

Table S1. Summary of basic characteristics of phages from published studies focused on the use of bacteriophages as biocontrol agents against *Pseudomonas syringae* over the last 50 years.

Target pathogen	Phage names*	Phages family	Other information	Reference
<i>Pseudomonas syringae</i> pv. <i>actinidiae</i>	φPSA2	<i>Podoviridae</i>		203
<i>Pseudomonas syringae</i> pv. <i>syringae</i>	SoKa	<i>Autographiviridae</i>	The presence of the phage is capable of significantly inhibiting the formation of biofilms of <i>Pss</i> KB49, KC19 and KC82, except for the KC46 strain.	204
<i>Pseudomonas syringae</i> pv. <i>actinidiae</i>	Hairong and ZY21	Not informed		205
<i>Pseudomonas syringae</i> pv. <i>tomato</i>	Eir4 and Eisa9	<i>Autographiviridae</i>		206
<i>Pseudomonas syringae</i> pv. <i>actinidiae</i>	PKb2b, PKb5a, PHR10a, and PHB10b	<i>Siphoviridae</i> and <i>Podoviridae</i>		207
<i>Pseudomonas syringae</i> pv. <i>syringae</i>	Pf-10	<i>Autographiviridae</i>	It is the first of five bacteriophages called "Multiphage" to be sequenced and characterized.	208
<i>Pseudomonas syringae</i> pv. <i>actinidiae</i>	PHB09	Not informed	Phylogenetic analysis of the phage sequence determined that PHB09 belongs to a new genus in the Caudoviricete class.	209
<i>Pseudomonas syringae</i> pv. <i>actinidiae</i> and <i>P. syringae</i> pv. <i>phaseolicola</i>	Psage A1, Psage B1, PsageK4 and Psage B2 for Psa while pφB1 for Pph	<i>Autographiviridae</i>	32 phages isolated (5 selected for further characterization). The phages maintained their stability even when they were exposed to stress conditions to determine their behavior in open field conditions.	210
<i>Pseudomonas syringae</i> pv. <i>syringae</i>	F911, F922, F943, F954, F1215, F1226, F137, F358, and F369	Not informed	Nine phages isolated (5 selected for further characterization). In 2014 and 2015, soil samples (approximately 30-cm deep) for isolation of bacteriophages specific for <i>P. syringae</i> pathovars were collected from sweet cherry orchards with symptoms of bacterial canker in 17 locations in Izmir and Manisa provinces in Turkey.	211
<i>Pseudomonas syringae</i> pv. <i>actinidiae</i>	PN09	<i>Myoviridae</i>	The lytic bacteriophage PN09 of Psa was isolated from surface water collected from a river in Hangzhou, China in 2019. Also,	194

			characterization of phage endolysin was performed.	
<i>Pseudomonas syringae</i> pv. actinidiae	PPPL-1	<i>Podoviridae</i>	PPPL-1 could successfully kill streptomycin-resistant Psa isolates. Also, phage was stable in the field soil and at low temperature of 0 ± 2°C.	201
<i>Pseudomonas syringae</i> pv. syringae	<i>Pseudomonas</i> phage vB_PsyS_Phobos	<i>Siphoviridae</i>		26
<i>Pseudomonas syringae</i> pv. porri	KIL3b and KIL5	<i>Myoviridae</i>		212
<i>Pseudomonas syringae</i> pv. aesculi	2KS, RC8CS, RC5CS and 1CKS	<i>Myoviridae</i> and <i>Podoviridae</i>	22 phages isolated (4 selected for further characterization)	22
<i>Pseudomonas syringae</i> spp.	<i>Pseudomonas</i> phage Bertil, <i>Pseudomonas</i> phage Misse and <i>Pseudomonas</i> phage Strit	Similar to <i>Autographiviridae</i>	The isolated phages shared some characteristics with <i>Autographiviridae</i> family, they could constitute a novel genus. This study is the first report of phages against GAW0113 strain.	213
<i>Pseudomonas syringae</i> pv. actinidiae	PN05 and PN09	<i>Myoviridae</i>		194
<i>Pseudomonas syringae</i> pv. actinidiae	φ6 (a commercially available phage)	<i>Cystoviridae</i>		202
<i>Pseudomonas syringae</i> pv. syringae and <i>P.</i> <i>syringae</i> pv. <i>morsprunorum</i>	MR1, MR2, MR4, MR5, MR6, MR7, MR8, MR12, MR13, MR14, MR15, MR16 and MR18	<i>Myoviridae</i> , <i>Podoviridae</i> and <i>Siphoviridae</i>	70 phages isolated (13 selected for further characterization)	136
<i>Pseudomonas syringae</i> pv. actinidiae	CHF1, CHF7, CHF19 and CHF1	<i>Podoviridae</i>	14 phages isolated (4 selected for further characterization)	27
<i>Pseudomonas syringae</i> pv. syringae	φ6 (a commercially available phage)	<i>Cystoviridae</i>		80
<i>Pseudomonas syringae</i> pv. actinidiae	PPPL-1	<i>Podoviridae</i>	Also, PPPL-1 was effective against at least 20 more <i>P. syringae</i> pathovars, including <i>P. syringae</i> <i>pv.</i> <i>aptata</i> , <i>pv.</i> <i>atofaciens</i> , <i>pv.</i> <i>atropurpurea</i> , <i>pv.</i> <i>berberidis</i> , <i>pv.</i> <i>ciccaronei</i> , <i>pv.</i> <i>coronafaciens</i> , <i>pv.</i> <i>dysoxyli</i> , <i>pv.</i> <i>eribotryae</i> , <i>pv.</i> <i>helianthi</i> , <i>pv.</i> <i>japonica</i> , <i>pv.</i> <i>lapsa</i> , <i>pv.</i> <i>mellea</i> , <i>pv.</i>	201

			<i>morsprunorum</i> , <i>pv. myricae</i> , <i>pv. panici</i> , <i>pv. phaseolicola</i> , <i>pv. pisi</i> , <i>pv. syringae</i> , <i>pv. tagetis</i> , and <i>pv. theae</i> .	
<i>Pseudomonas syringae</i> pv. porri	KIL1, KIL2, KIL3, KIL4, KIL5 and KIL3b	<i>Myoviridae</i>	Field trial experiments showed variable results. In one trial, symptom development was attenuated (reduction by 10% in symptomatic plants).	25
<i>Pseudomonas syringae</i> pv. actinidiae	KHUφ34, KHUφ38, KHUφ44, KHUφ59 and KHUφ74	<i>Myoviridae</i> and <i>Podoviridae</i>		200
Different bacteria genera and species, including <i>Pseudomonas syringae</i> spp.	PPJ1, PX1, PPJ2, PEa1 and PEf1	<i>Siphoviridae</i> and <i>Podoviridae</i>	5 phages isolated (2 selected for further characterization)	214
<i>Pseudomonas syringae</i> pv. actinidiae	φPSA1 and φPSA2	<i>Siphoviridae</i> and <i>Podoviridae</i>		187
<i>Pseudomonas syringae</i> pv. actinidiae	φPsa1, φPsa17, φPsa21, φPsa173, φPsa267, φPsa268, φPsa281, φPsa292, φPsa300, φPsa315, φPsa316, φPsa317, φPsa331, φPsa343, φPsa347, φPsa374, φPsa375, φPsa381, φPsa386, φPsa393, φPsa394, φPsa397, φPsa410 and φPsa440	<i>Myoviridae</i> , <i>Podoviridae</i> and <i>Siphoviridae</i>	275 phages isolated (24 selected from 258 infecting Psa). It was determined that the majority of phages have a very specific host range for <i>P. syringae</i> <i>pv. actinidiae</i> and do not affect any nonpathogenic bacteria isolated from kiwifruit plants	24
<i>Pseudomonas syringae</i> pv. tomato	PT1, PT2, PT8, PT10, PT11, PT14, PT15, PT16, PT17,	<i>Siphoviridae</i> and <i>Podoviridae</i>		23

	PT18, PT19, PT20, PT23, PT27, PT32 and PT34			
<i>Pseudomonas syringae</i> pv. glycinea	B3-0, B3-2, B3- 3, B5-1, R1-1, R3-1 and R4-0B	<i>Myoviridae</i> , <i>Podoviridae</i> and <i>Siphoviridae</i>	56 phages isolated (7 selected)	215
<i>Pseudomonas syringae</i> pv. morsprunorum (race 2)	B1	Not informed	<i>P. syringae</i> pv. <i>morsprunorum</i> c302, a cherry race 2 isolate, was used for isolation, purification and propagation procedures. Soil from beneath canker infected cherry trees on East Malling Research Station served as a source of phages.	196

*Phage names only of the selected phages on each study if it is the case. Abbreviations were used to describe typical bacteriophage general characterization assays, as follows: HR(n): host range (number of total tested bacterial strains). Methods of HR determination could differ between different studies; LF: lysogenization frequency; AC: adsorption curves; OSGC: one step growth curves; ST: stability tests; T: transduction assay; BR: phage resistant bacteria frequency; GS: genome sequencing; DGREA: direct genome restriction enzyme analysis; RTD: routine test dilution; TEM: transmission electron microscopy; RAPD: random amplification of polymorphic DNA by PCR; KCA: killing curves assay and RFLP: restriction fragment length polymorphism analysis.