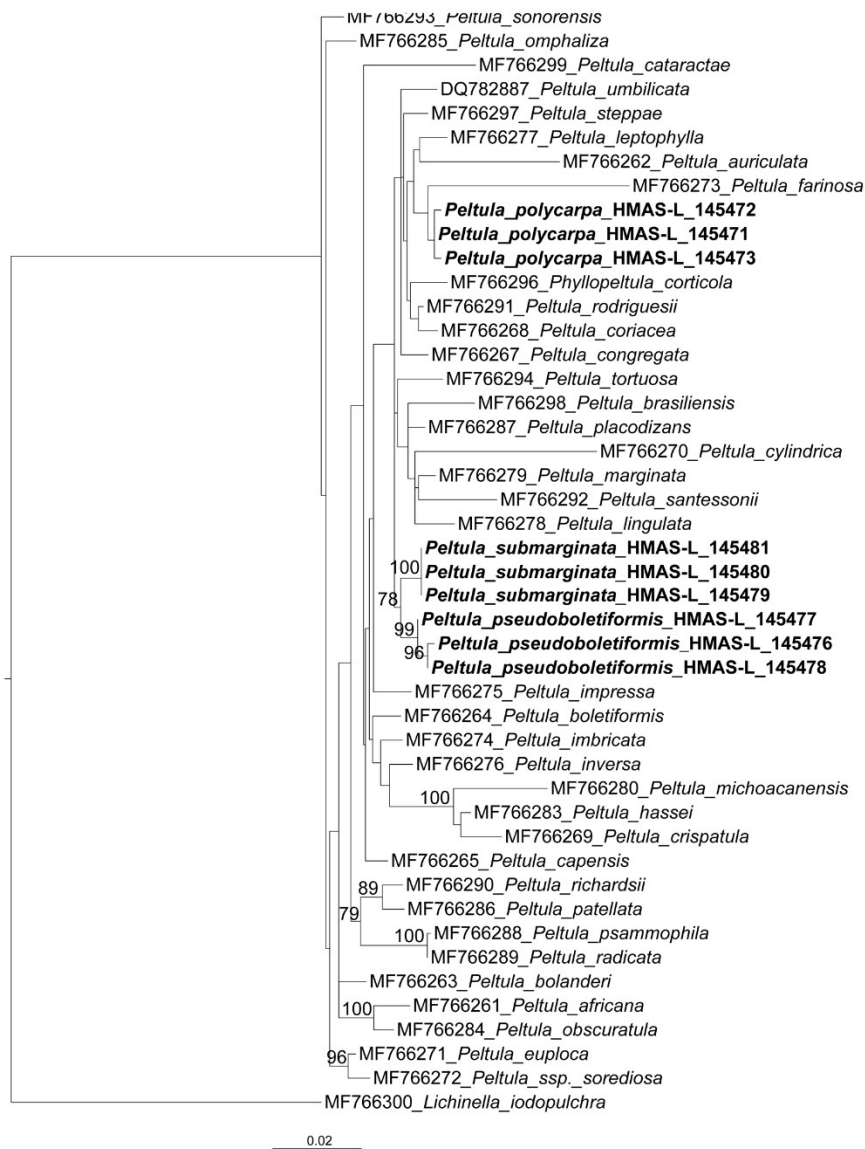
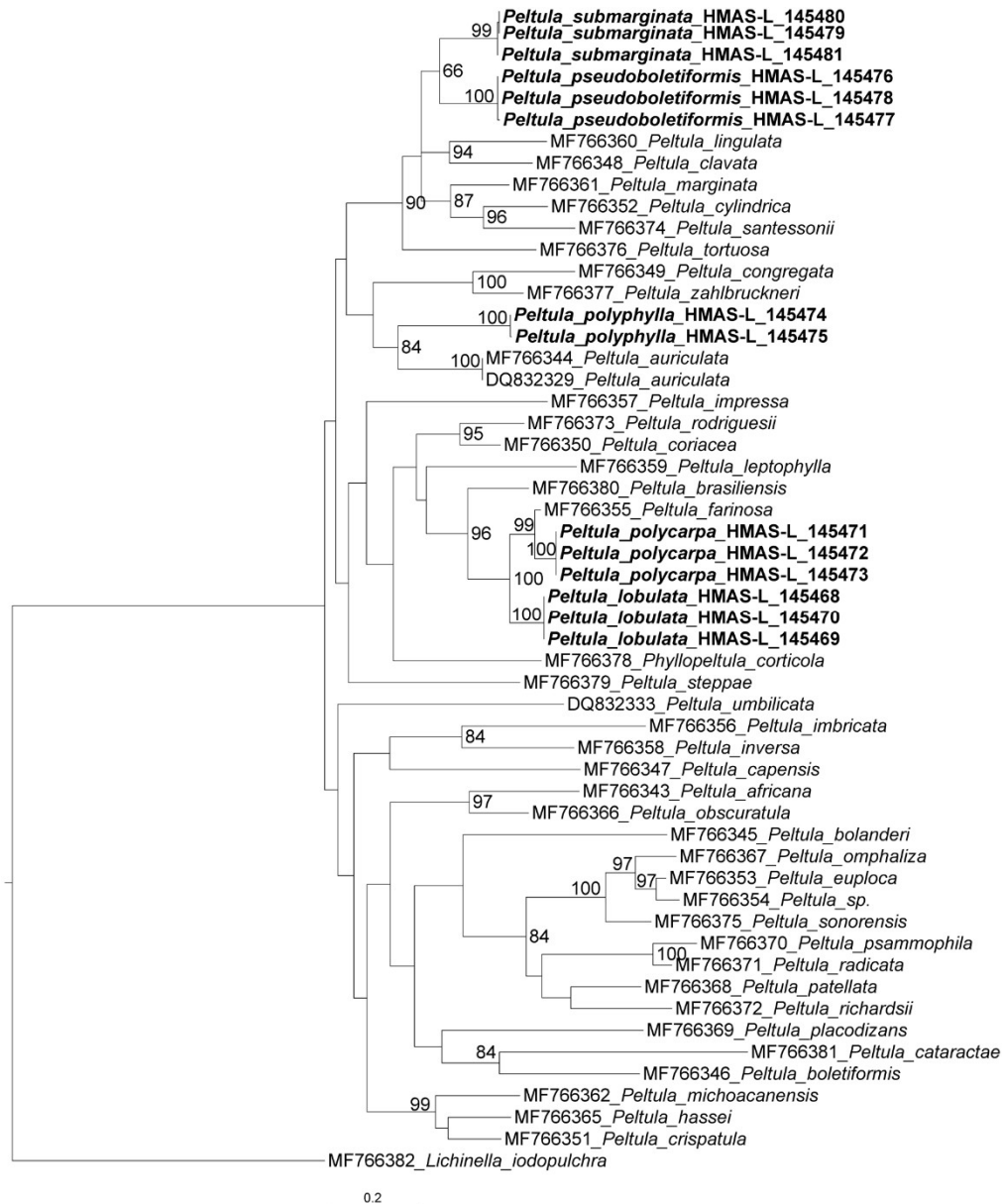


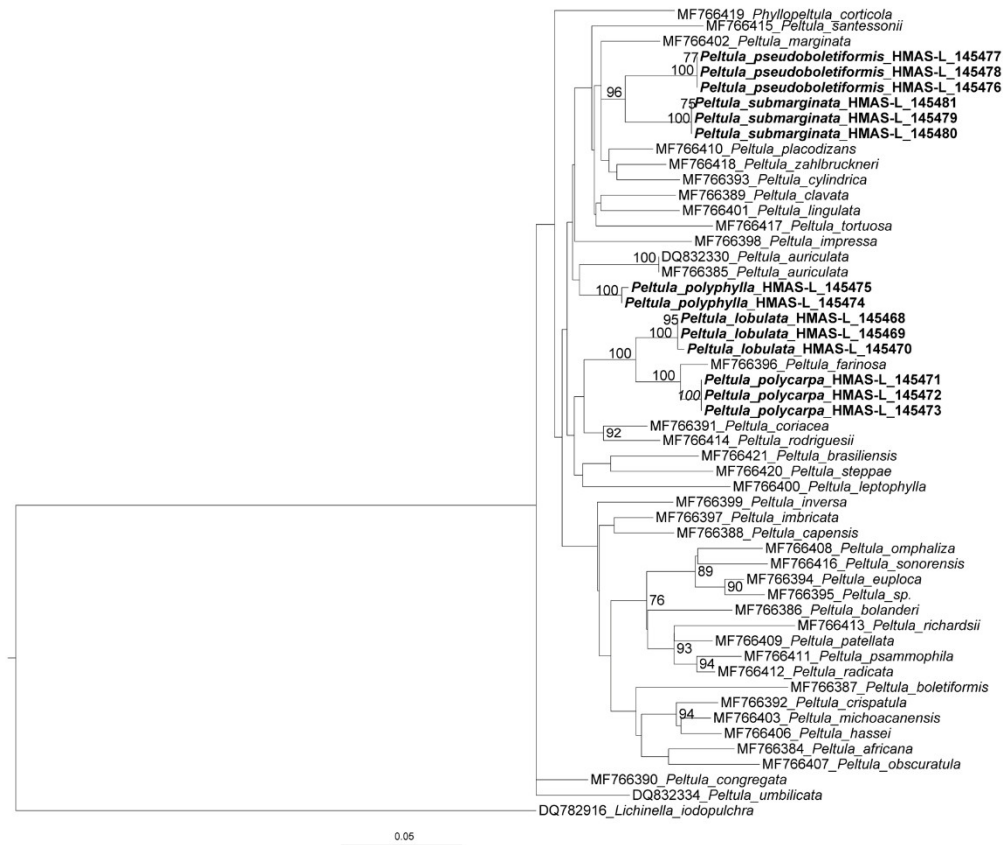
**Figure S1.** The Bayesian tree of *Peltula* species based on the concatenated ITS + nuSSU + nuLSU (three-gene) data set. The numbers in each node represent posterior probability (PP) values. Posterior probability values  $\geq 0.95$  were plotted on the branches of the MrBayes tree. The clades corresponding to the new species are in bold, which indicate that these sequences are newly generated for this study. Scale = 0.2 substitution per site.



**Figure S2.** The maximum likelihood tree of *Peltula* species based on the nuSSU sequences. The numbers in each node represent bootstrap support (BS). Bootstrap values  $\geq 75$  were plotted on the branches of the RAxML tree. The clades corresponding to the new species are in bold, which indicate that these sequences are newly generated for this study. Scale = 0.02 substitution per site.



**Figure S3.** The maximum likelihood tree of *Peltula* species based on the ITS sequences. The numbers in each node represent bootstrap support (BS). Bootstrap values  $\geq 75$  were plotted on the branches of the RAxML tree. The clades corresponding to the new species are in bold, which indicate that these sequences are newly generated for this study. Scale = 0.2 substitution per site.



**Figure S4.** The maximum likelihood tree of *Peltula* species based on the nuLSU sequences. The numbers in each node represent bootstrap support (BS). Bootstrap values  $\geq 75$  were plotted on the branches of the RAxML tree. The clades corresponding to the new species are in bold, which indicate that these sequences are newly generated for this study. Scale = 0.05 substitution per site.

**Table S1.** ABGD species delimitation results

Parameter settings	P0.001-0.1, X=0.5	P0.001-0.01, X=1
Delimited species	Group[ 1 ] n: 1 ;id: Lichinella_iodopulchra	Group[ 1 ] n: 1 ;id: Lichinella_iodopulchra
	Group[ 2 ] n: 1 ;id: P._euploca_ssp._sorediosa	Group[ 2 ] n: 1 ;id: P._euploca_ssp._sorediosa
	Group[ 3 ] n: 1 ;id: Peltula_africana	Group[ 3 ] n: 1 ;id: Peltula_africana
	Group[ 4 ] n: 2 ;id: Peltula_auriculata1 Peltula_auriculata2	Group[ 4 ] n: 2 ;id: Peltula_auriculata1 Peltula_auriculata2
	Group[ 5 ] n: 1 ;id: Peltula_bolanderi	Group[ 5 ] n: 1 ;id: Peltula_bolanderi
	Group[ 6 ] n: 1 ;id: Peltula_boletiformis	Group[ 6 ] n: 1 ;id: Peltula_boletiformis
	Group[ 7 ] n: 1 ;id: Peltula_brasiliensis	Group[ 7 ] n: 1 ;id: Peltula_brasiliensis
	Group[ 8 ] n: 1 ;id: Peltula_capensis	Group[ 8 ] n: 1 ;id: Peltula_capensis
	Group[ 9 ] n: 1 ;id: Peltula_cataractae	Group[ 9 ] n: 1 ;id: Peltula_cataractae
	Group[ 10 ] n: 1 ;id: Peltula_clavata	Group[ 10 ] n: 1 ;id: Peltula_clavata
	Group[ 11 ] n: 1 ;id: Peltula_congregata	Group[ 11 ] n: 1 ;id: Peltula_congregata
	Group[ 12 ] n: 1 ;id: Peltula_coriacea	Group[ 12 ] n: 1 ;id: Peltula_coriacea
	Group[ 13 ] n: 1 ;id: Peltula_crispatula	Group[ 13 ] n: 1 ;id: Peltula_crispatula
	Group[ 14 ] n: 1 ;id: Peltula_cylindrica	Group[ 14 ] n: 1 ;id: Peltula_cylindrica
	Group[ 15 ] n: 1 ;id: Peltula_euploca	Group[ 15 ] n: 1 ;id: Peltula_euploca
	Group[ 16 ] n: 1 ;id: Peltula_farinosa	Group[ 16 ] n: 1 ;id: Peltula_farinosa
	Group[ 17 ] n: 1 ;id: Peltula_hassei	Group[ 17 ] n: 1 ;id: Peltula_hassei
	Group[ 18 ] n: 1 ;id: Peltula_imbricata	Group[ 18 ] n: 1 ;id: Peltula_imbricata
	Group[ 19 ] n: 1 ;id: Peltula_impresa	Group[ 19 ] n: 1 ;id: Peltula_impresa
	Group[ 20 ] n: 1 ;id: Peltula_inversa	Group[ 20 ] n: 1 ;id: Peltula_inversa

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**Group[ 21 ] n: 1** ;id: Peltula\_leptophylla

**Group[ 22 ] n: 1** ;id: Peltula\_lingulata

**Group[ 23 ] n: 3** ;id: Peltula\_lobulata\_145468

Peltula\_lobulata\_145469 Peltula\_lobulata\_145470

**Group[ 24 ] n: 1** ;id: Peltula\_marginata

**Group[ 25 ] n: 1** ;id: Peltula\_michoacanensis

**Group[ 26 ] n: 1** ;id: Peltula\_obscuratula

**Group[ 27 ] n: 1** ;id: Peltula\_omphaliza

**Group[ 28 ] n: 1** ;id: Peltula\_patellata

**Group[ 29 ] n: 1** ;id: Peltula\_placodizans

**Group[ 30 ] n: 3** ;id: Peltula\_polycarpa\_145471

Peltula\_polycarpa\_145472 Peltula\_polycarpa\_145473

**Group[ 31 ] n: 2** ;id: Peltula\_polyphylla\_145474

Peltula\_polyphylla\_145475

**Group[ 32 ] n: 1** ;id: Peltula\_psammophila

**Group[ 33 ] n: 3** ;id: P.\_pseudoboletiformis\_145476

P.\_pseudoboletiformis\_145477 P.\_pseudoboletiformis\_145478

**Group[ 34 ] n: 1** ;id: Peltula\_radicata

**Group[ 35 ] n: 1** ;id: Peltula\_richardsii

**Group[ 36 ] n: 1** ;id: Peltula\_rodriguesii

**Group[ 37 ] n: 1** ;id: Peltula\_santessonii

**Group[ 38 ] n: 1** ;id: Peltula\_sonorensis

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**Group[ 21 ] n: 1** ;id: Peltula\_leptophylla

**Group[ 22 ] n: 1** ;id: Peltula\_lingulata

**Group[ 23 ] n: 3** ;id: Peltula\_lobulata\_145468 Peltula\_lobulata\_145469

Peltula\_lobulata\_145470

**Group[ 24 ] n: 1** ;id: Peltula\_marginata

**Group[ 25 ] n: 1** ;id: Peltula\_michoacanensis

**Group[ 26 ] n: 1** ;id: Peltula\_obscuratula

**Group[ 27 ] n: 1** ;id: Peltula\_omphaliza

**Group[ 28 ] n: 1** ;id: Peltula\_patellata

**Group[ 29 ] n: 1** ;id: Peltula\_placodizans

**Group[ 30 ] n: 3** ;id: Peltula\_polycarpa\_145471 Peltula\_polycarpa\_145472

Peltula\_polycarpa\_145473

**Group[ 31 ] n: 2** ;id: Peltula\_polyphylla\_145474

Peltula\_polyphylla\_145475

**Group[ 32 ] n: 1** ;id: Peltula\_psammophila

**Group[ 33 ] n: 3** ;id: P.\_pseudoboletiformis\_145476

P.\_pseudoboletiformis\_145477 P.\_pseudoboletiformis\_145478

**Group[ 34 ] n: 1** ;id: Peltula\_radicata

**Group[ 35 ] n: 1** ;id: Peltula\_richardsii

**Group[ 36 ] n: 1** ;id: Peltula\_rodriguesii

**Group[ 37 ] n: 1** ;id: Peltula\_santessonii

**Group[ 38 ] n: 1** ;id: Peltula\_sonorensis

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**Group[ 39 ] n: 1** ;id: Peltula\_steppae

**Group[ 40 ] n: 3** ;id: P.\_submarginata\_145479

P.\_submarginata\_145480 P.\_submarginata\_145481

**Group[ 41 ] n: 1** ;id: Peltula\_tortuosa

**Group[ 42 ] n: 1** ;id: Peltula\_umbilicata

**Group[ 43 ] n: 1** ;id: Peltula\_zahlbruckneri

**Group[ 44 ] n: 1** ;id: Phyllopeltula\_corticola

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**Group[ 39 ] n: 1** ;id: Peltula\_steppae

**Group[ 40 ] n: 3** ;id: P.\_submarginata\_145479 P.\_submarginata\_145480

P.\_submarginata\_145481

**Group[ 41 ] n: 1** ;id: Peltula\_tortuosa

**Group[ 42 ] n: 1** ;id: Peltula\_umbilicata

**Group[ 43 ] n: 1** ;id: Peltula\_zahlbruckneri

**Group[ 44 ] n: 1** ;id: Phyllopeltula\_corticola

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**Table S2.** bPTP species delimitation results based on Maximum Likelihood partition

Species No.	Sample name	Support
1	Peltula_cataractae	1.000
2	Peltula_steppae	1.000
3	Peltula_umbilicata	1.000
4	Peltula_impressa	1.000
5	Peltula_boletiformis	1.000
6	Peltula_leptophylla	1.000
7	Phyllopeltula_corticola	1.000
8	Peltula_placodizans	1.000
9	Peltula_bolanderi	1.000
10	Peltula_tortuosa	1.000
11	Peltula_cylindrica	1.000
12	Peltula_santessonii	1.000
13	Peltula_marginata	1.000
14	Peltula_capensis	1.000
15	Peltula_polyphylla_145475, Peltula_polyphylla_145474	0.824
16	Peltula_auriculata2, Peltula_auriculata1	0.492
17	Peltula_patellata	1.000
18	Peltula_richardsii	1.000
19	Peltula_inversa	1.000
20	Peltula_imbricata	1.000
21	Peltula_clavata	1.000
22	Peltula_lingulata	1.000



23	<i>Peltula_brasiliensis</i>	1.000
24	<i>Peltula_obscuratula</i>	1.000
25	<i>Peltula_africana</i>	1.000
26	<i>Peltula_zahlbruckneri</i>	1.000
27	<i>Peltula_congregata</i>	1.000
28	<i>Peltula_michoacanensis</i>	1.000
29	<i>Peltula_pseudoboletiformis_145476</i> , <i>Peltula_pseudoboletiformis_145478</i> , <i>Peltula_pseudoboletiformis_145477</i>	0.991
30	<i>Peltula_submarginata_145480</i> , <i>Peltula_submarginata_145479</i> , <i>Peltula_submarginata_145481</i>	0.882
31	<i>Peltula_sonorensis</i>	1.000
32	<i>Peltula_hassei</i>	1.000
33	<i>Peltula_crispatula</i>	1.000
34	<i>Peltula_rodriguesii</i>	1.000
35	<i>Peltula_coriacea</i>	1.000
36	<i>Peltula_polycarpa_145471</i> , <i>Peltula_polycarpa_145472</i> , <i>Peltula_polycarpa_145473</i>	0.932
37	<i>Peltula_farinosa</i>	0.999
38	<i>Peltula_lobulata_145468</i> , <i>Peltula_lobulata_145469</i> , <i>Peltula_lobulata_145470</i>	0.850
39	<i>Peltula_omphaliza</i>	1.000
40	<i>Peltula_radicata</i>	0.999
41	<i>Peltula_psammophila</i>	0.999
42	<i>Peltula_euploca_ssp._sorediosa</i>	0.996
43	<i>Peltula_euploca</i>	0.996

**Table S3.** GMYC species delimitation results

	Method	single
	Likelihood of null model	235.6642
<b>Results</b>	Maximum likelihood of GMYC	247.529
<b>summary</b>	model	
	Likelihood ratio	23.72973
	Result of LR test	7.033232e-06***
No.	Delimited species No.	Sample name
1	1	Peltula_auriculata1
2	1	Peltula_auriculata2
3	2	Peltula_polyphylla_HMAS_L_145474
4	2	Peltula_polyphylla_HMAS_L_145475
5	3	Peltula_polycarpa_HMAS_L_145473
6	3	Peltula_polycarpa_HMAS_L_145471
7	3	Peltula_polycarpa_HMAS_L_145472
8	4	Peltula_lobulata_HMAS_L_145470
9	4	Peltula_lobulata_HMAS_L_145468
10	4	Peltula_lobulata_HMAS_L_145469
11	5	Peltula_pseudoboletiformis_HMAS_L_145477
12	5	Peltula_pseudoboletiformis_HMAS_L_145476
13	5	Peltula_pseudoboletiformis_HMAS_L_145478
14	6	Peltula_submarginata_HMAS_L_145481
15	6	Peltula_submarginata_HMAS_L_145479
16	6	Peltula_submarginata_HMAS_L_145480
17	7	Lichinella_iodopulchra
18	8	Peltula_euploca_ssp._sorediosa
19	9	Peltula_euploca
20	10	Peltula_omphaliza
21	11	Peltula_sonorensis
22	12	Peltula_patellata
23	13	Peltula_richardsii
24	14	Peltula_psammophila
25	15	Peltula_radicata
26	16	Peltula_bolanderi
27	17	Peltula_africana
28	18	Peltula_obscuratula
29	19	Peltula_crispatula

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30	20	<i>Peltula_hassei</i>
31	21	<i>Peltula_michoacanensis</i>
32	22	<i>Peltula_boletiformis</i>
33	23	<i>Peltula_cataractae</i>
34	24	<i>Peltula_congregata</i>
35	25	<i>Peltula_zahlbruckneri</i>
36	26	<i>Peltula_umbilicata</i>
37	27	<i>Peltula_brasiliensis</i>
38	28	<i>Peltula_farinosa</i>
39	29	<i>Peltula_coriacea</i>
40	30	<i>Peltula_rodriguesii</i>
41	31	<i>Phyllopeltula_corticola</i>
42	32	<i>Peltula_leptophylla</i>
43	33	<i>Peltula_steppae</i>
44	34	<i>Peltula_clavata</i>
45	35	<i>Peltula_lingulata</i>
46	36	<i>Peltula_cylindrica</i>
47	37	<i>Peltula_santessonii</i>
48	38	<i>Peltula_marginata</i>
49	39	<i>Peltula_tortuosa</i>
50	40	<i>Peltula_placodizans</i>
51	41	<i>Peltula_impresa</i>
52	42	<i>Peltula_capensis</i>
53	43	<i>Peltula_imbricata</i>
54	44	<i>Peltula_inversa</i>

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