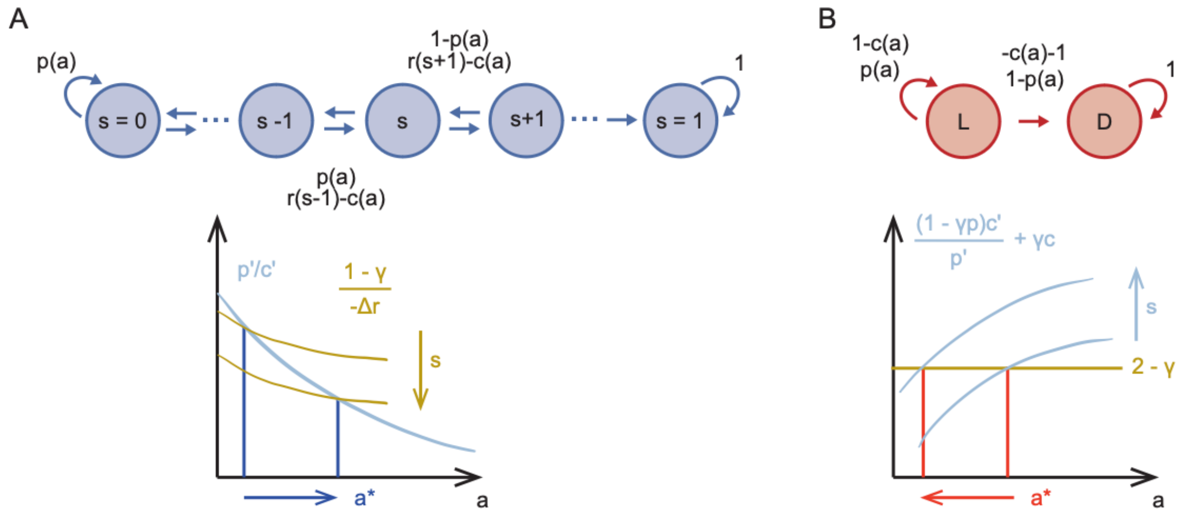

Figure 2—figure supplement 1. Sketch of Markov Decision Processes model and predictions for stinging.

A) Directed graph representing the Markov Decision Process for predatory stinging (*top*) including states of starvation s, actions a, and transitions to adjacent states depending on the probability to catch prey $p(a)$. Graphical representation of the result that optimal predatory stinging increases with starvation (*bottom*).

B) Directed graph representing the Markov Decision Process for defensive stinging (*top*) including states of safety and danger L and D, actions a, and transitions between L and D depending on the probability to successfully stinging the predator $p(a)$. Graphical representation of the result that the optimal defensive stinging decreases with starvation (*bottom*).

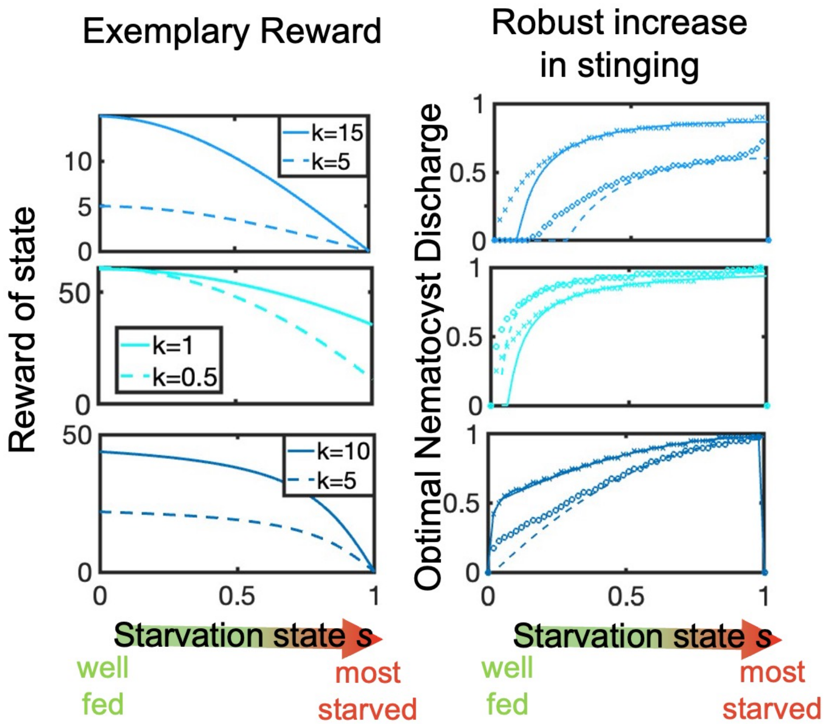

Figure 2—figure supplement 2. Optimal policy predicted by Bellman's theory for the MDP sketched in Figure 2—figure supplement 1A.
Left: three choices of concave reward functions $r(s')$: $r(s) = k\,cos(s\pi/2)$, upper left; $r = k(1 - 50s2) + 60$, middle left; $r = k\,tan - 1(5(1 - s)/(\pi/10))$, lower left. Solid and dashed lines correspond to two choices of the parameter k for each reward as in the legend. The cost of full dischare is constant $c_0 = 1.5$ and the likelihood of successful discharge is $p = p_M a(2 - a)$ with $p_M = 0.6$.
Right: the asymptotic solution for the optimal policy $a^*(s)$ (solid and dashed lines matching the corresponding reward on the left) reproduces well the numerical solution obtained from solving Bellman's Equation (1) with the value iteration algorithm (crosses and circles correspond to the solid and dashed rewards on the left). Optimal nematocyst discharge increases with the starvation state, independently on the shape of the reward function.

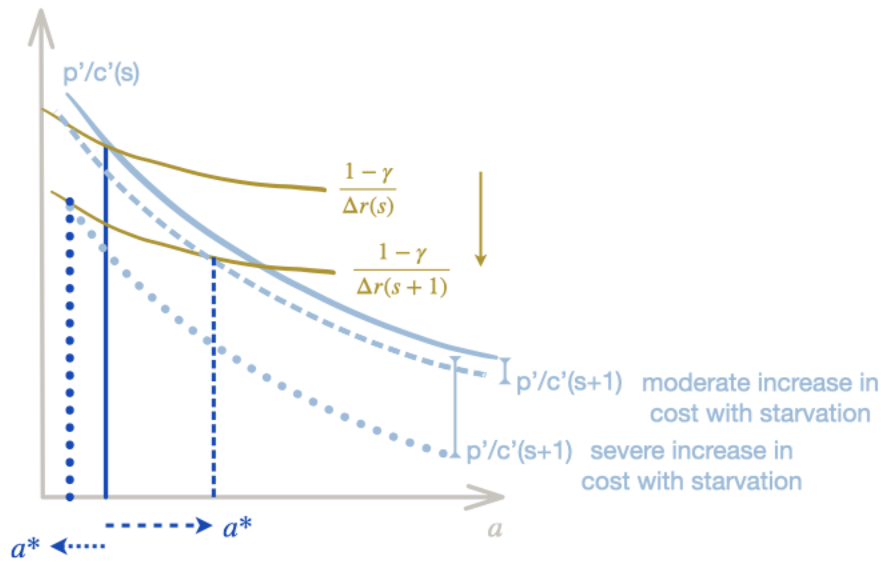

Figure 2—figure supplement 3. Sketch of theoretical prediction for predatory stinging with increasing cost. Similar to **Figure 2—figure supplement 1A bottom**, for the case where the cost per nematocyte varies with starvation $c = c_0(s)a$. Moderate increase in the cost per starvation (dashed light-blue line) do not affect the qualitative results as the green curve still intersects the light-blue curve for increasing values of a^* (marked by dashed dark-blue line). More dramatic increases of cost with starvation (light-blue dotted line) do lead to a decrease in predatory stinging with starvation as the intercept now moves backward with increasing s (marked by dark-blue dotted line).

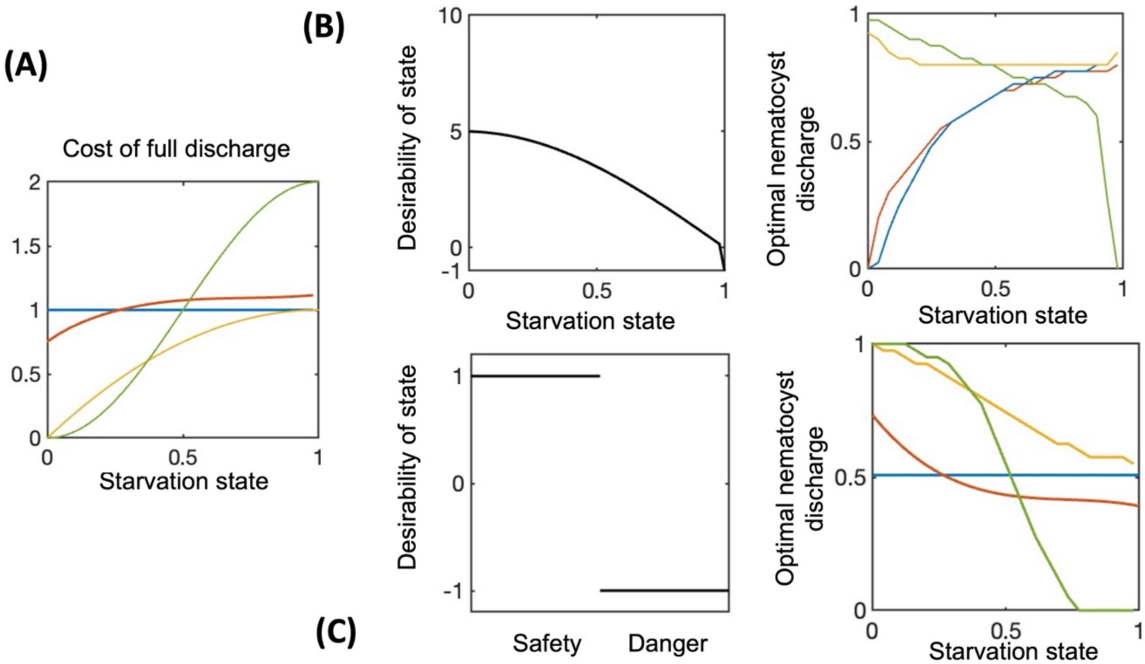

Figure 2—figure supplement 4. Effects of a moderately *vs* dramatically increasing cost with starvation.

For a constant cost of full discharge or moderately increasing cost with starvation, predatory stinging always increases, whereas defensive stinging decreases or stays constant (results discussed in main text, **Figure 2**, and reproduced here for comparison, red and blue curves in Panels A-C. For predation, we use desirability 2 from **Figure 2B**). When the cost function increases dramatically with starvation (panel A, yellow and green lines), defensive stinging keeps decreasing with starvation (panel C, right), but now also predatory stinging decreases with starvation (panel B, right, yellow and green lines). Results are obtained with numerical simulations.

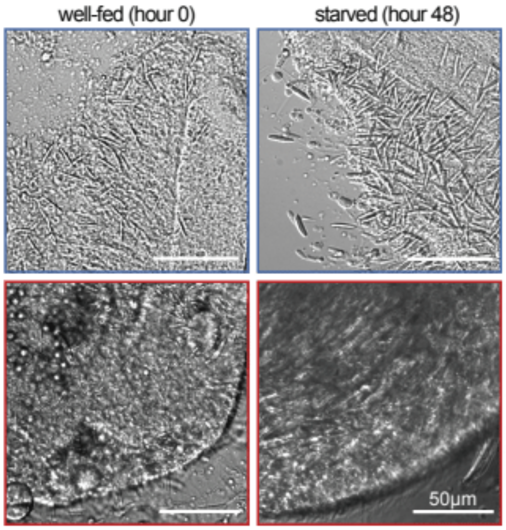

Figure 2—figure supplement 5. Modulation of *Nematostella* and *Exaiptasia* stinging is not due to changes in the abundance of nematocytes.

Nematocytes were highly abundant in tentacles from *Nematostella (top)* and *Exaiptasia (bottom)* before and after starvation. Representative of n = 3 animals. Scale bar = 50µm.

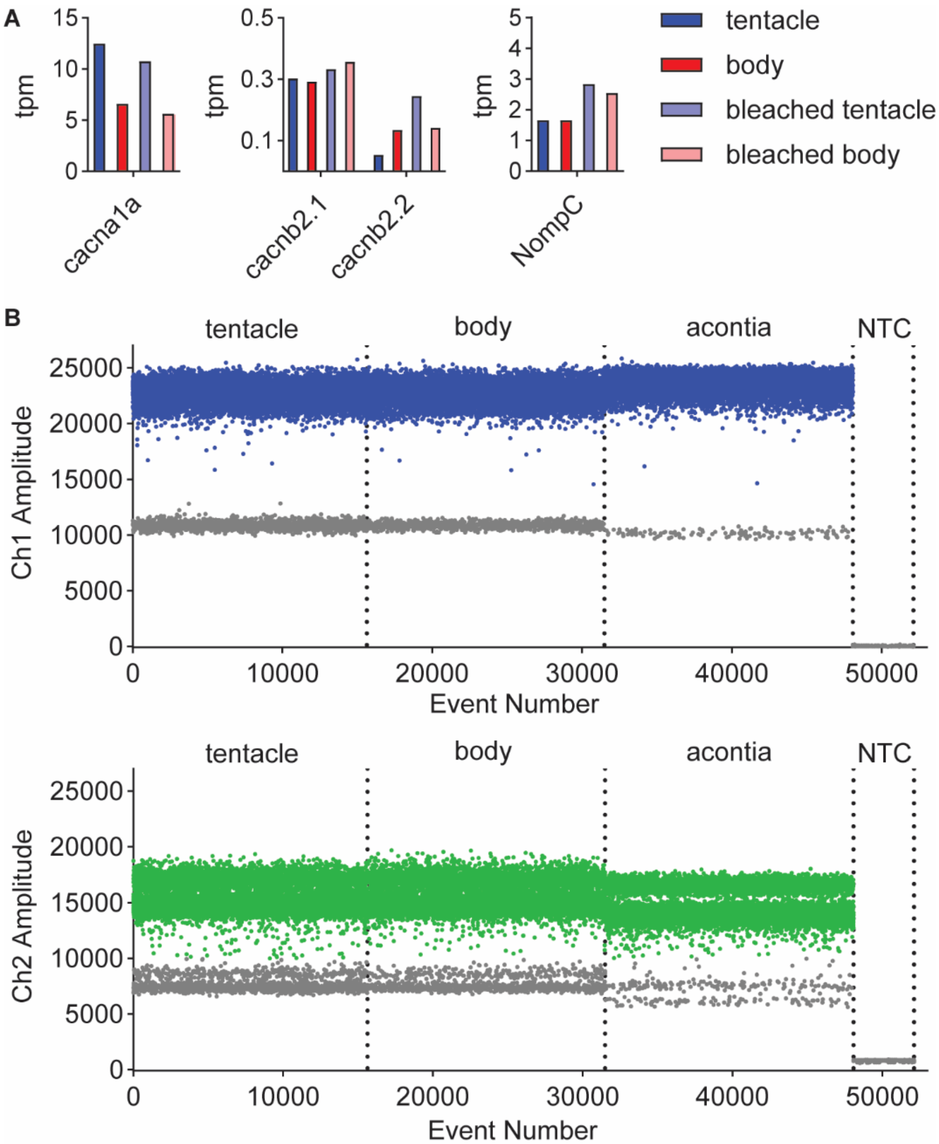

Figure 4—figure supplement 1. Transcriptomic and molecular analyses of *Exaiptasia* β subunit isoforms.

A) mRNA expression (transcripts per million, TPM) of voltage-gated calcium (Ca_V) channel α and β subunits in *Exaiptasia* tentacle (nematocyte abundant, blue), body (nematocyte non-abundant, red), bleached (minimal symbionts) tentacle (light blue), bleached body (light red) tissues. The Ca_V α subunit was identified by homology to the sequence of the cnidarian $Ca_V2.1$ homolog found enriched in *Nematostella* nematocyte-rich tissues (Weir et al., 2020). NompC, the putative mechanoreceptor in *Nematostella* nematocytes (Schüler et al., 2015; Weir et al., 2020), was also detected in *Exaiptasia* tentacles.

B) Representative plots of fluorescent amplitude across event number (droplet events) from amplification of unique regions of $EdCa_V\beta1$ (Ch1, *Top*) and $EdCa_V\beta2$ (Ch2, *Bottom*) sequences using droplet digital PCR (ddPCR, Bio-Rad Laboratories). Individual lanes correspond to tentacle RNA, body RNA, acontia RNA, and no template control (NTC). Blue and green points indicate positive PCR droplets after thresholding and gray points indicate negative droplets.

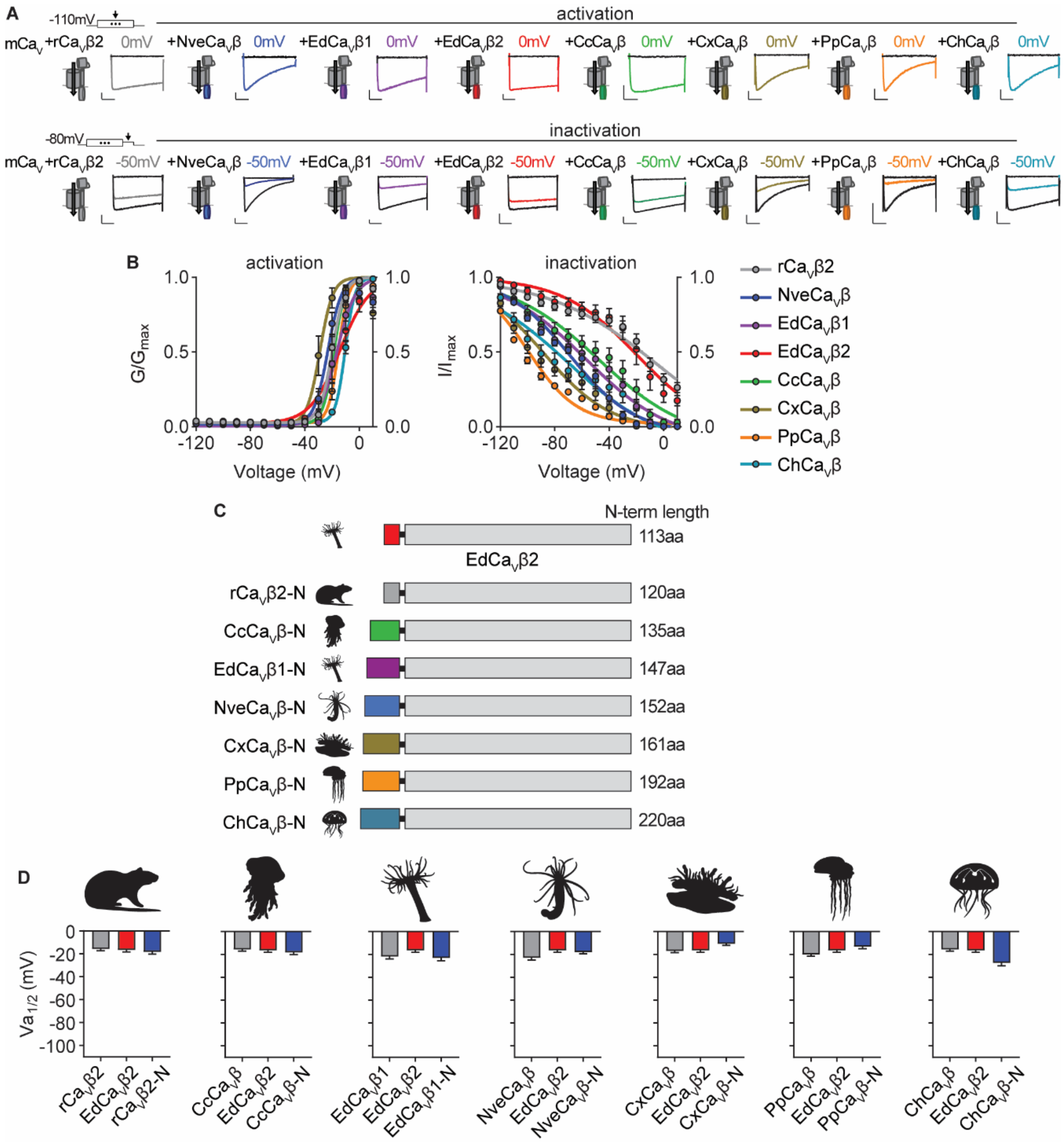

Figure 5—figure supplement 1. Voltage-dependent activation of Ca_V channels is conserved across cnidarian β subunits.

A) *Top*: Voltage-gated currents from heterologously-expressed chimeric Ca_Vs with the indicated β subunits elicited by voltage pulses to -120mV (no current, black) and 0mV (colored). Abbreviations of species: Nve, *Nematostella vectensis*; Ed, *Exaiptasia diaphana*; Cc, *Cyanea capillata* (jellyfish); Pp, *Physalia physalis* (siphonophore); Ch, *Clytia hemisphaerica* (jellyfish); Cx, *Cassiopea xamachana* (jellyfish); r, *Rattus norvegicus*. *Bottom*: Voltage-gated currents elicited by a maximally activating voltage pulse following 1 s pre-pulses to −110 mV (max current, black), −50 mV (colored), or 20 mV (inactivated, no current, black). Scalebars = 100pA, 50ms.

B) Activation and inactivation curves for heterologously-expressed chimeric Ca_Vs with different β subunits. Activation: rCa$_V$β2 $V_{a1/2}$ = -19.76 ± 1.16mV, n = 12; NveCa$_V$β $V_{a1/2}$ = -23.07 ± 1.16mV, n = 5; EdCa$_V$β1 $V_{a1/2}$ = -18.27 ± 1.08mV, n = 8; EdCa$_V$β2 $V_{a1/2}$ = -14.22 ± 1.46mV, n = 5; CcCa$_V$β $V_{a1/2}$ = -18.47 ± 1.59mV, n = 6; CxCa_Vβ $V_{a1/2}$ = -28.89 ± 1.54mV, n = 15; PpCa_Vβ $V_{a1/2}$ = -15.29 ± 1.23mV, n = 10; ChCa_Vβ $V_{a1/2}$ = -10.30 ± 1.04mV, n = 12. rCa_Vβ2 $V_{i1/2}$ = -2.98 ± 13.51mV, n = 12; NveCa_Vβ $V_{i1/2}$ = -68.93 ± 1.53mV, n = 5; EdCa_Vβ1 $V_{i1/2}$ = -56.76 ± 3.18mV, n = 8; EdCa_Vβ2 $V_{i1/2}$ = -18.84 ± 8.00mV, n = 5; CcCa_Vβ subunit $V_{i1/2}$ = -47.81 ± 5.57mV, n = 6; CxCa_Vβ $V_{i1/2}$ = -87.75 ± 1.72mV, n = 15; PpCa_Vβ $V_{i1/2}$ = -99.80 ± 0.92mV, n = 10; ChCa_Vβ $V_{i1/2}$ = -70.25 ± 4.67mV, n = 12 cells.

C) Diagram of Ca_V β subunit domain swaps and the length of the N-terminus swapped in amino acids.

D) Cnidarian Ca_V β N-termini do not greatly affect voltage-dependent activation of Ca_V channels containing EdCa_Vβ2. Voltage-dependent activation ($V_{a1/2}$) of heterologously-expressed Ca_Vs with WT EdCa_Vβ2, β subunits from the indicated cnidarians, and chimeras with their N-termini on EdCa_Vβ2, p = 0.5830 for average $V_{i1/2}$ values across mutant beta subunits, one-way ANOVA with Bartlett's test and post-hoc Tukey test, n = 4-7 cells. Data represented as mean ± sem.

Figure 5—supplement table 1: Wild type and Chimeric Ca$_V$β amino acid sequences.

Protein name	Amino Acid Sequence
Exaiptasia diaphana Ca$_V$β1 (EdCa$_V$β1)	MAQDFALSNRDIELDSLEHDSTGSSTPSEIQRWHMYSDRSGRVVCKDSEPAYRASDTSSVDEDKETSRRELERRAWEALQAARSKPVAFAVRTNIAYEGSEDDDSPVHGAAVSFNVKDFLHVKEKFNDDWWIGRVVKEGCDIGFIPTPSKLKSLQQVGPATGGRPVRGSSKTVFHFNDMVNQAQSPTNTSPSRHSSASVDAENGMEYNEEEQHSPTSPTSKTSTLPRSASGNTVTSQSAPGQQGKSKKAFFKKQEQLPPYDVVPSMRPIVLVGPSLKGYEVTDMMQKALFDYMKHQFSGRVLISRVTSDISLAKRSNLANPSKRNIIERSNSKNSGLAEVQQEIERIFELSRGLNLVVLDCDTVNHPTQLAKTSLAPLVVYVKISAPKVLQRLIKTRGKTQSRALNVQLVAAEKLAQCSEDLYDLILDETQLQDACHHLGEFLESYWRATHPPNQPGSRPPNMQQSTPQYNVIEAGERPSVYL
Exaiptasia diaphana Ca$_V$β2 (EdCa$_V$β2)	MGNTDSVQSFTKDSEPAYRASDTSSVDEDKETSRRELERRAWEALQAARSKPVAFAVRTNIAYEGSEDDDSPVHGAAVSFNVKDFLHVKEKFNDDWWIGRVVKEGCDIGFIPTPSKLKSLQQVGPATGGRPVRGSSKTVFHFNDMVNQAQSPTNTSPSRHSSASVVDAENGMEYNEEEQHSPTSPTSKTSTLPRSASGNTVTSQSAPGQQGKSKKAFFKKQEQLPPYDVVPSMRPIVLVGPSLKGYEVTDMMQKALFDYMKHQFSGRVLISRVTSDISLAKRSNLANPSKRNIIERSNSKNSGLAEVQQEIERIFELSRGLNLVVLDCDTVNHPTQLAKTSLAPLVVYVKISAPKVLQRLIKTRGKTQSRALNVQLVAAEKLAQCSEDLYDLILDETQLQDACHHLGEFLESYWRATHPPNQPGSRPPNMQQSTPQYNVIEAGERPSVYL
Cyanea Capillata Ca$_V$β (CcCa$_V$β)	MWFGTKKSKDSERRKRQPIDVYREQALSVNPAYIWGDDLDSRKTSGTSSEYGEDDIEQIRVQALEQLAAARVKPVAFAMRANYGYNGAEDDDSPIHGMALSFEPKDFLHIKEKFNNDWLIGRVVREGCDIGFIPSPSKLESLRLSGLAGRKMRQSSTSSNLHLQDAFSASSPSEDRQNSFDDESLPPSSPVKSVNPGVIGQPNSKTAKKGIFKKNDSLPPYDVVPSMRPVIFVGPSLKGYEVTDMMQKALFDYLKHRFQGRIVITRVTADISTAKKSTIQNLAKKPIIKERGATQASQEVNQEIERIFELCRNLQLVVLDSYTVNYPAQVAKTSLAPIIVYIKISSPKVLTRLVKSRGKSQSKNLNVQLVAAVKLGQCSEDMYDVVLDETQLEDACEHLGEFLEAYWRAAHPSQSNFGAAGAPGSFTANGQPVVVNYNSMDPFSAQSPTRHLRTAQV
Physalia physalis Ca$_V$β (PpCa$_V$β)	MVTASYNVPLDNTSATHSFNYPHAFLLTHSSCSYHSNEGFINSSTEVDIVDENDFKPLFEGNSNEPHCQKKVISFSSLLDNVVAPIWYFFEMGDEFDSRKTSGTSSEYGEEDVEALRVQALEQLAAAASKPVAFAVRANYGYNGSEDEDCPVNGMAVSFEAKDCLHIKVKFNNDWWIGRVVKEGHDIGFIPSASRLDNIRQSGISGKLKLRQSSTSSNMNLEDQSQPLSREQDNRSPSEERGTSFDDDSPASPLRNPSGSSLTANNNNNNSNTASNVNNSQPKGKKGIFKKSENLPPYDVVPSMRPIIFVGPSLKGYEVTNMMQKALFDYLKHRFQGRIVITRVGADISLAKRSAFQHPGKQPVIQKKGNTQSGIVEVQQEIERIFELCRSMQLVVLDCESINHPSQVAKTSLAPIIAMIRIASPKVLTRLIKSRGKSQTKHLNFQLVAAEKLNQCTEDMFDVILDENQLEDACEHLGDFLEAYWRSAVPPRRPYVNSDNRSYNNAGGQSIGNYNGGGQYNGTPQRHLRTAQV
Cassiopea xamachana Ca$_V$β (CxCa$_V$β)	MVQKSGMSRGPYPPSQEIPMEVFDPSPQGKYSKRKGRFKRSDGSTSSDTTSNSFVRQGSAESYTSRPSDSDVSLEEDREALRKEAERQALAQLEKAKTKPVAFAVRTNVGYNPSPGDEVPVQGVAITFEPKDFLHIKEKYNNDWWIGRLVKEGCEVGFIPSPVKLDSLRLLQEQTLRQNRLSSSKSGDNSSSSLGDVVTGTRRPTPPASAKQKQKSTEHVPPYDVVPSMRPIILVGPSLKGYEVTDMMQKALFDFLKHRFDGRISITRVTADISLAKRSVLNNPSKHIIIERSNTRSSLAEVQSEIERIFELARTLQLVALDADTINHPAQLSKTSLAPIIVYIKITSPKVLQRLIKSRGKSQSKHLNVQIAASEKLAQCPPEMFDIILDENQLEDACEHLAEYLEAYWKATHPPSSTPPNPLLNRTMATAALAASPAPVSNLQGPYLASGDQPLDRATGEHASVHEYPGELGQPPGLYPSNHPPGRAGTLRALSRQDTFDADTPGSRNSAYTEPGDSCVDMETDPSEGPGPGDPAGGGTPPARQGSWEEEEDYEEEMTDNRNRGRNKARYCAEGGGPVLGRNKNELEGWGQGVYIR

Clytia hemisphaerica $Ca_V\beta$ ($ChCa_V\beta$)	MMHGSQTEPAISSMTSERNHKNLSHGSRTSINSQRSTNKKVNSHVSFDESTAAPSS KKPGALSAAGGKKSVDDNFSSSVLQTVFALRWQKKAAQKKKKPDDFQQMYMHS MSGALGSIIGDEFDGRKTSGTSSEYGDGEDLEALRILALEKLQAARTRPVAFAVRA NYGYNGSEDDDSPVHGMAVSFEKDDCLHIKDKFNKDWWIGRVVKEGHNIGFVPS PDKLESIRQSGVSGKLKMRQSSTSSNMNLHDDPQNQRSPLGEAGGNNSFDDETVN SPVRNVSTESNNTNNNNTTNSLNAQKGKKGIFKKNEQLHPYYVIPSMRPIIFVGPSL KGYEVTDMMQKALFDYLKHRFSERIIFTRVNADISLAKRSNLNNQNRQPNFPKKSN GQAGLAEVQEEVNRIFELCRSSQLVVLDCDTINNPSQVIKTSLAPIIVAIKIASPKVLT RLIKSRGKNQVKHLNIQMIAADKLSQCNEEMFDVVLDENQLEDACEHLGEFLEAY WRAAVPGAQEGLISQENGGFVNQGGPNGAGYNGVDQYGTPQRNLRTAQV
Nematostella vectensis cacnb2.1 (NVE β)	MEPEPGLSEQDIELDSLEQVSTASSFHSDIQRHYNDGREASRFIGADDFNRDSDPAY RASDTSSIEEDRETSRRELERRAWDALQAARSKPVAFAVRTNLRYDGSEDDDSPVH GAAVSFEAKDFLHVKEKFNDDWWIGRVVKEGCDIGFIPTPSKLKSLQQIGGTASGR GMRNSKRDVFQFDMVNQAQSPTNTSPSRHSSTSVDAENGVEYDDDQQSPTSPTNK TLPRSASGTTVSSQPGTATGTQGKPKKGLFKKQEQLPPYDVVPSMRPIVLVGPSLK GYEVTDMMQKALLDFMKHRFSGRVLIARVTSDISLAKRTNMSNPGKQTIMERTKN KNTGLAEVQQEIERIFELARGLNLVVLDCETVNHPTQLAKTSLAPMIVYIKIAAPKV LQRLIKTRGKSQSRNLSIQLVAAEKLAQCSEDMYDLVLEETQLDDACEHLGEFLES YWRATHPPNQPGSRPPNVQPSNSTPQYNVIEGGERPSVYL
Rat cacnb2a (Rat β)	MQCCGLVHRRRVRVSYGSADSYTSRPSDSDVSLEEDREAVRREAERQAQAQLEK AKTKPVAFAVRTNVRYSAAQEDDVPVPGMAISFEAKDFLHVKEKFNNDWWIGRL VKEGCEIGFIPSPVKLENMRLQHEQRAKQGKFYSSKSGGNSSSSLGDIVPSSRKSTPP SSAIDIDATGLDAEENDIPANHRSPKPSANSVTSPHSKEKRMPFFKKTEHTPPYDVV PSMRPVVLVGPSLKGYEVTDMMQKALFDFLKHRFEGRISITRVTADISLAKRSVLN NPSKHAIIERSNTRSSLAEVQSEIERIFELARTLQLVVLDADTINHPAQLSKTSLAPIIV YVKISSPKVLQRLIKSRGKSQAKHLNVQMVAADKLAQCPPQESFDVILDENQLEDA CEHLADYLEAYWKATHPPSSNLPNPLLSRTLATSTLPLSPTLASNSQGSQGDQRTD RSAPRSASQAEEEPCLEPVKKSQHRSSSATHQNHRSGTGRGLSRQETFDSETQESRD SAYVEPKEDYSHEHVDRYVPHREHNHREESHSSNGHRHREPRHRTRDMGRDQDH NECSKQRSRHKSKDRYCDKEGEVISKRRSEAGEWNRDVYIRQ
Rat β with NVE Hook	MQCCGLVHRRRVRVSYGSADSYTSRPSDSDVSLEEDREAVRREAERQAQAQLEK AKTKPVAFAVRTNVRYSAAQEDDVPVPGMAISFEAKDFLHVKEKFNNDWWIGRL VKEGCEIGFIPSPSKLKSLQQIGGTASGRGMRNSKRDVFQFDMVNQAQSPTNTSPS RHSSTSVDAENGVEYDDDQQSPTSPTNKTLPRSASGTTVSSQPGTATGTQGKPKKG LFKKQEQLPPYDVVPSMRPVVLVGPSLKGYEVTDMMQKALFDFLKHRFEGRISITR VTADISLAKRSVLNNPSKHAIIERSNTRSSLAEVQSEIERIFELARTLQLVVLDADTIN HPAQLSKTSLAPIIVYVKISSPKVLQRLIKSRGKSQAKHLNVQMVAADKLAQCPPQ ESFDVILDENQLEDACEHLADYLEAYWKATHPPSSNLPNPLLSRTLATSTLPLSPTL ASNSQGSQGDQRTDRSAPRSASQAEEEPCLEPVKKSQHRSSSATHQNHRSGTGRGL SRQETFDSETQESRDSAYVEPKEDYSHEHVDRYVPHREHNHREESHSSNGHRHREP RHRTRDMGRDQDHNECSKQRSRHKSKDRYCDKEGEVISKRRSEAGEWNRDVYIR Q
NVE β with Rat Hook	MEPEPGLSEQDIELDSLEQVSTASSFHSDIQRHYNDGREASRFIGADDFNRDSDPAY RASDTSSIEEDRETSRRELERRAWDALQAARSKPVAFAVRTNLRYDGSEDDDSPV HGAAVSFEAKDFLHVKEKFNDDWWIGRVVKEGCDIGFIPTPVKLENMRLQHEQR AKQGKFYSSKSGGNSSSSLGDIVPSSRKSTPPSSAIDIDATGLDAEENDIPANHRSPK PSANSVTSPHSKEKRMPFFKKTEHTPPYDVVPSMRPIVLVGPSLKGYEVTDMMQK ALLDFMKHRFSGRVLIARVTSDISLAKRTNMSNPGKQTIMERTKNKNTGLAEVQQ EIERIFELARGLNLVVLDCETVNHPTQLAKTSLAPMIVYIKIAAPKVLQRLIKTRGKS QSRNLSIQLVAAEKLAQCSEDMYDLVLEETQLDDACEHLGEFLESYWRATHPPNQ PGSRPPNVQPSNSTPQYNVIEGGERPSVYL
Rat β with NVE GK	MQCCGLVHRRRVRVSYGSADSYTSRPSDSDVSLEEDREAVRREAERQAQAQLEK AKTKPVAFAVRTNVRYSAAQEDDVPVPGMAISFEAKDFLHVKEKFNNDWWIGRL

domain	VKEGCEIGFIPSPVKLENMRLQHEQRAKQGKFYSSKSGGNSSSSLGDIVPSSRKSTP PSSAIDIDATGLDAEENDIPANHRSPKPSANSVTSPHSKEKRMPFFKKTEHTPPYDV VPSMRPIVLVGPSLKGYEVTDMMQKALLDFMKHRFSGRVLIARVTSDISLAKRTN MSNPGKQTIMERTKNKNTGLAEVQQEIERIFELARGLNLVVLDCETVNHPTQLAKT SLAPMIVYIKIAAPKVLQRLIKTRGKSQSRNLSIQLVAAEKLAQCSEDMYDLVLEET QLDDACEHLGEFLESYWRATHPPNQPGSRPPNVQPSNSTPQYNVIEGGERPSVYL
NVE β with Rat GK domain	MEPEPGLSEQDIELDSLEQVSTASSFHSDIQRHYNDGREASRFIGADDFNRDSDPAY RASDTSSIEEDRETSRRELERRAWDALQAARSKPVAFAVRTNLRYDGSEDDDSPV HGAAVSFEAKDFLHVKEKFNDDWWIGRVVKEGCDIGFIPTPSKLKSLQQIGGTASG RGMRNSKRDVFQFDMVNQAQSPTNTSPSRHSSTSVDAENGVEYDDDQQSPTSPTN KTLPRSASGTTVSSQPGTATGTQGKPKKGLFKKQEQLPPYDVVPSMRPVVLVGPSL KGYEVTDMMQKALFDFLKHRFEGRISITRVTADISLAKRSVLNNPSKHAIIERSNTR SSLAEVQSEIERIFELARTLQLVVLDADTINHPAQLSKTSLAPIIVYVKISSPKVLQRL IKSRGKSQAKHLNVQMVAADKLAQCPPQESFDVILDENQLEDACEHLADYLEAY WKATHPPSSNLPNPLLSRTLATSTLPLSPTLASNSQGSQGDQRTDRSAPRSASQAEE EPCLEPVKKSQHRSSSATHQNHRSGTGRGLSRQETFDSETQESRDSAYVEPKEDYS HEHVDRYVPHREHNHREESHSSNGHRHREPRHRTRDMGRDQDHNECSKQRSRHK SKDRYCDKEGEVISKRRSEAGEWNRDVYIRQ
Rat 5’ on NVE β	MQCCGLVHRRRVRVSYGSADSYTSRPSDSDVSLEEDREAVRREAERQAQAQLEK AKTKPVAFAVRTNLRYDGSEDDDSPVHGAAVSFEAKDFLHVKEKFNDDWWIGRV VKEGCDIGFIPTPSKLKSLQQIGGTASGRGMRNSKRDVFQFDMVNQAQSPTNTSPS RHSSTSVDAENGVEYDDDQQSPTSPTNKTLPRSASGTTVSSQPGTATGTQGKPKKG LFKKQEQLPPYDVVPSMRPIVLVGPSLKGYEVTDMMQKALLDFMKHRFSGRVLIA RVTSDISLAKRTNMSNPGKQTIMERTKNKNTGLAEVQQEIERIFELARGLNLVVLD CETVNHPTQLAKTSLAPMIVYIKIAAPKVLQRLIKTRGKSQSRNLSIQLVAAEKLAQ CSEDMYDLVLEETQLDDACEHLGEFLESYWRATHPPNQPGSRPPNVQPSNSTPQY NVIEGGERPSVYL
Rat 5’ + SH3 on NVE β	MQCCGLVHRRRVRVSYGSADSYTSRPSDSDVSLEEDREAVRREAERQAQAQLEK AKTKPVAFAVRTNVRYSAAQEDDVPVPGMAISFEAKDFLHVKEKFNNDWWIGRL VKEGCEIGFIPSPSKLKSLQQIGGTASGRGMRNSKRDVFQFDMVNQAQSPTNTSPS RHSSTSVDAENGVEYDDDQQSPTSPTNKTLPRSASGTTVSSQPGTATGTQGKPKKG LFKKQEQLPPYDVVPSMRPIVLVGPSLKGYEVTDMMQKALLDFMKHRFSGRVLIA RVTSDISLAKRTNMSNPGKQTIMERTKNKNTGLAEVQQEIERIFELARGLNLVVLD CETVNHPTQLAKTSLAPMIVYIKIAAPKVLQRLIKTRGKSQSRNLSIQLVAAEKLAQ CSEDMYDLVLEETQLDDACEHLGEFLESYWRATHPPNQPGSRPPNVQPSNSTPQY NVIEGGERPSVYL
NVE 5’ + SH3 on Rat β	MEPEPGLSEQDIELDSLEQVSTASSFHSDIQRHYNDGREASRFIGADDFNRDSDPAY RASDTSSIEEDRETSRRELERRAWDALQAARSKPVAFAVRTNVRYSAAQEDDVPV PGMAISFEAKDFLHVKEKFNNDWWIGRLVKEGCEIGFIPSPVKLENMRLQHEQRA KQGKFYSSKSGGNSSSSLGDIVPSSRKSTPPSSAIDIDATGLDAEENDIPANHRSPKP SANSVTSPHSKEKRMPFFKKTEHTPPYDVVPSMRPVVLVGPSLKGYEVTDMMQK ALFDFLKHRFEGRISITRVTADISLAKRSVLNNPSKHAIIERSNTRSSLAEVQSEIERIF ELARTLQLVVLDADTINHPAQLSKTSLAPIIVYVKISSPKVLQRLIKSRGKSQAKHL NVQMVAADKLAQCPPQESFDVILDENQLEDACEHLADYLEAYWKATHPPSSNLP NPLLSRTLATSTLPLSPTLASNSQGSQGDQRTDRSAPRSASQAEEEPCLEPVKKSQH RSSSATHQNHRSGTGRGLSRQETFDSETQESRDSAYVEPKEDYSHEHVDRYVPHRE HNHREESHSSNGHRHREPRHRTRDMGRDQDHNECSKQRSRHKSKDRYCDKEGEV ISKRRSEAGEWNRDVYIRQ
NVE 5’ on Rat β	MEPEPGLSEQDIELDSLEQVSTASSFHSDIQRHYNDGREASRFIGADDFNRDSDPAY RASDTSSIEEDRETSRRELERRAWDALQAARSKPVAFAVRTNLRYDGSEDDDSPVH GAAVSFEAKDFLHVKEKFNDDWWIGRVVKEGCDIGFIPTPVKLENMRLQHEQRAK QGKFYSSKSGGNSSSSLGDIVPSSRKSTPPSSAIDIDATGLDAEENDIPANHRSPKPSA

	NSVTSPHSKEKRMPFFKKTEHTPPYDVVPSMRPVVLVGPSLKGYEVTDMMQKALF DFLKHRF EGRISITRVTADISLAKRSVLNNPSKHAIIERSNTRSSLAEVQSEIERIFELARTLQLVV LDADTINHPAQLSKTSLAPIIVYVKISSPKVLQRLIKSRGKSQAKHLNVQMVAADK LAQCPPQESFDVILDENQLEDACEHLADYLEAYWKATHPPSSNLPNPLLSRTLATS TLPLSPTLASNSQGSQGDQRTDRSAPRSASQAEEEPCLEPVKKSQHRSSSATHQNH RSGTGRGLSRQETFDSETQESRDSAYVEPKEDYSHEHVDRYVPHREHNHREESHSS NGHRHREPRHRTRDMGRDQDHNECSKQRSRHKSKDRYCDKEGEVISKRRSEAGE WNRDVYIRQ
EdCa$_V$β2 with NVE β NTerm	MEPEPGLSEQDIELDSLEQVSTASSFHSDIQRHYNDGREASRFIGADDFNRDSDPAY RASDTSSIEEDRETSRRELERRAWDALQAARSKPVAFAVRTNLRYDGSEDDDSPV HGAAVSFEAKDFLHVKEKFNDDWWIGRVVKEGCDIGFIPTPSKLKSLQQVGPATG GRPVRGSSKTVFHFNDMVNQAQSPTNTSPSRHSSASVVDAENGMEYNEEEQHSPT SPTSKTSTLPRSASGNTVTSQSAPGQQGKSKKAFFKKQEQLPPYDVVPSMRPIVLV GPSLKGYEVTDMMQKALFDYMKHQFSGRVLISRVTSDISLAKRSNLANPSKRNIIE RSNSKNSGLAEVQQEIERIFELSRGLNLVVLDCDTVNHPTQLAKTSLAPLVVYVKIS APKVLQRLIKTRGKTQSRALNVQLVAAEKLAQCSEDLYDLILDETQLQDACHHLG EFLESYWRATHPPNQPGSRPPNMQQSTPQYNVIEAGERPSVYL
EdCa$_V$β2 with CcCa$_V$β NTerm	MWFGTKKSKDSERRKRQPIDVYREQALSVNPAYIWGDDLDSRKTSGTSSEYGEDD IEQIRVQALEQLAAARVKPVAFAMRANYGYNGAEDDDSPIHGMALSFEPKDFLHI KEKFNNDWLIGRVVREGCDIGFIPSPSKLKSLQQVGPATGGRPVRGSSKTVFHFND MVNQAQSPTNTSPSRHSSASVVDAENGMEYNEEEQHSPTSPTSKTSTLPRSASGNT VTSQSAPGQQGKSKKAFFKKQEQLPPYDVVPSMRPIVLVGPSLKGYEVTDMMQK ALFDYMKHQFSGRVLISRVTSDISLAKRSNLANPSKRNIIERSNSKNSGLAEVQQEI ERIFELSRGLNLVVLDCDTVNHPTQLAKTSLAPLVVYVKISAPKVLQRLIKTRGKT QSRALNVQLVAAEKLAQCSEDLYDLILDETQLQDACHHLGEFLESYWRATHPPNQ PGSRPPNMQQSTPQYNVIEAGERPSVYL
EdCa$_V$β2 with PpCa$_V$β NTerm	MVTASYNVPLDNTSATHSFNYPHAFLLTHSSCSYHSNEGFINSSTEVDIVDENDFKP LFEGNSNEPHCQKKVISFSSLLDNVVAPIWYFFEMGDEFDSRKTSGTSSEYGEEDV EALRVQALEQLAAAASKPVAFAVRANYGYNGSEDEDCPVNGMAVSFEAKDCLHI KVKFNNDWWIGRVVKEGHDIGFIPSPSKLKSLQQVGPATGGRPVRGSSKTVFHFN DMVNQAQSPTNTSPSRHSSASVVDAENGMEYNEEEQHSPTSPTSKTSTLPRSASGN TVTSQSAPGQQGKSKKAFFKKQEQLPPYDVVPSMRPIVLVGPSLKGYEVTDMMQ KALFDYMKHQFSGRVLISRVTSDISLAKRSNLANPSKRNIIERSNSKNSGLAEVQQE IERIFELSRGLNLVVLDCDTVNHPTQLAKTSLAPLVVYVKISAPKVLQRLIKTRGKT QSRALNVQLVAAEKLAQCSEDLYDLILDETQLQDACHHLGEFLESYWRATHPPNQ PGSRPPNMQQSTPQYNVIEAGERPSVYL
EdCa$_V$β2 with Rat β NTerm	MQCCGLVHRRRVRVSYGSADSYTSRPSDSDVSLEEDREAVRREAERQAQAQLEK AKTKPVAFAVRTNVRYSAAQEDDVPVPGMAISFEAKDFLHVKEKFNNDWWIGRL VKEGCEIGFIPSPSKLKSLQQVGPATGGRPVRGSSKTVFHFNDMVNQAQSPTNTSP SRHSSASVVDAENGMEYNEEEQHSPTSPTSKTSTLPRSASGNTVTSQSAPGQQGKS KKAFFKKQEQLPPYDVVPSMRPIVLVGPSLKGYEVTDMMQKALFDYMKHQFSGR VLISRVTSDISLAKRSNLANPSKRNIIERSNSKNSGLAEVQQEIERIFELSRGLNLVVL DCDTVNHPTQLAKTSLAPLVVYVKISAPKVLQRLIKTRGKTQSRALNVQLVAAEK LAQCSEDLYDLILDETQLQDACHHLGEFLESYWRATHPPNQPGSRPPNMQQSTPQ YNVIEAGERPSVYL
EdCa$_V$β2 with CxCa$_V$β NTerm	MVQKSGMSRGPYPPSQEIPMEVFDPSPQGKYSKRKGRFKRSDGSTSSDTTSNSFVR QGSAESYTSRPSDSDVSLEEDREALRKEAERQALAQLEKAKTKPVAFAVRTNVGY NPSPGDEVPVQGVAITFEPKDFLHIKEKYNNDWWIGRLVKEGCEVGFIPSPSKLKS LQQVGPATGGRPVRGSSKTVFHFNDMVNQAQSPTNTSPSRHSSASVVDAENGME YNEEEQHSPTSPTSKTSTLPRSASGNTVTSQSAPGQQGKSKKAFFKKQEQLPPYDV VPSMRPIVLVGPSLKGYEVTDMMQKALFDYMKHQFSGRVLISRVTSDISLAKRSN LANPSKRNIIERSNSKNSGLAEVQQEIERIFELSRGLNLVVLDCDTVNHPTQLAKTS

	LAPLVVYVKISAPKVLQRLIKTRGKTQSRALNVQLVAAEKLAQCSEDLYDLILDET QLQDACHHLGEFLESYWRATHPPNQPGSRPPNMQQSTPQYNVIEAGERPSVYL
EdCa$_V$β2 with ChCa$_V$β NTerm	MMHGSQTEPAISSMTSERNHKNLSHGSRTSINSQRSTNKKVNSHVSFDESTAAPSS KKPGALSAAGGKKSVDDNFSSSVLQTVFALRWQKKAAQKKKKPDDFQQMYMHS MSGALGSIIGDEFDGRKTSGTSSEYGDGEDLEALRILALEKLQAARTRPVAFAVRA NYGYNGSEDDDSPVHGMAVSFEKDDCLHIKDKFNKDWWIGRVVKEGHNIGFVPS PSKLKSLQQVGPATGGRPVRGSSKTVFHFNDMVNQAQSPTNTSPSRHSSASVVDA ENGMEYNEEEQHSPTSPTSKTSTLPRSASGNTVTSQSAPGQQGKSKKAFFKKQEQL PPYDVVPSMRPIVLVGPSLKGYEVTDMMQKALFDYMKHQFSGRVLISRVTSDISL AKRSNLANPSKRNIIERSNSKNSGLAEVQQEIERIFELSRGLNLVVLDCDTVNHPTQ LAKTSLAPLVVYVKISAPKVLQRLIKTRGKTQSRALNVQLVAAEKLAQCSEDLYD LILDETQLQDACHHLGEFLESYWRATHPPNQPGSRPPNMQQSTPQYNVIEAGERPS VYL
EdCa$_V$β2 with EdCa$_V$β1 NTerm	MAQDFALSNRDIELDSLEHVSTGSSTPSEIQRWHMYSDRSGRVVCKDSEPAYRAS DTSSVDEDKETSRRELERRAWEALQAARSKPVAFAVRTNIAYEGSEDDDSPVHGA AVSFNVKDFLHVKEKFNDDWWIGRVVKEGCDIGFIPTPSKLKSLQQVGPATGGRP VRGSSKTVFHFNDMVNQAQSPTNTSPSRHSSASVVDAENGMEYNEEEQHSPTSPT SKTSTLPRSASGNTVTSQSAPGQQGKSKKAFFKKQEQLPPYDVVPSMRPIVLVGPS LKGYEVTDMMQKALFDYMKHQFSGRVLISRVTSDISLAKRSNLANPSKRNIIERSN SKNSGLAEVQQEIERIFELSRGLNLVVLDCDTVNHPTQLAKTSLAPLVVYVKISAP KVLQRLIKTRGKTQSRALNVQLVAAEKLAQCSEDLYDLILDETQLQDACHHLGEF LESYWRATHPPNQPGSRPPNMQQSTPQYNVIEAGERPSVYL