

Additional Table S1 - Found essential genes in the genome of *Williamsia* sp. ARP1. Open reading frames (ORFs) were mapped to Pfam and TIGRFAM domains using hmmer3. Given in the table is the number of the ORF, the e-value and bitscore of the matched domain and its description.

Open Reading Frame	e-value	bitscore	TIGRFAM/Pfam	Description
contig10_size140970_116	0	1679.5	TIGR02386	DNA-directed RNA polymerase beta' subunit
contig10_size140970_117	0	1699	TIGR02013	DNA-directed RNA polymerase beta subunit
contig10_size140970_129	2.1e-48	161.8	TIGR00855	ribosomal protein bL12
contig10_size140970_130	5.5e-27	91.9	PF00466.15	Ribosomal protein L10
contig10_size140970_29	9.7e-68	224.9	TIGR01029	ribosomal protein uS7
contig10_size140970_30	7e-67	220.9	TIGR00981	ribosomal protein uS12
contig11_size140457_43	2.1e-131	436.4	TIGR00092	GTP-binding protein YchF
contig11_size140457_72	2.6e-56	187.6	TIGR00086	SsrA-binding protein
contig12_size136193_35	4e-10	37.8	TIGR01031	ribosomal protein bL32
contig12_size136193_38	1.4e-24	84.3	TIGR00009	ribosomal protein bL28
contig12_size136193_41	1.9e-24	83.6	TIGR00165	ribosomal protein bS18
contig14_size119322_19	5e-62	206.7	TIGR03263	guanylate kinase
contig14_size119322_25	5.9e-65	217.4	TIGR00460	methionyl-tRNA formyltransferase
contig14_size119322_39	5.2e-141	467.9	PF00162.14	Phosphoglycerate kinase
contig14_size119322_41	3.7e-20	69.7	TIGR00810	preprotein translocase SecE subunit
contig18_size111977_99	8.4e-125	415	TIGR00414	serine-tRNA ligase
contig1_size428335_118	4.5e-242	803.8	TIGR00392	isoleucine-tRNA ligase
contig1_size428335_13	5.1e-171	568.6	TIGR00472	phenylalanine-tRNA ligase beta subunit
contig1_size428335_136	1.6e-98	328	PF01795.14	MraW methylase family
contig1_size428335_1	3e-107	357.1	TIGR00234	tyrosine-tRNA ligase
contig1_size428335_14	4.5e-85	283.7	TIGR00468	phenylalanine-tRNA ligase alpha subunit
contig1_size428335_16	8.2e-42	140.1	TIGR01032	ribosomal protein bL20
contig1_size428335_17	3.7e-26	89.2	TIGR00001	ribosomal protein bL35
contig1_size428335_18	3.3e-60	200.5	TIGR00168	translation initiation factor IF-3
contig1_size428335_25	0	1073.5	TIGR00631	excinuclease ABC subunit B
contig1_size428335_264	2.4e-112	373.8	TIGR01391	DNA primase
contig1_size428335_268	9.2e-150	497.8	TIGR00389	glycine-tRNA ligase
contig1_size428335_27	1.9e-46	156.2	TIGR00152	dephospho-CoA kinase

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Open Reading Frame	e-value	bitscore	TIGRFAM/Pfam	Description
contig1_size428335_275	4.7e-67	224.1	TIGR00436	GTP-binding protein Era
contig1_size428335_277	2.5e-33	112.5	TIGR00043	rRNA maturation RNase YbeY
contig1_size428335_300	4e-292	967.8	TIGR01393	elongation factor 4
contig1_size428335_326	2.5e-24	83.6	TIGR00029	ribosomal protein bS20
contig1_size428335_341	3.9e-23	79.7	TIGR00009	ribosomal protein bL28
contig21_size94691_14	2.9e-263	873.8	TIGR00396	leucine-tRNA ligase
contig21_size94691_77	9.9e-17	58.9	TIGR01030	ribosomal protein bL34
contig21_size94691_78	3.7e-147	488.8	TIGR00362	chromosomal replication initiator protein DnaA
contig21_size94691_79	7.7e-103	342.2	TIGR00663	DNA polymerase III beta subunit
contig21_size94691_83	1.4e-286	950.1	TIGR01059	DNA gyrase B subunit
contig21_size94691_84	0	1164.1	TIGR01063	DNA gyrase A subunit
contig22_size93302_21	2.3e-235	780.9	TIGR00575	DNA ligase NAD-dependent
contig22_size93302_25	1.8e-84	281.6	TIGR00420	tRNA (5-methylaminomethyl-2-thiouridylate)-methyltransferase
contig24_size85376_38	6.6e-129	428.9	TIGR00435	cysteine-tRNA ligase
contig25_size81038_1	4.6e-117	389.3	TIGR00115	trigger factor
contig25_size81038_15	2.1e-26	90.3	TIGR00061	ribosomal protein bL21
contig25_size81038_16	2e-35	118.7	TIGR00062	ribosomal protein bL27
contig25_size81038_17	3.4e-120	398.9	TIGR02729	Obg family GTPase CgtA
contig25_size81038_30	6.5e-65	216.7	TIGR02191	ribonuclease III
contig25_size81038_42	2e-102	340.2	TIGR00064	signal recognition particle-docking protein FtsY
contig25_size81038_46	4.9e-176	583.7	TIGR00959	signal recognition particle protein
contig25_size81038_48	1.5e-29	99.8	TIGR00002	ribosomal protein bS16
contig25_size81038_53	2.7e-50	167.2	TIGR01024	ribosomal protein bL19
contig25_size81038_70	2.9e-108	358.3	TIGR01011	ribosomal protein uS2
contig25_size81038_71	2.3e-75	251.5	TIGR00116	translation elongation factor Ts
contig25_size81038_73	1.2e-64	215.1	TIGR00496	ribosome recycling factor
contig25_size81038_9	4.6e-287	952.5	TIGR00422	valine-tRNA ligase
contig26_size76862_38	8.4e-39	131.3	TIGR00158	ribosomal protein bL9
contig26_size76862_39	1.4e-25	87.2	TIGR00165	ribosomal protein bS18
contig26_size76862_41	1e-26	90.9	TIGR00166	ribosomal protein bS6

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Open Reading Frame	e-value	bitscore	TIGRFAM/Pfam	Description
contig28_size60006_10	5.8e-62	206.8	PF00573.17	Ribosomal protein L4/L1
contig28_size60006_11	6.4e-45	151.8	PF00297.17	Ribosomal protein L3
contig28_size60006_12	4.3e-46	153.2	TIGR01049	ribosomal protein uS10
contig28_size60006_2	3.6e-29	98.9	PF00366.15	Ribosomal_S17
contig28_size60006_3	4.3e-20	69.5	TIGR00012	ribosomal protein uL29
contig28_size60006_4	2.6e-56	187.1	TIGR01164	ribosomal protein uL16
contig28_size60006_5	7.5e-94	311.3	TIGR01009	ribosomal protein uS3
contig28_size60006_6	3.1e-48	160.3	TIGR01044	ribosomal protein uL22
contig28_size60006_7	2.2e-47	157.3	TIGR01050	ribosomal protein uS19
contig28_size60006_8	4.4e-127	421.1	TIGR01171	ribosomal protein uL2
contig28_size60006_9	1.1e-27	94	PF00276.15	Ribosomal protein L23
contig29_size50806_15	8.3e-43	143.2	TIGR00059	ribosomal protein bL17
contig29_size50806_16	3.7e-114	378.8	TIGR02027	DNA-directed RNA polymerase alpha subunit
contig29_size50806_17	1.2e-79	264.6	TIGR01017	ribosomal protein uS4
contig29_size50806_18	4.9e-49	163.4	PF00411.14	ribosomal protein L11
contig29_size50806_19	4.1e-37	125.1	PF00416.17	ribosomal protein S13
contig29_size50806_28	3.9e-130	432.4	TIGR00967	preprotein translocase SecY subunit
contig29_size50806_29	8.1e-46	153.4	TIGR01071	ribosomal protein uL15
contig29_size50806_31	2.8e-68	226.6	TIGR01021	ribosomal protein uS5
contig29_size50806_32	4.9e-38	128	TIGR00060	ribosomal protein uL18
contig29_size50806_33	5.8e-44	146.7	PF00347.18	Ribosomal protein L6
contig29_size50806_34	2.8e-47	158	PF00410.14	Ribosomal_S8
contig29_size50806_39	2.2e-23	80.1	PF00281.14	Ribosomal_L5
contig29_size50806_40	1.7e-34	116.3	TIGR01079	ribosomal protein uL24
contig29_size50806_41	1.8e-57	190.5	TIGR01067	ribosomal protein uL14
contig2_size397101_171	2.6e-58	193.8	TIGR01066	ribosomal protein uL13
contig2_size397101_172	1e-44	149.9	PF00380.14	Ribosomal_S9
contig2_size397101_360	3.7e-104	346.6	PF00750.14	tRNA synthetases class I
contig2_size397101_368	1.9e-144	479	TIGR00019	peptide chain release factor 1
contig35_size31300_23	4.4e-167	555.3	TIGR00409	proline-tRNA ligase

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Open Reading Frame	e-value	bitscore	TIGRFAM/Pfam	Description
contig35_size31300_27	5.9e-106	352.2	TIGR01953	transcription termination factor NusA
contig4_size250961_209	2.3e-154	512.5	TIGR03594	ribosome-associated GTPase EngA
contig4_size250961_209	3.9e-41	139.1	TIGR00436	GTP-binding protein Era
contig4_size250961_217	2.7e-206	684.1	TIGR00337	CTP synthase
contig6_size212888_160	2.4e-32	110	PF01025.14	GrpE
contig6_size212888_161	3.7e-276	915.1	TIGR02350	chaperone protein DnaK
contig6_size212888_62	1.2e-30	104.8	TIGR02432	tRNA(Ile)-lysidine synthetase
contig7_size201016_10	5.4e-40	133.6	TIGR00952	ribosomal protein uS15
contig7_size201016_1	1.3e-222	738.7	TIGR00487	translation initiation factor IF-2
contig7_size201016_150	1.1e-188	626.6	TIGR00418	threonine-tRNA ligase
contig7_size201016_172	2.2e-131	436.5	TIGR00442	histidine-tRNA ligase
contig7_size201016_175	2.2e-209	694.6	TIGR00459	aspartate-tRNA ligase
contig7_size201016_182	1.2e-241	802.4	TIGR00344	alanine-tRNA ligase
contig7_size201016_2	4.8e-20	70.2	TIGR00082	ribosome-binding factor A
contig7_size201016_49	2.9e-172	570.2	TIGR02012	protein RecA
contig8_size193540_171	4.9e-111	369.3	TIGR02397	DNA polymerase III subunit gamma and tau
contig9_size150680_4	7.6e-99	327.6	TIGR01169	ribosomal protein uL1
contig9_size150680_5	1.6e-62	207.5	TIGR01632	ribosomal protein uL11
contig9_size150680_6	7e-64	212.7	TIGR00922	transcription termination/antitermination factor NusG
contig9_size150680_7	3.2e-19	66.6	TIGR00964	preprotein translocase SecE subunit