

**Table S3. Genbank accession numbers for all protein sequences used in CenK/R phylogeny (Fig 6).**

<b>Organism</b>	<b>CenK homolog</b>	<b>CenR homolog</b>
<i>Rhodobacter sphaeroides 2.4.1</i>	ABA80240.1	ABA80028.1
<i>Rhodobacter ovatus</i>	WP_097029852.1	WP_097029114.1
<i>Cereibacter changlensis</i>	PZX58573.1	WP_107663473.1
<i>Defluviimonas denitrificans</i>	WP_105515131.1	WP_105516383.1
<i>Pseudorhodobacter aquimaris</i>	WP_083444869.1	WP_050526965.1
<i>Pseudorhodobacter wandonensis</i>	WP_050524403.1	WP_050523141.1
<i>Roseibacterium elongatum</i>	WP_025311819.1	WP_025311137.1
<i>Paracoccus aminovorans</i>	WP_062561073.1	WP_074969281.1
<i>Rhodobacter capsulatus</i>	WP_055211899.1	WP_136906601.1
<i>Roseicitreum antarcticum</i>	WP_092887326.1	WP_092887229.1
<i>Gemmobacter megaterium</i>	WP_083701327.1	WP_076533744.1
<i>Meinhardsimonia xiamenensis</i>	WP_092500460.1	WP_092497609.1
<i>Pararhodobacter aggregans</i>	WP_107753170.1	WP_107752404.1
<i>Paracoccus zeaxanthinifaciens</i>	WP_022708257.1	WP_022707883.1
<i>Pontivivens insulae</i>	WP_108783177.1	WP_108783392.1
<i>Oceanicella actignis</i>	WP_211356277.1	WP_072746865.1
<i>Maricaulis maris</i>	WP_121209738.1	WP_041637067.1
<i>Hirschia maritima</i>	WP_155826066.1	WP_018997296.1
<i>Hyphomonas oceanitis</i>	WP_051624558.1	WP_035538430.1
<i>Ponticaulis koreensis</i>	WP_022695910.1	WP_022693572.1
<i>Henriciella algicola</i>	WP_119455183.1	WP_119453332.1
<i>Bradyrhizobium erythrophlei</i>	WP_074272850.1	WP_072818367.1
<i>Parvularculaceae bacterium</i>	MCB2096247.1	MAW81539.1
<i>Amphiplicatus metriothermophilus</i>	WP_089410642.1	WP_089410979.1
<i>Marinicaulis flavus</i>	WP_104828836.1	WP_104829420.1
<i>Caulobacter crescentus (vibrioides)</i>	WP_010918418.1	WP_024266002.1
<i>Caulobacter segnis</i>	WP_013077599.1	PZR32001.1
<i>Caulobacter henricii</i>	WP_035045754.1	WP_062151853.1
<i>Phenylobacterium haematophilum</i>	WP_183772596.1	WP_183775692.1
<i>Asticcacaulis endophyticus</i>	GGZ27123.1	WP_189484874.1
<i>Brevundimonas bacteroides</i>	WP_029414873.1	WP_029417475.1
<i>Oceanicaulis alexandrii</i>	WP_022701438.1	WP_009802422.1
<i>Ruegeria atlantica</i>	NOD30888.1	WP_058279748.1
<i>Ruegeria litorea</i>	WP_085794123.1	WP_085797046.1 ( <i>sp.</i> )
<i>Ruegeria pomeroyi</i>	WP_011046299.1	WP_011049109.1
<i>Thalassobius activus</i>	WP_058313840.1	WP_209358005.1
<i>Roseobacter cerasinus</i>	WP_159974535.1	WP_159975066.1
<i>Roseobacter denitrificans</i>	WP_011567720.1	WP_011566403.1 ( <i>sp.</i> )
<i>Sulfitobacter pontiacus</i>	WP_064215825.1	WP_005850360.1
<i>Lutimaribacter pacificus</i>	WP_149789044.1	WP_149788025.1
<i>Roseovarius aestuarii</i>	WP_085800950.1	WP_085800306.1
<i>Nitratireductor aquibiodomus</i>	WP_065816343.1	WP_065816950.1
<i>Nitratireductor pacificus</i>	WP_040676576.1	WP_008596599.1
<i>Hoeflea phototrophica</i>	WP_007199885.1	WP_007199422.1
<i>Phyllobacterium phragmitis</i>	WP_105743815.1	WP_105741337.1
<i>Phyllobacterium leguminum</i>	WP_110752236.1	WP_110749900.1
<i>Agrobacterium tumefaciens</i>	KIQ02346.1	AMD60228.1
<i>Sinorhizobium meliloti</i>	RVJ02864.1	WP_100672725.1
<i>Chelativorans alearensis</i>	WP_163266599.1	WP_163265216.1

<i>Pseudovibrio denitrificans</i>	WP_054784296.1	WP_041767864.1
<i>Azorhizobium caulinodans</i>	WP_043879669.1	WP_012168621.1
<i>Bosea robiniae</i>	WP_091856047.1	WP_061966680.1
<i>Pararhizobium polonicum</i>	WP_099050751.1	WP_068955266.1
<i>Mesorhizobium albiziae</i>	WP_188130341.1	WP_149759750.1
<i>Neorhizobium galegae</i>	WP_046664845.1	WP_210105920.1
<i>Brucella rhizophere</i>	WP_094579191.1	WP_094578402.1
<i>Brucella abortus</i>	WP_002963438.1	WP_002965068.1
<i>Brucella melitensis</i>	SPU63212.1	WP_070997026.1
<i>Labrenzia (Roseibium) alba</i>	WP_055675062.1	WP_055677803.1
<i>Labrenzia (Roseibium) aggregate</i>	WP_206904135.1	WP_190291169.1
<i>Nitrobacter winogradskyi</i>	WP_141383471.1	WP_011313424.1
<i>Nitrobacter hamburgensis</i>	WP_011512071.1	WP_011508702.1
<i>Rhodopseudomonas palustris</i>	WP_044412660.1	MBI5130782.1
<i>Sneathiella sp.</i>	PHQ71087.1	PHQ71627.1
<i>Sneathiella litorea</i>	MZR29347.1	WP_161314357.1
<i>Sneathiella chinensis</i>	WP_169559456.1	WP_169559000.1
<i>Kiloniella majae</i>	WP_085900939.1	WP_047764063.1
<i>Kiliella laminaria</i>	WP_020590891.1	WP_020590402.1
<i>Skermanella rosea</i>	WP_203096208.1	WP_203098182.1
<i>Denitrobaculum tricleocarpae</i>	WP_142894422.1	WP_142896990.1
<i>Fodinicurvata sediminis</i>	WP_022727682.1	WP_022727791.1
<i>Roseospirillum parvum</i>	WP_092616041.1	WP_092621908.1
<i>Novispirillum itersonii</i>	WP_184264282.1	WP_184262290.1
<i>Ferruginivarius sediminum</i>	WP_114583718.1	WP_114580497.1
<i>Azospirillum halopraeferens</i>	WP_029009133.1	WP_029010793.1
<i>Azospirillum lipoferum</i>	WP_085554914.1	WP_085555599.1
<i>Thalassospira profundimaris</i>	WP_114112327.1	WP_114100359.1
<i>Thalassospira povalilytica</i>	WP_206926285.1	WP_062950084.1 (sp.)
<i>Thalassospira xiamenensis</i>	WP_097053219.1	WP_101246657.1 (sp.)
<i>Curvivirus aplysinae</i>	WP_155157144.1	WP_155154090.1
<i>Aestuariuspira insulae</i>	WP_115938537.1	WP_115936241.1
<i>Oceanibaculum pacificum</i>	WP_067557655.1	WP_067551072.1