Amino Acid Sequence Comparisons Among gp91phox Homologs. Sequences within the regions homologous to gp91phox for each predicted protein are aligned. Residues highlighted in red are absolutely conserved among all homologs, while those highlighted in blue match a majority consensus sequence. Superior bold hashed bars indicate transmembrane alpha helices that are strongly predicted, while the lighter hashed bar represents a transmembrane alpha helix that is more weakly predicted. Superior "Ý" indicates glycosylation sites in gp91phox, while inferior filled circles indicate strictly conserved histidine residues that are candidates for liganding to heme iron. Yellow superior bars represent residues that are predicted to participate in FAD binding, while green superior bars are predicted to comprise the NADPH binding site. The most N terminal of these contains the indicated G-X-G-X-X-P canonical nucleotide binding motif.

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(outside)                                                                  (inside)
1078 TTRVGIILSRGTAASISFMFSYILLTMCRNLITFLRET----FLNRYVPFDAA duox.human
737  TTLVGIILSRGTAASVSFMFSYILLTMCRNLITFLRET----FLNRYVPFDAA p138tox.human
734  TTFVGIILSRGTAASVSFMFSYILLTMCRNLITFLRET----FLNHYVPFDAA p138tox.pig
1001 IMGVGIAITRGSAASLSFCYSLLLLTMSRNLITKLKEF----PIQQYIPLDSH Duox.Drosophila
1021 VMGAGIAITRGAAGALSFCMALILLTVCRNIITLLRET----VIAQYIPFDSA Ce-duox1
45   LLGSALALARAPAACLNFNCMLILLPVCRNLLSFLRGSSACCSTRVRRQLDRN gp91phox.human
45   LLGSALALARAPAACLNFNCMLILLPVCRNLLSFLRGSSACCSTRIRRQLDRN gp91phox.mouse
45   LLGSALALARAPAACLNFNCMLILLPVCRNLLSFLRGSSACCSTRIRRQLDRN gp91phox.bovine
45   ILGSTLACARASALCLNFNSTLILLPVCRNLLSFLRGTCSFCSRTLRKQLDHN Nox1.human
45   ILGTALALARASALCLNFNSMVILIPVCRNLLSFLRGTCSFCNHTLRKPLDHN Nox1.rat
46   ILGSTLAWARASALCLNFNCMLILIPVSRNLISFIRGTSICCRGPWRRQLDKN Nox3.human
49   MLGLGLCLSRASASVLNLNCSLILLPMCRTLLAYLRGSQKVPSRRTRRLLDKS Nox4.human
49   MLGLGLCLSRASASVLNLNCSLILLPMCRTVLAYLRGSQKVPSRRTRRLLDKS Nox4.mouse

                                                  †   (outside)
1127 VDFHRLIASTAIVLTVLHSVGHVVNV---YLFSISPLSVLSCLFPGLFHDDGS duox.human
786  VDFHRWIAMAAVVLAILHSAGHAVNV---YIFSVSPLSLLACIFPNVFVNDGS p138tox.human
783  VDFHRWIAMAALVLAILHSVGHVVNV---YIFSVSPLSLLACVFPSVFVNDGS p138tox.pig
1050 IQFHKIAACTALFFSVLHTVGHIVNF---YHVSTQSHENLRCLTREVHF--AS Duox.Drosophila
1070 IAFHKIVALFAAFWATLHTVGHCVNF---YHVGTQSQEGLACLFQEAFF--GS Ce-duox1
98   LTFHKMVAWMIALHSAIHTIAHLFNVEWCVNARVNNSDPYSVALSEL--GDRQ gp91phox.human
98   LTFHKMVAWMIALHTAIHTIAHLFNVEWCVNARVGISDRYSIALSDI--GDNE gp91phox.mouse
98   LTFHKMVAWMIALHTAIHTIAHLFNVEWCVNARVNNSDPYSIALSDI--GDKP gp91phox.bovine
98   LTFHKLVAYMICLHTAIHIIAHLFNFDCYSRSRQATDGSLASILSSLSHDEKK Nox1.human
98   LTFHKLVAYMICIFTAIHIIAHLFNFERYSRSQQAMDGSLASVLSSLFHPEKE Nox1.rat
99   LRFHKLVAYGIAVNATIHIVAHFFNLERYHWSQSEEAQGLLAALSKL--GNTP Nox3.human
102  RTFHITCGVTICIFSGVHVAAHL----------------------VNALNFSVNY Nox4.human
102  KTLHITCGVTICIFSGVHVAAHL----------------------VNALNFSVNY Nox4.mouse
       ●           ●   ●

     †                                                    (inside)
1177 ------------EFPQKYYWWFFQTVPGLTGVVLLLILAIMYVFASHHFRRRS duox.human
836  ------------KLPQKFYWWFFQTVPGMTGVLLLLVLAIMYVFASHHFRRRS p138tox.human
833  ------------KLPQKFYWWFFQTIPGMTGVLLLVVLAIMYVFASPYFRRRS p138tox.pig
1098 ------------DYKPDITFWLFQTVTGTTGVMLFIIMCIIFVFAHPTIRKKA Duox.Drosophila
1118 ------------NFLPSISYWFFSTITGLTGIALVAVMCIIYVFALPCFIKRA Ce-duox1
149  NESYLNFARKRIKNPEGGLYLAVTLLAGITGVVITLCLILIITSSTKTIRRSY gp91phox.human
149  NEEYLNFAREKIKNPEGGLYVAVTRLAGITGIVITLCLILIITSSTKTIRRSY gp91phox.mouse
149  NETYLNFVRQRIKNPEGGLYVAVTRLAGITGVVITLCLILIITSSTKTIRRSY gp91phox.bovine
151  GGSWLNPIQSR---NTTVEYVTFTSVAGLTGVIMTIALILMVTSATEFIRRSY Nox1.human
151  D-SWLNPIQSP---NVTVMYAAFTSIAGLTGVVATVALVLMVTSAMEFIRRNY Nox1.rat
150  NESYLNPVRTFPTNTTTELL---LRTIAGVTGLVISLALVLIMTSSTEFIRQAS Nox3.human
135  SEDFVELNAARYRDEDPRKLL-FTTVPGLTGVCMVVVLFLMITASTYAIRVSN Nox4.human
135  SEDFLELNAARYQNEDPRKLL-FTTIPGLTGVCMVVVLFLMVTASTYAIRVSN Nox4.mouse

                                          (outside)      †
1218 FRGFWLTHHLYILLYVLLIIHGSFALIQ------------------------- duox.human
877  FRGFWLTHHLYILLYALLIIHGSYALIQ------------------------- p138tox.human
874  FRGFWLTHHFYILLYVLLIIHGSFALIQ------------------------- p138tox.pig
1139 YNFFWNMHTLYIGLYLLSLIHGLARLTG------------------------- Duox.Drosophila
1159 YHAFRLTHLLNIAFYALTLLHGLPKLLD------------------------- Ce-duox1
202  FEVFWYTHHLFVIFFIGLAIHGAERIVR------GQTAESLAVHNITVCEQKI gp91phox.human
202  FEVFWYTHHLFVIFFIGLAIHGAERIVR------GQTAESLEEHNLDICADKI gp91phox.mouse
202  FEVFWYTHHLFVIFFIGLAIHGAQRIVR------GQTAESLLKHQPRNCYQNI gp91phox.bovine
201  FEVFWYTHHLFIFYILGLGIHGIGGIVR------GQTEESMNESHPRKCAESF Nox1.human
200  FELFWYTHHLFIIYIICLGIHGLGGIVR------GQTEESMSESHPRNCSYSF Nox1.rat
200  YELFWYTHHVFIVFFSLAIHGTGRIVR------GQTQDSLSLHNITFCRDRY Nox3.human
187  YDIFWYTHNLFFVFYMLLTLHVSGGLLKYQTNLDTHPPGCISLNRTSSQNISL Nox4.human
187  YDIFWYTHNLFFVFYMLLLLHVSGGLLKYQTNVDTHPPGCISLNQTSSQNMSI Nox4.mouse
            ●           ●

1246 ----------------------------------LPRF-------HIFFLVPAI duox.human
905  ----------------------------------LPTF-------HIYFLVPAI p138tox.human
902  ----------------------------------LPRF-------HIFFLVPAL p138tox.pig
1167 ----------------------------------PPRF-------WMFFLGPGI Duox.Drosophila
1187 ----------------------------------SPKF-------GYYVVGPIV Ce-duox1
249  SEW-----------------------GKIK-EC-PIPQFAGNPPMTWKWIVGPMF gp91phox.human
249  EEW-----------------------GKIK-EC-PVPKFAGNPPMTWKWIVGPMF gp91phox.mouse
249  SQW-----------------------GKIE-NC-PIPEFSGNPPMTWKWIVGPMF gp91phox.bovine
248  EMW-----------------------DDRDSHC-RRPKFEGHPPESWKWILAPVI Nox1.human
247  HEW-----------------------DKYERSC-RSPHFVGQPPESWKWILAPIA Nox1.rat
247  AEW-----------------------QTVA-QC-PVPQFSGKEPSAWKWILGPVV Nox3.human
240  PEYFSEHFHEPFPEGFSKPAEFTQHKFVKICMEEPRFQANFPQTWLWISGPLC Nox4.human
240  PDYVSEHFHGSLPRGFSKLEDRYQKTLVKICLEEPKFQAHFPQTWIWISGPLC Nox4.mouse

                                   (inside)
1259 IYGGDKLVSLSRKKVEISVVKAELLPSGVTHLRFQRPQGFEYKSGQWVRIACL duox.human
918  IYGGDKLVSLSRKKVEISVVKAELLPSGVTYLQFQRPQGFEYKSGQWVRIACL p138tox.human
915  IYVGDKLVSLSRKKVEISVVKAELLPSGVTHLQFQRPQGFEYKSGQWVRIACL p138tox.pig
1180 VYTLDKIVSLRTKYMALDVIDTDLLPSDYIKIKFYRPPNLKYLSGQWVRLSCT Duox.Drosophila
1200 LFVIDRIIGLMQYYKKLEIVNAEILPSDIIYIEYRRPREFKYKSGQWVTVSSP Ce-duox1
279  LYLCERLVRFWRSQQKVVITKVVTHPFKTIELQMKK-KGFKMEVGQYIFVKCP gp91phox.human
279  LYLCERLVRFWRSQQKVVITKVVTHPFKTIELQMKK-KGFKMEVGQYIFVKCP gp91phox.mouse
279  LYLCERLVRFWRSQQKVVITKVVTHPFKTIELQMKK-KGFKMEVGQYIFVKCP gp91phox.bovine
279  LYICERILRFYRSQQKVVITKVVMHPSKVLELQMNK-RGFSMEVGQYIFVNCP Nox1.human
278  FYIFERILRFYRSRQKVVITKVVMHPCKVLELQMRK-RGFTMGIGQYIFVNCP Nox1.rat
277  LYACERIIRFWRFQQEVVITKVVSHPSGVLELHMKK-RGFKMAPGQYILVQCP Nox3.human
293  LYCAERLYRYIRSNKPVTIISVISHPSDVMEIRMVK-ENFKARPGQYITLHCP Nox4.human
293  LYCAERLYRCIRSNKPVTIISVINHPSDVMELRMIK-ENFKARPGQYILLHCP Nox4.mouse
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1312 ALGTT--EYHPFTLTSAPHED--TLSLHIRAAGPWTTRLREIYSAPTG-----duox.human
971  ALGTT--EYHPFTLTSAPHED--TLSLHIRAVGPWTTRLREIYSSPKG-----p138tox.human
968  GLGTN--EYHPFTLTSAPHED--TLSLHIRAVGPWTTRLREIYSHPMG-----p138tox.pig
1233 AFRP--HEMHSFTLTSAPHEN--FLSCHIKAQGPWTWKLRNYFDPCNY-----Duox.Drosophila
1253 SISCTFNESHAFSIASSPQDE--NMKLYIKAVGPWTWKLRSELIRSLN-----Ce-duox1
331  KVSK--LEWHPFTLTSAPEED--FFSIHIRIVGDWTEG----LFNACGCDKQ-gp91phox.human
331  KVSK--LEWHPFTLTSAPEED--FFSIHIRIVGDWTEG----LFNACGCDKQ-gp91phox.mouse
331  VVSK--LEWHPFTLTSAPEED--FFSIHIRIVGDWTEG----LFKACGCDKQ-gp91phox.bovine
331  SISL--LEWHPFTLTSAPEED--FFSIHIRAAGDWTEN----LIRAFE-----Nox1.human
330  SISF--LEWHPFTLTSAPEEE--FFSIHIRAAGDWTEN----LIRTFE-----Nox1.rat
329  AISS--LEWHPFTLTSAPQED--FFSVHIRAAGDWTAA----LLEAFGAEGQ-Nox3.human
345  SVSA--LENHPFTLTMCPTETKATFGVHLKIVGDWTERFRDLLLPPSSQDSEI Nox4.human
345  SVSA--LENHPFTLTMCPTETKATFGVHFKVVGDWTERFRDLLLPPSSQDSEI Nox4.mouse

                                                GXGXXP
1356 ---DRCARYPKLYLDGPFGEGHQEWHKFEVSVLVGGGIGVTPFASILKDLV--duox.human
1015 ---NGCAGYPKLYLDGPFGEGHQEWHKFEVSVLVGGGIGVTPFASILKDLV--p138tox.human
1012 ---DGYARYPKLYLDGPFGEGHQEWHKFEVSVLVGGGIGVTPFASILKDLV--p138tox.pig
1277 ---NP-EDQPKIRIEGPFGGGNQDWYKFEVAVMVGGGIGVTPYASILNDLV--Duox.Drosophila
1299 ---TG-SPFPLIHMKGPYGDGNQEWMDYEVAIMVGAGIGVTPYASTLVDLV--Ce-duox1
375  -EFQDAWKLPKIAVDGPFGTASEDVFSYEVVMLVGAGIGVTPFASILKSV---gp91phox.human
375  -EFQDAWKLPKIAVDGPFGTASEDVFSYEVVMLVGAGIGVTPFASILKSV---gp91phox.mouse
375  -EFQDAWKLPKIAVDGPFGTASEDVFSYEVVMLVGAGIGVTPFASILKSV---gp91phox.bovine
371  ---QQYSPIPRIEVDGPFGTASEDVFQYEVAVLVGAGIGVTPFASILKSI---Nox1.human
370  ---QQHSPMPRIEVDGPFGTVSEDVFQYEVAVLVGAGIGVTPFASFLKSI---Nox1.rat
373  -ALQEPWSLPRLAVDGPFGTALTDVFHYPVCVCVAAGIGVTPFAALLKSI---Nox3.human
396  LPFIQSRNYPKLYIDGPFGSPFEESLNYEVSLCVAGGIGVTPFASILNTLLDD Nox4.human
396  LPFIHSRNYPKLYIDGPFGSPFEESLNYEVSLCVAGGIGVTPFASILNTLLDD Nox4.mouse

1404 FKSSVSC--QVFCKKIYFIWVTRTQRQFEWLADIIREVE----ENDHQDLVSV duox.human
1063 FKSSLGS--QMLCKKIYFIWVTRTQRQFEWLADIIQEVE----ENDHQDLVSV p138tox.human
1060 FKSSLGS--QMLCKKIYFIWVTRTQRQFEWLADIIREVE----ENDHRDLVSV p138tox.pig
1324 FGTSTNRYSGVACKKVYFLWICPSHKHFEWFIDVLRDVE----KKDVTNVLEI Duox.Drosophila
1346 QRTSSDSFHRVRCRKVYFLWVCSTHKNYEWFVDVLKNVE----DQARSGILET Ce-duox1
424  WYKYCNNATNLKLKKIYFYWLCRDTHAFEWFADLLQLLESQMQERNNAGFLSY gp91phox.human
424  WYKYCDNATSLKLKKIYFYWLCRDTHAFEWFADLLQLLETQMQERNNANFLSY gp91phox.mouse
424  WYKYCNKAPNLRLKKIYFYWLCRDTHAFEWFADLLQLLETQMQEKNNTDFLSY gp91phox.bovine
418  WYKFQCADHNLKTKKIYFYWICRETGAFSWFNNLLTSLEQEMEELGKVGFLNY Nox1.human
417  WYKFQRAHNKLKTQKIYFYWICRETGAFAWFNNLLNSLEQEMDELGKPDFLNY Nox1.rat
422  WYKCSEAQTPLKLSKVYFYWICRDARAFEWFADLLLSLETRMSEQGKTHFLSY Nox3.human
449  WKPY-------KLRRLYFIWVCRDIQSFRWFADLLCMLHNKFWQENRPDYVNI Nox4.human
449  WKPY-------KLRRLYFIWVCRDIQSFQWFADLLCVLHNKFWQENRPDFVNI Nox4.mouse

1451 HIYITQLAEKFDLRTTMLYICERHFQKVLNR-SLFTGLRSITHFGRPPFEPFF duox.human
1110 HIYVTQLAEKFDLRTTMLYICERHFQKVLNR-SLFTGLRSITHFGRPPFEPFF p138tox.human
1107 HIYITQLAEKFDLRTTMLYICERHFQKVLNR-SLFTGLRSITHFGRPPFEPFF p138tox.pig
1373 HIFITQFFHKFDLRTTMLYICENHFQRLSKT-SIFTGLKAVNHFGRPDMSSFL Duox.Drosophila
1395 HIFVTQTFHKFDLRTTMLYICEKHFRATNSGISMFTGLHAKNHFGRPNFKAFF Ce-duox1
477  NIYLTGWDESQANHFAV------HHDEEKDVI---TGLKQKTLYGRPNWDNEF gp91phox.human
477  NIYLTGWDESQANHFAV------HHDEEKDVI---TGLKQKTLYGRPNWDNEF gp91phox.mouse
477  NICLTGWDESQASHFAM------HHDEEKDVI---TGLKQKTLYGRPNWDNEF gp91phox.bovine
471  RLFLTGWDSNIVGHAAL------NFDKATDIV---TGLKQKTSFGRPMWDNEF Nox1.human
470  RLFLTGWDSNIAGHAAL------NFDRATDVL---TGLKQKTSFGRPMWDNEF Nox1.rat
475  HIFLTGWDENQALHIAL------HWDENTDVI---TGLKQKTFYGRPNWNNEF Nox3.human
495  QLYLSQ-TDGIQKIIGE------KYH----------ALNSRLFIGRPRWKLLF Nox4.human
495  QLYLSQ-TDGIQKIIGE------KYH----------TLNSRLFIGRPRWKLLF Nox4.mouse

1593 NSLQEVHPQVRKIGVFSCGPPGMTKNVEKACQLINRQD-R-THFSHHYENF    duox.human
1162 NSLQEVHPQVRKIGVFSCGPPGMTKNVEKACQLVNRQD-R-AHFMHHYENF    p138tox.human
1159 NSLQEVHPQVRKIGVFSCGPPGMTKNVEKTCQLISRQD-Q-THFVHHYENF    p138tox.pig
1425 KFVQKKHSYVSKIGVFSCGPRPLTKSVMSACDEVNKTR-KLPYFIHHFENFG   Duox.Drosophila
1448 QFIQSEHKEQSKIGVFSCGPVNLNESIAEGCADANRQR-DAPSFAHRFETF    Ce-duox1
521  KTIASQHPN-TRIGVFLCGPEALAETLSKQSISNSESGPRGVHFIFNKENF   gp91phox.human
521  KTIASEHPN-TTIGVFLCGPEALAETLSKQSISNSESGPRGVHFIFNKENF   gp91phox.mouse
521  KTIGSQHPN-TRIGVFLCGPEALADTLNKQCISNSDSGPRGVHFIFNKENF   gp91phox.bovine
515  STIATSHPK-SVVGVFLCGPRTLAKSLRKCCHRYSSLDPRKVQFYFNKENF   Nox1.human
514  SRIATAHPK-SVVGVFLCGPPTLAKSLRKCCRRYSSLDPRKVQFYFNKETF   Nox1.rat
519  KQIAYNHPS-SSIGVFFCGPKALSRTLQKMCHLYSSADPRGVHFYYNKESF   Nox3.human
531  DEIAKYNRG-KTVGVFCCGPNSLSKTLHKLSNQNNSYGTR---FEYNKESFS  Nox4.human
531  DEIAKCNRG-KTVGVFCCGPSSISKTLHSLSNRNNSYGTK---FEYNKESFS  Nox4.mouse
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