

Supplemental information

Check the journal formatting instructions for SI

**Missing: Counts or expression of virus sequences by tissue
(This was your major focus in an earlier version!)**

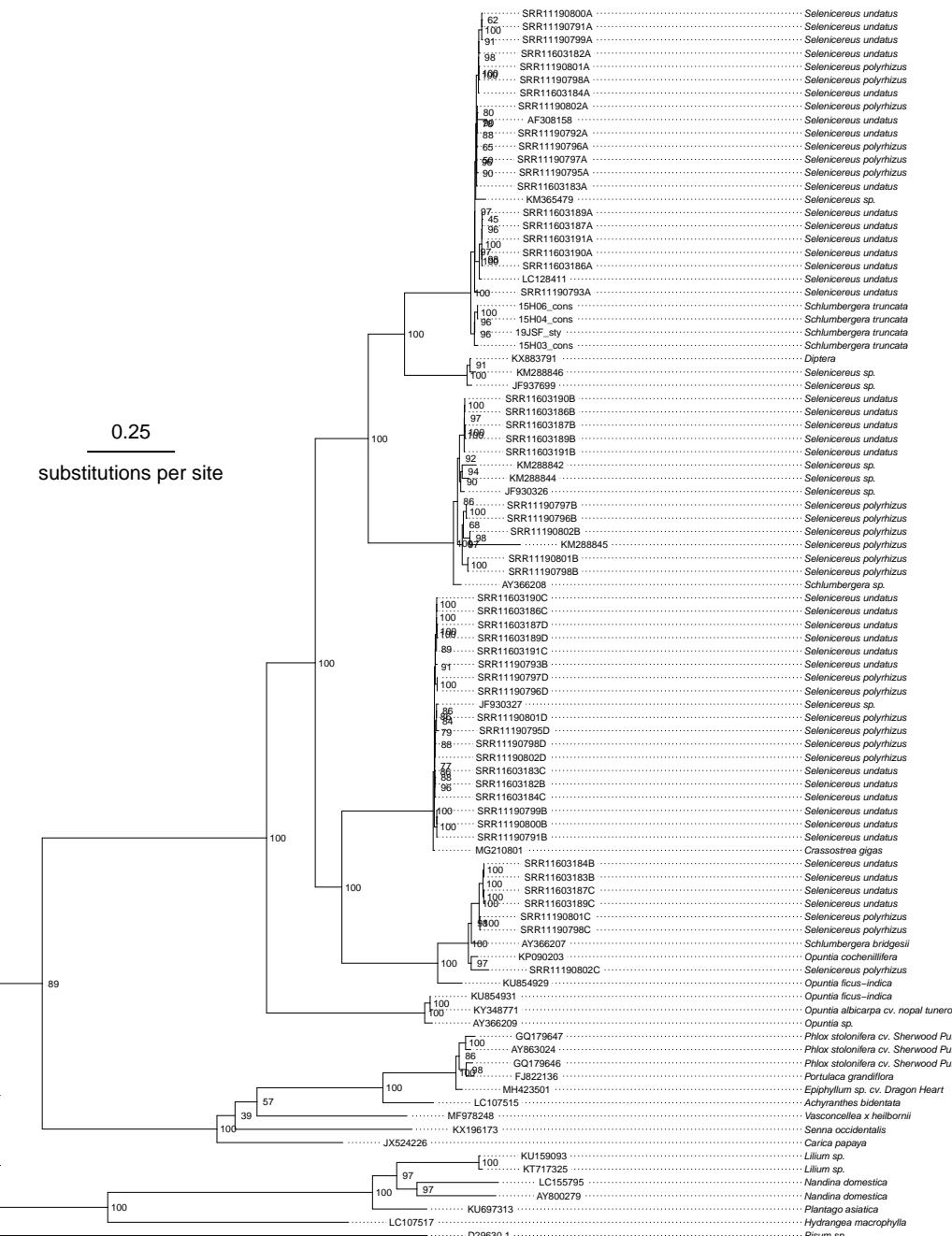
See notes below (red at top of each page)!

Pay attention to logic of ordering these. They will have to appear in the same order as mentioned in the manuscript.

The description here is insufficient for a reviewer or reader to recover the results or understand what exactly this phylogeny represents (methods, data need to be at least mentioned/explained in passing). Which alignment, search method, model, etc. and what is shown?

One way to do this is write a description in the first one, and refer to it in the subsequent figure captions.

Figure S1: RdRp gene tree with bootstrap values.



See Fig. S1

Figure S2: TGB1 gene tree with bootstrap values.

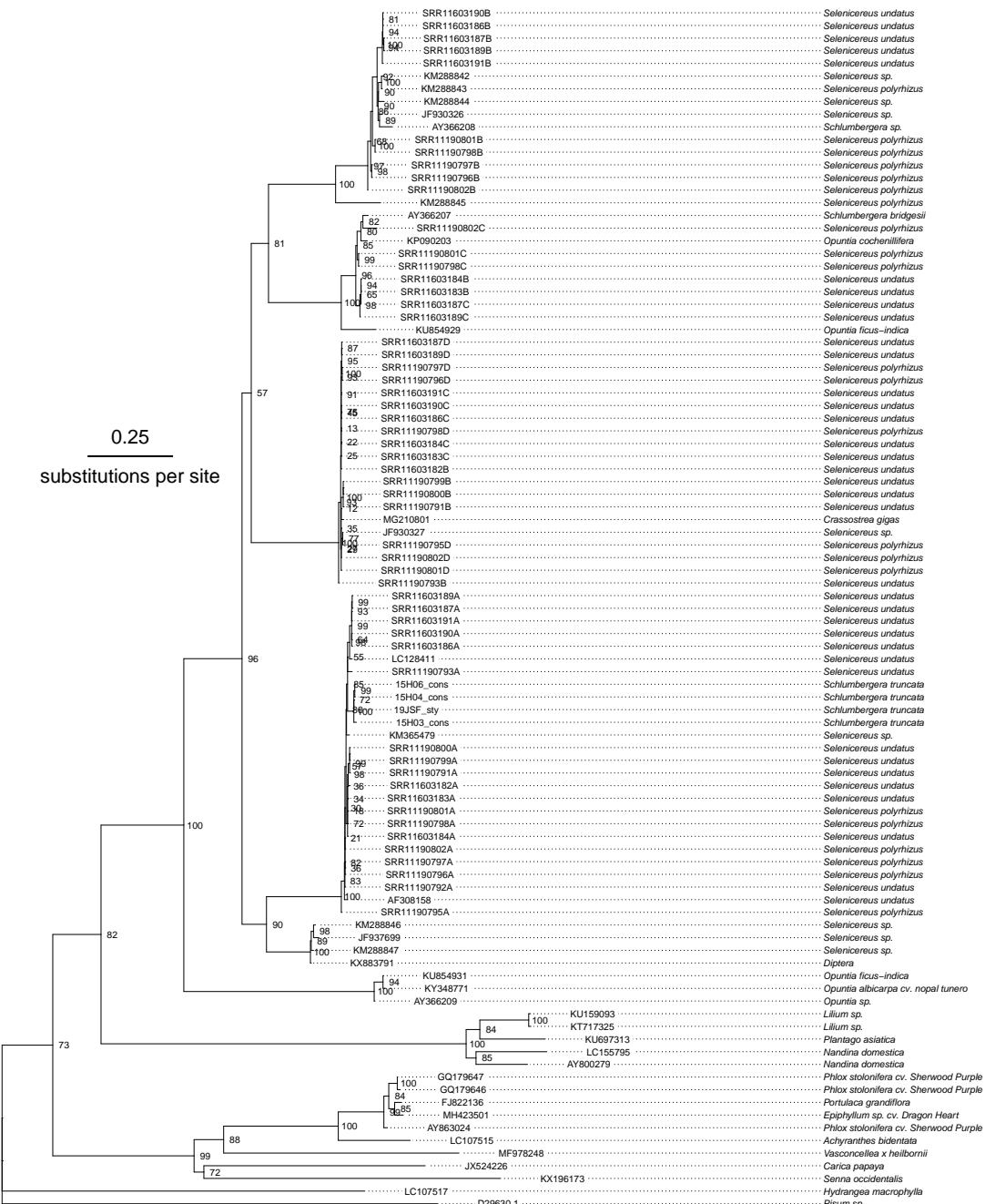


Figure S3: TGB2 gene tree with bootstrap values.

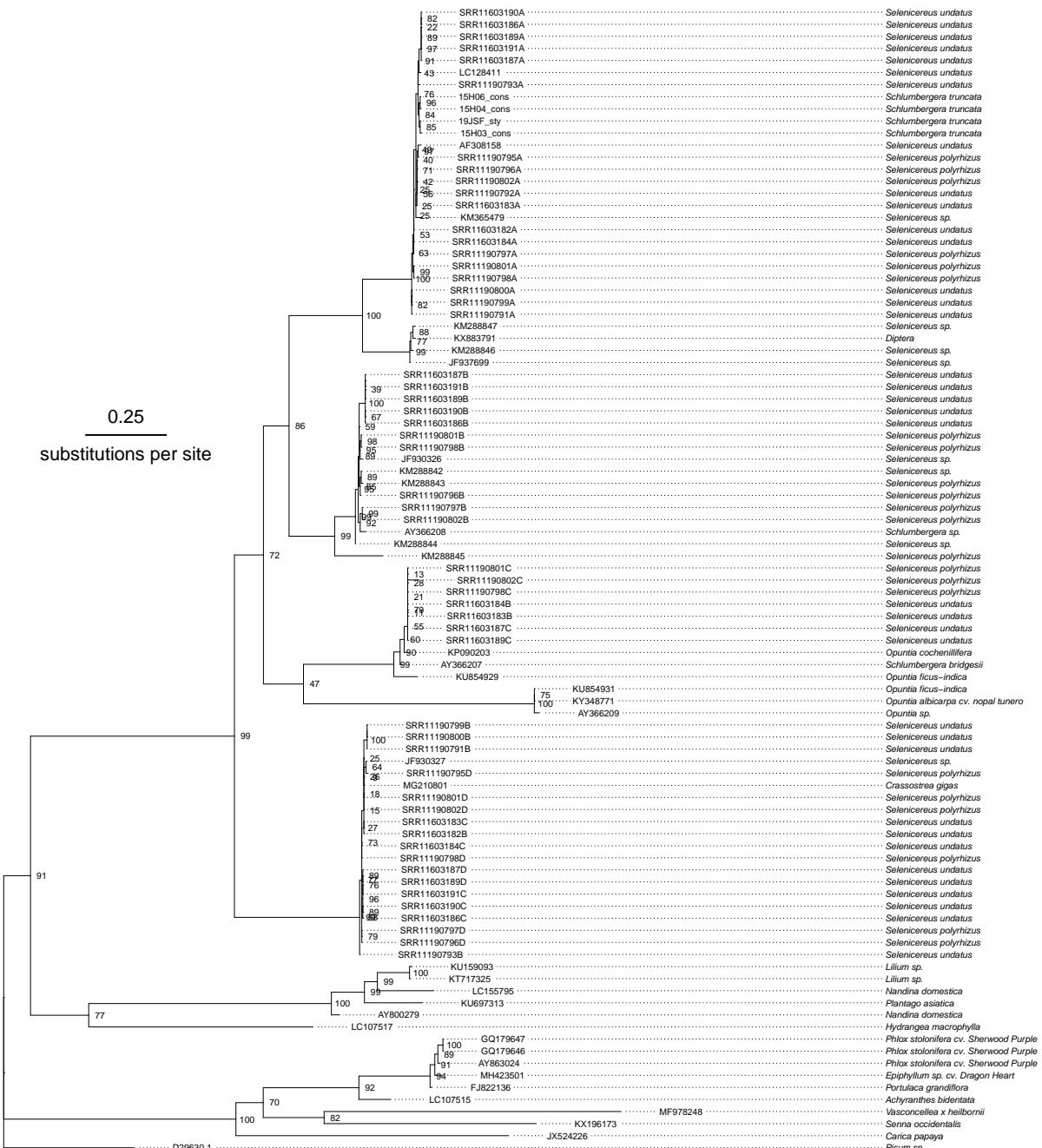
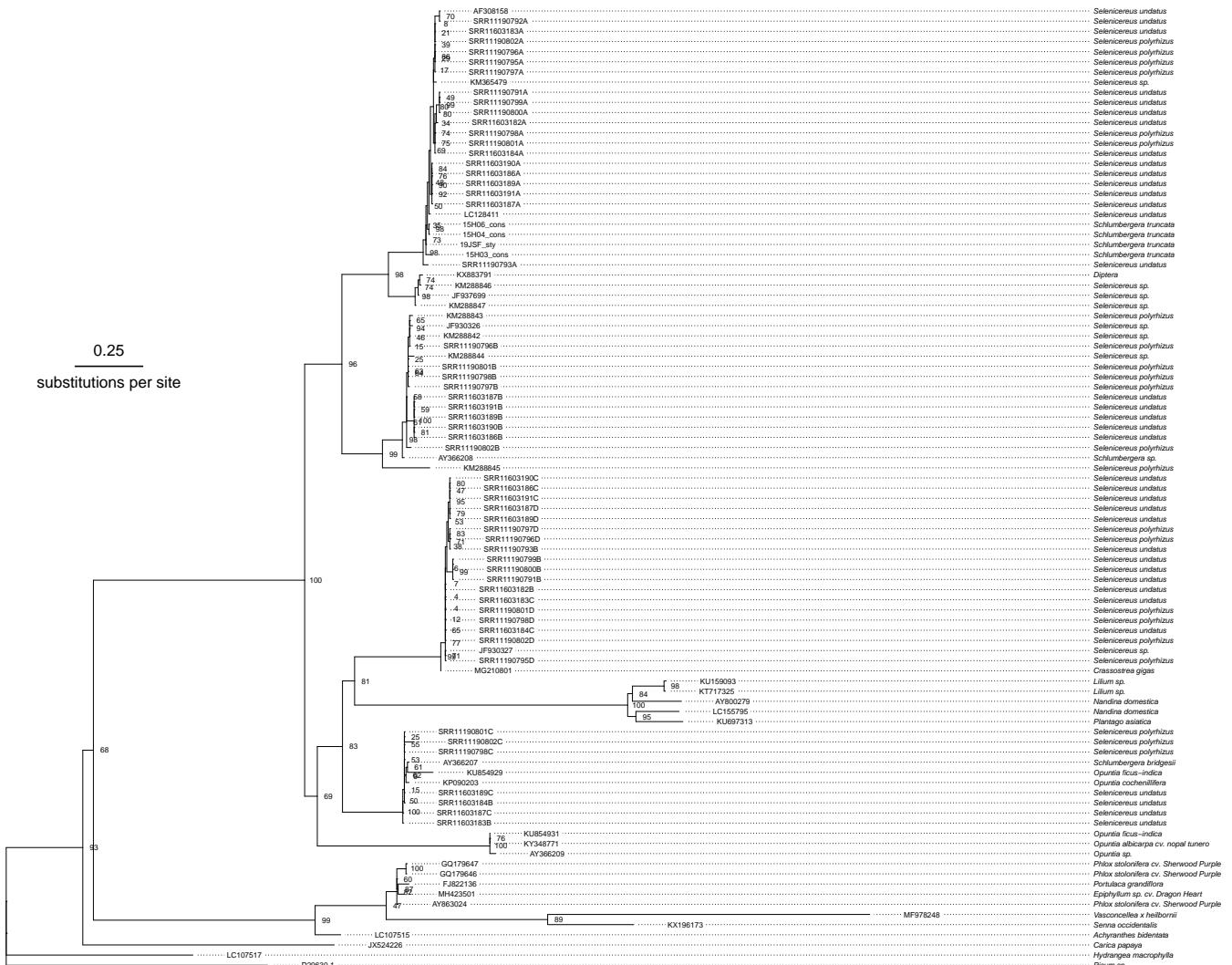


Figure S4: TGB3 gene tree with bootstrap values.



See Fig. S1

Figure S5: CP gene tree with bootstrap values.

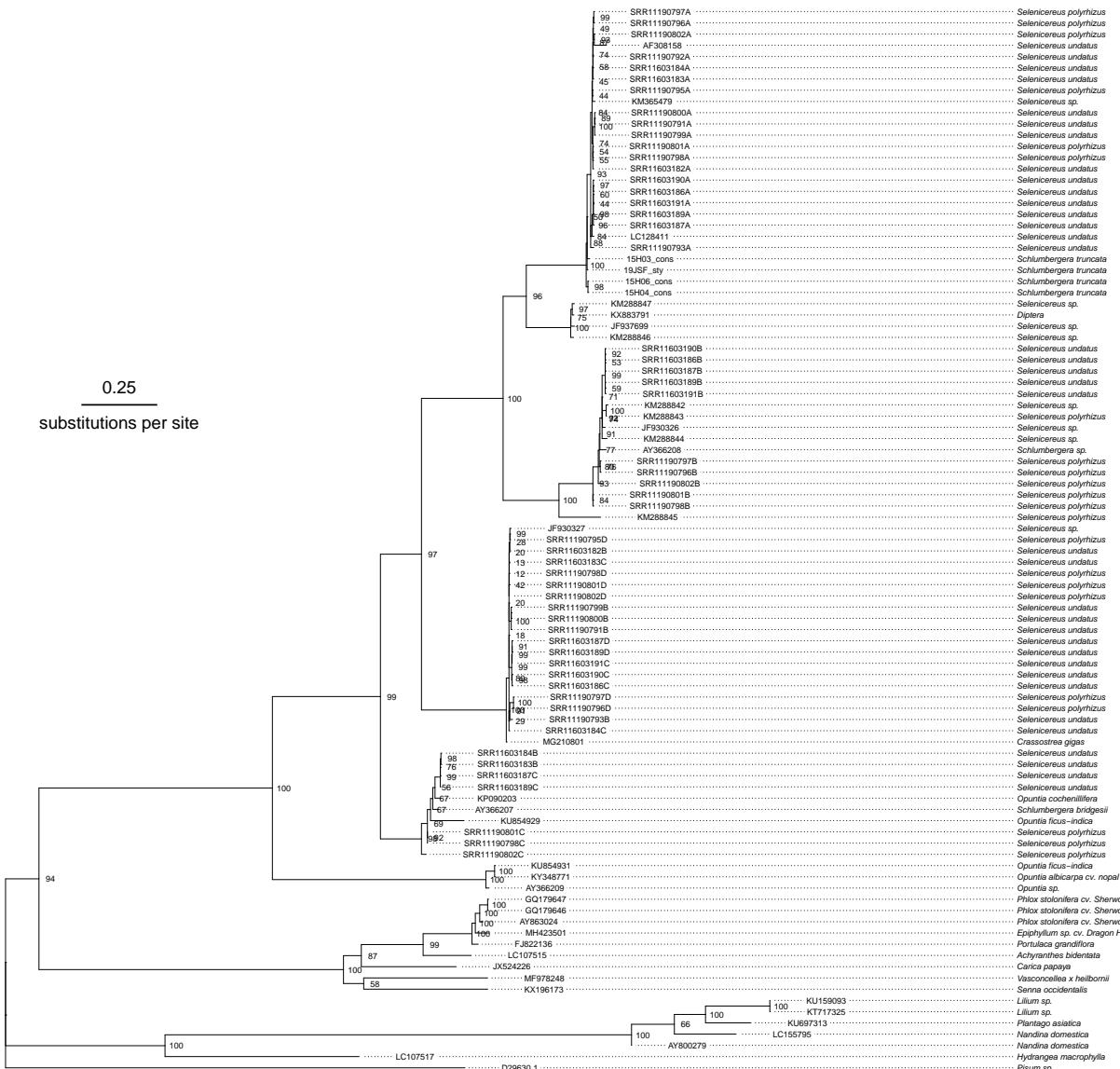
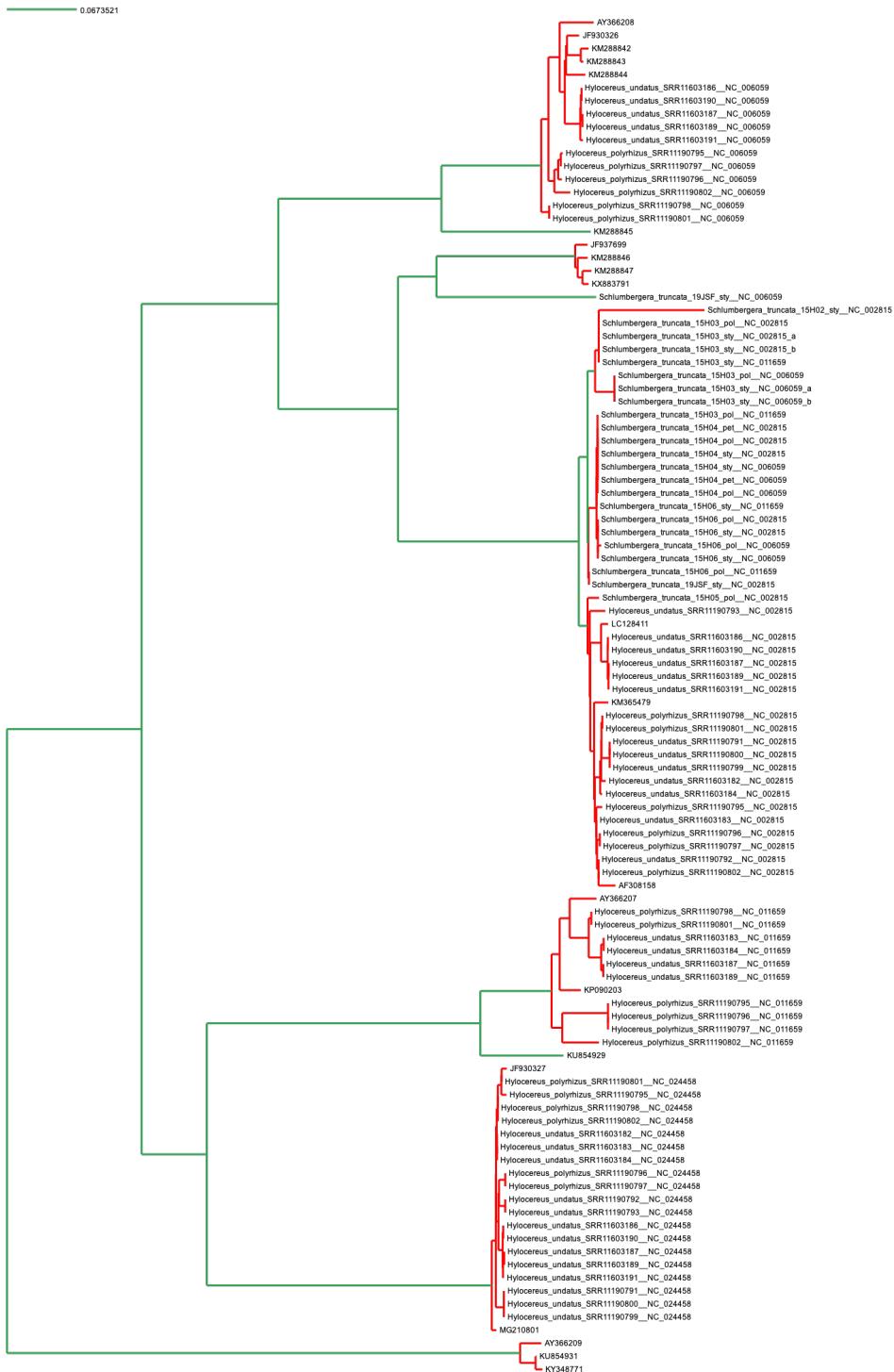
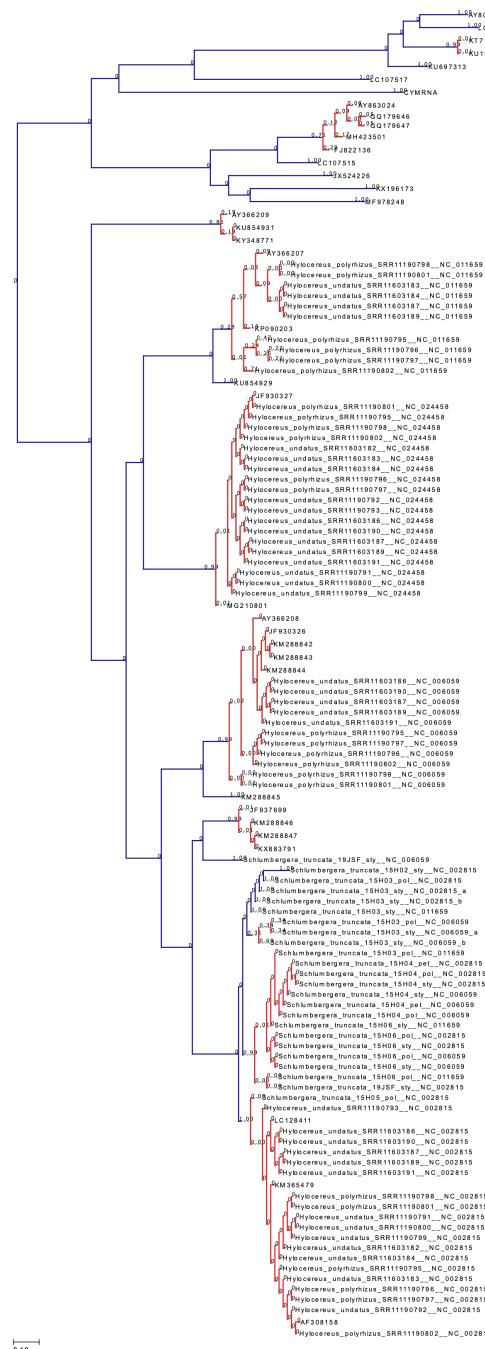


Figure S6: mPTP whole genome tree with delimitation represented by green and red coloration. Green branches represent delimitation outside of clades and red branches represent delimitation inside of clades.



I am not sure that this is sufficiently clear to an average reviewer or reader. (Both this and the previous figure.) Maybe including this nearer to a color-coded delimitation figure or pointing the reader there would clarify better. Moreover, the description from S6 is slightly better. Also, the posteriors are very hard to see. Someone will complain about that.

Figure S7: bPTP whole genome tree with delimitation represented by blue and red coloration. Numbers on nodes represent the posterior probability of the delimitation.



This tells the story of NCBI taxonomy (and ICTV) better than other figures!

Unless I'm missing something, S9 is a pseudoreplicate of S8. Moreover, S8 should be in the main body of the paper, maybe as the last figure. It needs a better caption, which is partly delivered by S9.

This would also be a lot better if the black bars (in "Formal taxonomy") were replaced with color scheme from Figure 1 and a similar legend to the left or right of figure.

Mytcor virus 1 is not formally defined anywhere, I don't think?

Figure S8: Visual demonstration of the agreement and disagreement of formal taxonomy, mPTP and bPTP delimitation methods as applied to the whole genome tree.

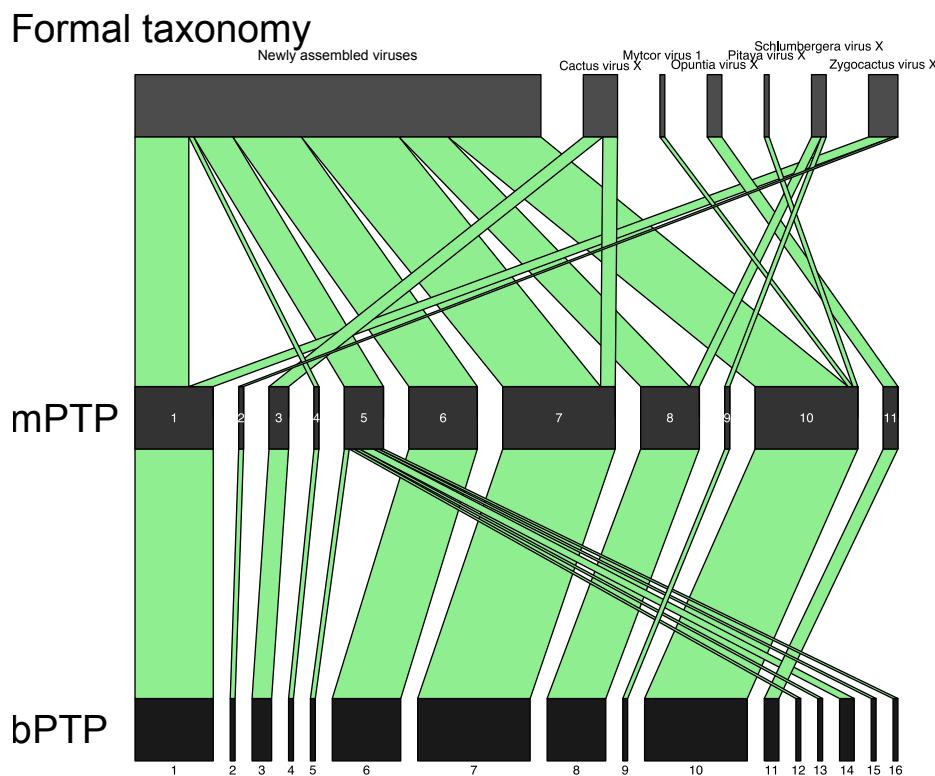
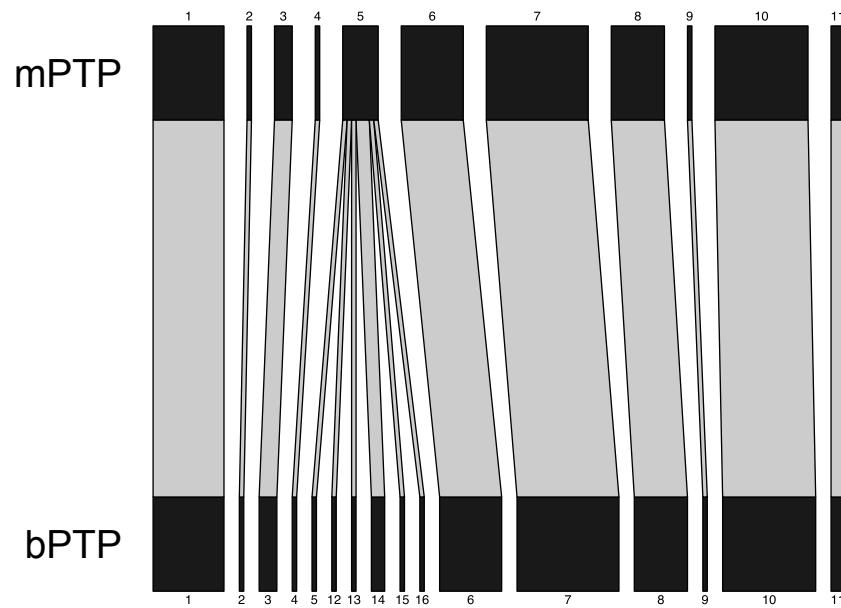


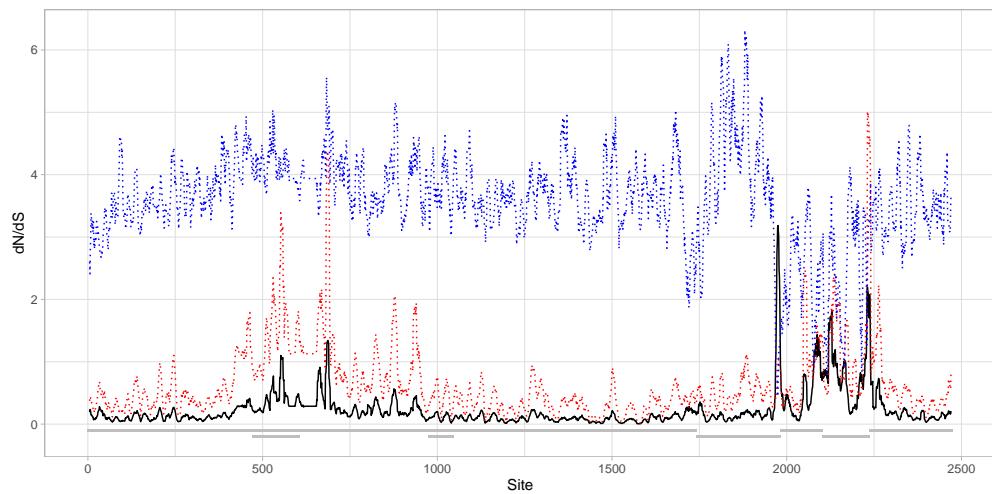
Figure S9: Bipartite graph displaying the disagreements between mPTP and bPTP methods. The main disagreement is located in clade 5 of mPTP, which is delimited into 7 separate species when bPTP methods are applied to the same data set.



I'm not ready to let this go: should be returned to main body of paper. It's the first and only selection analysis of potexvirus genome-wide selection, including a region with overlapping reading frames.

One reason for this is that even you seem a bit unclear about whether low dN/dS in the forward frame constitutes evidence for selection! Whatever it is, it ain't "noise"!

Figure S10: Selective pressure is displayed as dN/dS for amino acids across the viral genome. Due to overlaps in reading frames, higher levels of dN/dS may represent noise or true selective pressure on highly constrained functional regions which must serve multiple purposes.



Add host to left of GenBank ID and we're done (no need for this figure).

S12 seems to accidentally repeat this S11?

The host taxon names are missing from some tips. This should also say something like "alleged" or "supposed" host taxa as noted in GB records, because there are many ding-dong entries with clear mistakes.

Figure S11: Phylogeny as displayed in Figure 1, with host organisms listed.

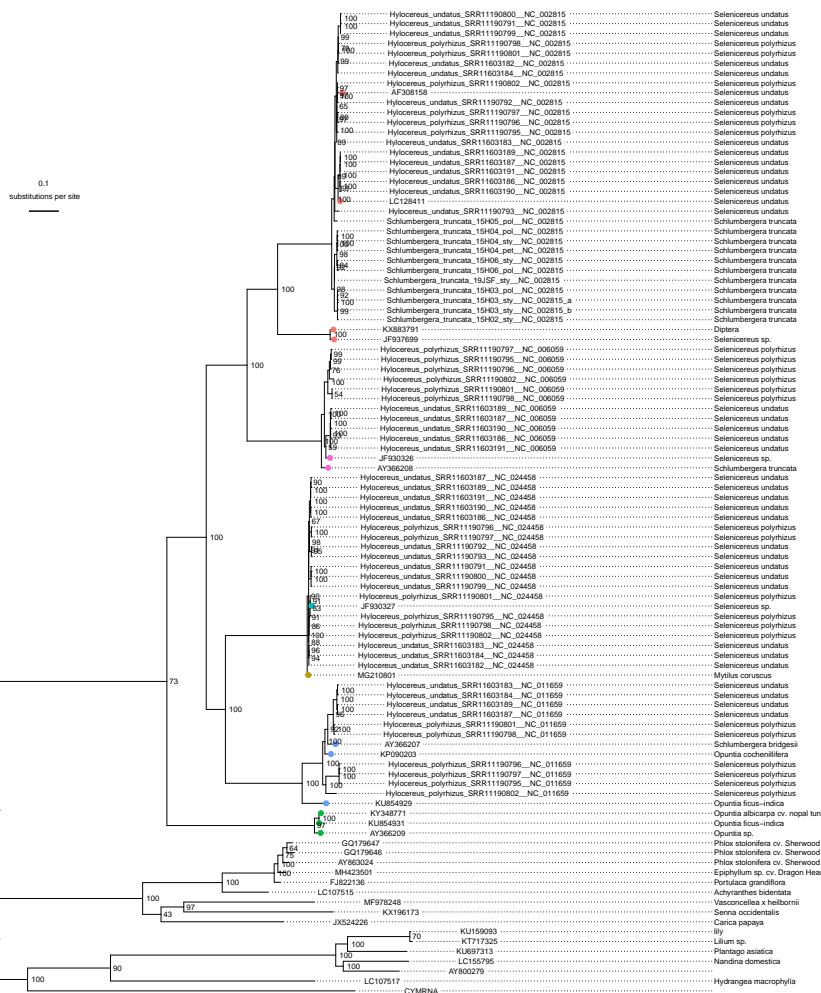
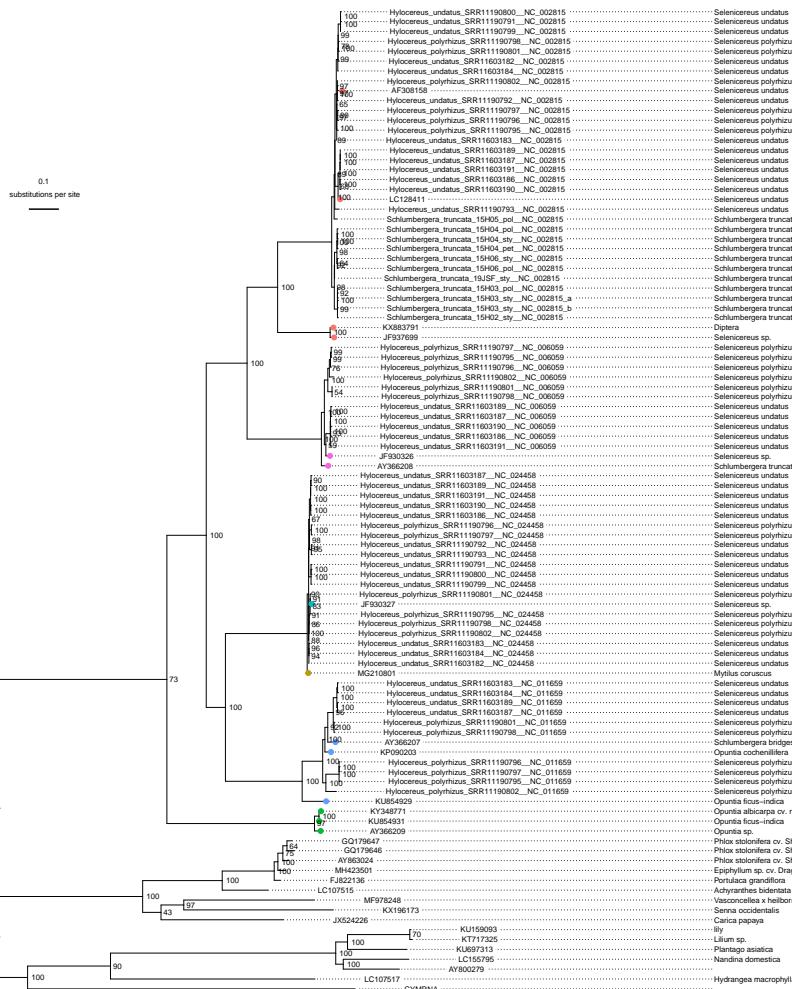


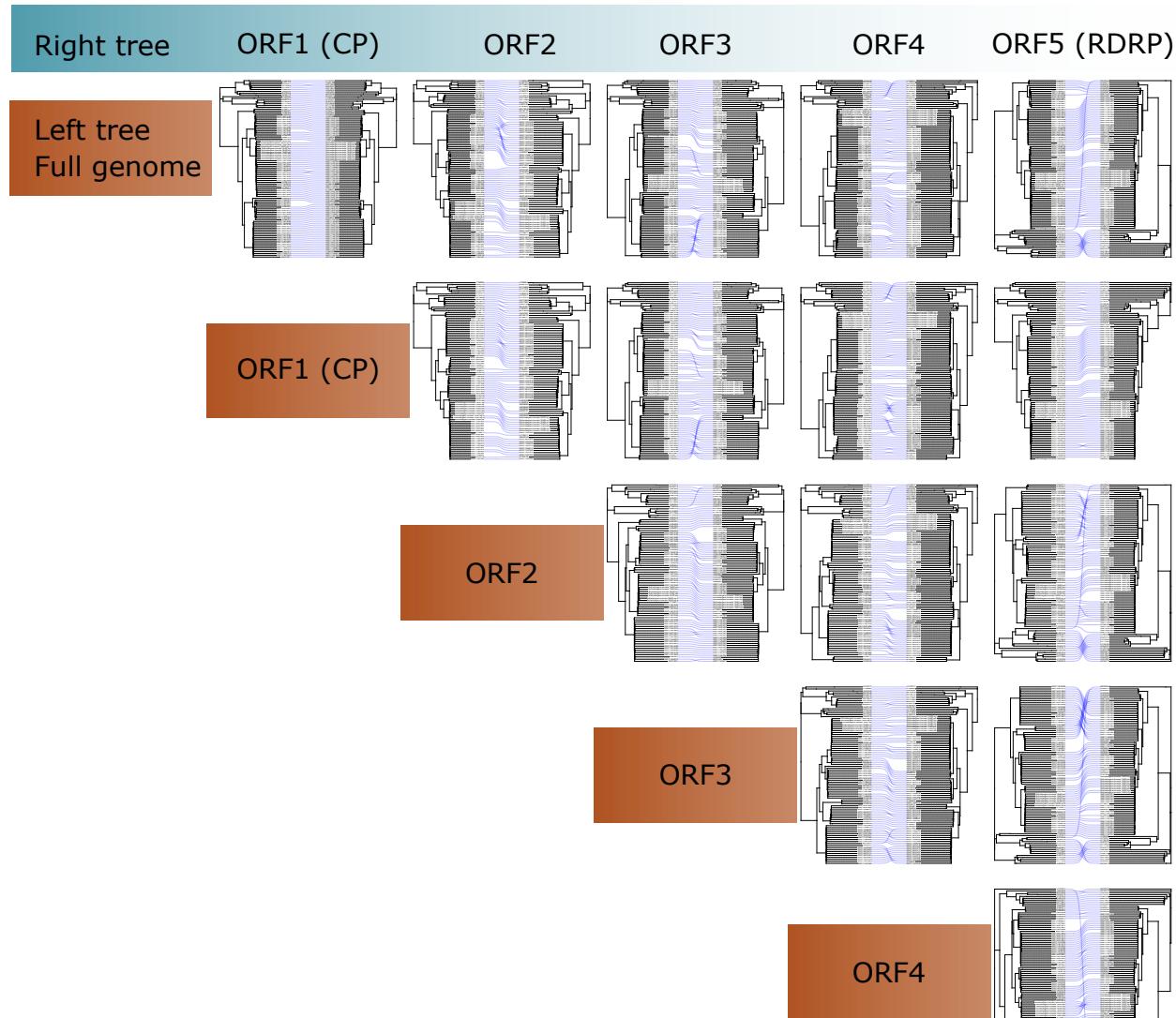
Figure S12: Phylogeny as displayed in Figure 1, with host organisms listed.



This is a great new figure. Maybe include in paper after fixing the bottom-left (last ORF4-ORF5) comparison phylogeny, which is slightly cut off at the bottom.

if not in the paper, it is out of order; should be immediately after the individual gene phylogenies above (S6?)

Figure S13: A summary of cophylogenetic comparisons generated using the phytools package in R. Tree topologies largely do not vary between ORF and full sequence.



This should be moved to Table 1 in the paper.

Table S1: RNA-seq and assembly summary statistics. The length of all reads before trimming was 150 bp.

Column labelled *filt. lists numbers of read pairs and average qualities after filtering step.

Sample	Read pairs		Avg. read len. trimmed		Avg. qual.		Avg. qual. *filt.		Assembly		SRR
	Raw	*filt.	F	R	F	R	F	R	Isoforms	Genes	
<i>Schlumbergera truncata</i> 15H01 pol	4,841,466	3,353,072	149	147	35.8	34.8	36.2	35.8	43,294	27,125	SRR13805650
<i>Schlumbergera truncata</i> 15H01 sty	6,769,308	4,628,401	148	139	38.8	35.9	39.9	38.8	73,047	42,717	SRR13805653
<i>Schlumbergera truncata</i> 15H02 pol	4,888,079	3,353,774	149	147	35.8	35.0	36.2	35.8	48,134	30,138	SRR13805649
<i>Schlumbergera truncata</i> 15H02 sty	6,173,982	4,263,304	147	139	38.8	36.3	39.8	38.8	56,416	32,918	SRR13805652
<i>Schlumbergera truncata</i> 15H03 pol	6,983,951	4,858,975	149	147	35.8	35.1	36.2	35.9	53,675	32,640	SRR13805648
<i>Schlumbergera truncata</i> 15H03 sty 1	9,183,100	5,450,149	147	139	38.4	35.9	39.6	38.6	59,668	34,275	SRR13805641
<i>Schlumbergera truncata</i> 15H03 sty 2	7,147,068	4,815,235	148	139	38.7	36.1	39.8	38.7	48,708	28,407	SRR13805637
<i>Schlumbergera truncata</i> 15H04 pol	8,392,597	5,497,308	148	138	38.8	35.8	39.8	38.6	58,662	35,689	SRR13805647
<i>Schlumbergera truncata</i> 15H04 sty	5,240,352	3,446,465	147	140	38.6	36.4	39.8	38.8	54,120	31,872	SRR13805636
<i>Schlumbergera truncata</i> 15H05 pol	6,347,070	4,365,031	148	139	38.8	35.9	39.8	38.8	46,638	28,580	SRR13805646
<i>Schlumbergera truncata</i> 15H05 sty 1	9,618,084	6,479,817	146	139	38.2	35.9	39.6	38.8	71,031	41,443	SRR13805635
<i>Schlumbergera truncata</i> 15H05 sty 2	5,043,649	3,051,699	147	141	38.7	36.8	39.9	39.0	59,857	36,264	SRR13805634
<i>Schlumbergera truncata</i> 15H06 pol	6,850,087	4,360,475	148	141	38.9	36.5	39.7	38.8	27,729	18,571	SRR13805645
<i>Schlumbergera truncata</i> 15H06 sty	6,632,382	4,203,598	148	139	38.8	36.1	39.7	38.6	24,392	16,949	SRR13805633
<i>Schlumbergera truncata</i> 15H07 pol	4,513,581	2,988,451	148	147	35.7	35.0	36.2	35.9	46,908	29,464	SRR13805644
<i>Schlumbergera truncata</i> 15H07 sty	6,411,850	4,200,344	148	139	38.9	35.9	39.9	38.6	68,107	39,657	SRR13805632
<i>Schlumbergera truncata</i> 15H08 pol	5,106,699	3,863,997	149	147	35.8	35.1	36.2	35.8	36,739	23,618	SRR13805643
<i>Schlumbergera truncata</i> 15H08 sty	4,521,102	2,741,695	148	146	35.7	34.8	36.2	35.8	47,754	29,812	SRR13805631
<i>Schlumbergera truncata</i> 15H09 pol	4,645,325	2,575,494	148	147	35.7	35.0	36.2	35.8	42,245	27,650	SRR13805642
<i>Schlumbergera truncata</i> 15H09 root	6,653,640	3,261,445	149	148	35.7	34.4	36.4	36.2	68,427	48,463	SRR13805640
<i>Schlumbergera truncata</i> 15H09 stem	8,275,870	5,731,805	149	149	35.8	35.2	36.4	36.2	79,859	51,788	SRR13805639
<i>Schlumbergera truncata</i> 15H09 sty	6,363,556	4,525,356	147	138	38.8	35.8	39.8	38.7	62,991	36,275	SRR13805651
<i>Matucana madisoniorum</i> HBG13 sty	4,148,932	2,396,890	145	140	38.1	36.4	39.5	38.9	41,968	33,810	SRR13805638

This should be Table S1 and at the top of the pile in S

Table S2: Genomes and gene sequences downloaded from the NCBI GenBank genome browser, descriptions of the genome, and associated hosts.

This should be moved to Table 2 in the paper. Get rid of the duplicated information in three columns (first column contains at least two columns of redundant information). This could allow it to fit in two-column format on one page (in landscape). We should also somehow make it clear which sequences are ours.

Table S3: Assembled viral sequences from transcriptomes previously uploaded to GenBank.

Name	sample_name	Description_mapped_to	Sequence Length	Size	host
Hylocereus_polyrhizus_SRR11190795_NC_002815	SRR11190795	NC_002815	6614	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190795_NC_006059	SRR11190795	NC_006059	6624	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190795_NC_011659	SRR11190795	NC_011659	6633	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190795_NC_024458	SRR11190795	NC_024458	6677	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190796_NC_002815	SRR11190796	NC_002815	6614	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190796_NC_006059	SRR11190796	NC_006059	6624	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190796_NC_011659	SRR11190796	NC_011659	6633	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190796_NC_024458	SRR11190796	NC_024458	6677	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190797_NC_002815	SRR11190797	NC_002815	6614	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190797_NC_006059	SRR11190797	NC_006059	6624	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190797_NC_011659	SRR11190797	NC_011659	6633	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190797_NC_024458	SRR11190797	NC_024458	6677	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190798_NC_002815	SRR11190798	NC_002815	6614	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190798_NC_006059	SRR11190798	NC_006059	6624	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190798_NC_011659	SRR11190798	NC_011659	6633	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190798_NC_024458	SRR11190798	NC_024458	6677	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190801_NC_002815	SRR11190801	NC_002815	6614	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190801_NC_006059	SRR11190801	NC_006059	6624	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190801_NC_011659	SRR11190801	NC_011659	6633	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190801_NC_024458	SRR11190801	NC_024458	6677	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190802_NC_002815	SRR11190802	NC_002815	6614	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190802_NC_006059	SRR11190802	NC_006059	6624	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190802_NC_011659	SRR11190802	NC_011659	6633	7 KB	Selenicereus polyrhizus
Hylocereus_polyrhizus_SRR11190802_NC_024458	SRR11190802	NC_024458	6677	7 KB	Selenicereus polyrhizus
Hylocereus_undatus_SRR11190791_NC_002815	SRR11190791	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11190791_NC_024458	SRR11190791	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11190792_NC_002815	SRR11190792	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11190792_NC_024458	SRR11190792	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11190793_NC_002815	SRR11190793	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11190793_NC_024458	SRR11190793	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11190799_NC_002815	SRR11190799	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11190799_NC_024458	SRR11190799	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11190800_NC_002815	SRR11190800	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11190800_NC_024458	SRR11190800	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603182_NC_002815	SRR11603182	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603182_NC_024458	SRR11603182	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603183_NC_002815	SRR11603183	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603183_NC_011659	SRR11603183	NC_011659	6633	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603183_NC_024458	SRR11603183	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603184_NC_002815	SRR11603184	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603184_NC_011659	SRR11603184	NC_011659	6633	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603184_NC_024458	SRR11603184	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603186_NC_002815	SRR11603186	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603186_NC_006059	SRR11603186	NC_006059	6624	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603186_NC_024458	SRR11603186	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603187_NC_002815	SRR11603187	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603187_NC_006059	SRR11603187	NC_006059	6624	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603187_NC_011659	SRR11603187	NC_011659	6633	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603187_NC_024458	SRR11603187	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603189_NC_002815	SRR11603189	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603189_NC_006059	SRR11603189	NC_006059	6624	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603189_NC_011659	SRR11603189	NC_011659	6633	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603189_NC_024458	SRR11603189	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603190_NC_002815	SRR11603190	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603190_NC_006059	SRR11603190	NC_006059	6624	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603190_NC_024458	SRR11603190	NC_024458	6677	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603191_NC_002815	SRR11603191	NC_002815	6614	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603191_NC_006059	SRR11603191	NC_006059	6624	7 KB	Selenicereus undatus
Hylocereus_undatus_SRR11603191_NC_024458	SRR11603191	NC_024458	6677	7 KB	Selenicereus undatus

Table S4: Assembled viral sequences from *Schlumbergera truncata* samples.

Name	Description	Sequence Length	Host	sample_name	tissue_type
Schlumbergera_truncata_15H02_sty_NC_002815	NC_002815	6614	Schlumbergera truncata	15H02	sty
Schlumbergera_truncata_15H03_pol_NC_002815	NC_002815	6614	Schlumbergera truncata	15H03	pol
Schlumbergera_truncata_15H03_pol_NC_006059	NC_006059	6624	Schlumbergera truncata	15H03	pol
Schlumbergera_truncata_15H03_pol_NC_011659	NC_011659	6633	Schlumbergera truncata	15H03	pol
Schlumbergera_truncata_15H03_sty_NC_002815_a	NC_002815	6614	Schlumbergera truncata	15H03	sty
Schlumbergera_truncata_15H03_sty_NC_002815_b	NC_002815	6614	Schlumbergera truncata	15H03	sty
Schlumbergera_truncata_15H03_sty_NC_006059_a	NC_006059	6624	Schlumbergera truncata	15H03	sty
Schlumbergera_truncata_15H03_sty_NC_006059_b	NC_006059	6624	Schlumbergera truncata	15H03	sty
Schlumbergera_truncata_15H03_sty_NC_011659	NC_011659	6633	Schlumbergera truncata	15H03	sty
Schlumbergera_truncata_15H04_pet_NC_002815	NC_002815	6614	Schlumbergera truncata	15H04	pet
Schlumbergera_truncata_15H04_pet_NC_006059	NC_006059	6624	Schlumbergera truncata	15H04	pet
Schlumbergera_truncata_15H04_pol_NC_002815	NC_002815	6614	Schlumbergera truncata	15H04	pol
Schlumbergera_truncata_15H04_pol_NC_006059	NC_006059	6624	Schlumbergera truncata	15H04	pol
Schlumbergera_truncata_15H04_sty_NC_002815	NC_002815	6614	Schlumbergera truncata	15H04	sty
Schlumbergera_truncata_15H04_sty_NC_006059	NC_006059	6624	Schlumbergera truncata	15H04	sty
Schlumbergera_truncata_15H05_pol_NC_002815	NC_002815	6553	Schlumbergera truncata	15H05	pol
Schlumbergera_truncata_15H06_pol_NC_002815	NC_002815	6614	Schlumbergera truncata	15H06	pol
Schlumbergera_truncata_15H06_pol_NC_006059	NC_006059	6624	Schlumbergera truncata	15H06	pol
Schlumbergera_truncata_15H06_pol_NC_011659	NC_011659	6633	Schlumbergera truncata	15H06	pol
Schlumbergera_truncata_15H06_sty_NC_002815	NC_002815	6614	Schlumbergera truncata	15H06	sty
Schlumbergera_truncata_15H06_sty_NC_006059	NC_006059	6624	Schlumbergera truncata	15H06	sty
Schlumbergera_truncata_15H06_sty_NC_011659	NC_011659	6633	Schlumbergera truncata	15H06	sty
Schlumbergera_truncata_19JSF_sty_NC_002815	NC_002815	6614	Schlumbergera truncata	19JSF	sty
Schlumbergera_truncata_19JSF_sty_NC_006059	NC_006059	6624	Schlumbergera truncata	19JSF	sty