

SUPPLEMENTARY TABLE IV. Accession numbers for CCAN complex components in 26 fungi (see SUPPLEMENTARY TABLE I for taxonomy). Species were examined for the presence or absence of KIN proteins by blastp or tblastn searches with various settings. CCAN complex proteins are overall poorly conserved in many fungal genomes when searching with yeast, *Neurospora* or human homologs. In some cases, homologs were not identified in a specific reference genome and in those cases the predicted protein of the nearest relative was included in the tables. In many cases, annotations are clearly incorrect (for example, *L. maculans* CENP-A is a short form as it is close to a contig end), and not all cases can be resolved because reliable transcription data are lacking in many (absence of RNA-seq data or low expression that makes it impossible to define likely transcription or translation units). “None” means that no clear homolog was found by searches based on sequence identity but it does not exclude the possibility that functional homologs exist

Name	CENP-A	CENP-C	CENP-L	CENP-N	CENP-H
<i>Neurospora crassa</i> (NEUCR)	XP_956658.1	XP_963373.1	XP_011394353.1	XP_956816.3	XP_957914.2
<i>Podospora anserina</i> (PODAN)	CDP32379.1	XP_001909877.1	XP_001903293.1	XP_001909944.1	XP_001905126.1
<i>Magnaporthe oryzae</i> (MAGO7)	XP_003717122.1	XP_003709706.1	XP_003720343.1	XP_003709754.1	XP_003710969.1
<i>Fusarium graminearum</i> (GIBZE)	Yes ¹	EYB26517.1	XP_011321400.1	EYB22170.1	XP_011316045.1
<i>Trichoderma reesei</i> (TRIQM)	XP_006963331.1	XP_006962435.1	XP_006968728.1	XP_006961278.1	XP_006963502.1
<i>Metarhizium album</i> (META)	XP_011411216.1	KHN97367.1	KHN99370.1	KHO01909.1	KHO00144.1
<i>Botryotinia fuckeliana</i> (BOTFB)	XP_001560816.1	XP_001558796.1	EMR87800.1	XP_001549279.1	EMR88649.1
<i>Aspergillus nidulans</i> (ANIDU)	CBF70976.1	XP_662719.1	CBF86464.1	XP_661964.1	XP_660490.1
<i>Talaromyces marneffei</i> (TALMA)	XP_002153334.1	XP_002149168.1	XP_002143777.1	XP_002144453.1	XP_002143530.1
<i>Arthroderma benhamiae</i> (ARTBC)	XP_003016899.1	XP_003017360.1	XP_003016312.1	XP_003012173.1	XP_003010851.1
<i>Histoplasma capsulatum</i> (HISTO)	XP_001539702.1	XP_001545013.1	XP_001544092.1	EEH08717.1	XP_001542971.1
<i>Coccidioides immitis</i> (COCIM)	XP_004444734.1	XP_001248763.1	XP_001246336.2	XP_001244730.1	XP_001244222.1
<i>Zymoseptoria brevis</i> (ZYMBR)	KJX99559.1	KJY01276.1	None	None	None
<i>Leptosphaeria maculans</i> (LEPMJ)	None	XP_003840425.1	CCT61112.1	XP_003835303.1	XP_003843359.1
<i>Pyronema omphalodens</i> (PYROO)	CCX31504.1	CCX06482.1	CCX10582	CCX06806.1	CCX32223.1
<i>Candida albicans</i> (CANAW)	XP_710644.1	KHC73432.1	None	XP_712209.1	None ²
<i>Saccharomyces cerevisiae</i> (SACCE)	P36012.2	CAA81927.1	None	NP_010540.3	Q12262.1
<i>Schizosaccharomyces pombe</i> (SCHPO)	NP_596473.1	CAB54977.2	O36024	XP_001713131.2	O94261.1
<i>Coprinopsis cinerea</i> (COPC7)	XP_001837248.2	XP_001832879.1	None	None	None
<i>Rhizoctonia solani</i> (RHIZS)	EUC66287.1	EUC59414.1	None	None	CEL63737.1
<i>Cryptococcus neoformans</i> (CRYNJ)	XP_566481.1	AAW45241.1	None	None	None
<i>Ustilago maydis</i> (USTMA)	XP_011392147.1	XP_011386202.1	None	None	CCF50569.1
<i>Puccinia graminis</i> (PUCGT)	XP_003320391.1	EHS63588.1	None	None	None
<i>Batrachochytrium dendrobatidis</i> (BATDE)	XP_006679417.1	XP_006682452.1	None	None	None
<i>Rozella allomyces</i> (ROZAC)	EPZ32954.1	None	None	None	None
<i>Encephalitozoon cuniculi</i> (ENCUU)	None	None	None	None	None

Name	CENP-I	CENP-K	CENP-O	CENP-P	CENP-Q
<i>Neurospora crassa</i> (NEUCR)	CAC28775.2	XP_963815.2	XP_964917.1	None	XP_963632.2
<i>Podospira anserina</i> (PODAN)	CDP26166	XP_001908752.1	CDN29903.1	None	XP_001909734.1
<i>Magnaporthe oryzae</i> (MAGO7)	XP_003712221.1	XP_003718542.1	XP_003721039.1	None	XP_003709424.1
<i>Fusarium graminearum</i> (GIBZE)	EYB26565.1	XP_011316811.1	EYB28561.1	None	XP_011325643.1
<i>Trichoderma reesei</i> (TRIQM)	XP_006961519.1	XP_006963001.1	XP_006964049.1	None	XP_006965480.1
<i>Metarhizium album</i> (METAA)	KHN95730.1	KHN95353.1	KHN98734.1	None	KHO01842.1
<i>Botryotinia fuckeliana</i> (BOTFB)	EMR83782.1	XP_001559018.1	XP_001559178.1 ³	None	None
<i>Aspergillus nidulans</i> (ANIDU)	CBF71071.1	XP_659692.1	XP_662439.1	None	XP_663898.1
<i>Talaromyces marneffeii</i> (TALMA)	XP_002143411.1	XP_002144659.1	XP_002152376.1	None	XP_002148780.1
<i>Arthroderma benhamiae</i> (ARTBC)	XP_003014286.1	XP_003016688.1	XP_003014825.1	None	Y
<i>Histoplasma capsulatum</i> (HISTO)	XP_001539671.1	None	XP_001537850.1	None	XP_001541723.1
<i>Coccidioides immitis</i> (COCIM)	XP_001239181.2	XP_001247292.2	XP_001246562.1	None	XP_001245780.1
<i>Zymoseptoria brevis</i> (ZYMBR)	None ²	None	None	None	None
<i>Leptosphaeria maculans</i> (LEPMJ)	XP_003840408.1 ²	XP_003841547.1	None	None	E4ZNW5
<i>Pyronema omphalodens</i> (PYROO)	CCX06676.1	None	CCX10018	None	None
<i>Candida albicans</i> (CANAW)	KHC73479.1	XP_722994.1	XP_710820	None	None
<i>Saccharomyces cerevisiae</i> (SACCE)	Q12748.1	P47167.1	NP_010604	NP_015307.1	NP_011695
<i>Schizosaccharomyces pombe</i> (SCHPO)	P87227	O94494	CAA63106	Q9US26.1	O74844
<i>Coprinopsis cinerea</i> (COPC7)	None	XP_001831212.2	None	None	None
<i>Rhizoctonia solani</i> (RHIZS)	None	None	None	None	None
<i>Cryptococcus neoformans</i> (CRYNJ)	None	None	None	None	None
<i>Ustilago maydis</i> (USTMA)	XP_011389960.1	KIS66080.1	XP_011390399.1	None	None
<i>Puccinia graminis</i> (PUCGT)	None	None	None	None	None
<i>Batrachochytrium dendrobatidis</i> (BATDE)	None	None	None	None	None
<i>Rozella allomycis</i> (ROZAC)	None	None	None	None	None
<i>Encephalitozoon cuniculi</i> (ENCUU)	None	None	None	None	None

Name	CENP-U	CENP-T	CENP-W	CENP-S	CENP-X
<i>Neurospora crassa</i> (NEUCR)	XP_961617.1	XP_964520.2	XP_956847.2	XP_961356.2	XP_963202.2
<i>Podospira anserina</i> (PODAN)	XP_001910929.1 ³	XP_001907371.1	XP_001909986.1	XP_001911731.1	XP_001909828.
<i>Magnaporthe oryzae</i> (MAGO7)	XP_003715021.1	XP_003721024.1	XP_003709441.1	XP_003715172.1	XP_003709361.1
<i>Fusarium graminearum</i> (GIBZE)	XP_011318572.1	XP_011319853.1	XP_011325574.1	EYB26560.1	XP_011324641.1 ³
<i>Trichoderma reesei</i> (TRIQM)	XP_006969751.1	XP_006964035.1 ³	XP_006965333.1	XP_006961053.1	XP_006965487.1 ³
<i>Metarhizium album</i> (METAA)	KHN95229.1	KHN98688.1	KFG81805.1	KHN98485.1	KHO01862.1 ³

<i>Botryotinia fuckeliana</i> (BOTFB)	XP_001550053.1 ³	XP_001545878.1	XP_001558612.1	XP_001560687.1	XP_001559451.1
<i>Aspergillus nidulans</i> (ANIDU)	XP_658615.1	XP_662356.1	CBF80942.1	CBF89155.1	XP_658561.1 ⁵
<i>Talaromyces marneffei</i> (TALMA)	XP_002146257.1	KFX49471.1	KFX46968.1 ⁵	KFX52806.1	KFX48730.1
<i>Arthroderma benhamiae</i> (ARTBC)	XP_003010155.1	XP_003014739.1		XP_003013764.1	D4B147
<i>Histoplasma capsulatum</i> (HISTO)	XP_001536660.1	XP_001544140.1	XP_001544340.1	XP_001544050.1	None
<i>Coccidioides immitis</i> (COCIM)	XP_001242008.1	XP_001246654.2	XP_012214415.1	XP_001246266.1	XP_001243597.1
<i>Zymoseptoria brevis</i> (ZYMBR)	None	None	None	KJX97569.1	KJY00797.1
<i>Leptosphaeria maculans</i> (LEPMJ)	XP_003842337.1	XP_003838461.1	XP_003840529.1 ⁶	XP_003836921.1	XP_003842929.1
<i>Pyronema omphalodens</i> (PYROO)	CCX33829.1	None	None	CCX07368	CCX08886.1 ³
<i>Candida albicans</i> (CANAW)	None ⁴	XP_717589.1	KGQ83180.1	XP_722239.1	XP_719356
<i>Saccharomyces cerevisiae</i> (SACCE)	NP_009770	NP_116704	NP_001032576	AJU08515.1	NP_878060
<i>Schizosaccharomyces pombe</i> (SCHPO)	NP_587962.1	NP_595115.1	XP_004001772.1	NP_596235.2	NP_588439.1
<i>Coprinopsis cinerea</i> (COPC7)	XP_001832193.1 ⁵	None	None	None	None
<i>Rhizoctonia solani</i> (RHIZS)	None	None	None	None	None
<i>Cryptococcus neoformans</i> (CRYNJ)	None	None	None	None	None
<i>Ustilago maydis</i> (USTMA)	None	None	None	None	None
<i>Puccinia graminis</i> (PUCGT)	None	None	None	XP_003307163.1	None
<i>Batrachochytrium dendrobatidis</i> (BATDE)	None	None	None	XP_006678982.1	None
<i>Rozella allomyces</i> (ROZAC)	None	None	None	None	EPZ32424.1
<i>Encephalitozoon cuniculi</i> (ENCUU)	None	None	None	None	None

¹ Annotation of *F. graminearum* *cenH3* was based on RNA-sequence data.

² Putative CENP-I homologs in ZYMBR and LEPMJ are based on an incorrect gene fusion in LEPMJ, thus two genes found in ZYMBR (XM_003851720, XM_003854806) are not CENP-I homologs.

³ Incomplete sequences.

⁴ Poor homologs can be found but were not included here because they fell below stringency criteria.

⁵ Predicted protein is too long.

⁶ Predicted protein matches rDNA ITS regions, likely not a true homolog.