

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/CEPD84pes Tue Feb 1 11:40:19 2022

Page 1 of 5

```

Xenopus_tropicalis      MIDSVRIRHQGSMDFLSHYEYLCALQDSVPIPAVKANIRHGSISFNADRIKLSDWLPIILN 60
Rhinatrema_bivittatum  MIDSVRIRRRQGALDFESHYEYLCILODTIPLHAVKANLRHGILDINADRLKLADWAPLLN 60
Pavo_muticus           MIDSVKMRRQCMLDFYSHYEHLCAVQGSVPLKAVKANLTQGTLDLTVDSIKAADWTPLLD 60
Pavo_cristatus         MIDSVKMRRQCMLDFYSHYEHLCAVQGSVPLKAVKANLTQGTLDLTVDSIKAADWTPLLD 60
Gallus_gallus          MIDSVKIRRRQCMLDFYSHYEHLCAVQGSVPLKAVKTNLTQGTLDLTVDRIKAADWTPLLD 60
Chelonia_mydas         MIDSVKIRRRQSTLDFYSHYEFLCAVQGSVPLKTVKANVNOGILELNADRLKAPDWAPLLN 60
Rattus_norvegicus      MIDSVKLRRDCATDFFSHYEYLCALQDSAPLPAVRACL RDGVLDNFADRLRAVDWAPLLS 60
Mus_musculus           MIDSVKLRRDCAADFFSHYEYLCALQDSVPLPAVRACL RDGVLDNFADRLRAVDWAPLLS 60
Homo_sapiens           MIDSVKLRRDCAADFFSHYEYLCALQDSVPLPAVRACL RDGVLDNFADRLRGVDWAPLLS 60
Pan_troglodytes        MIDSVKLRRDCAADFFSHYEYLCALQDSVPLPAVRACL RDGVLDNFADRLRGVDWAPLLS 60
Macaca_mulatta         MIDSVKLRRDCAADFFSHYEYLCALQDSVPLPAVRACL RDGVLDNFADRLRGVDWAPLLS 60
Callithrix_jacchus     MIDSVKLRRDCAADFFSHYEYLCALQDSVPLPALRACL RDGVLDNFADRLRGVDWAPLLS 60
Bos_taurus             MIDSVKLRRDCAADFFSHYEYLCALQDSVPLPAVRACL RDGVLDNFADRLRAVDWAPLLS 60
Equus_caballus         MIDSVKLRRDCAADFFSHYEYLCALQDSVPLPAVRACL RDGVLDNFADRLRAVDWAPLLS 60
Canis_lupus_familiaris MIDSVKLRRDCAADFFSHYEYLCALQDSVPLPAVRACL RDGVLDNFADRLRGVDWAPLLS 60
Latimeria_chalumnae    MIDSVKLRRDCAADFFSHYEYLCALQDSVPLPAVRACL RDGVLDNFADRLRGVDWAPLLS 60
                        -----MTTITRTQTVET-PDVG----- 15
                        1.....10.....20.....30.....40.....50.....60

```

```

Xenopus_tropicalis      SLKINKSLNVSISKSCHQPGGLGEF-----GAEKYGIYFKRRIPPIRSKDMTFQVCKAITS 115
Rhinatrema_bivittatum  TLKINKNLTSVVISSCSQGLGDS-----DAEKYKMRFRRGIPAIRSRDLTFQLCRAIKG 115
Pavo_muticus           AIRHDKTLTSVGIRSFHQOGLGES-----GAERYKTYFRRRIPAIRSKDLTGQLCKAVKG 115
Pavo_cristatus         AIRHDKTLTSVGIRSFHQOGLGES-----GAERYKTYFRRRIPAIRSKDLTGQLCKAVKG 115
Gallus_gallus          AIRHDKTLTSVGIRSFHQOGLGES-----GAERYKTYFRRRIPAIRSKDLTGQLCKAIKG 115
Chelonia_mydas         AIRHDKTLTSVGIRSFHQOGLGES-----GAERYKTYFRRRIPAIRSKDLTGQLCKAIKG 115
Rattus_norvegicus      SLRVNRDLPLVAIKSSFFQPWLGESVLRSGGADHR-VCRNRVPSVRSKDISFQLCALKG 119
Mus_musculus           TLRVNRDLPLVAIKSSFFQPWLGESVLRSGGADHR-ICRNRVPAVRSKDISFQLCALKG 119
Homo_sapiens           TLKINKDLPLVSIKSFQPWLGDT-----GSDMNK-FCRSRVPAIRYKDVTFQLCALKG 114
Pan_troglodytes        TLKINKDLPLVSIKSFQPWLGDT-----GSDMNK-FCRSRVPAIRYKDVTFQLCALKG 114
Macaca_mulatta         TLKINKDLPLVSIKSFQPWLGDT-----GSDMNK-FCRSRVPAIRYKDVTFQLCALKG 114
Callithrix_jacchus     TLKINKDLPLVSIKSFQPWLGDT-----GSDMNK-FCRSRVPAIRYKDVTFQLCALKG 114
Bos_taurus             TLKNDKDLPLVSIKSFQPWLGDT-----ASDRNK-VYRSRVPAINKDVTFQLCALKG 114
Equus_caballus         TLKINRDLPLVSIKSFQPWLGDT-----GSDRNK-VYRSRVPAINKDVTFQLCALKG 114
Canis_lupus_familiaris ALRINKDLPLVSIKSFQPWLGDT-----GSDRNK-VYRSRVPAINKDVTFQLCALKG 114
Latimeria_chalumnae    PAKANKPLS-----QRLLGAS-----SWERYKAHFRRTTPAIRSKDVTFYRLCKAVRD 62
                        .....70.....80.....90.....100.....110.....120

```

```

Xenopus_tropicalis      CLSVSGSLKELEHGLPLRERDLRILAKGLAASSVESLSLAYCSCGDEGLEIICQSVKN 175
Rhinatrema_bivittatum  CLCVSGALKNLELQGLPFRERDLIVLAKGLTRSSSLEALSIAHCSVGDDGLEIICRSIKN 175
Pavo_muticus           CLSISDALKNLELQGLLRERDLILLTKGLATTSSLESISIAHCPIGDGGLETVCQSVKN 175
Pavo_cristatus         CLSISDALKNLELQGLLRERDLILLTKGLATTSSLESISIAHCPIGDGGLETVCQSVKN 175
Gallus_gallus          CLSISDALKNLELQGLLRERDLILLTKGLATTSSLESISIAHCPIGDGGLETVCQSMKN 175
Chelonia_mydas         CLNVSSSLKNLELEGLLRERDLIFLTKGLAKTSSLESISIAHCPIGDGGLETICQSVRN 175
Rattus_norvegicus      CLSVSGVLRNLELNGLILRERDLTSLTKGLSKSASLVHLSLANCPVGDGGLEIICQGIKN 179
Mus_musculus           CLSVSGVLRNLELNGLILRERDLTSLTKGLSKSASLVHLSLANCPVGDGGLEIICQGIKN 179
Homo_sapiens           CLSISSVLKNLELNGLILRERDLTILAKGLNKSASLVHLSLANCPVGDGGLEIICQGIKS 174
Pan_troglodytes        CLSISSVLKNLELNGLILRERDLTILAKGLNKSASLVHLSLANCPVGDGGLEIICQGIKS 174
Macaca_mulatta         CLSISSVLKNLELNGLILRERDLTILAKGLNKSASLVHLSLANCPVGDGGLEIICQGIKS 174
Callithrix_jacchus     CLSISSVLKNLELNGLILRERDLTILAKGLNKSASLVHLSLANCPVGDGGLEIICQGIKS 174
Bos_taurus             CLSASGALRNLELNGLVLRERDLTMLTKGLNKSATLVHLSLANCPVGDGGLEIVCQGIKN 174
Equus_caballus         CLSASGALKNLELNGLVLRERDLTMLTKGLNKSATLVNLSLANCPVGDGGLEIICQGIKN 174
Canis_lupus_familiaris CLSASSALKNLELNGLVLRERDLTVLTKGLNKSATLVHLSLANCPVGDGGLEIICQGIKN 174
Latimeria_chalumnae    CLNTSSALKCLELQGLPFRERDLIMLTGKLARTKSLESLSMAHCPVGDGGLEIICQSVKN 122
                        .....130.....140.....150.....160.....170.....180

```

## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/CEPD4181.pss Tue Feb 1 11:40:19 2022

Page 2 of 5

\* .::: .\*\*\*\*\*.\*\*\*:\*\* \*:\*.:::\* \*: .:\*\* \* \*\*\*\*\*:\*\*\*:\*\*\*\*:\*:

SPTIKTVNFTGCNLTWRGAEHIASIIKHOATRHHSEAWAESLRYRRPDLDCMAGLRRVTL  
STTVKTVNFTGCNLTWHGAEHMANIIKYQATKRHGEAWAESLRYRRPDLDCMAGLRRITL  
SATIRYVNFTGCSLTWRGAEHMANVLKHOAMKRHGEAWAESLRYRRPDLDDYMTGLRRITF  
SATIRYVNFTGCSLTWRGAEHMANVLKHOAMKRHGEAWAESLRYRRPDLDDYMTGLRRITF  
SATIRYVNFTGCSLTWRGAEHMANVLKHOAMKRHGEAWAESLRYRRPDLDDYMTGLRRITF  
SANIKSINFTGCSLTWRGAEHLANVLKHOAMKRHGEAWAESLRYRRPDLDFCMTGLRRITL  
SVTLKTVNFTGCNLTWOGASHMAKILKYQTMRRHEETWAESLRYRRPDLDCMAGLRRITL  
SVTLKTVNFTGCNLTWOGACHMAKILKYQTMRRHEETWAESLRYRRPDLDCMAGLRRITL  
SITLKTVNFTGCNLTWOGADHMAKILKYQTMRRHEETWAESLRYRRPDLDCMAGLRRITL  
SITLKTVNFTGCNLTWOGADHMAKILKYQTMRRHEETWAESLRYRRPDLDCMAGLRRITL  
SITLKTVNFTGCNLTWOGADHMAKILKYQTMRRHEETWAESLRYRRPDLDCMAGLRRITL  
SITLKTVNFTGCNLTWOGADHMAKILKYQTMRRHEETWAESLRYRRPDLDCMAGLRRITL  
SVTLKTIINFTGCNLTWOGADHMAKILKYQTI RRHEETWAESLRYRRPDLDCMAGLRRITL  
SITLKTVNFTGCNLTWOGADHMAKILKYQTMRRHEETWAESLRYRRPDLDCMAGLRRITF  
SITLKTVNFTGCNLTWOGADHMAKILKYQTMRRHEETWAESLRYRRPDLDCMAGLRRITL  
SPSIKVVNFTGCNLTWRGAEHMASIIKLOATKRHSEAWAESLRYRRPDLDDIMSGLRRITL  
.....190.....200.....210.....220.....230.....240

\* \* : \*\* \*\* : : : \*\*\*\*\* : \*\* : : \*\* : : \*\* : : \* : : : \* : : : \*\* : \*

NSNTLVGDRGAIALAEVIGEDLWLKALDLRQCGISNEGAQAFNFAQTNTTTLIILDIRRN  
SYNTLIGDQGATILSELGEDLWLKALDLRQCGISTEGAKALLNVLESNTTTLTVLDIREN  
NCNMLVGDRGASAFADCLGEDLWLKGLDLQOCGISNEGARSLLDALQANTALVVLDIRKN  
NCNMLVGDRGASAFADCLGEDLWLKGLDLQOCGISNEGARSLLDALQANTALVVLDIRKN  
NCNMLVGDRGASAFADCLGEDLWLKALDLQHCGISNEGARSLLDALRNTNTTLVVLDIRKN  
NCNTLVGDRGARAFAECLGEDLWLKALDMQOCGISNDGAKSLLDAFQTNTTTLVILDVRKN  
NCNTLIGDQGASAFADSLSEDLWLRALDLQOCGLTSEGAKALLEAELETNRTLVLVDIRKN  
NCNTLIGDQGASAFADSLSEDLWLRALDLQOCGLTSEGAKALLEAELETNRTLVLVDIRKN  
NCNTLIGDGLGACAFADSLSEDLWLRALDLQOCGLTNEGAKALLEAELETNTTLVLVDIRKN  
NCNTLIGDLGASAFADSLSEDLWLRALDLQOCGLTNEGAKALLEAELETNTTLVLVDIRKN  
NCNTLIGDLGASAFADSLSEDLWLRALDLQOCGLTNEGAKALLEAELETNTTLVLVDIRKN  
NCNLTIGDLGASAFADSLSEDLWLRALDLQOCGLTNEGAKALLQAELETNRTLVLVDIRKN  
NCNTLIGDLGASGFAESLSEDLWLRALDLQOCGLTNEGANALLKALETNRTLVLVDIRKN  
NCNTLIGDLGASALAESLSEDLWLRALDLQOCGLTNEGAKALLKALETNRTLVLVDIRKN  
NCNTLIGDLGASAFAESLSEDLWLRALDLQOCGLTNEGAKALLRTLETNRTLVLVDIRKN  
CCNALIGDHGAHFAEALKEDLWLKALDLQOCGISNDGAKALLHAFHSNSTIMVLDVRKN  
.....250.....260.....270.....280.....290.....300

\*\*:\* :\*: :\*:\*\* \* . . \*\*\*:\* \* .. : :\* .. \*\*  
 PLIDRSL<sup>310</sup>LK<sup>311</sup>TI<sup>312</sup>ERVLMNA<sup>313</sup>HD<sup>314</sup>TN<sup>315</sup>SEY<sup>316</sup>KWY<sup>317</sup>TS<sup>318</sup>PSS<sup>319</sup>SKDNG<sup>320</sup>---KVR<sup>321</sup>OK<sup>322</sup>WRS<sup>323</sup>INNWN<sup>324</sup>GR<sup>325</sup>KG<sup>326</sup>  
 PLIDHSL<sup>327</sup>VKAVIE<sup>328</sup>KVLMNANGIN<sup>329</sup>SEY<sup>330</sup>QWFT<sup>331</sup>SPSS<sup>332</sup>SKEAS<sup>333</sup>---RT<sup>334</sup>KQ<sup>335</sup>RKRT<sup>336</sup>IVL<sup>337</sup>GN<sup>338</sup>GR<sup>339</sup>KG<sup>340</sup>  
 PLIDCVLMKNI<sup>341</sup>IERVLVNGSSAN<sup>342</sup>SEY<sup>343</sup>KWLSS<sup>344</sup>SPSS<sup>345</sup>SKDALK<sup>346</sup>---ARP<sup>347</sup>PK<sup>348</sup>KRT<sup>349</sup>IVL<sup>350</sup>GS<sup>351</sup>GR<sup>352</sup>KG<sup>353</sup>  
 PLIDCVLMKNI<sup>354</sup>IERVLVNGSSAN<sup>355</sup>SEY<sup>356</sup>KWLSS<sup>357</sup>SPSS<sup>358</sup>SKDALK<sup>359</sup>---ARP<sup>360</sup>PK<sup>361</sup>KRT<sup>362</sup>IVL<sup>363</sup>GS<sup>364</sup>GR<sup>365</sup>KG<sup>366</sup>  
 PLIDHVL<sup>367</sup>MKNI<sup>368</sup>IERVLVNGSSAN<sup>369</sup>SEY<sup>370</sup>KWLSS<sup>371</sup>SPSS<sup>372</sup>SKDALK<sup>373</sup>---ARP<sup>374</sup>PK<sup>375</sup>KRT<sup>376</sup>IVL<sup>377</sup>GS<sup>378</sup>GR<sup>379</sup>KG<sup>380</sup>  
 PLIDHTLMKK<sup>381</sup>LIERVL<sup>382</sup>MNGNSAS<sup>383</sup>SEY<sup>384</sup>KWLTS<sup>385</sup>SPS<sup>386</sup>KDILK<sup>387</sup>---PK<sup>388</sup>SK<sup>389</sup>KRT<sup>390</sup>IVL<sup>391</sup>GS<sup>392</sup>GR<sup>393</sup>KG<sup>394</sup>  
 PLIDHSM<sup>395</sup>MKA<sup>396</sup>VI<sup>397</sup>RKVL<sup>398</sup>ONGRSAT<sup>399</sup>SEY<sup>400</sup>QWVT<sup>401</sup>SPSL<sup>402</sup>KL<sup>403</sup>EL<sup>404</sup>PK<sup>405</sup>---TT<sup>406</sup>KQ<sup>407</sup>KKK<sup>408</sup>IVL<sup>409</sup>GS<sup>410</sup>SR<sup>411</sup>KG<sup>412</sup>  
 PLIDHSM<sup>413</sup>MKA<sup>414</sup>VI<sup>415</sup>KKVL<sup>416</sup>ONGRSAD<sup>417</sup>SEY<sup>418</sup>QWVT<sup>419</sup>SPSS<sup>420</sup>KEPSK<sup>421</sup>---TAK<sup>422</sup>Q<sup>423</sup>RKK<sup>424</sup>IVL<sup>425</sup>GS<sup>426</sup>SR<sup>427</sup>KG<sup>428</sup>  
 PLIDHSM<sup>429</sup>MKA<sup>430</sup>VI<sup>431</sup>KKVL<sup>432</sup>ONGRS<sup>433</sup>AK<sup>434</sup>SEY<sup>435</sup>QWITS<sup>436</sup>SPSV<sup>437</sup>KEPSK<sup>438</sup>---TAK<sup>439</sup>Q<sup>440</sup>KRRT<sup>441</sup>IIL<sup>442</sup>GS<sup>443</sup>GH<sup>444</sup>KG<sup>445</sup>  
 PLIDHSM<sup>446</sup>MKA<sup>447</sup>VI<sup>448</sup>KKVL<sup>449</sup>ONGRS<sup>450</sup>AK<sup>451</sup>SEY<sup>452</sup>QWITS<sup>453</sup>SPSV<sup>454</sup>KEPSK<sup>455</sup>---TAK<sup>456</sup>Q<sup>457</sup>KKRT<sup>458</sup>IIL<sup>459</sup>GS<sup>460</sup>GH<sup>461</sup>KG<sup>462</sup>  
 PLIDHSM<sup>463</sup>MKA<sup>464</sup>VI<sup>465</sup>KKVL<sup>466</sup>ONGRS<sup>467</sup>AR<sup>468</sup>SEY<sup>469</sup>QWITS<sup>470</sup>SPSV<sup>471</sup>KEPSK<sup>472</sup>---TAK<sup>473</sup>Q<sup>474</sup>KKRT<sup>475</sup>IIL<sup>476</sup>GS<sup>477</sup>GH<sup>478</sup>KG<sup>479</sup>  
 PLVDHSM<sup>480</sup>KA<sup>481</sup>II<sup>482</sup>KKVL<sup>483</sup>ONGRS<sup>484</sup>AK<sup>485</sup>SEY<sup>486</sup>QWITS<sup>487</sup>SPSV<sup>488</sup>KEPV<sup>489</sup>K<sup>490</sup>PSKA<sup>491</sup>AR<sup>492</sup>Q<sup>493</sup>KKRT<sup>494</sup>IIL<sup>495</sup>GG<sup>496</sup>SR<sup>497</sup>KG<sup>498</sup>  
 PLVDHSM<sup>499</sup>KA<sup>500</sup>VI<sup>501</sup>KKVL<sup>502</sup>ONGRS<sup>503</sup>AK<sup>504</sup>SEY<sup>505</sup>QWITS<sup>506</sup>SPSV<sup>507</sup>KEPFR<sup>508</sup>---TAR<sup>509</sup>Q<sup>510</sup>KKRT<sup>511</sup>IIL<sup>512</sup>GS<sup>513</sup>GR<sup>514</sup>KG<sup>515</sup>  
 PLVDHSM<sup>516</sup>KA<sup>517</sup>VI<sup>518</sup>KKVL<sup>519</sup>ONGRS<sup>520</sup>AK<sup>521</sup>SEY<sup>522</sup>QWITS<sup>523</sup>SPSV<sup>524</sup>KEPFF<sup>525</sup>---NAR<sup>526</sup>Q<sup>527</sup>KKRT<sup>528</sup>IIL<sup>529</sup>GS<sup>530</sup>GR<sup>531</sup>KG<sup>532</sup>  
 PLIDH<sup>533</sup>ELV<sup>534</sup>KA<sup>535</sup>IVER<sup>536</sup>VL<sup>537</sup>MNANDIN<sup>538</sup>SEY<sup>539</sup>KWLK<sup>540</sup>SLSP<sup>541</sup>KEPKL<sup>542</sup>---KRR<sup>543</sup>RT<sup>544</sup>IVL<sup>545</sup>GN<sup>546</sup>GL<sup>547</sup>KG<sup>548</sup>  
 .....310.....320.....330.....340.....350.....360

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/CEPD814181.fst Tue Feb 1 11:40:19 2022

Page 3 of 5

```

*  :::      .  .*:      * * * * . *:***** **.* *
Xenopus_tropicalis      KNIVRVG-----FSTKKPMVIGRKY-SKELYCPDPRPPGAEGLFPWRTAERAKRHR-- 401
Rhinatrema_bivittatum  KATIRIG-----FPSKRGLPAERKAPPKSDSYTPEPLPPGVKGFPLPWRTAERANRQRGF 405
Pavo_muticus            KATIRIG-----LTSKKSVPSPGKKTTSVKDSYSPKPLPPGAKGFLPWRTAERAKRCRGG 404
Pavo_cristatus          KATIRIG-----LTSKKSVPSPGKKTTSVKDSYSPKPLPPGAKGFLPWRTAERAKRCRGG 404
Gallus_gallus           KATIRIG-----LTSKKSVPSPGKKTLSVKDSYSPKPLPPGKGFPLPWRTAERAKRCRGG 404
Chelonia_mydas          KATIRIG-----LASKKSTHPGK-SFSDKDSYSPKPLPPGAYGFLPWRTAERAKRCRGG 402
Rattus_norvegicus       KATIRVG-----LATKKPVSNGRKHLSKDSYAPDPLPPGASGFLPWRTAERARRNRSF 409
Mus_musculus            KATIRIG-----LATKKPVSNGRKQGLGKDCYAPNPLPPGASGFLPWRTAERAKRSRSS 409
Homo_sapiens            KATIRIG-----LATKKPVSSGRKHSLSGKEYYAPAPLPPGVSGFLPWRTAERAKRHRGF 404
Pan_troglodytes         KATIRIVG-----LATKKPVSSGRKHSLSGKEYYGPAPLPPGVSGFLPWRTAERAKRHRGF 405
Macaca_mulatta          KATIRIVWRHRLATKKPVSSGRKHSLSGKEY-APAPLPPGVSGFLPWRTAERAKRHRGF 409
Callithrix_jacchus      KATIRIVWRHRLATKKPVSSGRKHSLSGKEYYAPAPLPPGVSGFLPWRTAERAKRHRGF 410
Bos_taurus              KATIRIG-----LATKKPVSNGRKHSTGKDSYAPEPLPPGVSGFLPWRTAERAKRNRGF 408
Equus_caballus          KATIRIG-----LATKKPVSNGRKHSLGK-EYAPEPLPPGVSGFLPWRTAERARRNRDF 403
Canis_lupus_familiaris KATIRIG-----VTTKKPVSNGRHSLSGKEYYAPEPLPPGVSGFLPWRTAERARRNRGF 404
Latimeria_chalumnae     KASIRIG-----VGPKRATSTGWKSP-----YFIPEPLPPGARGYIPWRTAERANRHR-- 343
.....370.....380.....390.....400.....410.....420

```

```

.  ::*
Xenopus_tropicalis      --DVSGEWASPGK-ADTAVKVIMDSSTSSSEKSDNILSILDQEVAVPGSGEKTISVKNYK 458
Rhinatrema_bivittatum  PVDTSNRSPCQMQ-TGAPVKVTVESGSSSETEENGSGLDIF--VHSLP---ETISPPQYK 459
Pavo_muticus            PMDSSEELPVKIQ-TGIPVKVTVESASTSETEETEN-LEDVIHHPDLTKSLDKVNVTKYQ 462
Pavo_cristatus          PMDSSEELPVKIQ-TGIPVKVTVESASTSETEETEN-LEDVIHHPDLTKSLDKVNVTKYQ 462
Gallus_gallus           PGDNSGELPLKIQ-MGIPVKVTVESASTSETEETED-LEDVIHHPDLTKSVDKVNVTKYQ 462
Chelonia_mydas          PVDGTQELPLKFOQTGIPVKVTVESASTSETEETEGALEDIMHDSDLTKSPVKTNVRRYQ 462
Rattus_norvegicus       PLIKTHDLSNHLQSSDFPVTVTVESPPSSSETDESEDSSSESVHEVPQKTS-----IKQE 462
Mus_musculus            SLIKTRDLSNHLKSSDFPVTVTVESPPSSSETDETEDSSSESVQEAPOKTS-----IKEE 462
Homo_sapiens            PLIKTRDICNQLQPGFPVTVTVESPPSSSEVEEVDSSSESVHEVPEKTS-----IEQE 457
Pan_troglodytes         PLIKTRDICNQLQPGFPVTVTVESPPSSSEIEEVDSSSESVHEVPEKTS-----IKQE 458
Macaca_mulatta          PLIKTRDIYNQLQPGFPVTVTVESPPSSSEIEEVDSSSESVHEVPEKTS-----IKQE 462
Callithrix_jacchus      PLIKARDIYNQLQPGFPVTVTVESPPSSSEIEEVDSSSESVHEMPEKTS-----IKQE 463
Bos_taurus              PLIKARDVCNQLQSSDFPVTVTIESPPSSSEIEEVDSTESVQEEPEKIN-----LKQE 461
Equus_caballus          PLIKTRDVYNHLQSEFPVTVTIESPPSSSEIEEVDSSSESVQEEPEKTS-----LKQE 456
Canis_lupus_familiaris PLIKTRDVYNHMQSSDFPVTVTIESPPSSSEIEEVDSSSESVQEEPEKTS-----LKQE 457
Latimeria_chalumnae     -----SHMMD-----QM 351
.....430.....440.....450.....460.....470.....480

```

```

:: ::*  .*:.*  *  :: * : *** *  ::*:.*  :*** *:  :: .. **:*
Xenopus_tropicalis      CLOVELQICQKNLNDERKARLRADERIMELEFENTRLRQINHTLSLSLHSRTATSVILED 518
Rhinatrema_bivittatum  RLOVELKDCQLKLNERTTRKTEDRIMELEVENTRLRQINLSLSETLHTQTIASVILED 519
Pavo_muticus            QFOLELEECMEKLKEERRARVKAERIMELEVEIARLRNLNTSLSEALHVQSVTNMILED 522
Pavo_cristatus          QFOLELEECMEKLKEERRARVKAERIMELEVEIARLRNLNTSLSEALHVQSVTNMILED 522
Gallus_gallus           QFOLELEECMEKLKEERRARVKAERIMELEVENARLRNLNTSLSEALHVQSVTNMILED 522
Chelonia_mydas          QLRTELEECCLKLKEERRARVKADERIMELEVENARLRNLNFSLSEVLHAQSVTNMILED 522
Rattus_norvegicus       TLOEKLEECLKQLKEERVTRLKTDKRSELEHENAQLRNINFSLSEALHAQSLTSMILDD 522
Mus_musculus            TLOEKLEECLKQLKEERVIRLKADKRVSELEHENAQLRNINFSLSEALHAQSLTNMILDD 522
Homo_sapiens            ALOEKLEECLKQLKEERVIRLKVDKRVSELEHENAQLRNINFSLSEALHAQSLTNMILDD 517
Pan_troglodytes         ALOEKLEECLKQLKEERVIRLKVDKRVSELEHENAQLRNINFSLSEALHAQSLTNMILDD 518
Macaca_mulatta          ALOEKLEECLKQLKEERVIRLKADKRVSELEHENAQLRNINFSLSEALHAQSLTNMILDD 522
Callithrix_jacchus      ALOEKLEECLKQLKEERVIRLKADKRVSELEHENAQLRNINFSLSEALHAQSLTNMILDD 523
Bos_taurus              ALOEKLEECLKQLKEERVIRLKADKRVSELEHENAQLRNINFSLSEALHAHSLTSMILDD 521
Equus_caballus          ALOEKLEECLKQLKEERVIRLKADRVSELEHENAQLRNINFSLSEALHAQSLTSMILDD 516
Canis_lupus_familiaris ALOEKLEECLKQLKEERVIRLKADKRVSELEHENAQLRNINFSLSEALHAQSLTNMILDD 517
Latimeria_chalumnae     HQVEFKECRLRLKEEMRAKADARLMELEVEITRLRNINLSLSEALHTQSVTILED 411
.....490.....500.....510.....520.....530.....540

```



# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/CEPD81ps Tue Feb 1 11:40:19 2022

Page 4 of 5

```

**:* ***.* *****
Xenopus_tropicalis  EGVLDSEKSFQKFHAFLLDKDAGTIIIPDRFCSLGQLANLAGIDQSDFAFPDPMSS 578
Rhinatrema_bivittatum EGILESIETSFQKFHAFLLDKDAG-----LGQLAAMAGIDHSDFGVLGHPOMSS 569
Pavo_muticus       EGVLGSIENSFQKFHAFLLDKDAG-----LGQLAVLAGIDQSDFGLLGHPOMNS 572
Pavo_cristatus     EGVLGSIENSFQKFHAFLLDKDAG-----LGQLAVLAGIDQSDFGLLGHPOMNS 572
Gallus_gallus      EGVLGSIENSFQKFHAFLLDKDAG-----LGQLAVLAGIDQSDFGLLGHPOMNS 572
Chelonia_mydas     EGVLGSIETSFQKFHAFLLDKDAG-----LGQLATIAGIDQSDFGLLGHPOMNS 572
Rattus_norvegicus  EGVLGSIENSFQKFHAFLLDKDAG-----LGQLATMAGIDQSDFHLLGRPMSS 572
Mus_musculus       EGVLGSIENSFQKFHAFLLDKDAG-----LGQLATMAGIDQSDFHLLGRPMNS 572
Homo_sapiens       EGVLGSIENSFQKFHAFLLDKDAG-----LGQLATMAGIDQSDFQLLGHPOMTS 567
Pan_troglodytes    EGVLGSIENSFQKFHAFLLDKDAG-----LGQLATMAGIDQSDFQLLGHPOMTS 568
Macaca_mulatta     EGVLGSIENSFQKFHAFLLDKDAG-----LGQLATMAGIDQSDFQLLGHPOMTS 572
Callithrix_jacchus EGVLGSIENSFQKFHAFLLDKDAG-----LGQLATMAGIDQSDFQLLGHPOMNS 573
Bos_taurus         EGVLGSIENSFRKFHAFLLDKDAG-----LGQLATMAGIDQSDFHLLGRPMNS 571
Equus_caballus     EGVLGSIENSFQKFHAFLLDKDAG-----LGQLATMAGIDQSDFHLLGRPMSS 566
Canis_lupus_familiaris EGVLGSIENSFQKFHAFLLDKDAG-----LGQLATIAGIDQSDFHLLGRPMNS 567
Latimeria_chalumnae EGVLESIETSFQKFHAFLLDKDAG-----LGQLATMAGIDQSDFGPLGRPMQTS 461
.....550.....560.....570.....580.....590.....600

```

```

*:.
Xenopus_tropicalis  TIDKIA-QQAPMPHQDQOETFFIHQA----- 603
Rhinatrema_bivittatum TLGKHT-SQQSTEVSQKAQEFRLNSK----- 594
Pavo_muticus       TLSKPVNMLKEKSFEERQEHQNSKNRDGNIQLS----- 607
Pavo_cristatus     TLSKPVNMLKEKSFEERQEHQNSKNRDGNIQLS----- 607
Gallus_gallus      TLSKPVNMLKEKSFEERQEHQNSKNRDGNIQLS----- 607
Chelonia_mydas     TVSKPAIIQKEKSYEERQEQTONSKNVCQDIKLSL----- 608
Rattus_norvegicus  TVNTP--VEEQKGLDENLDLKQTAVGQMODIG-----FOKITSDPMVP 614
Mus_musculus       TVNTP--IQEQKALEDETLPKQATGQMODIR-----FOKITSDALIP 614
Homo_sapiens       TVSNPP-KEEKKALEDEKPEPKQNALGQMNIQVSIQMSAYNEGTLMKFQKITGDARIP 626
Pan_troglodytes    TVSNPP-KEEKKALEDEKPEPKQNALGQMNIQVSIQMSAYNEGTLMKFQKITGDARIP 627
Macaca_mulatta     TVSNPP-KEEKKALEDERPEPKQNALGQMNIQVSIQMSAYNEGTLMKFQKITGDARIP 631
Callithrix_jacchus TVSNPP-KEEKKTHEEEKPEPKQNALGQMNIQVSIQMSAYNEGTLMKFQKITGDARIP 632
Bos_taurus         TVSSPP-KEEKKALEEEKSDLOQSALGQMNIQVSIQMSAYNEGTLMKFQKITGDARIP 630
Equus_caballus     TVSSPP-KEEK-ALEEEKPEPKQNALGQMNIQVSIQMSAYNEGTLMKFQKITGDARIP 624
Canis_lupus_familiaris TISSPP-KDEKKALEEEKPEPKQNALGQMNIQVSIQMSAYNEGTLMKFQKITGDARIP 626
Latimeria_chalumnae TVGKPAAEQKDEMSSELQSAQEQQANQVGDGD----- 494
.....610.....620.....630.....640.....650.....660

```

```

.
Xenopus_tropicalis  -----QSRDKKEHTGPSSESNALTADTLPS-READKYCTTSQKSKEGFDPDLKAR 653
Rhinatrema_bivittatum -----ALADDAP--SSPREEFKATDQLLQQQENEREKICIGADIPRK--ERELQKG 641
Pavo_muticus       -----PGTSQSQMIVD--FSALKEIHEYQTAVQ--QPILWK---ENEAQATNOTKED 652
Pavo_cristatus     -----PGTSQSQMIVD--FSALKEIHEYQTAVQ--QPILWK---ENEAQATNOTKED 652
Gallus_gallus      -----PGTSQSQMIVN--FPAHKEMHEYQTTVQQLQPALWK---ENEAQATNOTKED 654
Chelonia_mydas     -----PGLIHSQVLVNNTCAIPREIQEFQVTVQQ-QQDLWG---ETEAQMDNORKEE 656
Rattus_norvegicus  LPLDTNQVPASTQEAAGSSRDHLGVVALEQQEGSAVGFIATGSPSADGISGGRS-LEEV 673
Mus_musculus       LPLNTVQDPASAEAVGASRDHLGVVGLEQQEGSAAGFIATGSPLAGGIPGGRSOREEE 674
Homo_sapiens       LPLDSFPPVPVSTPEGLGTSSNNLGVPAEQROESFEGFIARMCSPPDATSGTGSORKEE 686
Pan_troglodytes    LPLDSFPPVPVSTPEGLGTSSNNLGVPAEQROESFEGFIARMCSPPDATSGTGSORKEE 687
Macaca_mulatta     LPLDSFPPVPVSTPETLGTSNDNLGVPAEQROESFEGFIARMCSPLPDATSGTGSORKEE 691
Callithrix_jacchus LPLDSFPPVPVSTPEDLVTSKDNLGVPAEQQROESFEGFIARMCSPLADATSGTGNORKEE 692
Bos_taurus         LPVDTFHAPASTQETLETSKDNLGVVPTEQROESFEDFIARACSPPADVICGTGSORKED 690
Equus_caballus     LPLESFQIPVPAEEALGTSKD-KGVDPTEQRRESLEEFARTCSPLADVISGAESRRKEE 683
Canis_lupus_familiaris LPLDSFRVPVSTQEPLETSRDNLGVVPSEQRDSIKEFIARTCSPSADVMSGTGSQKKED 686
Latimeria_chalumnae -----KNSSSDFVGRNFANDAFPLNHLKQGIQTGESEFG-ESSIRFNMOMKGD 545
.....670.....680.....690.....700.....710.....720

```

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/CEPD8141.fst Tue Feb 1 11:40:19 2022

Page 5 of 5

Xenopus_tropicalis	EANVNSGR---LPALEN---AQTLYDKKGSRNECSDSDSSRSQSSLSGQKSKASASKE	707
Rhinatrema_bivittatum	HSLVFFHT---NASREENPIKKDHSDDKPSPSRSLSSSDNKLKSLGSKKSNDSANDKN	698
Pavo_muticus	KT-RNSTP-LSERRVKQNEQAKGHHSARQLVASLSSFTDSSVNIKNNGSRTSGSSGGK-S	709
Pavo_cristatus	KT-RNSTP-LSERRVKQNEQAKGHHSARQLVASLSSFTDSSVNIKNNGSRTSGSSGGK-S	709
Gallus_gallus	KT-RSSTPALSERRVKQNEQAKGHHSARQLVTSLSNFTDSSVNIKNSSGTSSSSGGK-S	711
Chelonia_mydas	ETSKNSRPPSSSEKSVKLSEQTKG-HSSKQSAISQCSFSDSNVNLKSKGSKKFSATSSSDS	715
Rattus_norvegicus	VLSKHSRS-SSGKGSTASEPSRRQSAERHSRKDLHSDSDSPVNSKKGKPGKEKRSLLNEPI	732
Mus_musculus	VLSKHSRS-SSGKGSTASEPSRRQSAERHSRKDLHSDSDSPVNSKKGKPGKEKRSLLNEPI	733
Homo_sapiens	ELSRNSRS-SSEKKTCTESH-----	705
Pan_troglodytes	ELSRNSRS-SSEKKTCTGEYTKKHSDDKQHPKDLHS-----	722
Macaca_mulatta	ELSRNSRS-SSEKKTCTGEYTKKHSDDKQHPKDLHSCSDSPENRKSKGTGETSSSLVNESI	750
Callithrix_jacchus	ELSRNSRS-SSEKKTCTGEYTKKHSDDKQHPKDLHSCSDSPENRKSKGTGETSSSLVNEPI	751
Bos_taurus	ELSRNSRP-ASEKMTCTGEYIKKHSDDKQHPKDLHSCSDSPVQKTKGIGQNSSLVNEPI	749
Equus_caballus	ELSRNSRS-SSEKMTCTGEYTKKQSVKKQHPKDLHSCSDSPVNRKSKGNQNSSLVNEPI	742
Canis_lupus_familiaris	ELSRNSRS-SSEKMTCTGEYTKKCYAKKQPRKDLRSCSDSLVNRKSKGMEQNDFVNEPV	745
Latimeria_chalumnae	QNGKSSRP-----SSLGRSAKLGEQVENPPGPPDHSVASHVESGDGACSPKTNSSKKSSA	601

.....730.....740.....750.....760.....770.....780

Xenopus_tropicalis	RKPSSKRSHSSG-----TNKASQESIAARDEKAAARSNASISESEIQEKMN-SSESMHSG	761
Rhinatrema_bivittatum	HHHARRRHPSHG-----KTKISEEFLTTGSKNDIAGS-----DSEIQENIH-SVASLGSG	747
Pavo_muticus	KNCSS-KYIPKVTETLIASDGEKGDQSRQLQMDICSGTDTVGSASEIQESI-Q-SIGN----	763
Pavo_cristatus	KNCSS-KYIPKVTETLIASDGEKGDQSRQLQMDICSGTDTVGSASEIQESI-Q-SIGN----	763
Gallus_gallus	KNCSSKKYIPKVTETLIANDGERGDQSRQLQMDICSGTDTVGSASEIQESI-Q-SIGN----	767
Chelonia_mydas	QNLSSQKHIIYRTNETGMANVAAQGDQSKLQADRSRNDTEGFDSEIQESI-SMKSM---	771
Rattus_norvegicus	KSESLKKCVSIKKENRIVTVSSKSIKSKPNLLEHSESDTLGSDFEFQEHDS-SHAHLT--	789
Mus_musculus	KSESLKKCVSIKKENRIVTVSSKSIKSKPNLLEHSESDTLGSDFEFQEHDS-SHAHLT--	790
Homo_sapiens	-----	705
Pan_troglodytes	-----	722
Macaca_mulatta	KSRSLKKSVSVKKENRIVTVSSKTIKSKSPLEHSESDTLGSDFEFQESI-SLSRLSYD	809
Callithrix_jacchus	KSGSLKKYVSVKKERKIVTVSSKTIKSKSPLEHSGSDTLGSDFEFQESI-SLSQLIYD	810
Bos_taurus	KSESSKKHISVKKKESEILTVSSKTTTSKPNLLEHSESDTLRSDFEFQESI-TLSRLT--	806
Equus_caballus	KSESLKKHISVKKESRIVTVSSKTTTSKPNLLEHSESDTLGSDFEFQESI-TLSRLT--	799
Canis_lupus_familiaris	KSESLKKHISVQKESRIVTVSSKTTTSKPNLLEHSESDTLGSDFEFQESI-TVSHLT--	802
Latimeria_chalumnae	SSERNKRQPSLK-----NGSEMRGRGGGDDYEDDFVNSSEVQENIHYSMASLSGE	651

.....790.....800.....810.....820.....830.....840

Xenopus_tropicalis	SH---	763
Rhinatrema_bivittatum	SEERV	752
Pavo_muticus	-----	763
Pavo_cristatus	-----	763
Gallus_gallus	-----	767
Chelonia_mydas	-----	771
Rattus_norvegicus	-----	789
Mus_musculus	-----	790
Homo_sapiens	-----	705
Pan_troglodytes	-----	722
Macaca_mulatta	-----	809
Callithrix_jacchus	-----	810
Bos_taurus	-----	806
Equus_caballus	-----	799
Canis_lupus_familiaris	-----	802
Latimeria_chalumnae	NI---	653

.....