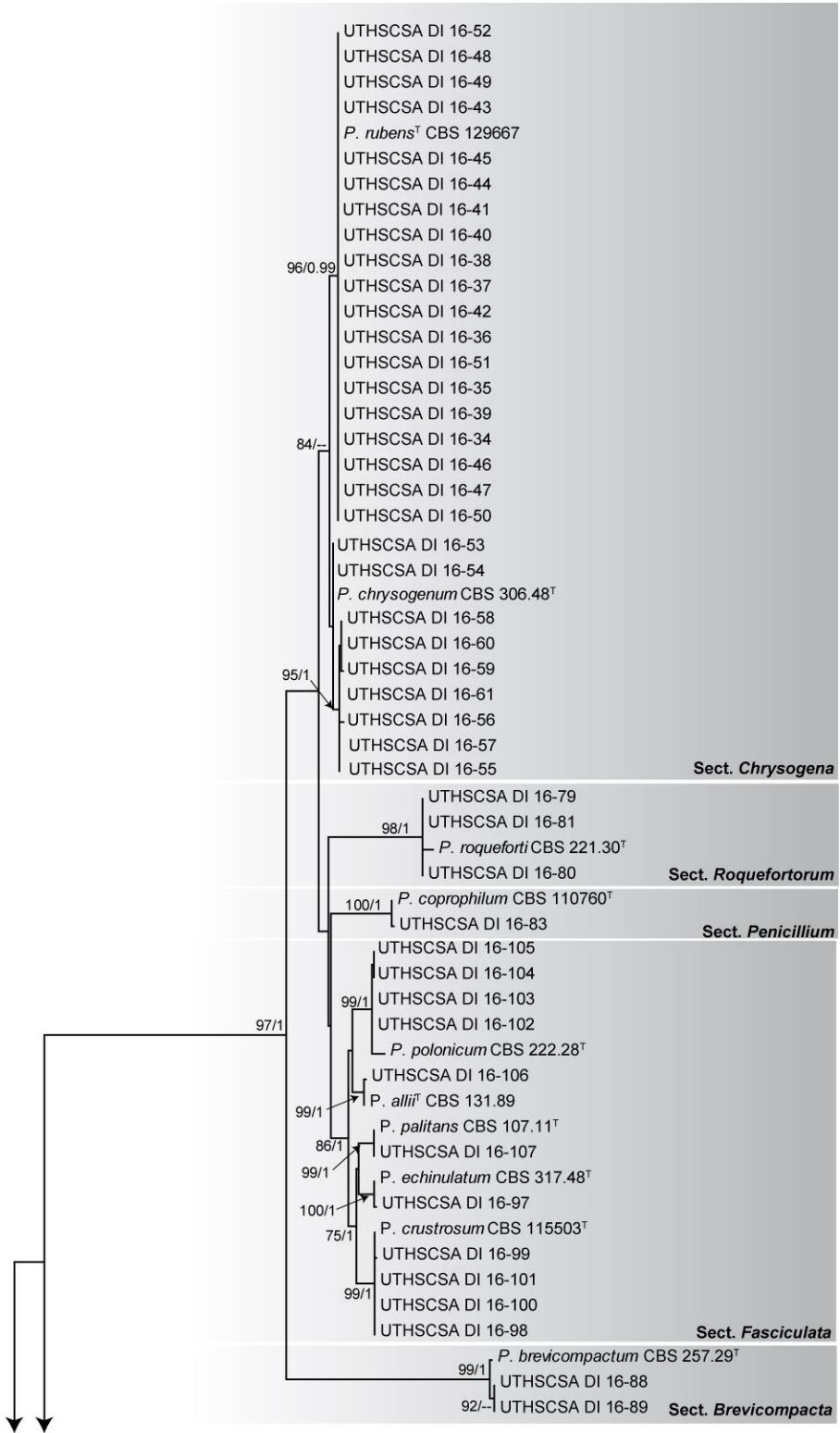Table S1. Identification, origin and GenBank accession numbers of the sequences of the isolates included in this study.

Species	UTHSCSA De-identified #	Source	State	GenBank accession no.	
				ITS	β-tubulin
P. rubens	DI16-34	Unknown	FL	LT558856	LT558974
	DI16-35	chicken cecal	TX	LT558857	LT558975
	DI16-36	BAL	CA	LT558858	LT558976
	DI16-37	Brain tissue	PA	LT558859	LT558977
	DI16-38	Cornea	MD	LT558860	LT558978
	DI16-39	Nasal	NC	LT558861	LT558979
	DI16-40	Toe	TX	LT558862	LT558980
	DI16-41	Sputum	VA	LT558863	LT558981
	DI16-42	Cornea	TX	LT558864	LT558982
	DI16-43	Sinus	TN	LT558865	LT558983
	DI16-44	Pericardial fluid	CA	LT558866	LT558984
	DI16-45	Lung Bx	PA	LT558867	LT558985
	DI16-46	Pleural	MN	LT558868	LT558986
	DI16-47	Air valve	CA	LT558869	LT558987
	DI16-48	Nasal	CA	LT558870	LT558988
	DI16-49	Catheter	TX	LT558871	LT558989
	DI16-50	Sputum	WA	LT558872	LT558990
	DI16-51	BAL	IL	LT558873	LT558991
	DI16-52	BAL	CA	LT558874	LT558992
P. chrysogenum	DI16-53	Sinus	MN	LT558875	LT558993
	DI16-54	BAL	MA	LT558876	LT558994
Penicillium sp.	DI16-55	Bone Marrow	MN	LT558877	LT558995
	DI16-56	BAL	CA	LT558878	LT558996
	DI16-57	Blood	TX	LT558879	LT558997
	DI16-58	BAL	TX	LT558880	LT558998
	DI16-59	BAL	MN	LT558881	LT558999
	DI16-60	Sputum	MN	LT558882	LT559000
	DI16-61	BAL	MN	LT558883	LT559001
P. citrinum	DI16-62	BAL	AZ	LT558884	LT559002
	DI16-63	Sinus	TX	LT558885	LT559003
	DI16-64	Gastric dolphin	Bahamas	LT558886	LT559004
	DI16-65	Sinus	WA	LT558887	LT559005
	DI16-66	Lung Bx	WI	LT558888	LT559006

	DI16-67	BAL	MN	LT558889	LT559007
	DI16-68	Sinus	TN	LT558890	LT559008
	DI16-69	Eye	NY	LT558891	LT559009
	DI16-70	Sinus	WA	LT558892	LT559010
	DI16-71	Sputum	VA	LT558893	LT559011
	DI16-72	BAL	UT	LT558894	LT559012
	DI16-73	Lung Bx	MN	LT558895	LT559013
	DI16-74	Urine	TX	LT558896	LT559014
	DI16-75	BAL	FL	LT558897	LT559015
P. sumatrense	DI16-76	Pulmonary nodule	WI	LT558898	LT559016
P. pancosmium	DI16-77	Peritoneal fluid	OK	LT558899	LT559017
P. roseopurpureum	DI16-78	Nasal Bx Canine	CA	LT558900	LT559018
P. roqueforti	DI16-79	Sinus	TN	LT558901	LT559019
	DI16-80	Hip	MN	LT558902	LT559020
	DI16-81	Sputum	WA	LT558903	LT559021
P. adametzioides	DI16-82	Cornea	TX	LT558904	LT559022
P. coprophilum	DI16-83	Sinus	TN	LT558905	LT559023
P. decumbens	DI16-84	BAL	TX	LT558906	LT559024
P. rubefaciens	DI16-85	BAL	AZ	LT558907	LT559025
P. citreonigrum	DI16-86	BAL	IL	LT558908	LT559026
	DI16-87	Sputum	VA	LT558909	LT559027
P. brevicompactum	DI16-88	Bone lesion	TX	LT558910	LT559028
	DI16-89	BAL	IL	LT558911	LT559029
P. rudallense	DI16-90	BAL	MA	LT558912	LT559030
P. frequentans	DI16-91	BAL	CA	LT558913	LT559031
P. glabrum	DI16-92	Urine	UT	LT558914	LT559032
	DI16-93	Finger tissue	NY	LT558915	LT559033
	DI16-94	Hip fluid	MI	LT558916	LT559034
	DI16-95	Epidural abscess	MN	LT558917	LT559035
	DI16-96	Trachael canine	CA	LT558918	LT559036
P. echinulatum	DI16-97	Sinus	TN	LT558919	LT559037
P. crustosum	DI16-98	BAL	MT	LT558920	LT559038
	DI16-99	Lymph node	VA	LT558921	LT559039
	DI16-100	Stool	CO	LT558922	LT559040
	DI16-101	Sputum	TN	LT558923	LT559041
P. polonicum	DI16-102	Unknown	WA	LT558924	LT559042

	DI16-103	Sinus	TN	LT558925	LT559043
	DI16-104	BAL	WA	LT558926	LT559044
	DI16-105	Blood	HI	LT558927	LT559045
P. allii	DI16-106	Sinus	MA	LT558928	LT559046
P. palitans	DI16-107	Unknown	WA	LT558929	LT559047
P. oxalicum	DI16-108	BAL	UT	LT558930	LT559048
	DI16-109	Sinus	MN	LT558931	LT559049
	DI16-110	BAL	TX	LT558932	LT559050
	DI16-111	Sputum	TX	LT558933	LT559051
	DI16-112	BAL	Canada	LT558934	LT559052
	DI16-113	Blood	MO	LT558935	-
	DI16-114	BAL	MN	LT558936	LT559053
P. rolfsii	DI16-115	Bronchus	TX	LT558937	LT559054
	DI16-116	BAL	CA	LT558938	LT559055
P. brasilianum	DI16-117	Sputum	CA	LT558939	LT559056
P. singorense	DI16-118	BAL	TX	LT558940	LT559057
T. columbinus	DI16-119	Trachael aspirate	NY	LT558941	LT559058
T. atroroseus	DI16-120	BAL	UT	LT558942	LT559059
T. diversus	DI16-121	Lung Bx	UT	LT558943	LT559060
T. purpurogenus	DI16-122	BAL	WI	LT558944	LT559061
	DI16-123	BAL	TX	LT558945	LT559062
	DI16-124	Lung Bx	WI	LT558946	LT559063
	DI16-125	Sputum	OH	LT558947	LT559064
	DI16-126	BAL	MN	LT558948	LT559065
T. aurantiacus	DI16-127	Scalp wound	MN	LT558949	LT559066
	DI16-128	Lung Canine	CA	LT558950	LT559067
T. amestolkiae	DI16-129	BAL	UT	LT558951	LT559068
	DI16-130	Lung Bx	WI	LT558952	LT559069
	DI16-131	Sputum	WA	LT558953	LT559070
	DI16-132	BAL	MN	LT558954	LT559071
	DI16-133	BAL	UT	LT558955	LT559072
	DI16-134	BAL	UT	LT558956	LT559073
	DI16-135	BAL	PA	LT558957	LT559074
T. ruber	DI16-136	Sputum	MN	LT558958	LT559075
	DI16-137	Finger	WA	LT558959	LT559076
T. cnidii	DI16-138	BAL	WV	LT558960	LT559077
T. funiculosus	DI16-139	BAL	TX	LT558961	LT559078

T. pinophilus	DI16-140	BAL	MT	LT558962	LT559079
	DI16-141	BAL	MT	LT558963	LT559080
	DI16-142	BAL	AZ	LT558964	LT559081
Talaromyces sp. I	DI16-143	BAL	UT	LT558965	LT559082
Talaromyces sp. II	DI16-144	Ear	MN	LT558966	LT559083
Talaromyces sp. III	DI16-145	Joint fluid animal	GA	LT558967	LT559084
Talaromyces sp. IV	DI16-146	BAL	TX	LT558968	LT559085
	DI16-147	BAL	UT	LT558969	LT559086
Talaromyces sp. V	DI16-148	BAL	OH	LT558970	LT559087
Talaromyces sp. VI	DI16-149	BAL	WA	LT558971	LT559088
R. argillacea	DI16-150	Lung Bx	TN	LT558972	LT559089
R. eburnea	DI16-151	Lung Bx	NY	LT558973	LT559090

UTHSCSA DI 16-52
UTHSCSA DI 16-48
UTHSCSA DI 16-49
UTHSCSA DI 16-43
P. rubens[T] CBS 129667
UTHSCSA DI 16-45
UTHSCSA DI 16-44
UTHSCSA DI 16-41
UTHSCSA DI 16-40
UTHSCSA DI 16-38
96/0.99
UTHSCSA DI 16-37
UTHSCSA DI 16-42
UTHSCSA DI 16-36
UTHSCSA DI 16-51
UTHSCSA DI 16-35
UTHSCSA DI 16-39
84/--
UTHSCSA DI 16-34
UTHSCSA DI 16-46
UTHSCSA DI 16-47
UTHSCSA DI 16-50
UTHSCSA DI 16-53
UTHSCSA DI 16-54
P. chrysogenum CBS 306.48[T]
UTHSCSA DI 16-58
UTHSCSA DI 16-60
UTHSCSA DI 16-59
95/1
UTHSCSA DI 16-61
UTHSCSA DI 16-56
UTHSCSA DI 16-57
UTHSCSA DI 16-55   **Sect. *Chrysogena***

UTHSCSA DI 16-79
UTHSCSA DI 16-81
98/1
P. roqueforti CBS 221.30[T]
UTHSCSA DI 16-80   **Sect. *Roquefortorum***

100/1   *P. coprophilum* CBS 110760[T]
UTHSCSA DI 16-83   **Sect. *Penicillium***

UTHSCSA DI 16-105
UTHSCSA DI 16-104
99/1   UTHSCSA DI 16-103
UTHSCSA DI 16-102
P. polonicum CBS 222.28[T]
UTHSCSA DI 16-106
P. allii[T] CBS 131.89
99/1
P. palitans CBS 107.11[T]
86/1   UTHSCSA DI 16-107
99/1   *P. echinulatum* CBS 317.48[T]
UTHSCSA DI 16-97
100/1   *P. crustrosum* CBS 115503[T]
75/1   UTHSCSA DI 16-99
UTHSCSA DI 16-101
UTHSCSA DI 16-100
99/1
UTHSCSA DI 16-98   **Sect. *Fasciculata***

97/1

P. brevicompactum CBS 257.29[T]
99/1   UTHSCSA DI 16-88
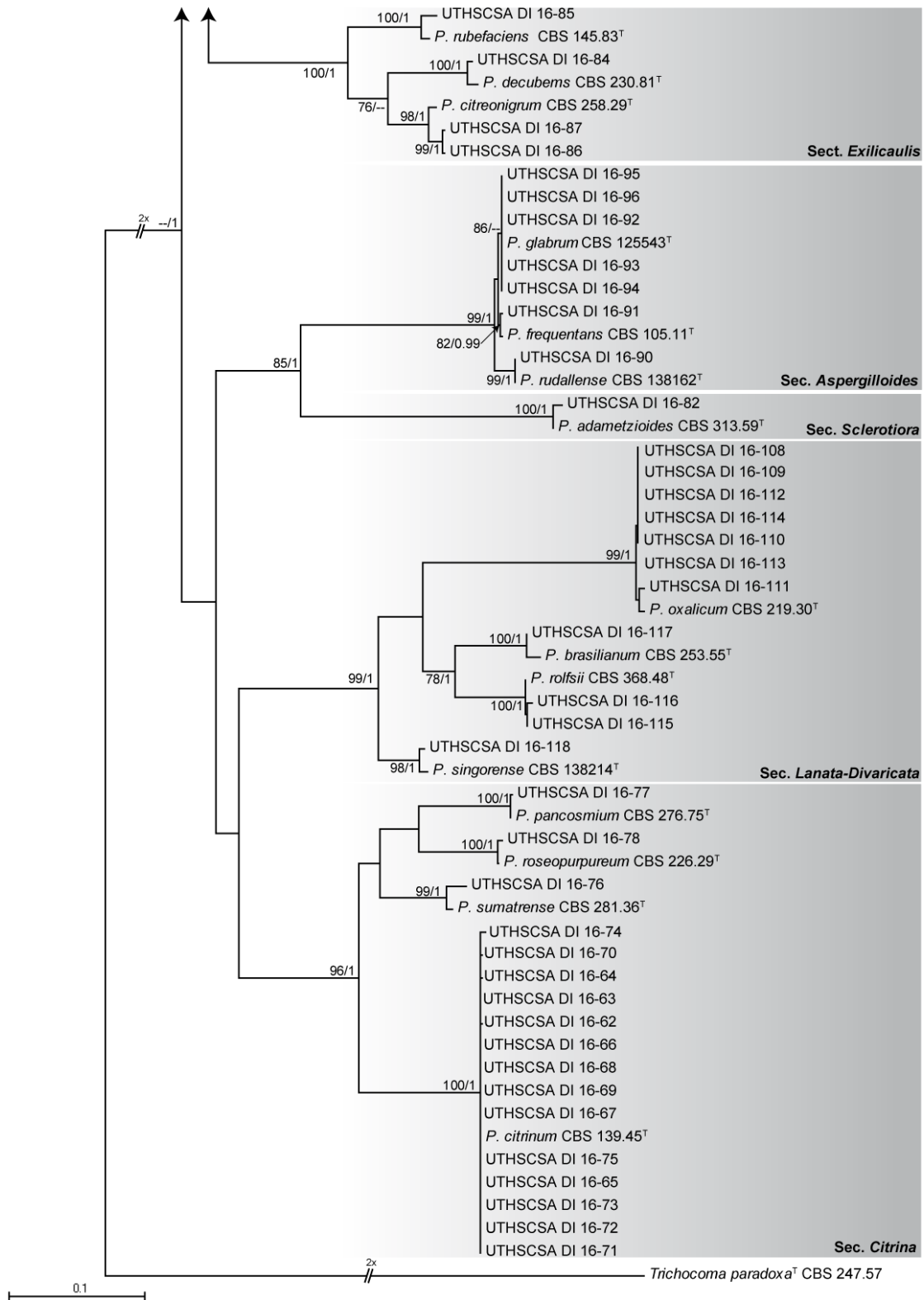92/-- UTHSCSA DI 16-89   **Sect. *Brevicompacta***

Figure S1. Phylogenetic tree of *Penicillium* genus, using Maximum-likelihood (ML) and Bayesian inference (BI), tree constructed with the combination of ITS (521 bp) and β-

tubulin (398 bp) sequence data. Support values are above branches, and represent bootstrap values >70% for ML/posterior probabilities >0.95 for BI. The phylogenetic tree was rooted with *Trichocoma paradoxa* CBS 247.57. T: type strain.
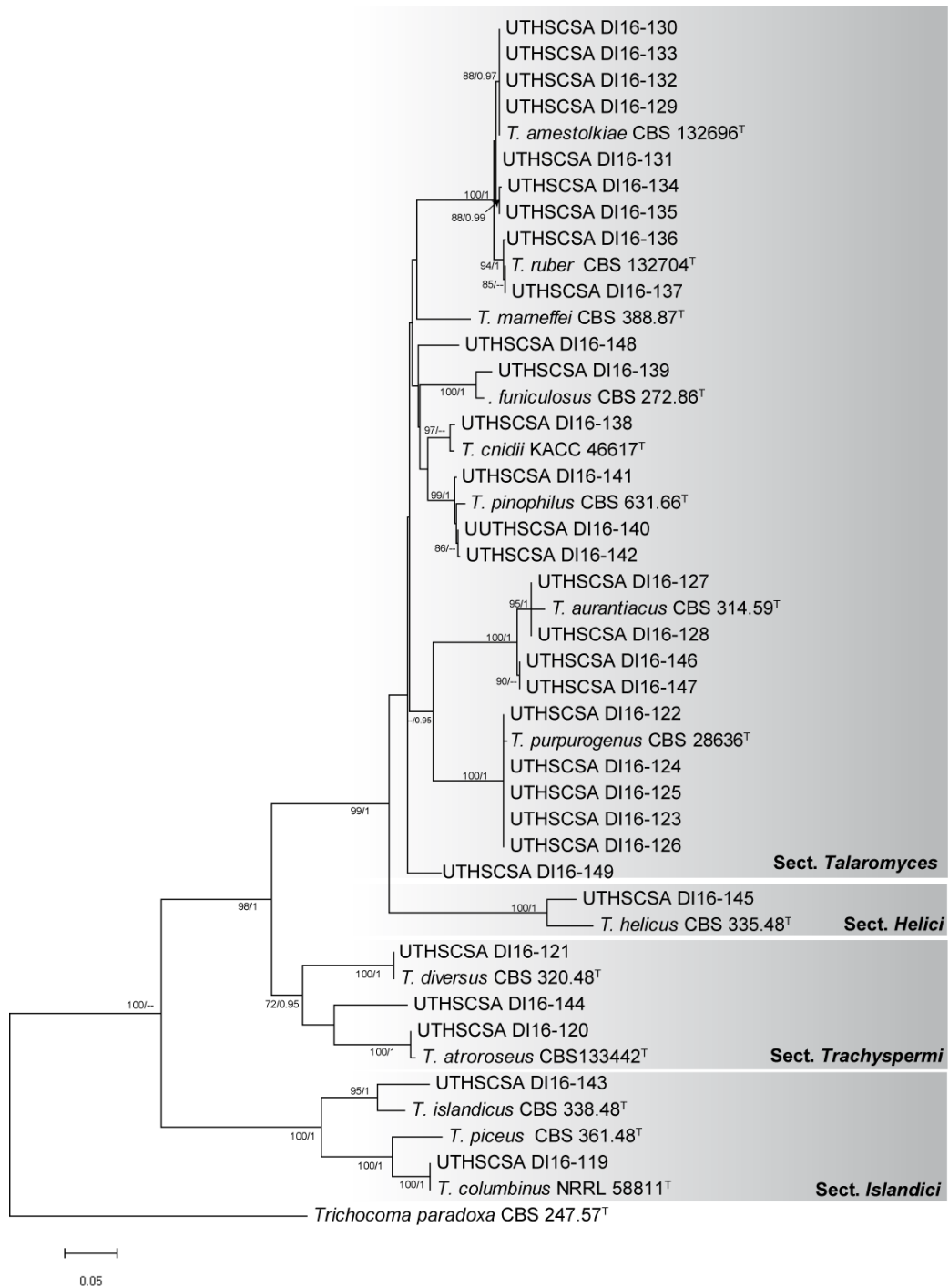
Figure S2. Phylogenetic tree of *Talaromyces* genus, using Maximum-likelihood (ML) and Bayesian inference (BI), tree constructed with the combination of ITS (474 bp) and β-tubulin (373 bp) sequence data. Support values are above branches, and represent bootstrap values >70% for ML/posterior probabilities >0.95 for BI. The phylogenetic tree was rooted with *Trichocoma paradoxa* CBS 247.57. T: type strain.
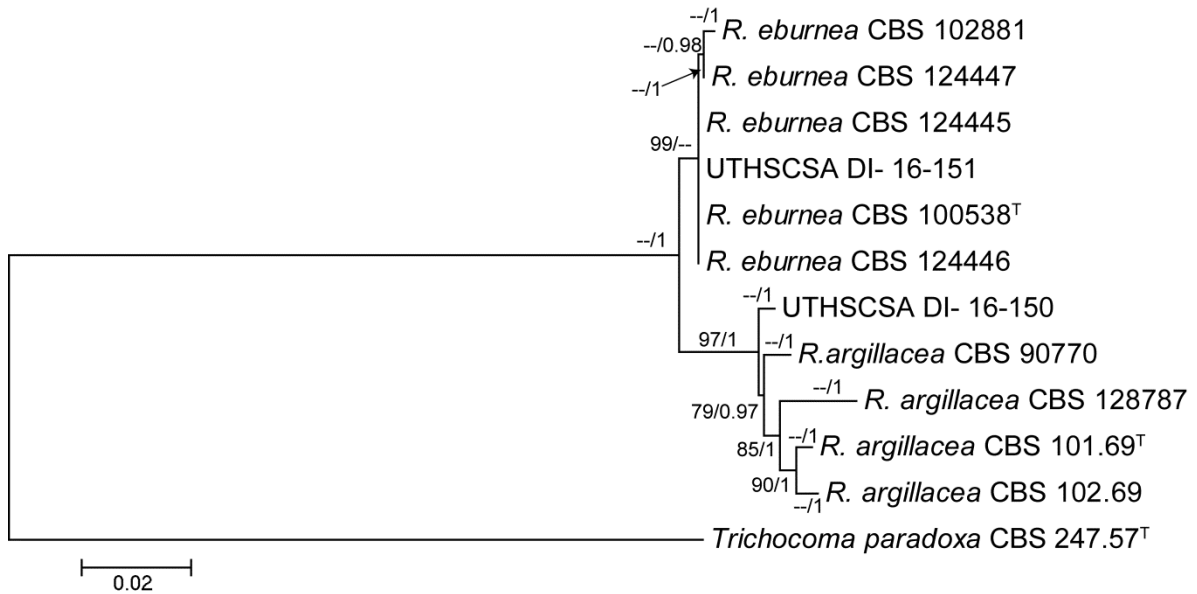
Figure S3. Phylogenetic tree of *Rasamsonia* genus, using Maximum-likelihood (ML) and Bayesian inference (BI), tree constructed with the combination of ITS (599 bp) and β-tubulin (479 bp) sequence data. Support values are above branches, and represent bootstrap values >70% for ML/posterior probabilities >0.95 for BI. The phylogenetic tree was rooted with *Trichocoma paradoxa* CBS 247.57. T: type strain.