sup>), relative to gene expression in healthy plants. Values are mean  $\pm$  SEM ( $n=3$ ).

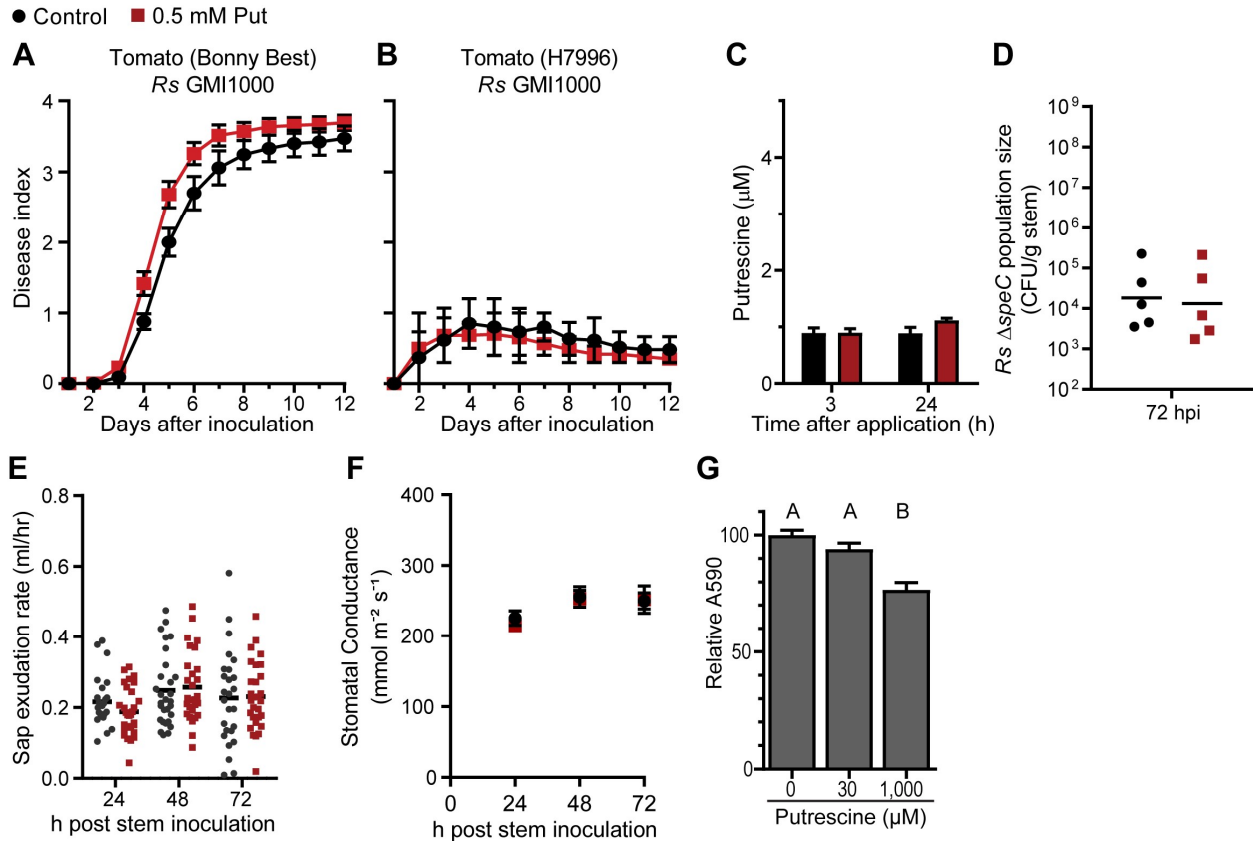


Figure S11. Effects of putrescine treatment on healthy and *R. solanacearum*-infected tomato plants and *R. solanacearum* attachment to polyvinylchloride. Putrescine (0.5 mM) or water (control) was applied to tomato plants by foliar spray and soil soak. (A-B) At 3 h post putrescine treatment, tomato (A) susceptible Bonny Best ( $P=0.0151$  repeated measures ANOVA;  $n=180$  plants/treatment) or (B) resistant Hawaii7996 (H7996) ( $P=0.8121$ ;  $n=30$  plants/treatment) were stem inoculated with (A) 50 or (B) 50,000 CFU *R. solanacearum* GMI1000. Symptom development was measured using a disease index corresponding to percent of wilted leaflets. Values are means  $\pm$  SEM. (C-D) Effect of putrescine treatment on putrescine levels in xylem sap as measured by (C) LC-MS quantification and (D) growth of *R. solanacearum*  $\Delta$ speC putrescine biosensor strain in xylem vessels. (C) Xylem sap of non-infected plants was harvested at 3 and 24 h after putrescine treatment, and putrescine was measured with LC-MS. Values are means  $\pm$  SEM ( $n=3$ ). (D) Leaves and soil of tomato plants were treated with 0.5 mM putrescine or water (control) every 24 h for three treatments. At 3 h after first treatment,  $10^4$  CFU  $\Delta$ speC were inoculated into the stem. Population size was determined at 72 h post inoculation by dilution plating ground stem sections. Line shows geometric mean ( $n=5$ ). (E) Effect of putrescine on root pressure-driven sap exudation of *R. solanacearum*-infected tomato cv. Money Maker plants. Plants were stem inoculated with 50 CFU *R. solanacearum* GMI1000. Sap exudation rate of detopped plants was measured for 30 min ( $n\geq 26$ ). (F) Leaf stomatal conductance of control or putrescine-treated tomato cv. Money Maker plants was measured by Licor 6400 XT portable photosynthesis system at 24 to 72 h after stem inoculation with 50 CFU *R. solanacearum* GMI1000; ( $n\geq 30$  plants/treatment). (G) Effect of putrescine on *R. solanacearum* GMI1000 in crystal violet polyvinylchloride attachment assay. *R. solanacearum* was grown in CPG with 0, 30  $\mu$ M, or 1 mM putrescine. Letters indicate  $P<0.05$  by ANOVA with Tukey's test for multiple comparisons. Values are means  $\pm$  SEM ( $n=60$ ).

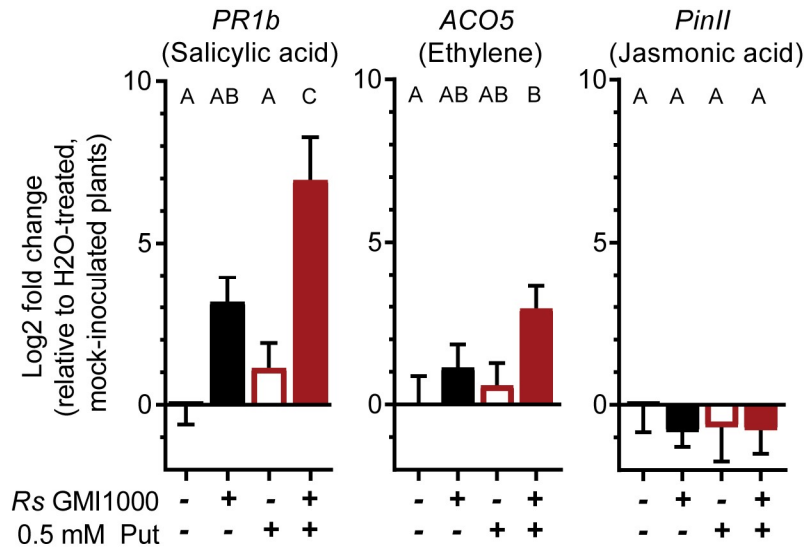


Figure S12. Effect of putrescine treatment and *R. solanacearum* infection on expression of tomato defense genes. Plants were stem inoculated with 50 CFU and RNA was extracted at 48 hpi. Expression was normalized to *ACT1N* transcript levels. Values are mean  $\pm$  SEM. Letters indicate  $P < 0.05$  by ANOVA with Tukey test for multiple comparisons ( $n = 7$  plants/treatment).

**Table S1: Expression of tomato polyamine metabolism genes in seedling roots of healthy and GMI1000-infected tomato (cv. Bonny Best)**

Enzyme Class	Locus tag	Gene name	Differential expression in Bonny Best seedling roots <sup>a</sup>
<i>Polyamine Biosynthesis Enzymes</i>			
Arginine decarboxylase (ADC)	Solyc10g054440.1.1	SI_ADC1	+3.4
	Solyc01g110440.2.1	SI_ADC2	
Ornithine decarboxylase (ODC)	Solyc04g082030.1.1	SI_ODC1	
	Solyc03g098300.1.1	SI_ODC2	+6.8
	Solyc03g098310.1.1	SI_ODC3	
Agmatine deiminase (AIH)	Solyc12g038970.1.1		
N-Carbamoylputrescine amidohydrolase (CPA)	Solyc11g068540.1.1		
Spermidine synthase (SPDS)	Solyc05g005710.2.1		
	Solyc04g026030.2.1		
Spermine synthase (SPMS)	Solyc03g007240.2.1	SI_SPMS1	
S-Adenosylmethionine decarboxylase (SAMDC)	Solyc05g010420.1.1	SI_SAMDC	
	Solyc02g089610.1.1	SI_SAMDC2	+1.8
	Solyc01g010050.2.1	SI_SAMDC3	
Thermospermine synthase (tSPMS)	Solyc08g061970.2.1		
	Solyc09g075900.2.1		
	Solyc07g041300.1.1		
<i>Polyamine Catabolism</i>			
Diamine oxidase (DAO)	Solyc03g005160.2.1		
	Solyc09g075930.1.1		
	Solyc09g075940.2.1		-4.4
	Solyc09g090490.1.1		
Polyamine oxidase (PAO)	Solyc05g018880.1.1		+1.9
	Solyc07g039310.1.1		
	Solyc01g087590.2.1		
	Solyc07g043590.2.1		+1.5
	Solyc12g006370.1.1		

	Solyc02g081390.2.1	
	Solyc03g031880.2.1	
Putrescine <i>N</i> -methyltransferase (PMT)	Solyc08g014310.2.1	
	Solyc06g053510.2.1	
Putrescine N-Acetyltransferase (NATA)	Solyc10g084640.1.1	SI_NATA1
Spermidine hydroxycinnamoyl transferase (HCT/SHT)	Solyc07g015960.1.1	
	Solyc03g117600.2.1	+1.6
	Solyc07g005760.2.1	

<sup>a</sup> Differential gene expression in tomato seedling roots with or without GMI1000 at 24 hpi; Differentially expressed genes with  $q < 0.05$  were identified using Cuffdiff (Tuxedo Suite). Genes up- and down-regulated are labeled in yellow and blue, respectively.

**Table S2: Strains, plasmids, and primers used in this study**

	<b>Description<sup>a</sup></b>	<b>Reference</b>
<b><i>R. solanacearum</i> species complex strains</b>		
GMI1000	Phylotype I sequevar 18 strain, isolated from tomato in French Guyana	(Boucher et al., 1985)
$\Delta$ speC	GMI1000 with RSc2365-encoding SpeC ornithine decarboxylase gene replaced with $\Omega$ cassette; Sm <sup>R</sup> Put <sup>-</sup>	This study
speC complement	$\Delta$ speC complemented with pRCT-speC_com integrated into the chromosome; Sm <sup>R</sup> Tet <sup>R</sup>	This study
$\Delta$ hrcC	Unmarked GMI1000 $\Delta$ hrcC mutant; lacks type III secretion activity	This study
GMI1000-Kan	GMI1000 with pRCK-GWY integrated into chromosome; Km <sup>R</sup>	(Lowe et al., 2015)
K60	Phylotype IIA sequevar 7 strain isolated from tomato in USA	(Kelman, 1954)
UW551	Phylotype IIB sequevar 1 strain isolated from geranium in Kenya	(Gabriel et al., 2006)
IBSBF1503	Phylotype IIB sequevar 4 (NPB “Not pathogenic to banana”) strain isolated from cucumber in Brazil	(Ailloud et al., 2015)
UW163	Phylotype IIB sequevar 4 strain isolated from plantain in Peru	(Ailloud et al., 2015)
BDB R229	Phylotype IV sequevar 10 Blood Disease Bacterium strain isolated from banana in Indonesia	(Remenant et al., 2011)
PSI07	Phylotype IV sequevar 9 strain isolated from tomato in Indonesia	(Remenant et al., 2010)
<i>R. syzygii</i> R24	Phylotype IV sequevar 9 strain isolated from clove tree in Indonesia	(Remenant et al., 2011)
<b><i>V. dahliae</i> strains</b>		
JR2	Strain isolated from tomato in Canada	(Faino et al., 2015)
<b><i>E. coli</i> strains</b>		
TOP10	Cloning strain with genotype: F- <i>mcrA</i> $\Delta$ ( <i>mrr-hsdRMS-mcrBC</i> ) $\Phi$ 80 <i>lacZ</i> $\Delta$ M15 $\Delta$ <i>lacX74 recA1 araD139</i> $\Delta$ ( <i>araleu</i> )7697 <i>galU galK rpsL</i> (Str <sup>R</sup> ) <i>endA1 nupG</i>	ThermoFisher Scientific
BL21(DE3)	Protein expression strain: <i>fhuA2</i> [ <i>lon</i> ] <i>ompT gal</i> ( $\lambda$ DE3) [ <i>dcm</i> ] $\Delta$ <i>hdsS</i> $\lambda$ DE3 = $\lambda$ sBamH1o $\Delta$ EcoRI-B <i>int::</i> ( <i>lacI::</i> PlacUV5:: <i>T7 gene1</i> ) <i>i21</i> $\Delta$ <i>nin5</i>	
<b>Plasmids</b>		
pST-Blue	Suicide vector for marked <i>R. solanacearum</i> mutants; Kan <sup>R</sup>	Novagen
pCR8	PCR template for Sm resistance gene ( $\Omega$ cassette); Sm <sup>R</sup>	ThermoFisher Scientific

pKO-speC::Sm	Vector used to generate Sm-marked <i>R. solanacearum</i> $\Delta$ speC mutant; Kan <sup>R</sup> Sm <sup>R</sup>	This study
pRCT-GWY	Vector that integrates into the selectively neutral <i>att</i> site of strain GMI1000 chromosome; Tet <sup>R</sup>	(Monteiro et al., 2012)
pRCT-speC_com	Contains the RSc2365 native promoter and ORF; Tet <sup>R</sup>	This study
pRCK-GWY	Vector that integrates into the selectively neutral <i>att</i> site of strain GMI1000 chromosome; Kan <sup>R</sup>	(Monteiro et al., 2012)
pUFR80	Positive selection ( <i>sacB</i> ) suicide vector; Suc <sup>S</sup> , Kan <sup>R</sup>	(Castañeda et al., 2005)
pUFR80-hrcC	Vector used to generate unmarked <i>R. solanacearum</i> $\Delta$ hrcC mutant; Suc <sup>S</sup> ( <i>sacB</i> ), Kan <sup>R</sup>	This study
pET28b-TEV	Overexpression vector for 6xHis-tagged proteins, Kan <sup>R</sup>	Margeret Phillips, UT-Southwestern
pET28b-TEV-speC	SpeC overexpression vector for with <i>E. coli</i> -optimized codons, Kan <sup>R</sup>	This study
<b>Cloning Primers<sup>b</sup></b>		
RSc2365upF	5`-gatatctgaattcgtcgcacaCAAGGTCTTCTACACCACCGG target locus: RSc2365	This study
RSc2365upR	5`-ccagagctgcCGGGATTCTTGACTGATGAAACAAAAG target locus: RSc2365	This study
omega(c2365)F	5`- aggaatcccgcGAGCTCTGGCCCGTGTC	This study
omega(c2365)R	5`- gcaatcacctAAGGGATTTGGTCATGGGTGGC	This study
RSc2365dwnF	5`-aaaatcccttAGGTGATTGCCGCAACAGG target locus: RSc2365	This study
RSc2365dwnR	5`-gagctagcctaggctcgagaTGGGTGACAAGGCGAACC target locus: RSc2365	This study
speC_comF	5`-ctagggttaacggtaCATCGTCAACGTCACACCG target locus: RSc2365	This study
speC_comR	5`-ccctagtctaagatccttAAAAGACGCTGATGGGGC target locus: RSc2365	This study
hrcCupF	5`-cgacggccagtgccCATCTACGAATTCGCCGTG target locus: RSp0874	This study
hrcCupR	5`-gcggtccgGATGTTGTCCAGGAGATG target locus: RSp0874	This study
hrcCdwnF	5`-gacaacatcCGGACCGCGCATTCTGTC target locus: RSp0874	This study
hrcCdwnR	5`-acctgcaggcatgcaCGATGGCCTTCCATGCCAAA target locus: RSp0874	This study
1578upF	5`-cgacggccagtgccACTTCGTGATCCTGTTCTG target locus: RSp1578	This study
1578upR	5`-ccgcttcaCGAGTGGTATAGGTGCTC target locus: RSp1578	This study
1578dwnF	5`-ccactgctGAAGCGCCATGCTGAC target locus: RSp1578	This study
1578dwnR	5`-acctgcaggcatgcaCCATCTGGGCCTCTCTG target locus: RSp1578	This study



RT-qPCR primers <sup>c</sup>		
SIADC1-F	5`-AGGTATCGTACTCTCCGCGA target locus: Solyc10g054440.1.1	This study
SIADC1-R	5`-TAGCGAAAGTGGCAGAGCAA target locus: Solyc10g054440.1.1	This study
SIADC2-F	5`-TTGGTCGCAAGAAAGCTCCT target locus: Solyc01g110440.2.1	This study
SIADC2-R	5`-TGGCCAGAATGCTTTGTCCT target locus: Solyc01g110440.2.1	This study
SIODC1-F	5`-TGCCGATATGGAAGGACACG target locus: Solyc04g082030.1.1	This study
SIODC1-R	5`-GAGATGCCCAATGGGTCCA target locus: Solyc04g082030.1.1	This study
SIODC3-F	5`-GGACCAAGTTGTGACTGCCT target locus: Solyc03g098310.1.1	This study
SIODC3-R	5`-AGGTAGCTGATCCAAGTTTTAGGT target locus: Solyc03g098310.1.1	This study
SIActin-F	5`-TCAGCAACTGGGATGATATG target locus: BT013524	(Milling et al., 2011)
SIActin-R	5`-TTAGGGTTGAGAGGTGCTTC target locus: BT013524	(Milling et al., 2011)
SI_PR1bM-F	5`-CAAGACATAGGCCCGACTCC target locus: Solyc00g174340.1	Milling and Allen unpublished
SI_PR1bM-R	5`-AGGCCCAAATTCACCCCAA target locus: Solyc00g174340.1	Milling and Allen unpublished
SI_ACO5-F	5`-AGATGGGCATTGGGTGAACA target locus: Solyc07g026650.2	Milling and Allen unpublished
SI_ACO5-R	5`-TTCAGCCATCACTCGGTGTC target locus: Solyc07g026650.2	Milling and Allen unpublished
SI_Pin2-F	5`-TGATGCCAAGGCTTGTACTAGAGA target locus: AY129402	(Milling et al., 2011)
SI_Pin2-R	5`-AGCGGACTTCCTTCTGAACGT target locus: AY129402	(Milling et al., 2011)

<sup>a</sup> Abbreviations: Sm<sup>R</sup>, spectinomycin and streptomycin resistance; Put<sup>-</sup>, Put auxotrophy; Tet<sup>R</sup>, tetracycline resistance; Kan<sup>R</sup>; kanamycin resistance.

<sup>b</sup> lowercase bases show the region that overlaps the adjacent fragment and uppercase bases indicate the region specific for the product of interest.

<sup>c</sup> qPCR primers demonstrated amplification efficiencies between 90-110%.

#### References for Table S2

- Ailloud, F., Lowe, T., Cellier, G., Roche, D., Allen, C., and Prior, P. (2015) Comparative genomic analysis of *Ralstonia solanacearum* reveals candidate genes for host specificity. *BMC genomics* **16**: 270.
- Boucher, C., Barberis, P., Trigalet, A., and Demery, D. (1985) Transposon mutagenesis of *Pseudomonas solanacearum*: isolation of Tn5-induced avirulent mutants. *J Gen Microbiol* **131**: 2449-2457.
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**Dataset S1: Relative quantification of metabolites in tomato xylem sap.**

(A) Comparison of metabolites in healthy vs *R. solanacearum*-infected sap. (B) Comparison of metabolites in *R. solanacearum*-infected tomato sap with or without 3 h incubation with *R. solanacearum* GMI1000.