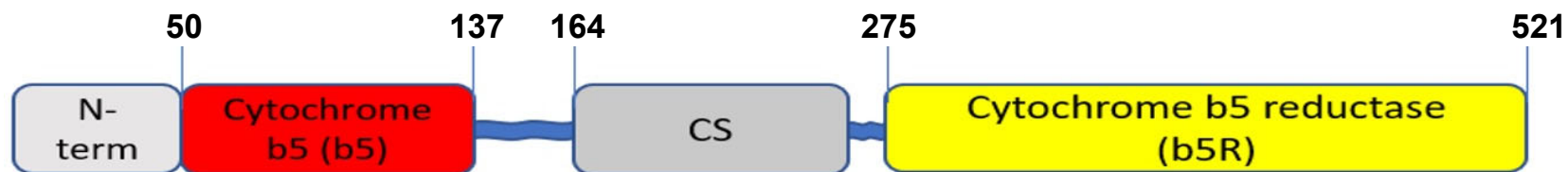


A

N/b5 1 |-----| 137

N/b5-Δ21 22 |-----| 137

N/b5-Δ34 35 |-----| 137

b5 51 |-----| 137

N-term 1 |-----| 50

B

	10	20	30	40	50
N/b5	MLNVPSQSFPAPRSQQRVASGGRSKVPLKQGRSLMDWIRLTKSGKDLTGL...				
N/b5-W37A	-----A-----				
N/b5-LM/AA	-----AA-----				

Figure 1

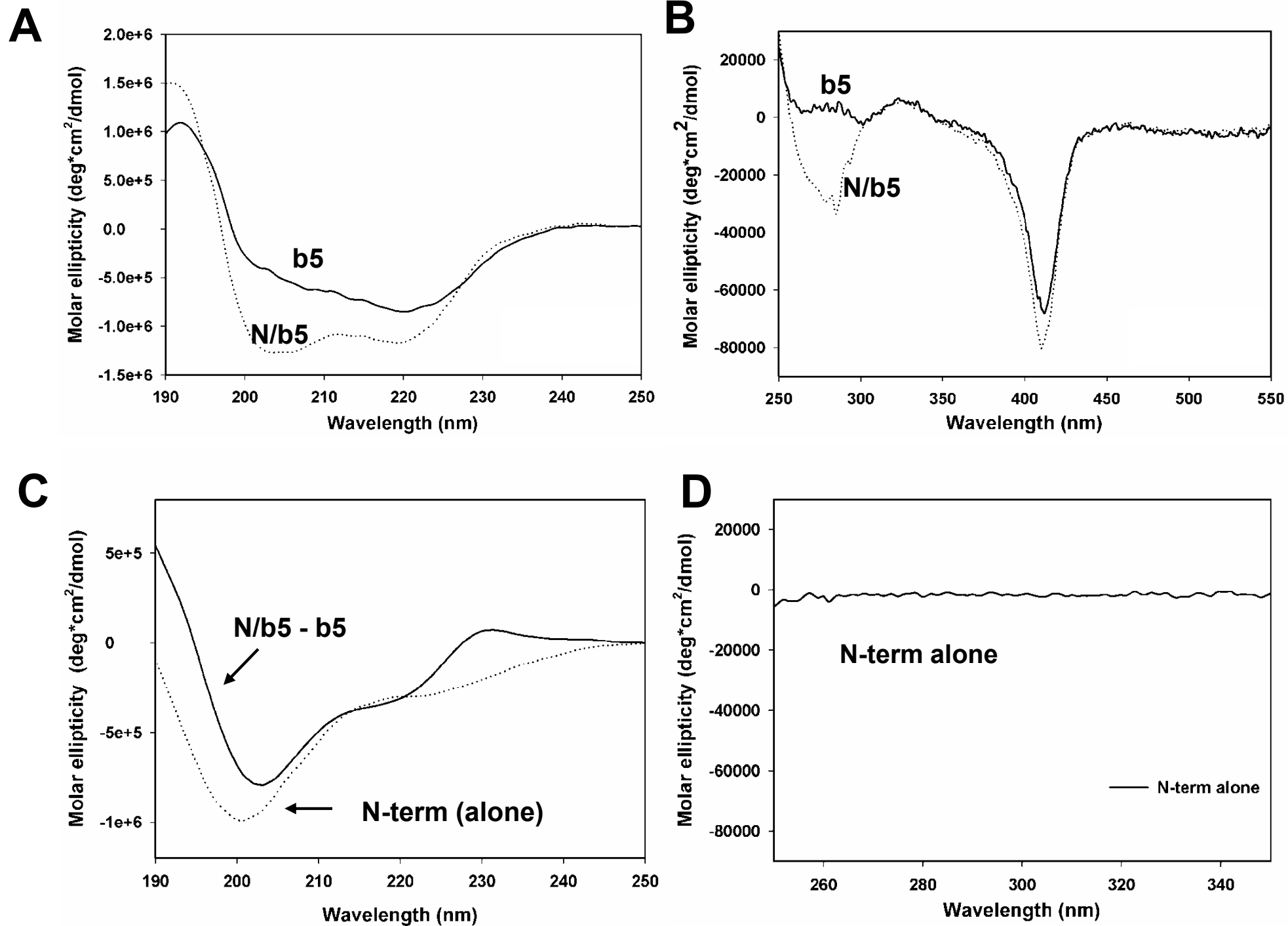


Figure 2

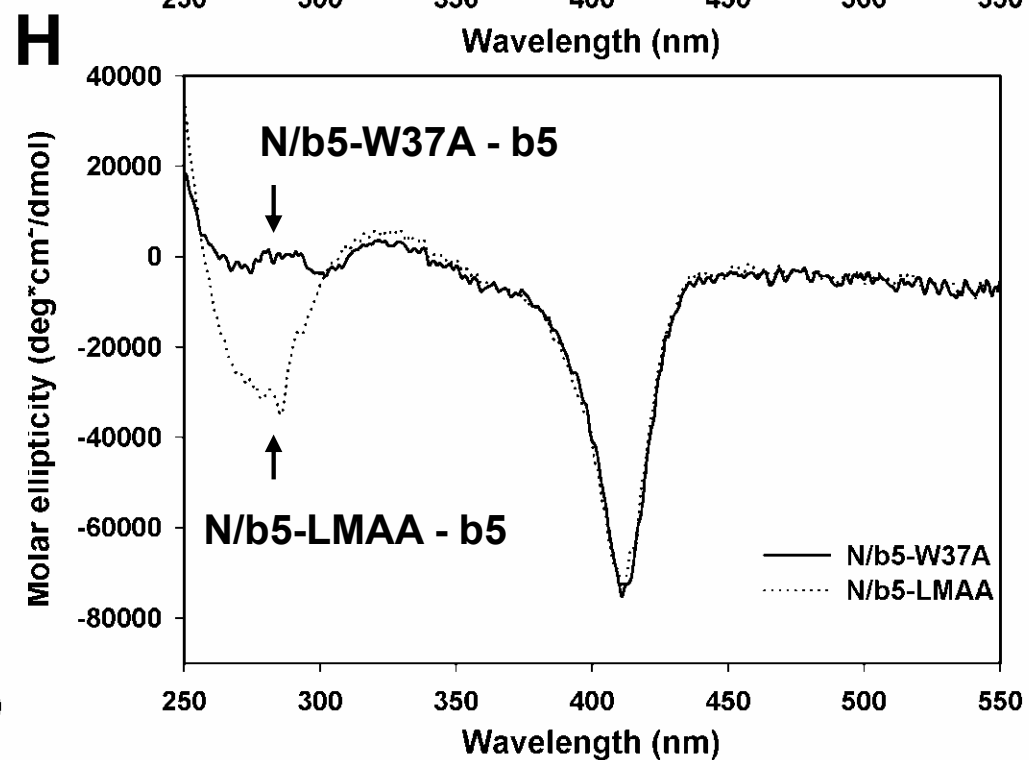
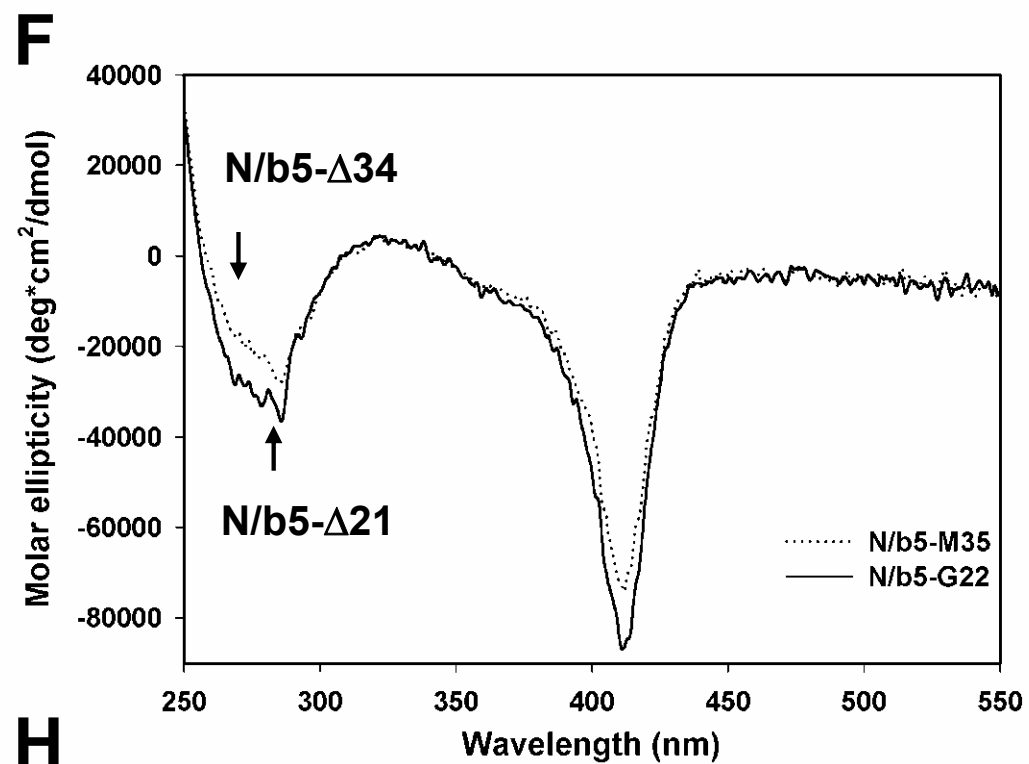
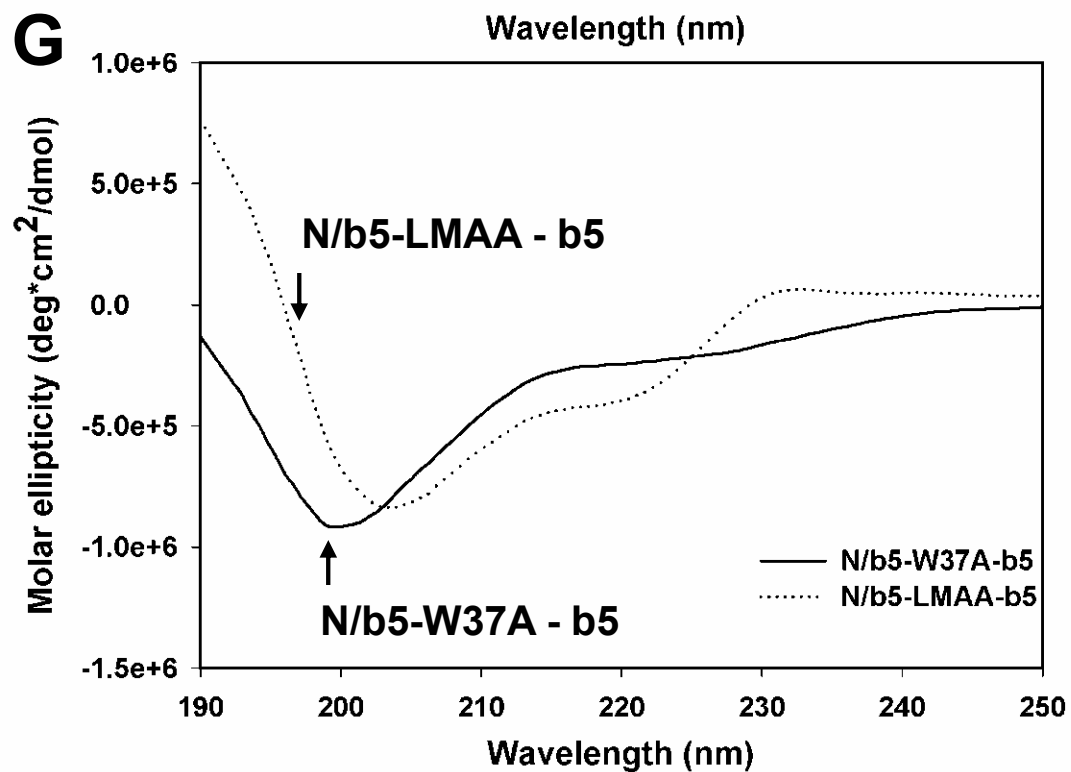
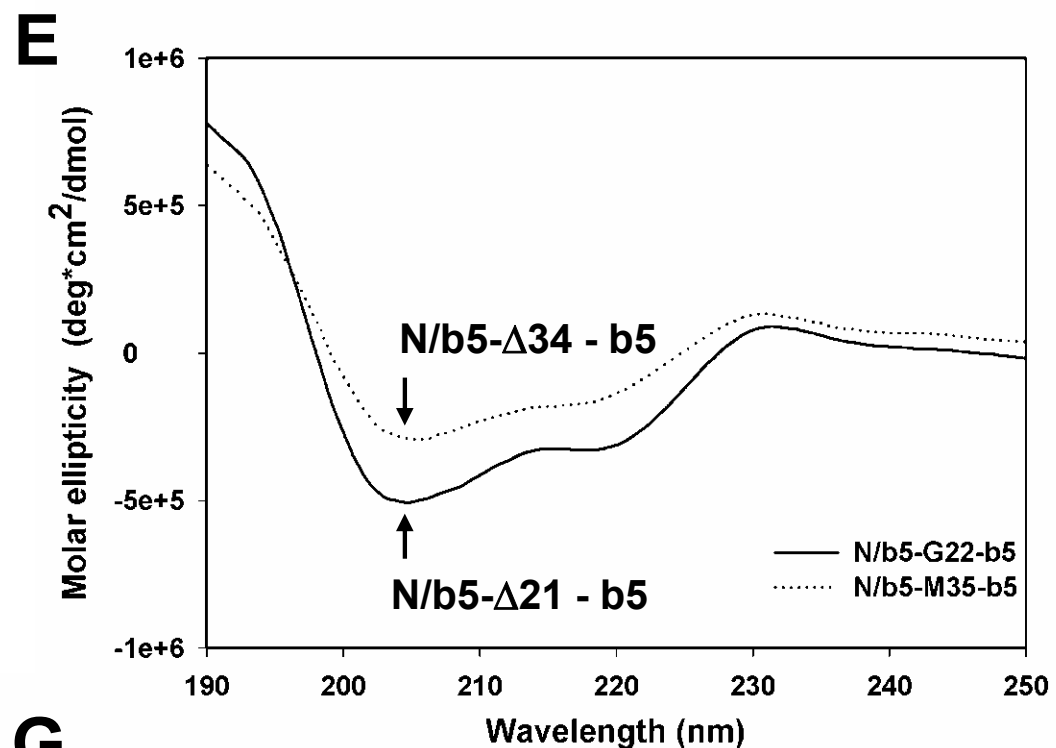
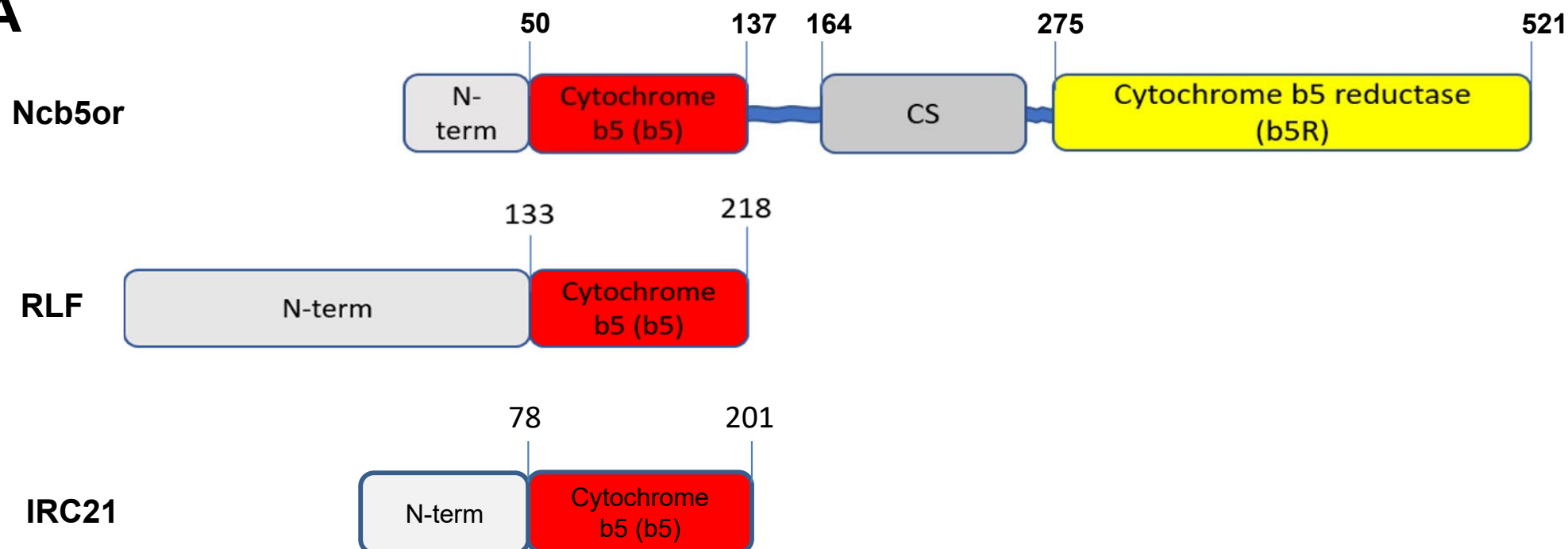


Figure 2 (cont'd)

A**B**

-----N-terminal-----

MLNVPSQSFPAPRSQQRVASGGRSKVPLKQGRSLMDWIRLTSGKDLTGL human Ncb5or
 .KESVLSRENTQSNLSSQPKSSKKPAARAKVPFEKGYSQMDWLKLTRTHPDLAGL rice RLF
 .RLSVAHPAIS SPLHMPMSKSSRKPLVRTKIRLDPGHSALDWHSLTSNPANYITK FVSLQLIQDLLDDPVFQKDNFKFSPSGLKNGLLVQKIPLY yeast IRC21

-----b5-----

KGRLIE VTEELKKH NKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT ELFDQVHRWVNYESMLKECLVGGRMAIKPAVLK..
 KGQLNRRLISLEE VKQH KTGD SIWTVLKG RVYNIAPYMKFHPGGVDMLMKAAGKDST ALFNKYHAWVNFEFLLEKCLVGFLDPNE*
 KIMPLRLNR KIVKKHCKGEDELWCVINGKVYDISSYIKFHPGGTDILIKHRNSDDLITYFNKYHQWVNYEKLQVCFIGVVCE*

human Ncb5or
 rice RLF
 yeast IRC21

Figure 3

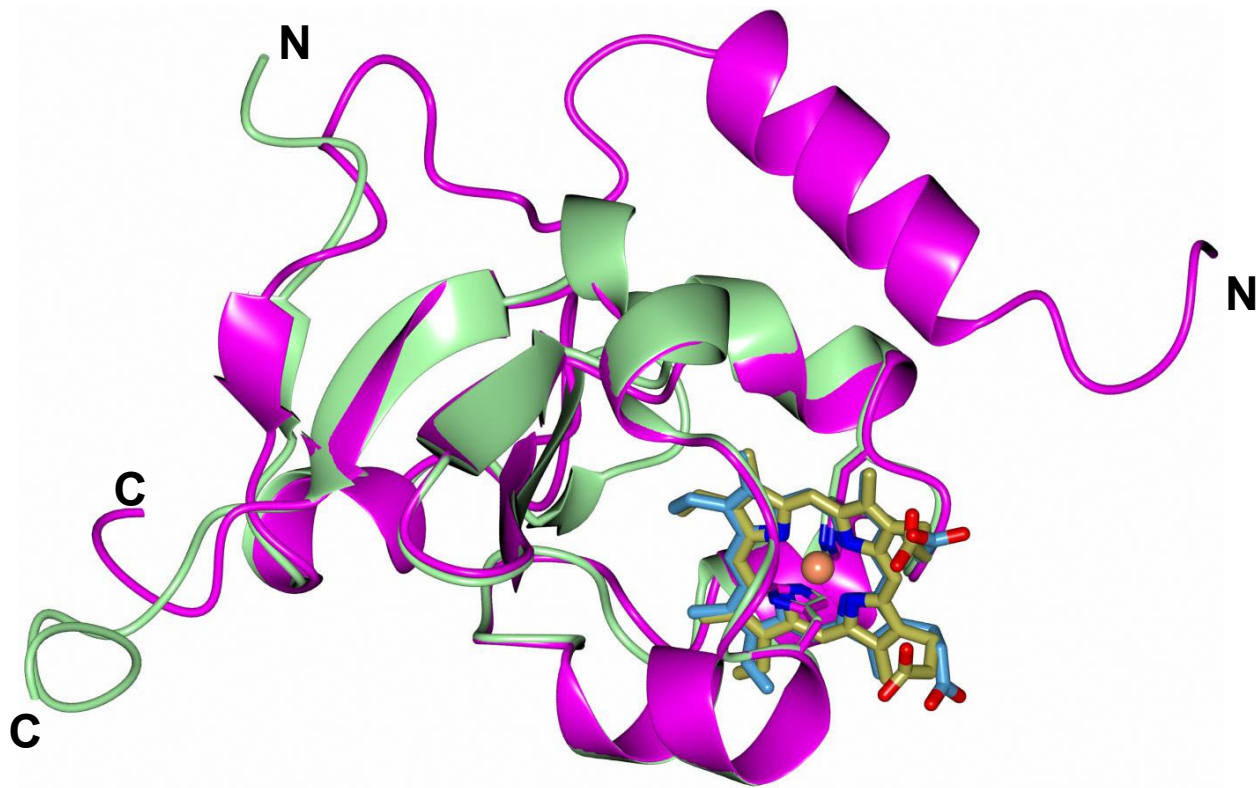


Figure 5

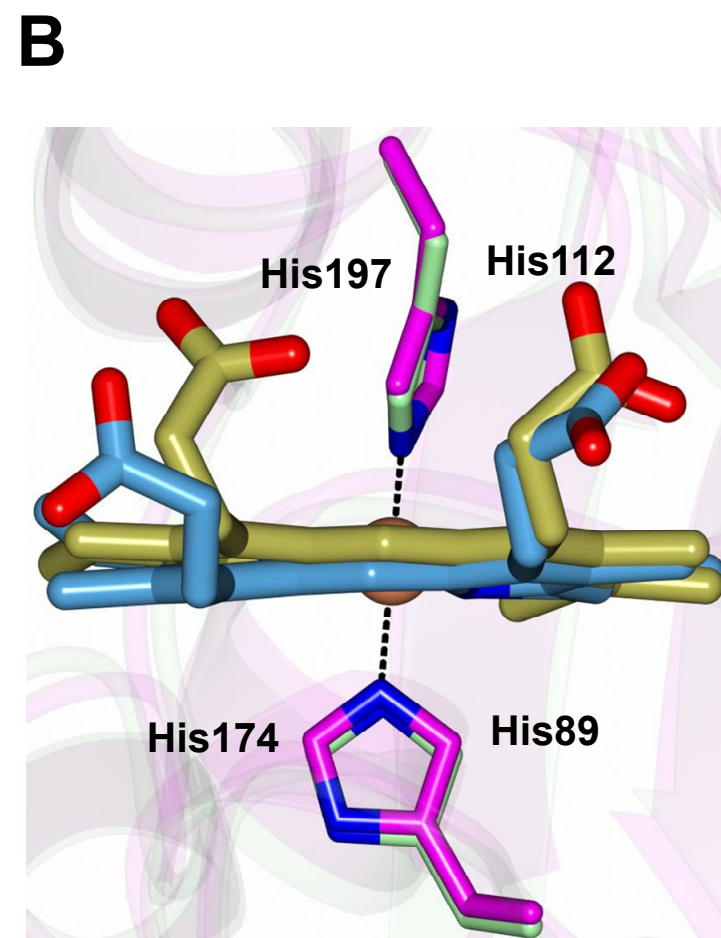
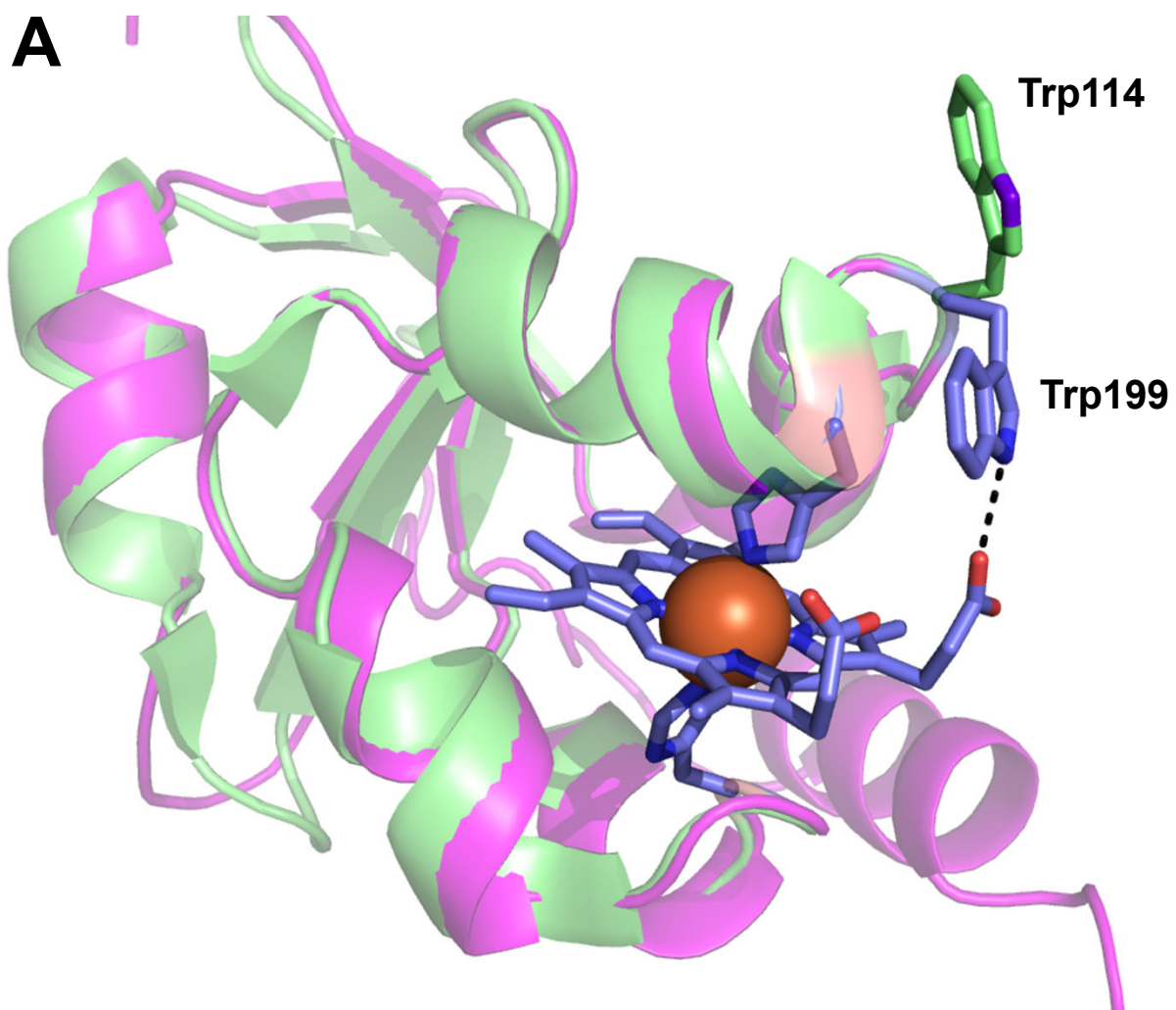


Figure 6

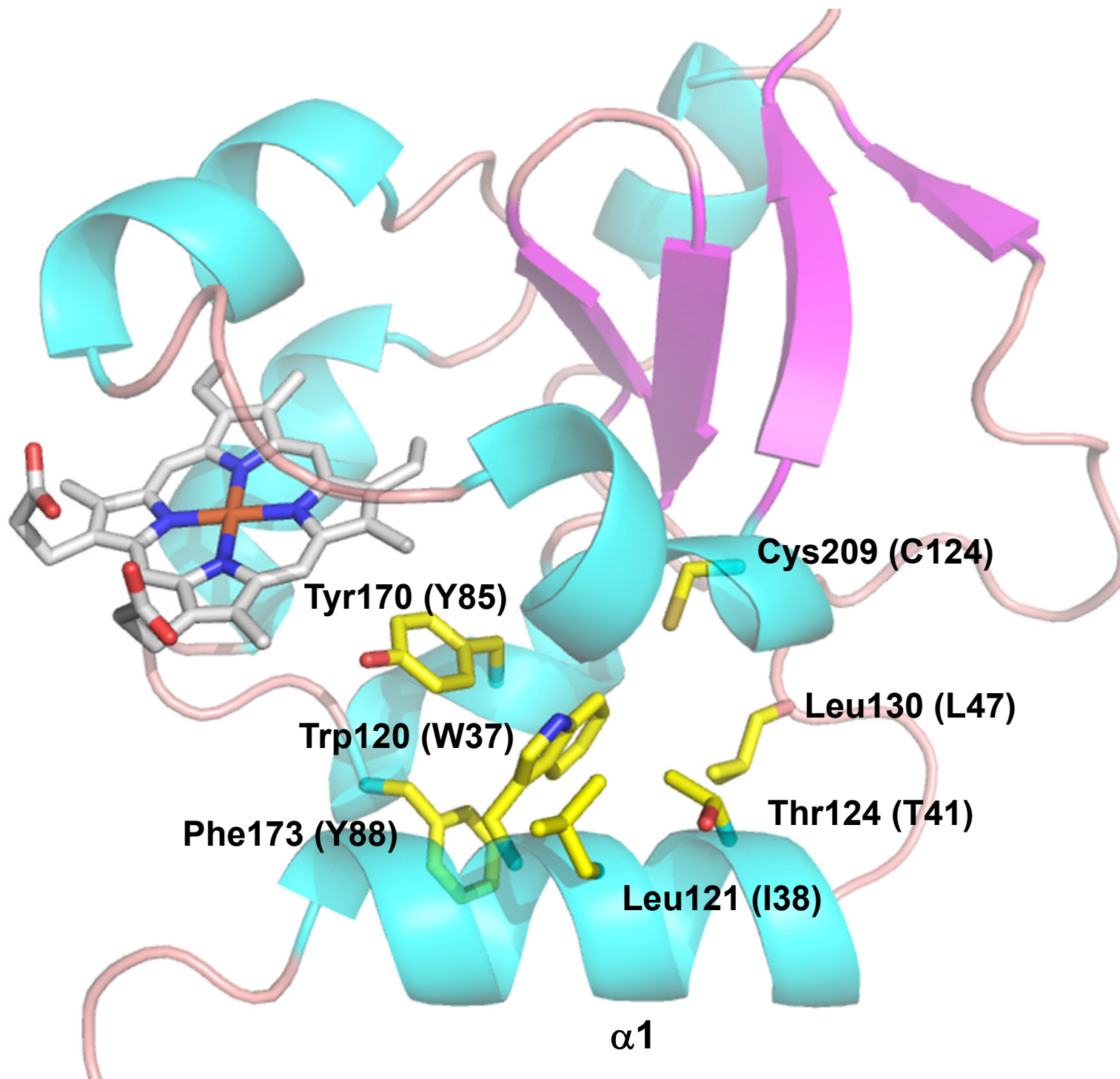


Figure 7

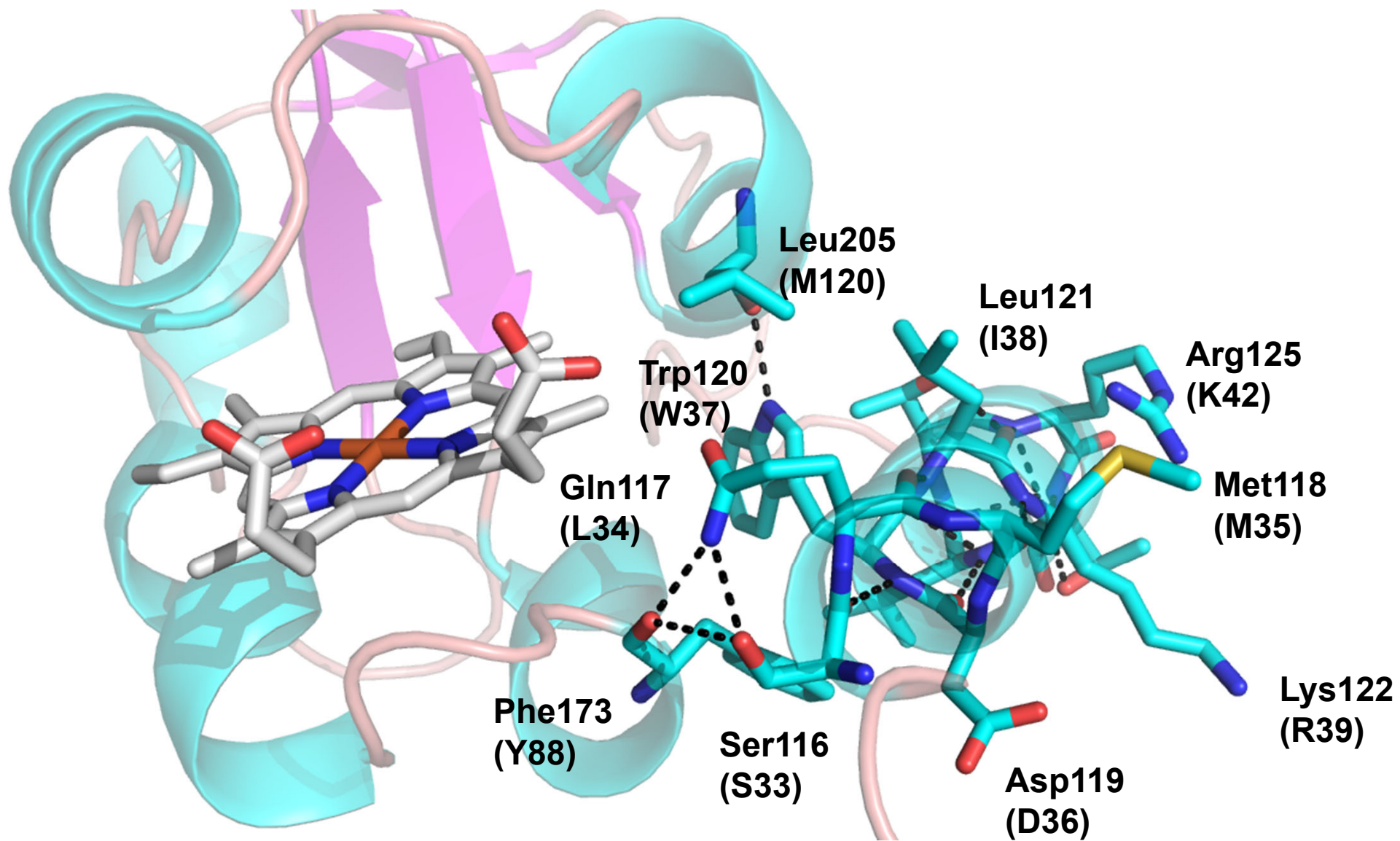
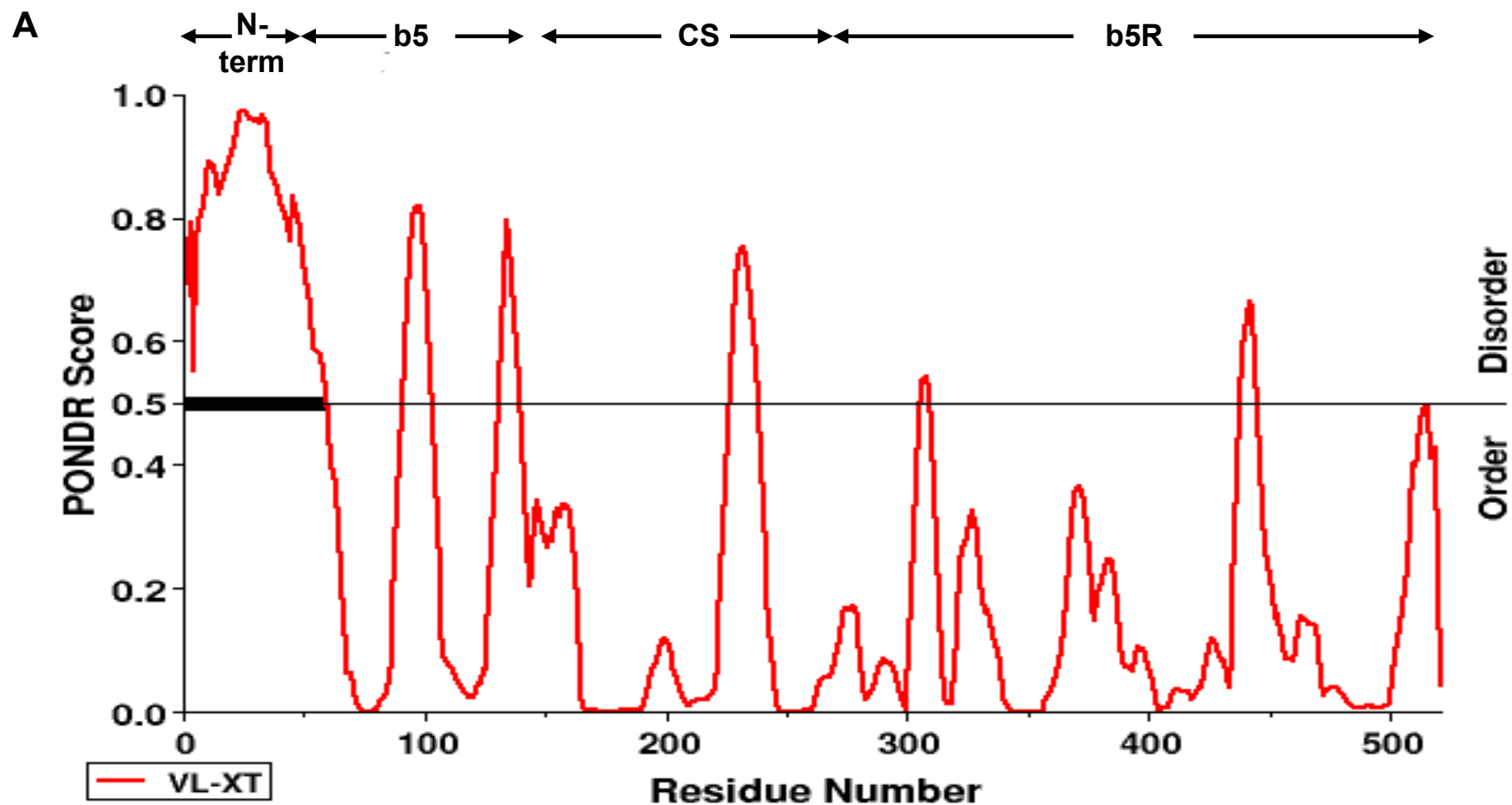


Figure 8

Sequence alignment of N-terminal region and cytochrome b5 domain of known Ncb5or proteins.

----- N-terminal-----	W37	----- ---b5--		
-* * ***- **-	-*****- *****--* ***-----* -*-----			
MLNVPSQSFPAPRSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	human
MLNVPSQSFPAPRSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	monkey
MLNVPSQSFPAPRSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	monkey Old World
MLNVPSQSFPAPSSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	guinea pig
MLNVPSQAFPAPGSQQRVSSQ	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGG L IEVT	mouse
MLNVPSQAFPAPGSQQRVASQ	GRSKVPLKQGRSLMDWFRLTK	SGKD F TGL	KGG L IEVT	rat
MLNVPSQSFPGPSSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	cow
MLNVPSQSFPAPSSQQRVVAG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	horse
MLNVPSQSFPGPSSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	sheep
MLNVPSQSFPGPQRSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	pig
MLNVPSQSFPAPSSQQRRAASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	dog
MLNVPSQSFPGPSSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	minke whale
MLNVPSQSFPAPSSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	ferret
MLNVPSQSFPAPSSQQRVASG	GRSKVPLKQGRSLMDWIRLSK	SGKDLTGL	KGR L IDVT	squirrel
MLNVPSQSFPAPSSQQRVSS E	GRSKVPLK P GRSLMDWIR M TK	SGKDLTGL	KGRLIEVT	bat (Molossus)
MLNVPSQSFPAPSSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	bat (Pteropus)
MLNIPSQSFPASSSQQRVASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	RGR L IEVT	brown bat
MLNVPSQAFPAPGSQQRRAASG	GRSKVPLKQGRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	opossum
MLNVPAQAAPAGSQQRRAAPP	ARTKVPLK K GRSLMDWIRLTK	SGKDLSGL	RGR L IEVT	platypus
MLNV P FAFPAPGSQQRRAAAG	ARSKVPLK P GRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	Zebra Finch
MLNV P QAFAFPASSQQRVAAG	GR A KVPLK P GRSLMDWIRLTK	SGRDLTGL	KGRLIEVT	golden eagle
MLNV P QAFAFPAGSQQRVAAG	GR A KVPLK P GRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	peregrine falcon
MLNV P QAFAFPAGSQQRVAAG	GRTKVPLK P GRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	chicken
	..VPLK P GRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	Dalmatian pelican
	..VPLK P GRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	crested ibis
	..VPLK P GRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	seriema
	..MDWIRLTK	SGKDLTGL	KGRLIEVT	swan goose
	..MDWIRLTK	SGKDLTGL	KGR L IEVS	turkey
MLNVPAQAAPASGSQQRRAAAG	GRSKVPLK P GRSLMDWIRLTK	SGKDLTGL	KGR L IDVT	turtle (Terrapene)
	MGEQTGVPLK P GRSLMDWIRLTK	SGKDLTGL	KGR L IEVS	turtle (Pelodiscus)
MLNVPSQSFPAPDSQQRVALA	GRSKVPLKSGRSLMDWIRLTK	SG Q DLTGL	KGR L IEVT	garter snake
MLNVPSQSFPAPSSQQRVAAI	GRSKVPLK P GRSLMDWIRLTK	SGKDLTGL	KGR L IDVT	Xenopus
MLNFPAPK S QQRVSSSS	GRSKVPLK P GRSLMDWIRLTK	SGKDLTGL	KGRLIEVT	Coelacanth
MLNVPSQSFPAAAGSQQRVAPT	GQ RNKVALKPGHSL L DWIRLTK	SGRDLTGL	RGR L IEVT	Cyprinidae
MLNVPSQAAPAAAGSQQRVAPA	GQSRNKVVLPKGHSL L DWIRLTK	SG Q DLTGL	RGR L IEVT	Zebrafish
MLNVPSQSFPASAGSQQRVSPA	GQSRNKVALKPGHSL L DWIRLTK	SGRDLTGL	RGR L IEVT	Pimephales
MLNVPSQSFPAAASSQQRVAPA	GQSGRNKVALKPGHSLMDWIRV A K	SGRDLTGL	RGR L IDVT	salmon
MLNIPTQSFPAPSSQQRVAPS	GQSGRNKVALKPGHSLMDWIRFSK	SGKDLTGL	RGR L IEVT	bony fish
MLNVPTQSFPAPGSQQRVAPS	GQSGRNKVALKPGHSLMDWIRFSK	SGKDLTGL	RGR L IEVT	yellow croaker
MLNIPTQSFPSPSSQQRVSPS	GQSGRSKVALKPGHSLMDWIRFSK	SGKDLTGL	RGR L IEVS	Fugu
MLNIPTQSFPSPSSQQRVSPS	GQSGRSKVALKPGHSLMDWIRFSK	SGKDLTGL	RGR L IEVS	pufferfish.Japan
MLNIPTQSFPAPSSQQRVAPS	GQSGRNKVALKPGHSLMDWIRFSK	SGKDLTGL	RGR L IEVT	tire track eel
MLNIPTQSFPAPSSQQRVAPS	GQSGRNKVALKPGHSLMDWIRFSK	SGKDLTGL	RGR L IEVT	swamp eel
MLNIPSPSFPAARSQQRVAAS	GQSGRNKVALKPGHSLMDWIRFSK	SAT D LTGL	RGR L IEVT	Gasterosteus
MLNVPAQSFPASGSQQRVASS	GAGRNVVLKPGHSLMDWIRF A K	SGKDLTGL	RGR L IDVT	Rice Fish
MLNVPAQSFPAPGSQQRVGPSEPS	GSGRNKVVLPKGHSLMDWIRF A K	SGKDLTGL	RGR L IEVS	Rice Fish India
..FPAPASQQRVSESGLA	GT P RNKVSLKPGRSLMDWVRLAK	SGRDM T TGL	RGRLLHVT	Lamprey
MDGPSQ FPAVGSQQRAAAPRTR	GGWTRKM L LKPGRSLMDWIRL I K	SGKDM T TGL	RGKLLRVT	Skate
MLNIPTQSFPAPSSQQRV	GQSGRTKVALKPGHSLMDWIRY S K	SGKDLTGL	RGR L IEVT	seahorse
MSQNLGVPQFPALASPQRA GGGK	P RNKVALKPGRSLMDWIRLSK	SKNLSGT	GGKLLNVT	lancelet
MSNPKGGQLFPMANSPQRSSAGS	TANGGRKKVILG KGYGL L L DWITLGT	KHPDLAGT	GGIIRKIT	Trichoplax (metazoa)
MSKELFPAANSAQRLGVPA PV	LNTTKVPLQ R GRSLMDWIRLSK	SNVDLRGT	GPRPLKIS	tunicate
MGEALFPSPSSSQRL	VRNKVALKPGRSLM H WIRFVN	ENKVAGV	EGRNGSIT	Hydra
MLSPKINFPAENSPQRQG	SSNSVRAKVALKPGRSLMDWIRLGA	SGKDLTGV	NGQHRPVT	sea anemone
MEAPKLSFPSLNSPQRAA	SSGSVRAKVALKPGRSLMDWIKLGA	SGKDLTGV	GGIRRPVT	coral (Exaiptasia)
	..VPLK P GRSLMDWIRLGK	SARDLAGN	GGIVRPIT..	coral
MMNPKMSLSPPQQQFPAMNSPQRAGSSS	LSVPGGSSSR I KVALKPGRSLMDWVRLGKQQGRR L NGV		QQQRMEVT	sea urchin (Lytechinus)
MNSPQRAGGSSSLSVPSGSSSR I KAALKPGRSLMDWVRLGKQQGK L NGV			QQQKMDVS	sea urchin
MPLLNLPTLTAYFYFTSLNWFQKPPIGRSEYGRVKVALLPGKGLMDWVRLA	SGKVLA K	KRMSVD		Teladorsagia
MGSNDSKPAVGRSEYGRVKVALPPGKGLMDWVRLA	SGKVLA K	KRMSVD		hookworm (Necator)
MNNLSVNGSSNGLFAKPTIGRSEYGRVKVALAPGKGFMDWLRLT TN	KHLAK	RVSGGVD		C.elegans
	..MD C WKEFVSNLEDPST		GGKLLSVT	pig worm (Trichuris suis)
	..SLTDPSGT		GGRILKVT	Trichuris
..APAGSGGGLQLPVTAPQKLNSNGSSASGSATGNPRNKCALKPGYS L M N WIRLCN	SGADLSGT	GGR L VPVS		Drosophila
..NKEVKHVTTSPMRSPVNQSLLLPKQSSGSATGNPRNKTALKPGHSLMDWIRLGN	SGTDLTGT	GGRIVPVS		mosquito (Anopheles)
MVRTLDYHAEDLGSNPTPDKLAKCNPRNKTALKPGHSLMDWIRYGN	SGVDLAGT	GGRV R PV Q		mosquito (Aedes)
MPRCCGASLVSVMDGDGSPQSLGLQIQDGNPRNKTALAPGHSLMDWIRLGN	SGVDLTGV	GGVPRIVT		honeybee
MLSSGNPRNKVALNPGHSLMDWIRLGN	SGKDLTGV	GGVLKDVP		Louse
..KQLRDAALNEASPSGASSSGSATGNPRNKTALAPGHSLMDWIRLGS	SGVDLTGV	GGKLLSVT		Jewel Wasp
..KTPISEQGGDADQEEEDLETGYKIGKEKLERNLRNKYALAPGHSLMDWIRLGS	SGKDLTGVGSQA G NLSVT			beetle
MATGTTTRNKVALAPGHSLMDWIRLGN	SGSDLTGV	GGKMLSIS		Pea aphid
..MDWIRLTH	ANPNLSGV	GGKVLDVN		Deer Tick

	H89	H112	W114	-----b5-----	
****	*****-*****	*****--*****	*****-*	*-	
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	ELFDQVHRWVNYESMLKECLVGRMAIKP	AVLKDYR..	human		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	ELFDQVHRWVNYESMLKECLVGRMAIKP	AVLKDYR..	monkey		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	ELFDQVHRWVNYESMLKECLVGRMAIKP	AVLKDYR..	monkey	Old World	
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFNQVHRWVNYESMLKECLVGRMAVKP	AVPKECD..	guinea pig		
EEELKKHNKKEDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFNEVHRWVNYESMLKECLVGRMAVKP	AVPKDCH..	mouse		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFNEVHRWVNYESMLKECLVGRMAVKP	AVPKDCH..	rat		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAMKP	ALPKDYH..	cow		
EEELKKHDKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAVKP	AAPKDYH..	horse		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAMKP	ALPKDYH..	sheep		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEELMRAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAIKP	ALPKDYR..	pig		
EEELKRHNTKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAIKP	TIPKDYH..	dog		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEELMRGAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAVKP	AFPKDYH..	minke whale		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAIKP	AVSKDYH..	ferret		
EEELKKHNKKEDCWICIRGFVYNVSSYMEFHPGGEDELMRAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAVKP	AVLKDYR..	squirrel		
EEELKKHNKKDDCWICIRGCVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFDQVHRWVNYESMLKECLI GRMAVKP	TVPKDYH..	bat (Molossus)		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAVKS	AVPKDYH..	bat (Pteropus)		
EEELKKHNKKDDCWICIRGFVYNVSPYMEYHPGGEDELMKAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAVKP	AVPKDYH..	brown bat		
EEELIRHNKKDDCWVCIRGLVYNVSPYMEYHPGGEDELMRAAGSDGT	DLFDQVHRWVNYESMLKECLVGRMAVKPVAVAKDLKNH..		opossum		
EEELAKHNKKDDCWVCIRGLVYNVSPYMEYHPGGEDELMRAAGTDGT	DLFDQVHRWVNYESMLKECLI GRMAAKPVAAAKENL..		platypus		
EEELSKHNKRKEDCWICIRGFVYNVTPYMEYHPGGEDELMKAAGTDGT	DLFDQVHRWVNYESMLKECLVGRMAVKPVAI..		ZebraFinch		
EEELAKHNKKEDCWICIRGFVYNVTPYMEYHPGGEDELMKAAGTDGT	DLFDQVHRWVNYESMLKECLVGRMAVKPVAAPKEI..		crested ibis		
EEELAKHNKKEDCWICIRGFVYNVTPYMEYHPGGEDELMKAAGADGT	DLFDQVHRWVNYESMLKECLVGRMAVKPIAAPKEI..		golden eagle		
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EEELAKHNKKEDCWICIRGFVYNVTPYMEYHPGGEDELMKAAGTDGT	DLFDQVHRWVNYESMLKECLVGRMAVKPIAAPKGI..		Dalmatian pelican		
EEELAKHDKKEDCWICIRGLVYNVTPYMEYHPGGEDELMKAAGTDGT	DLFDQVHRWVNYESMLKECLVGRMAFKPIAAPKDI..		swan goose		
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EEELAKHNKKEDCWICIRGLVYNVTPYMEYHPGGEDELMKAAGADGT	DLFDQVHRWVNYESMLKECLVGRMAFKPIAAPKDI..		chicken		
EEELAKHFKKDDCWICIRGLVYNVTPYMEYHPGGDDELMRAAGTDGT	DLFDQVHRWVNYESMLKECLVGRMALKPVAATIET..		turtle (Terrapene)		
EEELAKHNKKDDCWICIRGLVYNVTPYMEYHPGGEDELMKAAGTDGT	DLFDQVHRWVNYESMLKECLVGRMALKPVAATS..		turtle (Pelodiscus)		
EEELMKHNKRDDCWICIRGLVYNVTPYMEYHPGGEDELMKAAGTDGT	DLFDQVHRWVNYESMLKECLVGRISLKPATSIKEI..		garter snake		
EEELAQHNNKKEDCWICIRGMVYNITPYMEYHPGGEELMKAAGRDGT	DLFDQVHRWVNYESMLKECLI GRMAIKHVSISKEV..		Xenopus		
EEELAKHNKKDDCWICIRGLVYDVT	PYMEYHPGGEDELMKAAGADGT	ELFDQVHRWVNYESMLKECLVGRMALKPASVAKEI..	Coelacanth		
EEELKKHNTRNDCWTCIRGMVYNVSAYMDFHPGGEELMRAAGIDST	DLFDQVHRWVNYESMLKECLVGRMAVKPNPALQAQTEK..		Cyprinidae		
EEELKKHNTKKDCWTCIRGMVYNLSAYMDFHPGGEELMRAAGIDST	DLFDEVHRWVNYESMLKECLVGRMAVKPSPALQAHTK..		Zebrafish		
EEELKKHNTRNDCWTCIRGMVYNVSAYMDFHPGGEAELMRAAGIDGT	DLFDQVHRWVNYESMLKECLVGRMAVKLASAPQAQTEK..		Pimephales		
EAELARHNLRDDCWTCIRGLVYNVTAYMEYHPGGEELMKAAGVDGT	ELFEQVHRWVNFESMLKECLVGRMAISLPIP..		Lamprey		
PEELAKHKEKTDCWICIRGMVYNVTPYLEYHPGGEDELMRGAGADATE	LFDQIHSWVNYDSILKECLVGRMTSKPFPVAKASV..		Skate		
EEELQKHNTRHDCWTCIRGMVYNVSPYMDFHPGGEELMKAAGIDGT	DLFDQVHRWVNYESMLKECLVGRMAVKA	STALKAQ..	salmon		
QEELQKHNTRDDCWTCIRDVYNVTPYMDYHPGGEELMKAAGRDGT	DLFDQVHRWVNYESMLKECLVGRMATKATTA..		bony fish		
QEELQKHNTRDDCWTCIRGMVYNVTPYMDYHPGGEDELMKAAGVDGT	ELFDQVHRWVNYESMLKECLVGRMATAIKA..		yellow croaker		
QEELRKHNRRDDCWTCIRGLVYNVTPYMDYHPGGEDELMKAAGIDGT	DLFDQVHRWVNYESMLKECLVGRMATTTKA..		Fugu		
QEELRKHNRRDDCWTCIRGLVYNVTPYIDYHPGGEDELMKAAGIDGT	DLFDQVHRWVNYESMLKECLVGRMATTTKA..		pufferfish.Japan		
QEELQRHNTRNDCWTCIRGMVYNVTPYMDYHPGGEELMKAAGIDGT	DLFDQVHRWVNYESMLKECLVGRMATAVIKA..		Gasterosteus		
QEELQKHNSRDDCWTCIRGMVYNVTPYMDYHPGGEELMKAAGIDGT	DLFDQVHRWVNYESMLKECLVGRMATKATT..		tire track eel		
QEELQKHNTRDNCWICIRGLVYNVTPYMDYHPGGEELMKAAGIDGT	DLFDQVHRWVNYESMLKECLVGRMATKATAA..		swamp eel		
HEELQKHNTRNDCWTCIRGMVYNVTPYMDYHPGGEDELMKAAGIDGT	DLFDQVHRWVNYESMLKECLVGRMATKPNT..		seahorse		
PEELEKHNRDDCWTCIRGMVYNVTPYIDYHPGGEDELMKAAGIDGT	DLFDQVHRWVNYESMLKECLVGRMALKTPAAVKGVT..		Rice Fish		
PEELKKHNSRDDCWTCIRGMVYNVTPYMDYHPGGGDELMKAAGLDGT	DLFDQVHRWVNYESMLKECLVGRMALKTTA..		Rice Fish India		
PEELAKHDKEGDVWTAIRGKVYNVTAYAEYHPGGAELMRAAGKDGTD	LFNEVHRWVNYESMLESCVLGRLRTTLNVAPNSGATK..		lancelet		
NDELARHNTETDAWTCIRGKVYNITPYMKFHPGGIDELMRSVCGDGT	DLFDEIHRWVNVESMLAKCLVG..		Trichoplax		
MEELAKHNTRDDAWMAIRGYVFENVTRYMEYHPGGEELMRGVGKDAT	SLFEEVHRWVNFE	SMLKACFIG..	tunicate		
LEELANHNTVKDCWTAIRGKVYNITPYLEFHPGGIEELMKSAGIDAT	TIFDQVHRWVNIESMLAKCYLGPLKVNIEKYLTIEDFS..		Hydra		
FEELDKHTSEEDCWIAIRG VYNLTPYLEYHPGGIPEIMKGAGKDGTL	QLFDEVHKWVNAESMMEKCFIGPLVGVPQMGP	PRRTGSR..	sea anemone		
WDELSKHNTHEDCWMSVRGKVYNITPYLEYHPGGIPEIMKGAGKDGTL	ALFDEIHKWVNAESMLEKCFIGPLDTSTMPPPRPGSN..		coral (Exaiptasia)		
EEELAKHNKIDDGWLAIRGQVYNVTPYMEYHPGGAELMKGLGIDAT	DLFNEVHRWVNVESMLEKCHIGPLQKGDPLAFFK..		sea urchin		
EEELAKHNKIDDGWLAIRGKVYNVTPYMEYHPGGAELERGLGKDAT	DLFNEVHRWVNVESMLEKCHIGSLQKADPMAVFK..		sea urchin (Lytechinus)		
HEELMKHNQRDDCWVHIFGQVYDVTSYLEFHPGGIPELMRAAGTDAT	DLFNQFHAWVNYENMLKSCLVGRFTGDLSKLPQPGP..		Teladorsagia		
HEELMKHNKQNDCWIHIFGQVYDVTSYLEFHPGGIPELMRAAGTDGT	DLFNQIHAWVNYENMLKSCLVGRFTGDLSKLPKPGP..		hookworm (Necator)		
	..YDSMLKSCLVGRFTGDLSKLPQPGP..		Necator		
HVELMKHNTKDDCWVHLFGIVYDVTKYLD	FHPGGIPELLRGAGRDATPLFNQYHAWVNYESMLKACVY	PFIGDLTKLPSPLP..	C.elegans		
TEMLKDHSTPDDLWILLDGKVYNITHYLRHPGGSEALINAIGKDG	KPAVQCHIWVNC	HSILERC	LVGYFVDQ	PPSSNEGKPN..	pig worm (Trichuris suis)
AKDLREHSTADNLWILLDGRVYNVTHYLPFHPGGRDALLIFIGQDG	APAYQYHPWVNC	HSVLERCLVG..			Trichuris
RTELARHNKIDDAWMAIRGRVFNVTRYMDFHPGGVDELMRGVGRDAT	KLDFDEVHAWVNYPQLLGKCYVGP	PLKDNETKPAKESPO..	Drosophila		
HAELAKHDRAEDAWMAIRGKVYNVTRYMNFHPGGADELMRGAGKDAT	RLFEEVHAWVNYESLLAKCYIGPLRNTVTINLADSST..		mosquito (Anopheles)		
HTELATHNKP	PGDVWMAIRGKVYNVTSYLD	FHPGGVDELMRGAGKDATKLDFDEVHAWVNYESLLAKCYIGPLRSTGVLKLVPEEP..	mosquito (Aedes)		
LSELASHNKQNDAWIAIRGIVFNVTRYMDFHPGGISELMRGVGKDAT	KLFE	SVHAWVNYQSILQKCVVGRLSRG	SITGSSSSSM..		honeybee
LDELAEHNSKENAWISLRGKVYNVSHYMN	FHPGGVPELMKGVGKDATKL	FTEIHPWVNYESILQKCLVGR	LVKNNPTATSDDFEKA..		Louse
PAELAKHNTENDAWIAIRGIVFNVSRYMSFHPGGVPELMKGAGKDAT	KL	FDDVHAWVNYQSILQKCVVGR	LLERSAGAELLFESD..		Jewel Wasp
PSELALHNKETDAWLCIRGRVYNVTAYLPFHPGGPEQLMKGAGKDAT	RLFEEVHPWVNF	DQILTKCYV	GKLKKNAPPPPQNNET..		beetle
KSELAKHNKR	TDAWLAIRGTVYNVTQYMD	FHPGGVDELVRGIGTDATKL	FSEIHAWVNYESILQKCVVGR	LVNEELFKLPDILK..	Pea aphid
PEELARHSRRDDAWICLKGRVYNVTPYMEFHPGGEELMRGVGKDAT	DLFIQVHKWVN	FE	SMLKCLVGR	LVGPPANSIRKCVS..	Deer Tick



B

10 20 30 40 50 60 70

AA: MLNVPSQSFPAPRSQQRVASGGRSKVPLKQGRSLMDWIRLTKSGKDLTGLKGRLIEVTEELKKHNKKDD

PSIPRED results:

Pred: CCCCCCCCCCCCCCCCCCCCCCECCCCCHHHHHHHHCCCCCCCCCCCCCCCCCHHHHHHHCCCC

Conf: 9888998999998755558999643105899985359987428999889888421039999976518889

PROF results:

Pred: _____ HHHHHHH _____ EEEE_HHHHHH _____

Figure S2

C

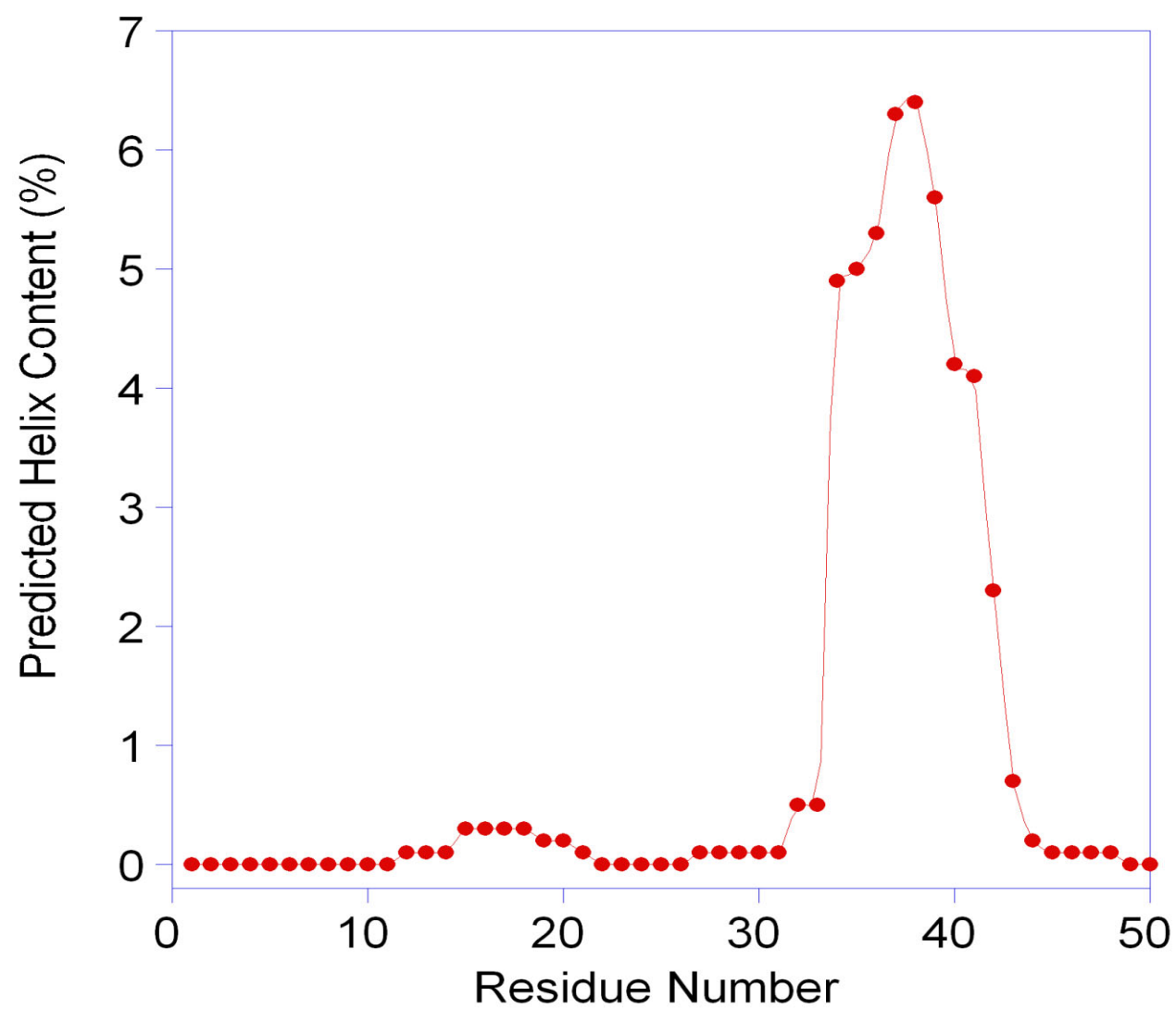


Figure S2 (cont'd)

Sequence alignment of N-terminal region of human Ncb5or against RLF in plants.

Sequence alignment of N-terminal region of human Ncb5or against IRC21 in fungi.

— * —

Human, Ncb50r
NP_013789, yeast (IRC21)
XP_002416862, Candida
EEQ42953, Candida
XP_002550312, Candida
XP_002616018, Clavispora
CAG86857, Debaryomyces
XP_001526828, Lodderomyces
EDK41487, Pichia
XP_001482565, Pichia
XP_001384271, Scheffersomyces
XP_501731, Yarrowia
XP_001240913, Coccidioides
XP_002542840, Uncinocarpus
XP_661402, Aspergillus
XP_001272797, Aspergillus
XP_749520, Aspergillus
XP_002373662, Aspergillus
XP_001389090, Aspergillus
EEH41743, Paracoccidioides
EEH18593, Paracoccidioides
EEQ92276, Ajellomyces
XP_001536862, Ajellomyces
EER40089, Ajellomyces
EEH04658, Ajellomyces
XP_001260021, Neosartorya
EEQ29684, Microsporum
XP_002562331, Penicillium
XP_002149052, Penicillium
XP_002485125, Talaromyces
XP_959814, Neurospora
XP_001596435, Sclerotinia
XP_001905357, Podospora
XP_001937768, Pyrenophora
XP_389554, Gibberella
XP_364392, Magnaporthe
XP_568744, Cryptococcus
XP_771928, Cryptococcus
XP_001838747, Coprinopsis
XP_002474966, Postia
XP_002493579, Pichia
XP_002173985, Schizosac

Sequence alignment of N-terminal region and cytochrome b5 domain of human Ncb5or against cytochrome b5s in parasites and protists.

Babesia/GFE55910.1		MDASSHGRR-ERAP	14
Plasmodium/XP_002808938.1	MKENDKNKLNVFSAQ-----	NEKSEKSSRT-ERRT	29
Hepaticocystis/VWU48363.1	MEPDKNKLKPVTPQ-----	RDD-DLINKS-NRKP	27
Dictyostelium/XP_643535.1	MMMTDKQLNNNVQFQQLSTEMKEAIKSI	IMVSPTEQE-----IEDKKN	51
Trypanosoma/XP_845676.1	MSLPDGGNPESFNE	LSTDSKEAFSQNPSTAGRSADDEP	39
Human Ncb5or/NP_057314.2	MLNVPSQSFPAPR-----	SQQRVASGGR-SKVP	27
Giardia/XP_001708782.1	MSEHHGRPSG--VAFLMQHRIKGV	P---AHVAANTNYTANQVYEH	41
Giardia/XP_001704041.1	MASHGRVHRATQEF	LDLYSSAKIPT---KQELAA	42
Giardia/XP_001708389.1	MKGGTIAORRDAMMRAHILSKVR	QRT---DAEINSTFYTP	43
Trichomoniasis/XP_001310855.1	MDVYERRREM	QKQWRENA--KQCEWIGDITIEEVMKH	35
Babesia/GFE55910.1	-----SNNPVLGSAQFRFAQLMDS	NKDSV---VQRATGPIDITEVAKH	54
Plasmodium/XP_002808938.1	-----PNEP---NQLGYINASEDFK	NSI----IKSDKPITKEEVAKH	64
Hepaticocystis/VWU48363.1	-----LNSA---NQMVYVNLSESLK	KNT----SDKKKIFTREEVKKH	62
Dictyostelium/XP_643535.1	-----LPHGHSQLDWMKK-QSAAQ	PCF---DTSGNGGKITIQELKKH	89
Trypanosoma/XP_845676.1	FRMEVTRFETLDVMLRAKSSCRAGF	SMVDWGGILQSIWRKMKRETNEKKLPYLSISEIRRH	99
Human Ncb5or/NP_057314.2	-----LKQGRSLMDWIRLT	KSGKDLT---GLKGRLIEVTEELKKH	65
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Giardia/XP_001708782.1	RS	EDDCWVTRYGRVYDITQYLDWHPAGKDILRPF	101
Giardia/XP_001704041.1	RDV	NDCWVSHKGIVYNLTPYLRYPHAGIAPIEDY	102
Giardia/XP_001708389.1	ASMD	DAWMSYRGKVYDITHYVRYHPGGLQCMQEYMGKDMTHAADSVHKWNVATMLRPLA	103
Trichomoniasis/XP_001310855.1	RTPKDCWVIIDGIVYN	TQYVYNHPGGSSHFLGK-NPDITVPFHN	93
Babesia/GFE55910.1	TS	ENDCWTIYKGVYDITRYLDMHPGGRQHLLDYAGMDITEEFSDIHPWVNAEFL	114
Plasmodium/XP_002808938.1	NKKDD	AWVIYENKVYEVTHYLKYHPGGKRILLGKSGKDITKYVKMHPWVNI	124
Hepaticocystis/VWU48363.1	NTY	EDAWVIYENKVYNITHYFKYHPGGEDVLL	122
Dictyostelium/XP_643535.1	NN	ENDAWTVYKGRVYNITDYFQFHPGGKIELLRAAGNDCTQMFEFTHSWVNFEAMMLKYL	149
Trypanosoma/XP_845676.1	NT	PDDLWIVIGSVVYDCTKFQHFHPGGERMLQLCGGRDATELFNYYHRWVSCESMLQ	159
Human Ncb5or/NP_057314.2	NKKDD	CWICIRGFVYNVSPYMEYHPGGEDELMRAAGSDGTELFQVHRWVNYESMLKECL	125
	. * * . ** : : : ** * : . * * * :		
Giardia/XP_001708782.1	IGMLQGP	PRLLQGYDYDALRTRDLRRGSPA*	131
Giardia/XP_001704041.1	VGVLNGD	PCVPPEKKLKVE-TGVLRRY*	129
Giardia/XP_001708389.1	IGTVK	THVDNSNAFSC	136
Trichomoniasis/XP_001310855.1	IGRLV	SSKYLYS*	105
Babesia/GFE55910.1	VGELK	SEDVATDLPPTKGTAPDN*	137
Plasmodium/XP_002808938.1	IGY	VEV*	130
Hepaticocystis/VWU48363.1	LG	VED*	128
Dictyostelium/XP_643535.1	VGYS	IEDN*	158
Trypanosoma/XP_845676.1	VGLVK	PEDEERGEREKEKEKGPG*	182
Human Ncb5or/NP_057314.2	VGRMAIK	PAVLKDYR..	140
	: * :		