VERTEBRATE SDR FAMILY VARIANTS.

```
SDR7C1  H. sapiens        ------MVELMF--PLLLLLLPFLLYMAAPQIrkML-SS--------GVCTSTVQLPGKV 1p.1
SDR7C1  G. gorilla        ------MVELMF--PLLLLLLPFLLYVAAPQIrkML-SS--------GVCTSTVQLPGKV 1p.1
SDR7C1  M. musculus       ---------MFG--FLLLLSLPFILYLVTPKIrkML-SS--------GVCTSNVQLPGKV 1p.1
SDR7C1  M. domestica      --------MFWL--LVLLASLVLLLVWATPYVreAV-SK--------GVCTSTVQLPGKV 1p.1
SDR7C1  P. formosa        --------MFVLLIIAGLGVVTLLVILFAPHIrrYA-AG--------AVCKSTARLDGKT 1p.1
SDR7C2  H. sapiens        --------MLVT--LGLLTSFFSFLYMVAPSIrkFF-AG--------GVCRTNVQLPGKV 1p.1
SDR7C2  P. troglodytes    --------MLVT--LGLLTSFFSFLYMVAPSIrkFF-AG--------GVCRTNVQLPGKV 1p.1
SDR7C2  M. musculus       --------MLFI--LVLLTSFLSILYLTAPSIrkFF-AG--------GVCTTNVQIPGKV 1p.1
SDR7C2  M. domestica      --------MIGI--MVGLTSFVSFLYMAGPYIrkFF-AG--------GVCTSTVQLPGKV 1p.1
SDR7C2  G. gallus         MEPAAGMLSCWGAVLGAAVSVPLLLLAAAPYVrrYV-AG--------GRCRSTARLDGKV 1p.1
SDR7C2  A. carolinensis   ----------------------MSSTFSPFrkWF-AG--------GVCTSTAMLHGKV 1p.1
SDR7C2  D. rerio          ------MMLALVAFAAGLGLVALILRLLSPQIrkYA-AG--------GSCRSTVRLDGKV 1p.1
SDR7C3  H. sapiens        ------MSR-----YLLPLSALGTVAGAAVLLkdYV-TG--------GACPSKATIPGKT 1p.1
SDR7C3  P. troglodytes    ------MSR-----YLLPLSALGTVAGAAVLLkdYV-TG--------GACPSKATIPGKT 1p.1
SDR7C3  M. musculus       ------MSR-----FLLPVSVVGTVIGGTVLLkdYV-AG--------GACPSKATIPGKT 1p.1
SDR7C3  X. tropicalis     ------MNK-----YVVRASMVGTALGGAILLkdYT-GG--------GNCPSKASIIGQT 1p.1
SDR7C3  O. latipes        ------MSK-----YILPVSVFGTVFGSAVLLkhHV-TG--------GRCPSKATITGKT 1p.1
SDR7C4  H. sapiens        ------MA-VATAAAVLAALGGALWLAARRFVGPRVQRL--------RRGGDPGLMHGKT
SDR7C4  P. troglodytes    ------MA-VATAAAVLAALGGALWLAARRFVGPRVQRL--------RRGGDPGLMHGKT
SDR7C4  M. musculus       ------MAVASVAAALLAALGGALWLAARRFSGPRNQRQ--------QGGGDPGLMHGKT
SDR7C4  M. domestica      MRSRRRAMVSLSSVLLAAALGGGLWLAVRRYLRSPGRTP----------AAGLMLMRGKT
SDR7C4  P. humilis        ------MAA----ALPALVLGAGLLVAAWRWLR----GA--------ARPGRGGSMRGKT
SDR7C4  A. carolinensis   --------MAATAVVLAAALGGGLLLIARRFWQVAA-GA--------GAGKVKRGMEGKT
SDR7C4  X. tropicalis     MAA----SSPALMVAAAVALGGGLILVVRRLLSNS------------VRAGGSGLMRGKT
SDR7C4  D. rerio          ----------MSAAVVLAAVLGGGVFFIARRIIFRRKALR--------LMSYPPALMRGKT
SDR7C5  H. sapiens        --------------MEALLLGAGLLLGAYVLVYYNLVKA--------PPCGGMGNLRGRT
SDR7C5  P. abelii         --------------MEALLLGAGLLLGAYVLVYYNLVKA--------PPCGGMGNLRGRT
SDR7C5  M. musculus       --------------MEMLLLGAGLLLGAYVLVYYNLVKA--------PSCGGIGSLRGRT
SDR7C5  M. domestica      ----------------------MLLGSYVLIYYNFIKA--------VPCMSPINLKGKT
SDR7C5  H. leucocephalus  --------------MGWTLLGAGLLLALYTLLRHGLRRS--------PPLRDRPELRGRT
SDR7C5  G. japonicus      ----------------MVLSGLALLTGLYVWLYYNFLRG--------PKCRNETSLRGKT
SDR7C5  X. tropicalis     ---------------MVPVMLVVGLGIGAYILIYFNLIRG--------RQCRSDASLKGKT
SDR7C5  O. latipes        -------------MCGFILIVFALAAVAY-MFHDIVVKG--------KRCKSNANLNGKT
SDR40C1 H. sapiens        ------MSLYRS---------VVWFAK----GLREYTksGYESACKDFVPHDLEVQIPGRV 1p.1
SDR40C1 P. troglodytes    ------MSLYRS---------VVWFAK----GLREYTksGYESACKDFVPHDLEVQVPGRV 1p.1
SDR40C1 B. taurus         ------MLLYRS---------AAWFAK----GLREYTksGYESASKDFVPDDLEVQVPGRA 1p.1
SDR40C1 G. gallus         ------MSWYRN---------VVWFVK----GLREYTrsGYESASKHFDPADLEVDVAGRS 1p.1
SDR40C1 A. carolinensis   ------MSIYRN---------SVWFIK----GLNEYCrsGYESASKRFVPGDLEVDVTGRS 1p.1
SDR40C1 X. tropicalis     ------MSLYRN---------TIWFLK----GMREYTksGYETAAKQFLSEDLEFDVRGRS 1p.1
SDR40C1 O. latipes        ------MSIYRN---------AVWFMK----GLQEYTksGYEAAAKHFVPNDLDVNLTGRS 1p.1
                                                                                    *

                                  x   x x
SDR7C1  H. sapiens        VVVTGANTGIGKETAKELAQrgARVYLACRDVEKGELVAKEIQTTTG------------- 2p.2
SDR7C1  G. gorilla        VVVTGANTGIGKETAKELAQrgARVYLACRDVEKGELVAKEIQTTTG------------- 2p.2
SDR7C1  M. musculus       AIVTGANTGIGKETAKDLAQrgARVYLACRDVDKGELAAREIQAVTG------------- 2p.2
SDR7C1  M. domestica      VIVTGANTGIGKETAKDLAQrgARVYIACRDLQKGELAASEIRAKTG------------- 2p.2
SDR7C1  P. formosa        VLITGANTGIGKETALDLAVrgARVIMACRDVEKGEEAAASIRAAYS------------- 2p.2
SDR7C2  H. sapiens        VVITGANTGIGKETARELASrgARVYIACRDVLKGESAASEIRVDTK------------- 2p.2
SDR7C2  P. troglodytes    VVITGANTGIGKETARELASrgARVYIACRDVLKGESAASEIRVDTK------------- 2p.2
SDR7C2  M. musculus       VVITGANTGIGKETARELARrgARVYIACRDVLKGESAASEIRADTK------------- 2p.2
SDR7C2  M. domestica      VVVTGANTGIGKETAKDLARrgARVYIACRNILKGESAASEIRAATK------------- 2p.2
SDR7C2  G. gallus         AVITGANTGIGKETARELARrgARVIVACRDIAKAEAAAREIRAETD------------- 2p.2
```

```
SDR7C2  A. carolinensis   AVITGANTGIGKETARELARrgARVIIACRNTEKGEAAAHEIQRETG------------- 2p.2
SDR7C2  D. rerio          ALVTGANSGIGKETALDLASrgARVILACRDLEKAEEAAAEIRTRVG------------- 2p.2
SDR7C3  H. sapiens        VIVTGANTGIGKQTALELARrgGNIILACRDMEKCEAAAKDIRGETL------------- 2p.2
SDR7C3  P. troglodytes    VIVTGANTGIGKQTALELARrgGNIILACRDMEKCEAAAKDIRGETL------------- 2p.2
SDR7C3  M. musculus       VIVTGANTGIGKQTALELAKrgGNVILACRDMEKCEVAAKDIRGETL------------- 2p.2
SDR7C3  X. tropicalis     VIVTGANTGIGKETALELAKrgGRIIMACRDMGKCENAARDIRGKTL------------- 2p.2
SDR7C3  O. latipes        VVITGANTGIGKETARELAKrgGRILMGCRDMEKCETAAKEIRGATL------------- 2p.2
SDR7C4  H. sapiens        VLITGANSGLGRATAAELLRLGARVIMGCRDRARAEEAAGQLRRELRQAAECGPEPGVSG
SDR7C4  P. troglodytes    VLITGANSGLGRATAAELLRLGARVIMGCRDRARAEEAAGQLRRELRQAAECGPEPGVSG
SDR7C4  M. musculus       VLITGANSGLGRATAAELLRLGARVIMGCRDRARAEEAAGQLRQELCQAGGAGPDG---T
SDR7C4  M. domestica      VIVTGANSGLGRATAAELLRQEARVILACRDRGRAEQTAAELRREQAQA---PPAAEGSP
SDR7C4  P. humilis        VIITGANSGLGRAAAAELLRMRARVIMGCRDRARAERAAREIRAEVGER--------ADG
SDR7C4  A. carolinensis   VIITGANSGIGRATAAELLRQHARVIMACRDPLRAEEAARELRAELGVCAR----GGGEC
SDR7C4  X. tropicalis     VIITGANCGIGKATAAELVKQEARVILACRDQGRAEEAAAELRREAGE------------
SDR7C4  D. rerio          VIVTGANCGIGKATAAELLKLQARVIMACRDRQRAEDAARDIQNQAG-----------TS
SDR7C5  H. sapiens        AVVtgANSGIGKMTALELARRGARVVLACRSQERGEAAAFDLRqeSG------------- 1p.2 2p.0
SDR7C5  P. abelii         AVVtgANSGIGKMTALELARRGARVVLACRSRERGEAAAFDLRqeSG------------- 1p.2 2p.0
SDR7C5  M. musculus       VVVtgANSGIGKMTALELARRGARVVLACRSRERGEAAAFDLRqeSG------------- 1p.2 2p.0
SDR7C5  M. domestica      AVVtgGNTGIGKMTALELAQRGARVVLACRSKEKGEAAVYDIRkeSG------------- 1p.2 2p.0
SDR7C5  H. leucocephalus  AIVtgGSSGIGAATALELARCGARVVLATRNAPRGEAAARRIRteTG------------- 1p.2 2p.0
SDR7C5  G. japonicus      VLItgGNTGIGKETALDLARRGARIIMACRNKARAEAAVYDIRreSG------------- 1p.2 2p.0
SDR7C5  X. tropicalis     VIVtgANVGIGKMTALDMAKRGARVILACRVKETGEAAAYDIRklSG------------- 1p.2 2p.0
SDR7C5  O. latipes        AIVtgSNTGIGKATAIELAKRGARVILACRSKQRGEAALEDVRrvTG------------- 1p.2 2p.0
SDR40C1 H. sapiens        FLVTGGNSGIGKATALEIAKrgGTVHLVCRDQAPAEDARGEIIRESG------------- 2p.2
SDR40C1 P. troglodytes    FLVTGGNSGIGKATALEIAKrgGTVHLVCRDQARAEDARDEIIRESS------------- 2p.2
SDR40C1 B. taurus         FMVTGGNSGIGKATAMEIAKrgGTVHLVCRDHSRAEGAKAEIIRESG------------- 2p.2
SDR40C1 G. gallus         FLITGSNSGIGKAAAKEIARrgGTVHLVCRNKERAEDAKGEIVTETG------------- 2p.2
SDR40C1 A. carolinensis   FMVTGANSGIGKATAKEIAKrgGIIHLVCRNKDRGEEAKKEITTETG------------- 2p.2
SDR40C1 X. tropicalis     YMITGANSGIGKAAALVIAKkgGTIHLVCRNKERAEEAQRELKANSG------------- 2p.2
SDR40C1 O. latipes        FMVTGANSGIGKAAAQEIAArgGTVHMVCRNKGRAEAAKEEIVERSK------------- 2p.2
                             **   * *   *              *     *

SDR7C1  H. sapiens        NQQVLVRKLDLSDTKSIRAFAKGFLaeEKHLHVLINNAGVMMCPYSKTADGFEMHIGVNH 3p.2
SDR7C1  G. gorilla        NQQVLVRKLDLSDTKSIRAFAKGFLaeEKHLHVLINNAGVMMCPYSKTADGFEMHIGVNH 3p.2
SDR7C1  M. musculus       NSQVFVRKLDLADTKSIRAFAKDFLaeEKHLHLLINNAGVMMCPYSKTADGFEMHIGVNH 3p.2
SDR7C1  M. domestica      NQQVLVRKLDLSDTKSIRAFAEAFLaeEKHLHILINNAGVMMCPYSKTADGFEMHMGINY 3p.2
SDR7C1  P. formosa        EAKVEVRELDLADTCSIRAFAQKFLreVNHLHILINNAGVMMCPYTKTIDGFEMHIGVNH 3p.2
SDR7C2  H. sapiens        NSQVLVRKLDLSDTKSIRAFAEGFLaeEKQLHILINNAGVMMCPYSKTADGFETHLGVNH 3p.2
SDR7C2  P. troglodytes    NSQVLVRKLDLSDTKSIRAFAEGFLaeEKQLHILINNAGVMMCPYSKTADGFETHLGVNH 3p.2
SDR7C2  M. musculus       NSQVLVRKLDLSDTKSIRAFAERFLaeEKKLHILINNAGVMMCPYSKTTDGFETHFGVNH 3p.2
SDR7C2  M. domestica      NQQVFVRKLDLSDTKSIRAFAEGFLaeEKQLHILINNAGVMMCPNSKTADGFETHLGVNH 3p.2
SDR7C2  G. gallus         NQEVIVKKLDLADTRSIREFANSFLaeEKELHILINNAGVMLCPYSKTADGFEMHLGVNH 3p.2
SDR7C2  A. carolinensis   NQQVIVKKLDLSDTKSIRTFAENLLkeEDKLHILINNAGVMFCPYSKTADGFEMQFGVNH 3p.2
SDR7C2  D. rerio          GAKVEVRELDLADCCSIRAFAQRFLreVDHLHILINNAGVMMCPYMKTADGFEMQIGVNH 3p.2
SDR7C3  H. sapiens        NHHVNARHLDLASLKSIREFAAKIIeeEERVDILINNAGVMRCPHWTTEDGFEMQFGVNH 3p.2
SDR7C3  P. troglodytes    NHHVNARHLDLASLKSIREFAAKIIeeEERVDILINNAGVMRCPHWTTEDGFEMQFGVNH 3p.2
SDR7C3  M. musculus       NPRVRAERLDLASLKSIREFARKVIkeEERVDILVNNAAVMRCPHWTTEDGFEMQFGVNY 3p.2
SDR7C3  X. tropicalis     NHNVFARHLDLASSKSIKEFAKTIIneEERVDVLINNAAVMRCPHWKTEDNFEMQFGVNH 3p.2
SDR7C3  O. latipes        NPHVYACHLDLASIKSIREFAERVNkeEKRVDVLINNAGVMRCPAWKTEDGFDMQFGVNH 3p.2
SDR7C4  H. sapiens        VGELIVRELDLASLRSVRAFCQEMLqeEPRLDVLINNAGIFQCPYMKTEDGFEMQFGVNH 1p.0
SDR7C4  P. troglodytes    VGELIVRELDLASLRSVRAFCQEMLqeEPRLDVLINNAGIFQCPYMKTEDGFEMQFGVNH 1p.0
SDR7C4  M. musculus       DGQLVVKELDLASLRSVRAFCQELLqeEPRLDVLINNAGVFHCPYTKTEDGFEMQFGVNH 1p.0
SDR7C4  M. domestica      AGELIVKELDLASLSSVRAFCREVLleEPRLDVLINNAGVFQCPYTKTEDGFEMQFGVNH 1p.0
SDR7C4  P. humilis        AGELVVRELDLASLRSVRAFCHRVLqeESRLDVLINNAGIFQCPYMKTEDGFEMQFGVNH 1p.0
SDR7C4  A. carolinensis   RGELLVRELDLASLRSVRTFCHQVLqeEPRLDVLINNAGIFQCPYTKTEDGFEMQFAVNH 1p.0
SDR7C4  X. tropicalis     RGEIVIKQLDLGSLQSVRRFCQEVLkeEPRLDVLINNAGVFQCPYTKTEDGFEMQFGVNH 1p.0
```

```
SDR7C4  D. rerio           QGEIVIKHLDLASLQSVRRFCEEVIreEPRIDVLINNAGLYQCPYSKTEEGFEMQLGVNH 1p.0
SDR7C5  H. sapiens         NNEVIFMALDLASLASVRAFATAFLSSEPRLDILIHNagISSCG--RTREAFNLLLRVNH 3p.2
SDR7C5  P. abelii          NNEVIFMALDLASLASVRAFATAFLSSEPRLDILIHNagISSCG--RTREAFNLLLRVNH 3p.2
SDR7C5  M. musculus        NNEVIFMALDLASLASVQAFATAFLSSEPRLDVLIHNagISSCG--RTRETFNLLLRVNH 3p.2
SDR7C5  M. domestica       NNEVIFMMLDLSSLTSVHSFATAFLSSEPRLDLLIHNagISSCG--KAKENFNLILRVNH 3p.2
SDR7C5  H. leucocephalus   NAEVLFMQLDLASLRSVRAFASAFLRQEPHLHLLINNagVSVGG--TTEDGFSLPFQVNH 3p.2
SDR7C5  G. japonicus       NNEVLFMSLDLADLSSVRAFVDAFLRSEPRLDILINNagVQSSG--KSADGFDLTFQVNH 3p.2
SDR7C5  X. tropicalis      NNQVVFMKLDLASLESVRSFCRAFLSSEPRLDILINNagLSGFG--KTAEGYNIVFGVNH 3p.2
SDR7C5  O. latipes         STQVLFMQLDLGSLKSVRNFAETFLKTESRLDILINNagLYMQG--RTEDGFGMMFGVNH 3p.2
SDR40C1 H. sapiens         NqnIFLHIVDLSDPKQIWKFVENFK-QEHKLHVliNNAGCMVNKRELTEDGLEKNFAANT 3p.0 4p.0
SDR40C1 P. troglodytes     NqnIFLHIVDLSDPKQIWKFVENFK-QEHKLHVliNNAGCMVNKRELTEDGLEKNFAANT 3p.0 4p.0
SDR40C1 B. taurus          NqnIFLHIVDLSLPKSVWKFVENFK-QEHTLNVliNNAGCMVNKRELTEDGLEKNFATNT 3p.0 4p.0
SDR40C1 G. gallus          NqnIFLHVVDISNPKEIWKFAEKFK-NEHKLNVliNNAGCMVNNRELTEDGLEKNFATNT 3p.0 4p.0
SDR40C1 A. carolinensis    NqkVFVHILDMSDPKGIWKFGEQFK-NEHRLNVliNNAGCMVNKRELTENGLEKNFATNT 3p.0 4p.0
SDR40C1 X. tropicalis      NedISVHLLDMSDPKQIWEFAEKFK-TEHKLNVliNNAGCMVNKRELTEDGLEKNFATNT 3p.0 4p.0
SDR40C1 O. latipes         NenVHVHIVDMSSAKQVWEFAQNFS-QNNKIHVliNNAGCMVNQRELTDEGLEKNFATNT 3p.0 4p.0
                                      *         *             *  **                    *

                                                                                      +
SDR7C1  H. sapiens         lgHFLLTHLLLEKLKESAPSRIVNVSSLAHHLGRIHFHNLQGE-------KFYNAGLAYC 4p.2
SDR7C1  G. gorilla         lgHFLLTHLLLEKLKESAPSRIVNVSSLAHHLGRIHFHNLQGE-------KFYNAGLAYC 4p.2
SDR7C1  M. musculus        lgHFLLTHLLLEKLKESAPSRIVNLSSLGHHLGRIHFHNLQGE-------KFYSAGLAYC 4p.2
SDR7C1  M. domestica       lgHFLLTHLLLERLKESAPSRVVNLSSLAFHLGRIHFYNLHGE-------KYYNRGLAYC 4p.2
SDR7C1  P. formosa         lgHFLLTYLLIGLLKRSAPARVVVVSSLAHNFGWIRFHDLHSQ-------GSYNSGLAYC 4p.2
SDR7C2  H. sapiens         lgHFLLTYLLLERLKVSAPARVVNVSSVAHHIGKIPFHDLQSE-------KRYSRGFAYC 4p.2
SDR7C2  P. troglodytes     lgHFLLTYLLLERLKVSAPARVVNVSSVAHHIGKIPFHDLQSE-------KRYSRGFAYC 4p.2
SDR7C2  M. musculus        lgHFLLTYLLLERLKESAPARVVNLSSIAHLIGKIRFHDLQGQ-------KRYCSAFAYG 4p.2
SDR7C2  M. domestica       lgHFLLTHLLLERLKESAPSRVVNVSSVGHHLGRIFFQDLQGE-------KYYNRSYAYC 4p.2
SDR7C2  G. gallus          lgHFLLTFLLLERLKQSAPSRIVNVSSLAHHGGRIRFHDLNGE-------KSYNRGLAYC 4p.2
SDR7C2  A. carolinensis    lgHFLLTFLLLDRLKESAPARIVNVSSLAHILGKIYFQDLQGE-------KCYSAQFAYF 4p.2
SDR7C2  D. rerio           lgHYLLTYLLIGLLKRSAPSRIVVVSSLAHNFGWIRFHDLHSQ-------GSYNSGLAYC 4p.2
SDR7C3  H. sapiens         lgHFLLTNLLLDKLKASAPSRIINLSSLAHVAGHIDFDDLNWQT------RKYNTKAAYC 4p.2
SDR7C3  P. troglodytes     lgHFLLTNLLLDKLKASAPSRIINLSSLAHVAGHIDFDDLNWQT------RKYNTKAAYC 4p.2
SDR7C3  M. musculus        lgHFLLTNLLLDKLKASAPSRIINLSSLAHVAGHIDFEDLNWQM------KKYDTKAAYC 4p.2
SDR7C3  X. tropicalis      lgHFLLTNLLLEKMKRSENSRIINVSSLAHIAGDIDFDDLNWEK------KKYNTKAAYC 4p.2
SDR7C3  O. latipes         lgHFLLTNLLLEKLKEPAPSRVINLSSLAHIIGNIDFEDLNWEK------KTFDTKQAYC 4p.2
SDR7C4  H. sapiens         LGHFLLTNLLLGLLKSSAPSRIVVVSSKLYKYGDINFDDLNSE-------QSYNKSFCYS
SDR7C4  P. troglodytes     LGHFLLTNLLLGLLKSSAPSRIVVVSSKLYKYGDINFDDLNSE-------QSYNKSFCYS
SDR7C4  M. musculus        LGHFLLTNLLLGLLKSSAPSRIVVVSSKLYKYGEINFEDLNSE-------QSYNKSFCYS
SDR7C4  M. domestica       LGHFLLTNLLLDRLKDSAPSRIVVVSSKLYKYGEINFEDLNSE-------LNYNKSFCYS
SDR7C4  P. humilis         LGHFLLTNLLLGLLKNSAPSRIVVVSSKLYKYGEINFEDLNSE-------ISYNKSFCYS
SDR7C4  A. carolinensis    LGHFLLTNLLLGLLKSSAPSRIVVVSSKLYKYGEINFDDLNSE-------LSYNKSFAYS
SDR7C4  X. tropicalis      LGHFLLTHHLLGLLKSSAPSRIVVVSSKLYKYGEINFDDLNSE-------KSYSRSFGYS
SDR7C4  D. rerio           LGHFLLTNLLLDLLKQSSPSRVVVVSSKLYKYGSINFEDLNSE-------QSYNKSFCYS
SDR7C5  H. sapiens         IGPFLLTHLLLPCLKACAPSRVVVVASAAHCRGRLDFKRLDRPV----V-GWRQELRAYA
SDR7C5  P. abelii          IGPFLLTHLLLPCLKACAPSRVVVVASAAHRRGRLDFKRLDRPV----V-GWRQELRAYA
SDR7C5  M. musculus        VGPFLLTHLLLPRLRSCAPSRVVIVSSAAHRRGRLDFTRLDCPV----V-GWQQELRAYA
SDR7C5  M. domestica       VGPFLLTHLLLPRLKANAPSRVVVMASAAHRRGRLDFSRLDCPV----W-GWQQELRAYA
SDR7C5  H. leucocephalus   LGHFLLTQLLLERLQSCAPSRVVIVASRAHCAGRLRPNTLGRPP----S-GLFSAFQDYC
SDR7C5  G. japonicus       LSHFLMTHLLLDRLKCCAPSRVVVVASRAHRIGKINFQNIHKPV----LGGLVKYFQAYC
SDR7C5  X. tropicalis      LGHFLLTSLLLDRLKQSTPSRIVVLASYAHEWGKIDFNKISVPS----E-HVKDTLQSYC
SDR7C5  O. latipes         LGHFLLTNLLLDRLKECGPSRIVNVSSSAHNVGNVNFDCLNTHKDLGVATSTRDALQMYC
SDR40C1 H. sapiens         lgVYILTTGLIPVLEKEHDPRviTVSSGGMLVQKLNTNDLQSER------TPFDGTMVYA 5p.2 6p.0
SDR40C1 P. troglodytes     lgVYILTTGLIPVLEKEHDPRviTVSSGGMLAQKLSTNDLQSER------TPFDGTMVYA 5p.2 6p.0
SDR40C1 B. taurus          lgVYVLTTALIPVLEKEHDPRviTVSSGGMLVQKLNTDDPQSER------TAFDGTMVYA 5p.2 6p.0
SDR40C1 G. gallus          lgTYVLTTALLPLLEKEADARvvTVSSGGMLVQKLNISDLQSGS------ETFDGTMVYA 5p.2 6p.0
```

```
SDR40C1 A. carolinensis   lgPYILTTVLLPLLEKEDDPRviTVSSGGMLVQKLNVSDLQTEN------TTFDGTMVYA 5p.2 6p.0
SDR40C1 X. tropicalis     lgTYILTTALLPSLEKEEDPRviTVSSGGMLVQKLNVSDLQFET------GTFDGTMAYA 5p.2 6p.0
SDR40C1 O. latipes        lgTYILTTALIPSLKQVEDPRviTVSSGGMLTQKLNVDDLQFEK------GAFDGTMAYA 5p.2 6p.0
                                  *  *          *     *                              *

                                +
SDR7C1  H. sapiens        HSKLANILFTQELARRLkgSGVTTYSVHPGTVQSELV-RHSSFM------RWMWWLFSFF 5p.2
SDR7C1  G. gorilla        HSKLANILFTQELARRLkgSGVTTYSVHPGTVQSELV-RHSSFM------RWMWWLFSFF 5p.2
SDR7C1  M. musculus       HSKLANILFTKELAKRLkgSGVTTYSVHPGTVHSELT-RYSSIM------RWLWQLFFVF 5p.2
SDR7C1  M. domestica      HSKLANVLFTQELSRRLkgTGVTTYSVHPGTVDSDLF-RHSLFL------KLLVKLFSSF 5p.2
SDR7C1  P. formosa        QSKLANVLFARELARRLkgTNVMVNSVHPGTVNSDLT-RHSTLM------MILFTVFSVF 5p.2
SDR7C2  H. sapiens        HSKLANVLFTRELAKRLqgTGVTTYAVHPGVVRSELV-RHSSLL------CLLWRLFSPF 5p.2
SDR7C2  P. troglodytes    HSKLANVLFTRELAKRLqgTGVTTYAVHPGVVRSELV-RHSSLL------CLLWRLFSPF 5p.2
SDR7C2  M. musculus       HSKLANLLFTRELAKRLqgTGVTAYAVHPGVVLSEIT-RNSYLL------CLLWRLFSPF 5p.2
SDR7C2  M. domestica      NSKLANVLFTRELAYRLkgTGVTTYAVHPGLVQSELV-RHSFLM------CLLWRLLTPI 5p.2
SDR7C2  G. gallus         HSKLANVLFTRELARRLqgTKVTANSLHPGSVHSELV-RHSFVM------TWLWRIFSFF 5p.2
SDR7C2  A. carolinensis   QSKLANILFTRELAGRLqgTGVTVNALHPGAVLSELG-RHSYVA------KFLQRVFNFM 5p.2
SDR7C2  D. rerio          QSKLANVLFTRELARRLqgSNVTVNSVHPGTVRSELV-RHSTLM------SLLFAFFSMF 5p.2
SDR7C3  H. sapiens        QSKLAIVLFTKELSRRLqgSGVTVNALHPGVARTELG-RHTGIHGSTFSSTTlgPIFWLL 5p.2 6p.2
SDR7C3  P. troglodytes    QSKLAIVLFTKELSRRLqgSGVTVNALHPGVARTELG-RHTGIHGSTFSSTTlgPIFWLL 5p.2 6p.2
SDR7C3  M. musculus       QSKLAVVLFTKELSHRLqgSGVTVNALHPGVARTELG-RHTGMHNSAFSGFMlgPFFWLL 5p.2 6p.2
SDR7C3  X. tropicalis     QSKLANVLFTNELAKRLqgTKLTANSLHPGVADTELG-RHTGMHQSAFSSTIlaPLFWFL 5p.2 6p.2
SDR7C3  O. latipes        QSKLANVLFTRELAKRLqgTGVTVNAVHPGVVATELG-RHTGLHQSQFSSFMlgPFFSLL 5p.2 6p.2
SDR7C4  H. sapiens        RSKLANILFTRELARRLEGTNVTVNVLHPGIVRTNLG-RHIHIP--LLVKPLFNLVSWAF
SDR7C4  P. troglodytes    RSKLANILFTRELARRLEGTNVTVNVLHPGIVRTNLG-RHIHIP--LLVKPLFNLVSWAF
SDR7C4  M. musculus       RSKLANILFTRELARRLEGTNVTVNVLHPGIVRTNLG-RHIHIP--LLARPLFNLVSWAF
SDR7C4  M. domestica      QSKLANILFTRELARRLEGTNVTVNVLHPGIVRTNLG-RHINIP--LLVKPLFNLVSWAF
SDR7C4  P. humilis        RSKLANILFARELARRLEGTGVTVNSLHPGIVRTNLG-RHVNIP--LLAKPLFNLVSWAF
SDR7C4  A. carolinensis   RSKLANILFTRELSHRLEGTGVSVNVLHPGVVRTNLG-RYVHIP--LLARPLFNLVSWAF
SDR7C4  X. tropicalis     RSKLANILFTRELASRLEGTGVTVNALHPGIVRTNLG-RHINIP--ILIKPLFNVVSWAF
SDR7C4  D. rerio          QSKLANLLFTRELARRLDGTEVTVNALTPGIVRTRLG-RHVNIP--LLIKPLFWLVSWLF
SDR7C5  H. sapiens        DTKLANVLFARELANQLEATGVTCYAAHpgPVNSELFLRHVPG----WLRPLLRPLAWLV 4p.2
SDR7C5  P. abelii         DTKLANVLFARELANQLEGTGVTCYAAHpgPVNSELFLRHVPG----WLRPLLRPLAWLV 4p.2
SDR7C5  M. musculus       DSKLANVLFARELATQLEGTGVTCYAAHpgPVNSELFLRHLPG----WLRPILRPLAWLV 4p.2
SDR7C5  M. domestica      DSKLANVLFTRELATQLEGSGVTCYAAHpgPVNSELFLRHVPG----WLHLLLSPLAWLV 4p.2
SDR7C5  H. leucocephalus  DSKLANVLHARELATHLQGTQVTCYAVHpgFVNTELF-RHTPL----WLKPLFLPLAWLF 4p.2
SDR7C5  G. japonicus      NSKLANILYTRELANRLEGTSVTCYALHpgTVNTELF-RHASI----WLKLIVGPLCWLF 4p.2
SDR7C5  X. tropicalis     DSKLCNVLFARELANRLQGTSVTCYSVHpgTVHTNLA-RSLPS----WIKVLIEPVSWLF 4p.2
SDR7C5  O. latipes        DSKLCNVLFTHELAKRLEGTKVTCYSLHpgAISTELK-RNAGS----ILQFSLTFASVFF 4p.2
SDR40C1 H. sapiens        QNkrQQVVLTERWAQGHP--AIHFSSMHPGWADTpgV-RQA--------MPGFHARFGDR 7p.0 8p.2
SDR40C1 P. troglodytes    QNkrQQVVLTERWAQGHL--AIHFSSMHPGWADTpgV-RQA--------MPGFHARFRDR 7p.0 8p.2
SDR40C1 B. taurus         QNkrQQVVLTERWARAHP--AIHFSCMHPGWVDTpgV-RLS--------MPGFHARLGAR 7p.0 8p.2
SDR40C1 G. gallus         QNkrQQVVLTEQWAKTHR--SIHFSVMHPGWADTpaV-RSS--------MPDFYQKMKNS 7p.0 8p.2
SDR40C1 A. carolinensis   QNkrQQVVMTEQWAKAHP--SIHFSSMHPGWANTpaV-QSS--------MPDFYEKMKNK 7p.0 8p.2
SDR40C1 O. latipes        QNkrQQVVLTDKWAAQHK--DIHFSSMHPGWADTpaV-QSS--------MPSFHAKMQSK 7p.0 8p.2
SDR40C1 X. tropicalis     QNkrQQVILTEQWAKANP--NVHFSVMHPGWADTpaV-RSS--------MPDFYEKMKNR 7p.0 8p.2
                                *                        **

SDR7C1  H. sapiens        IKTPQQGAQTSLHCALTEG-LEILSGNHFsdCHVAWV-SAQARNETI---ARRLWDVSCD 6p.1
SDR7C1  G. gorilla        IKTPQQGAQTSLHCALTEG-LEILSGNHFsdCHVAWV-SAQARNETI---ARRLWDVSCD 6p.1
SDR7C1  M. musculus       IKTPQEGAQTSLYCALTEG-LESLSGSHFsdCQLAWV-SYQGRNEII---ARRLWDVSCD 6p.1
SDR7C1  P. formosa        LKTPLEGAQTSVYCAVAEE-LHSVSGKHFsdCAPAFV-APQGRSEET---ASKLWDVSCE 6p.1
SDR7C1  M. domestica      IKTPQEGAQTSLYCALTEG-LEPLSGNHFsdCRPAWI-SSRGRNMTT---AMRLWDASCN 6p.1
SDR7C2  H. sapiens        VKTAREGAQTSLHCALAEG-LEPLSGKYFsdCKRTWV-SPRARNNKT---AERLWNVSCE 6p.1
SDR7C2  P. troglodytes    VKTAREGAQTSLHCALAEG-LEPLSGKYFsdCKRTWV-SPRARNNKT---AERLWNVSCE 6p.1
SDR7C2  M. musculus       FKSTSQGAQTSLHCALAED-LEPLSGKYFsdCKRMWV-SSRARNKKT---AERLWNVSCE 6p.1
```

```
SDR7C2  M. domestica       MKTTSQGAQTSLHCALAEG-IESQSGRYFsdCRKAWV-SPKGRNNKT---ARRLWDVSCE 6p.1
SDR7C2  G. gallus          LKTPWEGAQTSVYCAVAEE-LESVTGQYFsdCQPAYV-SPWGRDDET---AKKLWNVSCE 6p.1
SDR7C2  A. carolinensis    WKTVEEGAQTTVHCAVAEE-LESVTGEYFsdCKPAWV-APQGLDENT---AKKLWKVSCE 6p.1
SDR7C2  D. rerio           LKSPKEGAQTSIYCAVAEE-LQSISGKHFsdCAPAFV-APQGRSEET---ARKLWDVSCE 6p.1
SDR7C3  H. sapiens         VKSPELAAQPSTYLAVAEE-LADVSGKYFDGLKQKAP-APEAEDEEV---ARRLWAESAR
SDR7C3  P. troglodytes     VKSPELAAQPSTYLAVAEE-LADVSGKYFDGLKQKAP-APEAEDEEV---AQRLWAESAR
SDR7C3  M. musculus        FKSPQLAAQPSTYLAVAEE-LENVSGKYFDGLREKAP-SPEAEDEEV---ARRLWTESAR
SDR7C3  X. tropicalis      VKSPKQAAQPSVYLAVAEN-LQGVSGKYFNALKEKEP-APQALDEES---ARKLWEESAK
SDR7C3  O. latipes         VKSPALGAQPSVFLAVSEE-MEGVTGRYYDVMTEKEP-AAQALDDEV---ACRLWEVSSR
SDR7C4  H. sapiens         FKTPVEGAQTSIYLASSPE-VEGVSGRYFGDCKEEEL-LPKAMDESV---ARKLWDISEV
SDR7C4  P. troglodytes     FKTPVEGAQTSIYLASSPE-VEGVSGRYFGDCKEEEL-LPKAMDESV---ARKLWDISEV
SDR7C4  M. musculus        FKTPLEGAQTSIYLACSPD-VEGVSGRYFGDCKEEEL-LPKAMDESV---ARKLWDISEV
SDR7C4  M. domestica       FKTPEEGAQTSIYLASSAE-VEGVTGKYFGDCKQEEL-LPKAMDDSV---ARKLWDISEV
SDR7C4  P. humilis         FKTPLEGAQTSIYLASSPD-VEGVSGKYFGDCKEEEL-LPKAMDDLV---ARKLWDISEV
SDR7C4  A. carolinensis    FKSPLEGAQTSVYLASSPE-VEGVSGKYFGDCKEEQL-LPKAMDDLV---ARKLWDISEV
SDR7C4  X. tropicalis      FKSPEEGAQTSIYLASSPE-VEGVSGSYFGNSKEEEL-LPKAMDDLV---ARKLWDISEV
SDR7C4  D. rerio           FKSPLEGAQTPLYLACSPE-VEGVSGKCFANCEEEQL-LSKATDDHA---AKRLWDLSES
SDR7C5  H. sapiens         LRAPRGGAQTPLYCALQEG-IEPLSGRYFANCHVEEV-PPAARDDRA---AHRLWEASKR
SDR7C5  P. abelii          LRAPRGGAQTPLYCALQEG-IEPLSGRYFANCHVEEV-PPAARDDRA---AHRLWEASKR
SDR7C5  M. musculus        LRAPQGGAQTPLYCALQEG-IEPLSGRYFANCHVEEV-SPAARDDQA---AQRLWKATKK
SDR7C5  M. domestica       LRTPRGGAQTPLHCALQEG-IEPLSGRYFANCHVEEV-PTTARDDRA---ARRLWEASEK
SDR7C5  H. leucocephalus   FLDAAEGAQTSLHCATQEG-LERFSGRYFADCRLQEP-WPPARDDRL---ARALWEASER
SDR7C5  G. japonicus       LRDPVNGAQTTIYCATQEG-IERFSGHYFANCKLQEP-YPQARDDAI---AKKLWEFSEK
SDR7C5  X. tropicalis      LRTPMNGAQTSIYCAVQEG-IEMYSGRYFDNCQVRQV-KPHARDDAV---AKKLWEVSER
SDR7C5  O. latipes         FKDAEQGSQTTLHCALQEG-IEHLSGRYFSNCTVRDV-FARAKDDAT---AKKLWELSER
SDR40C1 H. sapiens         LRSEAQGADTMLWLALSSAAAAQPSGRFFqdRKPVSTHLPLATASSSPAEEEKLIEILEQ 9p.2
SDR40C1 P. troglodytes     LRSEAQGADTVLWLALSSAAAAQPSGRFFqdRKPVSTHLPLARTSSSPAEEEKLIEILEQ 9p.2
SDR40C1 B. taurus          LRSEAQGADTVLWLALAPAATAQPSGCFFqdRKPAPTHLPLARTSSSPAEEEKLIEILEE 9p.2
SDR40C1 G. gallus          LRTEAQGADTVVWLAVSSEAAKLPSGLFFqdRQSVPKHLPLARTHSPPGDEEKLMEVLEE 9p.2
SDR40C1 A. carolinensis    LRTEAQGADTVVWLAVSSAARKQASGLFFqdREPVATHLPLAWTKSSPGDDEKLMQVLEE 9p.2
SDR40C1 X. tropicalis      LRTEEQGADTVVWLTLSPSAKKHPSGLFFqdRKPVSTHLPFALTHSSPGDEEKLMESLKE 9p.2
SDR40C1 O. latipes         LRTEAMGADTVVWLAVSAAAIKQPSGLFFqdRKPVPTHLPLAWSRPSAQDEDQLLAALQE 9p.2
                                                        *                       *

SDR7C1  H. sapiens         LLGLPID-------------------------------------------------------
SDR7C1  G. gorilla         LLGLPID-------------------------------------------------------
SDR7C1  M. musculus        LLGLPVDW------------------------------------------------------
SDR7C1  M. domestica       MLGIQQD-------------------------------------------------------
SDR7C1  P. formosa         LLGIDWD-------------------------------------------------------
SDR7C2  H. sapiens         LLGIRWE-------------------------------------------------------
SDR7C2  P. troglodytes     LLGIRWE-------------------------------------------------------
SDR7C2  M. musculus        LLGIQWE-------------------------------------------------------
SDR7C2  M. domestica       LLGI----------------------------------------------------------
SDR7C2  G. gallus          LLGIQWD-------------------------------------------------------
SDR7C2  A. carolinensis    LLGIQWQ-------------------------------------------------------
SDR7C2  D. rerio           LLGIEWD-------------------------------------------------------
SDR7C3  H. sapiens         LVGLEAPSVREQPLPR----------------------------------------------
SDR7C3  P. troglodytes     LVGLEAPSVREQPLPR----------------------------------------------
SDR7C3  M. musculus        LVGLAMAHGSPGRGHAIPR--------------------------------------------
SDR7C3  X. tropicalis      LVHLEEALTECKAL------------------------------------------------
SDR7C3  O. latipes         LVGLQENGQHGSLKKEGVSEP------------------------------------------
SDR7C4  H. sapiens         MVGLLK--------------------------------------------------------
SDR7C4  P. troglodytes     MVGLLK--------------------------------------------------------
SDR7C4  M. musculus        MVGILK--------------------------------------------------------
SDR7C4  M. domestica       MVGILE--------------------------------------------------------
SDR7C4  P. humilis         MVGLLK--------------------------------------------------------
```

```
SDR7C4  A. carolinensis   MVGLLK------------------------------------------------------------
SDR7C4  X. tropicalis     MVGLIK------------------------------------------------------------
SDR7C4  D. rerio          MVGLRR------------------------------------------------------------
SDR7C5  H. sapiens        LAGLGPGEDAEPDEDPQSEDSEAPSSLSTPHPEEPTVSQPYPSPQSSPDLSKMTHRIQAKVEPEIQLS
SDR7C5  P. abelii         LAGLGPGEDAEPDEDPQSEDSEAPFSLSTPHPEEPTVSQPYPSPQSSPDLSKMTHRIQAKVEPETQLS
SDR7C5  M. musculus       LAGLAPGDDDDDPDEEPEPEDPRAPSSQSAPSPEKTTVSGPSHSYQGSQDLSKLTQRRIQVKDEPTP-
SDR7C5  M. domestica      LAGLSKGGSQNTNPKPGSPRNPLAQIATSPALSRFRNLSFPLLSEGQRTVKDEPTP----------
SDR7C5  H. leucocephalus  LVGLGGPGENPSLAPAAVIQ----------------------------------------------
SDR7C5  G. japonicus      LLGLAE------------------------------------------------------------
SDR7C5  X. tropicalis     MTGLAS------------------------------------------------------------
SDR7C5  O. latipes        MSGLA-------------------------------------------------------------
SDR40C1 H. sapiens        LAQTFK------------------------------------------------------------
SDR40C1 P. troglodytes    LAQTFK------------------------------------------------------------
SDR40C1 B. taurus         LARRFK------------------------------------------------------------
SDR40C1 G. gallus         FSQKFKSTSPGSPQCH--------------------------------------------------
SDR40C1 A. carolinensis   LSQQFKPQ----------------------------------------------------------
SDR40C1 X. tropicalis     LSQKFAPASCKL------------------------------------------------------
SDR40C1 O. latipes        LALKFKP-----------------------------------------------------------
```

Figure S13. Alignment of the vertebrate SDR7C family and of SDR40C1 variants. × and + symbols mark the structure consensus and the catalysis consensus respectively; the couples of amino acid symbols in red lowercase mark the splicing-site positions. Splicing sites are progressively numbered and the phase (p.) type is indicated after the splicing-site number. * symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
SDR9C1 H. sapiens           ---------------------M-L-----ATRLSRPLSRLPG----KTLSACDRE-----
SDR9C1 P. paniscus          ---------------------M-L-----ATRLSRPLSRLPG----KTLSACDRE-----
SDR9C1 M. musculus          ---------------------M-L-----AARLSRPLSQLPG----KALSVRDRE-----
SDR9C1 M. domestica         ---------------------M-L-----TARFSRSLVHLSR----NFLSFQ--------
SDR9C1 C. livia             ---------------------M-L-----ATKLSRPLLNFAV----KALNFKDPG-----
SDR9C1 C. picta             ---------------------MM-L-----ATRISRPLSLFSV----KTLNSRDIG-----
SDR9C1 X. tropicalis        ----------------------------------------MAS----CHLPVRACA-----
SDR9C1 D. rerio             MAS----------------LPM-V-RVALLVAFSVFLTLVLGFGLPSVLNWIARCCGFPE
SDR9C2 H. sapiens           -MSTFFSDTAWICLA----VPTVLCGTVFCK-YKKS-S------G-QLWSWMVCL-AGLC
SDR9C2 P. troglodytes       -MSTFFSDTAWICLA----VPTVLCGTVFCK-YKKS-S------G-QLWSWMVCL-AGLC
SDR9C2 M. musculus          -MSPFASESAWLCLA----AAAVLGGTLLCG-CRSG-R--------QLRSQAVCLAGLWG
SDR9C2 M. domestica         -----MNPFSWESRLLPLGVTVMLGAIALYK-FKKS-QSRTGS-SPVVLCHSVLL-CLWG
SDR9C2 G. gallus            MDALPSSPWGWLCVA----IPVLFGL---CL-AKRS-C------RAHMLLRSVLP-ALFG
SDR9C2 A. mississippiensis  ------------------------------------------------------------
SDR9C2 X. tropicalis        -MAHLDS------RLLYLAVCVFFSGSALHK-IMKN-KVKIEN-ASV---SGLLSLLILG
SDR9C2 D. rerio             ---------------------MYTSGIVLYVSFIRSNKRPIAF-TSKWRSRGAV------
SDR9C3 H. sapiens           -----MERWPWPSGG----AWLLVAARALLQ-LLRS---DLRL-GRPLLAALAL-LAALD
SDR9C3 P. troglodytes       -----MERWPWPSGG----AWLLVAARALLQ-LLRS---DLRL-GRPLLAALAL-LAALD
SDR9C3 M. musculus          -----MERWPWPSGG----AWLLVAARALLQ-LLRS---DLRL-GRPLLAALAL-LAALD
SDR9C3 C. picta             -----MERWV--YGS----LWLVFAGSLLLR-LSRS---QLLL-TRALL-HLGL-LGLLQ
SDR9C3 X. tropicalis        -MELAACPSLWAYGA----VWLSFLLLGFLR-FSNS---DMVL-SPALLLYVVV-LVLIE
SDR9C3 D. rerio             --MEDFAVSFWIYIG----VMSIFVGGAVKK-FLAF---NIGA-MPSVVVWLGA-TLLVE
SDR9C4 H. sapiens           ------------------------------------------------------------
SDR9C4 P. troglodytes       ------------------------------------------------------------
SDR9C4 M. musculus          ------------------------------------------------------------
SDR9C4 M. domestica         ------------------------------------------------------------
SDR9C4 G. gallus            ------------------------------------------------------------
SDR9C4 C. mydas             ------------------------------------------------------------
SDR9C4 X. tropicalis        ------------------------------------------------------------
SDR9C4 D. rerio             ------------------------------------------------------------
SDR9C5 H. sapiens           ------------------------------------------------------------
SDR9C5 P. troglodytes       ------------------------------------------------------------
SDR9C5 M. musculus          ------------------------------------------------------------
SDR9C5 S. harrisii          ------------------------------------------------------------
SDR9C5 G. gallus            ------------------------------------------------------------
SDR9C5 A. carolinensis      ------------------------------------------------------------
SDR9C5 X. tropicalis        ------------------------------------------------------------
SDR9C5 D. rerio             ------------------------------------------------------------MYE
SDR9C6 H. sapiens           ------------------------------------------------------------
SDR9C6 P. paniscus          ------------------------------------------------------------
SDR9C6 M. musculus          ------------------------------------------------------------
SDR9C6 S. harrisii          ------------------------------------------------------------
SDR9C6 X. tropicalis        ------------------------------------------------------------
SDR9C6 A. carolinensis      ------------------------------------------------------------
SDR9C7 H. sapiens           ------------------------------------------------------------
SDR9C7 P. troglodytes       ------------------------------------------------------------
SDR9C7 M. musculus          ------------------------------------------------------------
SDR9C7 S. harrisii          ------------------------------------------------------------
SDR9C7 X. tropicalis        ------------------------------------------------------------
SDR9C8 H. sapiens           ------------------------------------------------------------
SDR9C8 P. troglodytes       ------------------------------------------------------------
SDR9C8 M. musculus          ------------------------------------------------------------
SDR9C8 P. humilis           ------------------------------------------------------------
SDR9C8 A. carolinensis      ------------------------------------------------------------
SDR9C8 M. domestica         ------------------------------------------------------------
SDR9C8 X. tropicalis        ------------------------------------------------------------
```

```
SDR9C8 P. reticulata        ------------------------------------------------------------

                                                                    ×   × ×
SDR9C1 H. sapiens           NGArrPLLLGSTSFI----PI---GRRTYASAAEpvGSKAVLVTGCDSGFGFSLAKHLHS  1p.1 2p.0
SDR9C1 P. paniscus          NGArrPLLLGSTSFI----PI---GRRTYASAAEpvGSKAVLVTGCDSGFGFSLAKHLHS  1p.1 2p.0
SDR9C1 M. musculus          NGTrhTLLFYPASFS----PD---TRRTYASQADaaSGKAILITGCDSGFGFSLAKHLHS  1p.1 2p.0
SDR9C1 M. domestica         NIGrpGQELFDPQAT----PA---GQRSSSTQVTeiGNRAVLITGCDSGFGFTTAKDLHE  1p.1 2p.0
SDR9C1 C. livia             NGFrpAERFCFPLLS----PH---GSRSYASEVDqiGSKAVLITGCDSGFGFALAKHLHD  1p.1 2p.0
SDR9C1 C. picta             NGLrpVQGFCFPFLT----PS---GRRSYASEIDqiGSKAVLITGCDSGFGFSLAKHLHS  1p.1 2p.0
SDR9C1 X. tropicalis        NHFrfMPKWSFPLQS----AV---GKRPFASHTAed-SKAVLVTGCDSGFGFSLAKHLHN  1p.1 2p.0
SDR9C1 D. rerio             ASVTECIVFVYALFV---LYV---AVPRLPRGTVevEGKALLITGCDTGFGPALAKHFHK      1p.0
SDR9C2 H. sapiens           AVCLLILSPFWGLILFSVSCFLMY-TYLSGQELLPVDQKAVLVtgGDCGLGHALCKYLDE  1p.2
SDR9C2 P. troglodytes       AVCLLILSPFWGLVLFSVSCFLMY-TYLSGQELLPVDQKAVLVtgGDCGLGHALCKYLDE  1p.2
SDR9C2 M. musculus          GACLLSLSLLCTLFLLSVACFLLLYMSSSDQDLLPVDQKAVLVtgADSGFGHGLAKHLDK  1p.2
SDR9C2 M. domestica         IYCFSSFSIFWGWTLFSLACCISL-SYSTSQEMLPLDKRAVLItgGDSGIGHALSKYLDE  1p.2
SDR9C2 G. gallus            LLCVAMLGTCWGLIVFCSTWLSCS-AYL-DAGPLPVGDKAVLItgSDTGIGHALAKYLDN  1p.2
SDR9C2 A. mississippiensis  --------------------------------MLPVDNKAVLItgSDSGIGHALAKHLDN  1p.2
SDR9C2 X. tropicalis        IFCFFVLSDTAGLTLLTLACTIYYYS-IPVRDMLSAEGKSVLItgCDSGFGHALAKHLDK  1p.2
SDR9C2 D. rerio             --AVELSIERRPLVILSSLTTLYF------RKIF----TLAGVfSCDSGFGHELAQVLDR  1p.2
SDR9C3 H. sapiens           WLCQRLLPPPAALAVLAAAGWIAL-SRLARPQRLPVATRAVLItgCDSGFGKETAKKLDS  1p.2
SDR9C3 P. troglodytes       WLCQRLLPPPAALAVLAAAGWIAL-SRLARPQRLPVATRAVLItgCDSGFGKETAKKLDA  1p.2
SDR9C3 M. musculus          WLCQRLLPPPAALVVLAGAGWIAL-SRLARPPRLPVATRAVLItgCDTGFGKETAKKLDA  1p.2
SDR9C3 C. picta             YLCQACLPLPLGA-ALTAAGCLAL-GRGAQGRRLPVVGKAVFItgCDSGFGKQAACHLDS  1p.2
SDR9C3 X. tropicalis        WLCHLYLPIALGILFLSSACWYVL-GIVSPKRTLPVEGKVVFItgCDSGFGNVAAHKLDS  1p.2
SDR9C3 D. rerio             RLCALCMPAVLARLVLCVCCWLYF-TWATPKPSLPVEDKAVFItgCDSGFGNATAKKLDA  1p.2
SDR9C4 H. sapiens           -------MLFWVLGLLILCGFL--WTRKGKLKIEDITDKYIFITGCDSGFGNLAARTFDK
SDR9C4 P. troglodytes       -------MLFWVLGLLILCGFL--WTRKGKLKIEDITDKYIFITGCDSGFGNLAARTFDK
SDR9C4 M. musculus          -------MLFWLLALLFLCAFL--WNYKGQLKIADIADKYVFITGCDTGFGNLAARTFDK
SDR9C4 M. domestica         -------MILWMLAFLIICCFL--WNYKGHLRIADINNKYIFITGCDTGFGNLAAKTFDK
SDR9C4 G. gallus            -------MFFYILLFLSISSLWWYWKTRDGGKVANLNGKYIFITGCDTGFGNMAAKTFDK
SDR9C4 C. mydas             -------MFFHILIFLAIFYLWWRWRAQDGQKIRDLTDKYIFITGCDSGFGNLAARTFDK
SDR9C4 X. tropicalis        -------MLLCFLIGVAILYIWW--RVRDGLKINNITEKYILITGCDTGFGNHAAKTFDK
SDR9C4 D. rerio             -------MYLYI-AGLVVLFYVY-RWFRELGRVSNKSEKFVYITGCDTGFGNLLARHLDT
SDR9C5 H. sapiens           -------MWLPL-LLGALLWAVL-WLLRDRQSLPA-SNAFVFITGCDSGFGRLLALQLDQ
SDR9C5 P. troglodytes       -------MWLPL-LLGALLWAVL-WLLRDRQSLPA-SDAFVFITGCDSGFGRLLALQLDQ
SDR9C5 M. musculus          -------MWLPL-LLGALLWAVL-WLLRDRQSLPA-SDAFIFITGCDSGFGRLLALQLDQ
SDR9C5 S. harrisii          -------MWLLL-LLGTLLWGVL-WFLRDRLVLPP-SDAFVFITGCDSGFGRHLALRLDR
SDR9C5 G. gallus            -------MWLYL-LLVVLAWALG-WLVRDRQTLPSVKDKHVFITGCDSGFGNLLARRLAQ
SDR9C5 A. carolinensis      -------MWCCV-LLFSVLWTVV-WFFRDRQMLSSFKDKYVFVTGCDTGFGNLLAKRLDK
SDR9C5 X. tropicalis        -------MWCYV-LLFAMVWAIG-WLLRDRQKISRFSNKHVFITGCDTGFGNLLAKRLSR
SDR9C5 D. rerio             FLsnSCPSTYAL-GTFAILWVLV-WFYRDNLKITRVSEKHVFVTGCDSGFGNLLCKRLDK  1p.1
SDR9C6 H. sapiens           -------MWLYL-AAFVGLYYLL-HWYRERQVVSHLQDKYVFITGCDSGFGNLLARQLDA
SDR9C6 P. paniscus          -------MWLYL-AAFVGLYYLL-HWYRERQVVSHLQDKYIFITGCDSGFGNLLARQLDA
SDR9C6 M. musculus          -------MWFYL-VTLVGLYHLL-RWYRERQVVSHLQDKYVFITGCDSGFGNLLARQLDR
SDR9C6 S. harrisii          -------MWLYV-ASLIGLYYLF-RWYREKQVVSNLEDKYVFITGCDSGFGNQLAKQLDL
SDR9C6 X. tropicalis        -------MWLPLLVI-ITLMLLY-RWSRQRKKIQNLSDKYVFITGCDSGFGNVLAKQLDK
SDR9C6 A. carolinensis      -------MWIYL-VPAVILYFVI-RFYRERQTVENLGEKYVFITGCDSGFGNQVAKQLDI
SDR9C7 H. sapiens           ------------MAALTDLSFMY-RWFKNCNLVGNLSEKYVFITGCDSGFGNLLAKQLVD
SDR9C7 P. troglodytes       ------------MAALTDLSFMY-RWFKNCNLVGNLSEKYVFITGCDSGFGNLLAKQLVD
SDR9C7 M. musculus          ------------MAALTDFAFMY-RWFKNCNLVKNLSEKYVFITGCDSGFGNLLAKQLVD
SDR9C7 S. harrisii          ------------MGGIMDISFMY-RWFKNLNLVPNLSDKYVFITGCDSGFGNLLARKLDQ
SDR9C7 X. tropicalis        -------MWLLLLVVAAAMIFLY-RWNIQRQILPNLTDKYVLITGCDSGFGKLLAKQLDG
SDR9C8 H. sapiens           -------MWLYL-AVFVGLYYLL-HWYRERQVLSHLRDKYVFITGCDSGFGKLLARQLDA
SDR9C8 P. troglodytes       -------MWLYL-AVFVGLYYLL-HWYRERQVLSHLRDKYVFITGCDSGFGKLLARQLDA
SDR9C8 M. musculus          -------MWLYL-VALVGLWTLL-RFFRVRQVVSHLQDKYVFITGCDSGFGTLLARQLDR
SDR9C8 M. domestica         -------MWLYL-AVLVGLYFLF-RWLRERQVVSNLGDKYVFITGCDSGFGNLLAKQLDL
```

```
SDR9C8 P. humilis            -------MWLYAVAVLLGLFLLR-RWHRERQTVPRLSEKHVLITGCDSGFGNLLARQLDA
SDR9C8 A. carolinensis       -------MWLYL-AAFLGLYLLC-RWYREKQILSHLTEKYVFITGCDSGFGNLVARQLDA
SDR9C8 X. tropicalis         -------MWLFLLVL-LALILLY-RWNIGRKMLPNLTDKYVFITGCDSGFGNLLAKQLDR
SDR9C8 P. reticulata         -------MFLYI-LGLVAVWYLY-RWYKESERVPNKGDKYVYITGCDSGFGNSLAKHLDK
                                                                 *   * *

SDR9C1 H. sapiens            KGFLVFAGCLMkdKGHDGVKELDSLNSDRLRTVQLNVCSSEEVEKVVEIVRSSLKDPEkg  3p.2 4p.2
SDR9C1 P. paniscus           KGFLVFAGCLMkdKGHDGVKELDSLNSDRLRTVQLNVCSSEEVEKAVEIVRSSLKDPEkg  3p.2 4p.2
SDR9C1 M. musculus           KGFLVFAGCLMkdKGDAGVKELDSLKSDRLRTIQLNVCNSEEVEKAVETIRSGLKDPEkg  3p.2 4p.2
SDR9C1 M. domestica          LGFRVFAGCLFkdKGGKGVEELDSMKSERMQTIQLDVCQSAEVEKAVKTIQESLEDPEkg  3p.2 4p.2
SDR9C1 C. livia              KGFIIYAGCLQkdKGEGGSKDLDNMNSDRMRTLQLNVCDSKEVDRAVEHVNRTLQDPEkg  3p.2 4p.2
SDR9C1 C. picta              KGFIVYAGCLFkdQGAAGSQELDNMKSERMRTIQLNVCDSQEIERAVEHMGASLKDPQkg  3p.2 4p.2
SDR9C1 X. tropicalis         KGFIVYAGCLFkdKGEAGVKELDSMKSDRMRTIQLNVVKQDEVDRTVEIIRENLTNPEkg  3p.2 4p.2
SDR9C1 D. rerio              LGFTVFAGCLFkdG--EGAKELENIHSEKLKVVQLDVCSEEQVSQAVQFVTENLPDSEkg  3p.0 4p.2
SDR9C2 H. sapiens            LGFTVFAGVLNENG--PGAEELRRTCSPRLSVLQMDITKPVQIKDAYSKVAAMLQ--Drg        2p.2
SDR9C2 P. troglodytes        LGFTVFAGVLNENG--PGAEELRRTCSPRLSVLQMDITKPVQIKDAYSKVAAMLQ--Drg        2p.2
SDR9C2 M. musculus           LGFTVFAGVLDKEG--PGAEELRKHCSERLSVLQMDVTKPEQIKDAHSKVTEKIQ--Dkg        2p.2
SDR9C2 M. domestica          LGFTVFVGVLNEKG--PGAEALKKTCSKRTSVFQMDITKPAQIREVQARVAEKVQ--Qtg        2p.2
SDR9C2 G. gallus             LGFIVFAGVLNKDG--PGAEELRRTCSQRLSLLQLDITNPTQVKEAYLQVSEKVQ--Ktg        2p.2
SDR9C2 A. mississippiensis   LGFVVFAGVLNKEG--PGAEALKRSCSQRLSVLQMDITNPTQIREAYLAVSEKVQ--Nag        2p.2
SDR9C2 X. tropicalis         LGVHVFAGVLDKKG--PGAEELKRVCSTHLCLIQLNITNCEEIRKAYKEISSYIQ--Dag        2p.2
SDR9C2 D. rerio              AGMRVFAGVLDELS--PGALKLKESASVNLTVLQLDITNNTQITQTHQFIKSQTG--Ktg        2p.2
SDR9C3 H. sapiens            MGFTVLATVLELNS--PGAIELRTCCSPRLRLLQMDLTKPGDISRVLEFTKAHTT--Stg        2p.2
SDR9C3 P. troglodytes        MGFTVLATVLELNS--PGAIELRTCCSPRLRLLQMDLTKPGDISRVLEFTKAHTT--Stg        2p.2
SDR9C3 M. musculus           MGFTVLATVLDLNS--PGALELRDLCSPRLKLLQMDLTKAEDISRVLEITKAHTA--Stg        2p.2
SDR9C3 C. picta              MGFKVFASVLDLQS--AGAKELRQRCSPSLTLLQMDLTKPEDIRKAQQLVQPQTA--Rtg        2p.2
SDR9C3 X. tropicalis         MGFKVIATVLNLES--PGARKLRKICSDNLTIIQMDLTKQEDIQKAQQTTKLHTA--Grg        2p.2
SDR9C3 D. rerio              MGFEVFATVLNLEG--EGAKHLRKVCSSRLTLLQVDITQPQQVQQALLDTKAKLG--Ird        2p.2
SDR9C4 H. sapiens            KGFHVIAACLTE----SGSTALKAETSERLRTVLLDVTDPENVKRTAQWVKNQVG--Ekg        1p.2
SDR9C4 P. troglodytes        KGFHVIAACLTE----SGSTALKAETSERLCTVLLDVTNPENVKRTAQWVKNQVG--Ekg        1p.2
SDR9C4 M. musculus           KGFRVIAACLTE----SGSAALKAKTSERLHTVLLDVTDPENVKKTAQWVKSHVG--Ekg        1p.2
SDR9C4 M. domestica          KGFRVLAACLTE----SGCRDLKASTSGKLQTVLLDVTKPDNVKRTAQWVKDEVG--Eng        1p.2
SDR9C4 G. gallus             KGFRVLASCLTE----TGAKELQAATSDQLQTVLLDVRDSNSVKKAAAWIKAKVQ--Seg        1p.2
SDR9C4 C. mydas              KGFRVLASCLTE----AGAVELKAATSEQLQTVLLDVTDPDNVRKVAEWIKAEVG--Sag        1p.2
SDR9C4 X. tropicalis         QGFRILATCLTE----AGATGLREATSQRLKTTLLDVTIAENVVSMAEWVKGEVG--Srg        1p.2
SDR9C4 D. rerio              KGFRVIAGCYSE----KGEDELKKICSDRLITLHLDVTDNENVKKAAETIKSLVG--Qkg        1p.2
SDR9C5 H. sapiens            RGFRVLASCLTP----SGAEDLQRVASSRLHTTLLDITDPQSVQQAAKWVEMHVK--Eag        1p.2
SDR9C5 P. troglodytes        RGFRVLASCLTP----SGAEDLQRVASSRLHTTLLDITDPQSVQQAAKWVEMHVK--Eag        1p.2
SDR9C5 M. musculus           KGFQVLAGCLTP----SGAEDLQQMASSRLHTTLLDITDPQNVQQVAKWVKTRVG--Etg        1p.2
SDR9C5 S. harrisii           RGFRVLAACLTP----TGAENLKQAASPRLCTTLLDVTDPQNIQQVAEWVGTLVG--Erg        1p.2
SDR9C5 G. gallus             RGFRVLATCLTP----QGADGLQRGCAGHLRTTLLDVTRSDSIRRAAEWVREEVG--Ekg        1p.2
SDR9C5 A. carolinensis       KGFQVLAGCLTQ----KGADNLQRSSSPNLRTTLLDVTNSESIRKAVEWVKGEVG--Ekg        1p.2
SDR9C5 X. tropicalis         KGFQVLAGCLTQ----AGADDLQKACPTGLKCTLLDVTSQESINKAVEWVKSEVG--Drg        1p.2
SDR9C5 D. rerio              RGFRVLAGCLTE----KGADDLKRAAGPFLKTCILDVTSSASIQKAMEWTKNEVG--Dkg        1p.2
SDR9C6 H. sapiens            RGLRVLAACLTE----KGAEQLRGQTSDRLETVTLDVTKMESIAAATQWVKEHVG--Drg        1p.2
SDR9C6 P. paniscus           RGLRVLAACLTE----KGAEQLRGQTSDRLETVTLDVTKMESIAAATQWVKEHVG--Drg        1p.2
SDR9C6 M. musculus           RGMRVLAACLTE----KGAEELRNKTSDRLETVILDVTKTESIVAATQWVKERVG--Drg        1p.2
SDR9C6 S. harrisii           RGLRVLAACLTE----KGAEQLRHQTSDRVKTVILDVTKTESITAAAQWVKECVG--Nkg        1p.2
SDR9C6 A. carolinensis       QGLRVLAACLTQ----EGAEELERLTSDRLKTTILDVTSTESVKAASEWVKGIVG--Nkg        1p.2
SDR9C6 X. tropicalis         QGIQVLATCLTE----KGAETLKSETSSRLRTVNMNVTDSQSVKSAAEWVTGIVG--Dag        1p.2
SDR9C7 H. sapiens            RGMQVLAACFTE----EGSQKLQRDTSYRLQTTLLDVTKSESIKAAAQWVRDKVG--Eqg        1p.2
SDR9C7 P. troglodytes        RGMQVLAACFTE----EGSQKLQQDTSYRLQTTLLDVTKSESIKAAAQWVRDKVG--Eqg        1p.2
SDR9C7 M. musculus           RGMKVLAACLTE----EGAQKLLQDTSHQLQTFLLDVTKSENVKEAAQWVRDQVG--Eqg        1p.2
SDR9C7 S. harrisii           RGMRVLATCFTE----EGAQELRRACSHRLQITFLDVTKTESIKAAAQWVNAQVG--Drg        1p.2
SDR9C7 X. tropicalis         QGLKVLATCLTQ----KGAEELKKETSSRLKTVIMDVSDSESVSKAAQWVSQIVG--Nag        1p.2
SDR9C8 H. sapiens            RGLRVLAACLTE----KGAEQLRGQTSDRLETVTLDVTKTESVAAAAQWVKECVR--Dkg        1p.2
```

```
SDR9C8 P. troglodytes        RGLRVLAACLTE----KGAEQLRGQTSDRLETVTLDVTKTESVAAAAQWVKECVR--Dkg       1p.2
SDR9C8 M. musculus           RGMRVLAACLTE----KGAEELRNKTSDRLETVILDVTKTESIVTATQWVKEHVG--Nrg       1p.2
SDR9C8 M. domestica          RGLRVLAACLSE----EGAQRLRRATSERVETVILDVTKTESITAAAQWVKERVG--Nkg       1p.2
SDR9C8 P. humilis            RGLRVLAACLTD----SGAAQLRAATSDRLQTVLLDVTSSKSIADVTAWVRERVG--Dqg       1p.2
SDR9C8 A. carolinensis       RGLRVLAGCFTE----EGAKKLKEATSQRLQTISLDVTKTESVAQAAAWAKGIVG--Dkg       1p.2
SDR9C8 X. tropicalis         RGLWVLAACLTD----KGAEELKKETSSRLKTVILNVTDSQSVISASAWVSDIVG--Nkg       1p.2
SDR9C8 P. reticulata         LGFCVIAGCYTE----NGETELKKVSSERLTAISLDVSKSESVKKVAAFIKTLVG--Dkg       1p.2
                                           *               *   *

SDR9C1 H. sapiens            MWGLVNNAGIST-FGEVEFTSLETYKQVAEVNLWGTVRMTKSFLPLIRRAkgRVVNISSM  5p.2
SDR9C1 P. paniscus           MWGLVNNAGIST-FGEVEFTSLETYKQVAEVNLWGTVRMTKSFLPLIRRAkgRVVNISSM  5p.2
SDR9C1 M. musculus           MWGLVNNAGIST-FGEVEFTSMETYKEVAEVNLWGTVRTTKSFLPLLRRAkgRVVNISSM  5p.2
SDR9C1 M. domestica          LWGLVNNAGIST-FGEVEFTSMETYKEVAEVNLWGTIRTTKACLPLIRRAkgRVVNISSM  5p.2
SDR9C1 C. livia              LWGLVNNAGIST-FGEVEFTSMDTYMEVAEVNLWGTVRTTKAFLPLIRRSkgRVVNISSM  5p.2
SDR9C1 C. picta              LWGLVNNAGIST-FGEVEFTSMETYKEVAEVNLWGTIRTTKAFLPLIRRAkgRVVNISSM  5p.2
SDR9C1 X. tropicalis         LWGVVNNAGIST-FGEVEFTSMETYKEVAEVNLWGTVRVTKACLPLIRRAkgRVVNISSM  5p.2
SDR9C1 D. rerio              LWGVVNNAGIST-FGEVEFTTMDTYKQVSEVNLWGTIRVTKAFLPLIRRAkgRVVNIASM  5p.2
SDR9C2 H. sapiens            LWAVINNAGVLGFPTDGELLLMTDYKQCMAVNFFGTVEVTKTFLPLLRKSKGRLVNVSSM
SDR9C2 P. troglodytes        LWAVINNAGVLGFPTDGELLLMTDYKQCMAVNFFGTVEVTKTFLPLLRKSKGRLVNVSSM
SDR9C2 M. musculus           LWAVVNNAGVFHLPIDGELIPMSIYRKCMAVNFFGTVEVTKAFLPLLRKSKGRLVNVSSM
SDR9C2 M. domestica          LWAIVNNAGILGSIGDGELLPMEVYRQCMDVNFFGAVEVTKAFMPLLRKSKGRVVNVSSL
SDR9C2 G. gallus             LWGVVNNAGILGFPADGELLPMSMYRQCMEVNFFGAVHVSKTFLPLLRKSRGRLVNMSSM
SDR9C2 A. mississippiensis   LWGIINNAGVLGFTADSELLPMSVYRQCMDVNFFGAVEVSKMFLPLLRKSQGRLVNMSSM
SDR9C2 X. tropicalis         LWGIVHNAGVLGYVADGELIPFSVYRQCMEVNFLGAVQVTQIFAPLLRKSKGRLVSISSM
SDR9C2 D. rerio              LWALVNNAGVLGYVCDGEILPMKMYKSCLDVNFLGSVMMTHTFLPLIRQSRGRVINITSM
SDR9C3 H. sapiens            LWGLVNNAGHNEVVADAELSPVATFRSCMEVNFFGALELTKGLLPLLRSSRGRIVTVGSP
SDR9C3 P. troglodytes        LWGLVNNAGHNEVVADAELSPVATFRSCMEVNFFGALELTKGLLPLLRSSRGRIVTVGSP
SDR9C3 M. musculus           LWGLVNNAGLNIVVADVELSPVATFRKCMEVNFFGALELTKGLLPLLRHSRGRIVTVGSP
SDR9C3 C. picta              LWGLVNNAGFDDTIADAELSPLCKFRTCMDVNFFGTLELTKALLPLLRSARGRIVTVSSP
SDR9C3 X. tropicalis         LWALINNAGYCAHFGDAELTLMSTYKACMDVNFFGTLELTQALLPFIRYAKGRIVTVGSP
SDR9C3 D. rerio              LWGLVNNAGWCVNIGDAELSLMSNYRGCMEVNFFGTVTVTRTFLPLLRQSKGRIVTISSP
SDR9C4 H. sapiens            LWGLINNAGVPGVLAPTDWLTLEDYREPIEVNLFGLISVTLNMLPLVKKAQGRVINVSSV
SDR9C4 P. troglodytes        LWGLINNAGVPGVLAPTDWLTLEDYREPIEVNLFGLISVTLNMLPLVKKAQGRVINVSSV
SDR9C4 M. musculus           LWGLINNAGVLGVLAPTDWLTVDDYREPIEVNLFGLINVTLNMLPLVKKARGRVINVSSI
SDR9C4 M. domestica          LWGLINNAGILGVLAPTDWLTVEHFREPFEVNLFGLINVTLNMLPLVKKAQGRIINISSI
SDR9C4 G. gallus             LWGLVNNAGIMGPTAPTDWLDIEHFREPIEVNLIGLINVTINMLPLIKLAKGRIVNVSSI
SDR9C4 C. mydas              LWGLVNNAGIMGPSAPTDWLNIEHFRAPIETNLIGLINVTLHLLPLVKKARGRLVNISST
SDR9C4 X. tropicalis         LWGLINNAGVMGTLAPFDWLTIEDIKKPMEINLIGLIHVTLVLLPFIKKAKGRIINVSSI
SDR9C4 D. rerio              LWAVVNNAGIAFPTAPNDWLEIEDFTPMINVNLIGVIAVTLSVLPLIKKAKGRVVNVASV
SDR9C5 H. sapiens            LFGLVNNAGVAGIIGPTPWLTRDDFQRVLNVNTMGPIGVTLALLPLLQQARGRVINITSV
SDR9C5 P. troglodytes        LFGLVNNAGVAGIIGPTPWLTRDDFQRVLNVNTMGPIGVTLALLPLLQQARGRVINITSV
SDR9C5 M. musculus           LFGLVNNAGVAGIIGPTPWLTQDDFQRVLSVNTLGPIGVTLALLPLLQQARGRVVNITSV
SDR9C5 S. harrisii           LFGLVNNAGITGIIGPTPWLNLEDYRKVLEVNTLGPIGVTLALLPLLRQSRGRIINISSV
SDR9C5 G. gallus             LFGLVNNAGVANPIGPTEWMRIEDYRQVMAVNTFGAIEVTLQLLPLLKRARGRVVNTSSV
SDR9C5 A. carolinensis       LFGLVNNAGVANPIGPTEWMIVEDYRKVMSINTFGMIEVSLAFLPLLKQARGRVVNTSSV
SDR9C5 X. tropicalis         LYGLVNNAGIANPIGPTEWMTIQDYKRVMDVNAFGTIAVSLSFLSLIKKAQGRIINMASI
SDR9C5 D. rerio              LWGLVNNAGRSLPMGPSEWMKIEDFESTLKVNMTGVIETTMTFLPLVKKARGRIVNVASV
SDR9C6 H. sapiens            LWGLVNNAGILTPITLCEWLNTEDSMNMLKVNLIGVIQVTLSMLPLVRRARGRIVNVSSI
SDR9C6 P. paniscus           LWGLVNNAGILTPITLCEWLNTEDSMNMLKMNLIGVIQVTLSMLPLVRRARGRIVNVSSI
SDR9C6 M. musculus           LWGLVNNAGVLQPFAYIEWYRPEDYMPIFQVNLIGLTQVTISMLFLVKKARGRIVNVSSA
SDR9C6 S. harrisii           LWGLVNNAGIVLPHICTEMMTKEILTKTLNVNLIGLIEVTLNMLPMIRQARGRIVNVCSI
SDR9C6 A. carolinensis       LWGLVNNAGILRTTCPNEWLTKEDFEKVLNVNLLGLIDVTLQMLPLLRKAKGRVVNVASI
SDR9C6 X. tropicalis         LWGLVNNAGYGFVFSPTGWQTKEHFVKVLEINLLGMVDVTLNLLPLLRKAQGRIVNVSSN
SDR9C7 H. sapiens            LWALVNNAGVGLPSGPNEWLTKDDFVKVINVNLVGLIEVTLHMLPMVKRARGRVVNMSSS
SDR9C7 P. troglodytes        LWALVNNAGVGLPSGPNEWLTKEDFVKVINVNLVGLIEVTLHMLPMVKRARGRVVNMSSS
SDR9C7 M. musculus           LWALVNNAGVGLPSGPNEWLTIKDFVKVININLVGLIDVTLNMLPMIKKARGRVVNMSSS
```

```
SDR9C7 S. harrisii           LWGLVNNAGVGLPSGPNEWLTKEDFAKVINVNLIGMIEVTLNMLPMIKRARGRVVNMSSS
SDR9C7 X. tropicalis         LWGLVNNAGIALPIGPNGWMKKEHFVKMIDVNLLGMVDVTLTLLPLIRRARGRIVNVSSS
SDR9C8 H. sapiens            LWGLVNNAGISLPTAPNELLTKQDFVTILDVNLLGVIDVTLSLLPLVRRARGRVVNVSSV
SDR9C8 P. troglodytes        LWGLVNNAGISLPTAPNELLTKQDFMTILDVNLLGVIDVTLSLLPLVRRAKGRVVNVSSV
SDR9C8 M. musculus           LWGLVNNAGISTPSGPNEWMKKQDFAHVLDVNLLGMIEVTLSMLPLVRKARGRVVNVSSV
SDR9C8 M. domestica          LWGLVNNAGISMPTAPNDWLTKEDFLRVINVNLIGLIEVTLSLLSLVRKAKGRIVNVSSI
SDR9C8 P. humilis            LWGLVNNAGIAIPTGPNEWLTKQDFVKVLDVNLIGVVEVTLSLLPLLRRARGRVVNVASV
SDR9C8 A. carolinensis       LWGLVNNAGISIPTAPNEWLTKEDFQKILDINLLGVFDVTKHMLPLLRKAKGRIVNVASV
SDR9C8 X. tropicalis         LWGLVNNAGISNPIAPNEWLSKEDYLKVLNVNLLGVIDITLKLLPLIRKARGRIVNVASV
SDR9C8 P. reticulata         LWAVVNNAGVATPSGPTEWLTIDDYKSMLAVNLNGVIDVTLSVLPLIKKARGRVVNVASV
                                   ***                   *  *              **     *

                                        +   +
SDR9C1 H. sapiens            LGRMANPARSPYCITKFGVEAFSDCLRYEMYPLGVKVSVVEPGNFIAATSLY-SPESIQA
SDR9C1 P. paniscus           LGRMANPARSPYCITKFGVEAFSDCLRYEMYPLGVKVSVVEPGNFIAATSLY-SPESIQA
SDR9C1 M. domestica          LGRMSSPSRSPYCITKYGVEAFSDCLRYEMYPLGVRVCVVEPGNFIAATSLY-SPERIRA
SDR9C1 M. musculus           LGRMANPARSPYCITKFGIEAFSDCLRYEMHPLGVKVSVVEPGNFIAATSLY-SPERIQA
SDR9C1 C. livia              MGRMGSPARSPYCITKFGVEAFSDCLRYEMQPQGVTVSIVEPGNFIAATNLY-SPERIKA
SDR9C1 C. picta              MGRMGSPARSSYCITKFGVEAFSDCLRYEMQPQEVKICVVEPGNFIGATNLY-TPERIKA
SDR9C1 X. tropicalis         LGRMANPARSPYCITKFGVEAFSDCLRYEMHPLGVKVSVVEPGNFIAGTSLY-SPEKIKA
SDR9C1 D. rerio              YGRMGNALRSPYCISKYGVEAFSDCLRYEMKTWGVKVSIIEPGNFIVATGIL-TRDIVTT
SDR9C2 H. sapiens            ggGAPMERLASYGSSKAAVTMFSSVMRLELSKWGIKVASIQPGGFL--tnIAGTSDKWEK  3p.2 4p.2
SDR9C2 P. troglodytes        ggGAPMERLASYGSSKAAVTMFSSVMRLELSKWGIKVASIQPGGFL--tnIAGTSDKWEK  3p.2 4p.2
SDR9C2 M. musculus           ggTVPLQMTSAYAATKAALTMFSTIIRQELDKWGVKVVTIKPGGFK--tnITGSQDIWDK  3p.2 4p.2
SDR9C2 M. domestica          agAMPMKFLAAYCASKAALTMFSAVMRMELEKWGIKVVIIHPAGFK--tfIFGTKETLGM  3p.2 4p.2
SDR9C2 G. gallus             tgGIPLPRYAAYGASKAALSMFSGVMRQELSKWGIKVAAIHPSGFR--tgIQGTPELWVK  3p.2 4p.2
SDR9C2 A. mississippiensis   agGVPMPRLSAYGASKAALSMFSGVMRQELSKWGIKVAVVHPSGFR--tcIQGTPELWDK  3p.2 4p.2
SDR9C2 X. tropicalis         ggHVPLNGFAAYASSKAALSMFSAVMRQDLSKWGVKVAVVCPSGFR--tnIFGSQ-----  3p.2 4p.2
SDR9C2 D. rerio              agEVPLVGFAGYGASKAALNIYSGAIRQELSRWGVRVIIVQPGAFR--tnILGSSEQWER  3p.2 4p.2
SDR9C3 H. sapiens            agDMPYPCLGAYGTSKAAVALLMDTFSCELLPWGVKVSIIQPGCFK--teSVRNVGQWEK  3p.2 4p.2
SDR9C3 P. troglodytes        agDMPYPCLGAYGTSKAAVALLMDTFSCELLPWGVKVSIIQPGCFK--teSVRNVGQWEK  3p.2 4p.2
SDR9C3 M. musculus           agDMPYPCLAAYGTSKAAIALLMDTFGCELLPWGIKVSIIKPGCFK--tdAVTNVNLWEK  3p.2 4p.2
SDR9C3 C. picta              agDMPYPCLAAYGASKAALTLLMDTFRSELEPWGVKVSVILPGYFK--tgTSCDPAYWHE  3p.2 4p.2
SDR9C3 X. tropicalis         agEHSFPYLAAYGSSKAALNRVMDIFRHELMPWGVKVILILPASYK--tgAHDNHIHWEN  3p.2 4p.2
SDR9C3 D. rerio              sgEHPFPCLASYGASKAALNLFINTLRHELDPWGVKVSTILPSAYK--tgQSSNAEYWEK  3p.2 4p.2
SDR9C4 H. sapiens            GGRLAI-VGGGYTPSKYAVEGFNDSLrrDMKAFGVHVSCIEPGLFK--TNLA-DPVKVIE  2p.1
SDR9C4 P. troglodytes        GGRLAI-VGGGYTPSKYAVEGFNDSLrrDMKAFGVHVSCIEPGLFK--TNLA-DPVKVIE  2p.1
SDR9C4 M. musculus           GGRLAF-GGGGYTPSKYAVEGFNDSLrrDMKAFGVHVSCIEPGLFK--TELA-DPIKTTE  2p.1
SDR9C4 M. domestica          GGRLAF-SGGGYTPSKYAVEGFNDSLrrDMKEFGVKVSCIEPGLFK--TGLS-DPVKAIE  2p.1
SDR9C4 G. gallus             GGRLAF-CGGGYCPSKFGVEGFNDSLrrDMKAFGVKVSCIQPGLFK--TPLT-DLAKILK  2p.1
SDR9C4 C. mydas              GGRLAV-WGGGYVPSKFGVEGFNDSLrrDMKAFGVKVSCIEPGLFK--TGLS-NRKKVIE  2p.1
SDR9C4 X. tropicalis         GGRVAA-SGGAYFSSKFGVEGFNDSLrrDMKAFGVQVSCIEPGLFK--TPLS-DPKKVLQ  2p.1
SDR9C4 D. rerio              FGRIST-LGGAYCITKYGVEAFNDALrrQMAPFGVKVLCIEPGFFK--TIVT-DFNIVES  2p.1
SDR9C5 H. sapiens            LGRLAA-NGGGYCVSKFGLEAFSDSLrrDVAHFGIRVSIVEPGFFR--TPVT-NLESLEK  2p.1
SDR9C5 P. troglodytes        LGRLAA-NGGGYCVSKFGLEAFSDSLrrDVAHFGIRVSIVEPGFFR--TPVT-NLESLEK  2p.1
SDR9C5 M. musculus           LGRIAA-NGGGYCVSKFGLEAFSDSLrrDMAPFGVQVSIVEPGFFR--TPVT-NLESLES  2p.1
SDR9C5 S. harrisii           LGRLAA-NGGGYCVSKYGVEAFSDSLrrDIAHFGVRVSIVEPGFFR--TAAT-DLESVEG  2p.1
SDR9C5 G. gallus             LGRLSA-NGGGYCVSKYCIEAFSDSLrrDMYHFGVKVSIVEPGFFK--TAVT-NLESIEA  2p.1
SDR9C5 A. carolinensis       LGRLSA-NGGGYCISKYCVEAFSDSLrrDMYHFGVKVSIVEPGFFK--TAVT-NLDSIES  2p.1
SDR9C5 X. tropicalis         LGRISA-NGGGYCVSKYAVEAFSDSLrrDMQHFGVRVCIIEPGFFK--TAVT-NLDSIER  2p.1
SDR9C5 D. rerio              LGRVAA-NGGGYCISKFAVESFSDCLrrDIQGFGVNVCIIEPGFFK--TQVT-SLEPIER  2p.1
SDR9C6 H. sapiens            LGRVAF-FVGGYCVSKYGVEAFSDILrrEIQHFGVKISIVEPGYFR--TGMT-NMTQSLE  2p.1
SDR9C6 P. paniscus           LGRVAF-FVGGYCVSKYGVEAFSDILrrEIQHFGVKISIVEPGYFR--TGMT-NMTQSLE  2p.1
SDR9C6 M. musculus           LGRVAL-FGGFYSCSKYGVEAFSDVLrhEVQDFGVKVSIIEPGSFK--TEMT-DAELTIE  2p.1
SDR9C6 S. harrisii           LGRMAA-FSTAYCSSKFGVEAFSDCLrlEMQYFGVKVCIIEPGYFK--TNLT-NEETFVE  2p.1
SDR9C6 A. carolinensis       LGRLSF-YGGGYCPSKYGVEAFSDSLrrELSPFGVKVSVIEPGYFK--TPMT-NVQDTLN  2p.1
```

```
SDR9C6 X. tropicalis          AGRLAF-IGGGYCLSKFGVEAFSDSLrrELLDFGIKVSIIEPGAFR--TGMG-VSGPHLQ  2p.1
SDR9C7 H. sapiens             GGRVAV-IGGGYCVSKFGVEAFSDSIrrELYYFGVKVCIIEPGNYR--TAIL-GKENLES  2p.1
SDR9C7 P. troglodytes         GGRVAV-IGGGYCVSKFGVEAFSDSIrrELYYFGVKVCIIEPGNYR--TAIL-GKENLES  2p.1
SDR9C7 M. musculus            GGRVAI-FGGGYCVSKFGVEAFSDSIrrELHFFGVKVSIIEPGNYK--TSIL-GQEALES  2p.1
SDR9C7 S. harrisii            GGRVAV-IGGGYCVSKFGVEAFSDSIrrELYYFGVKVCIIEPGNYR--TAIL-GTEDIEQ  2p.1
SDR9C7 X. tropicalis          MGRIAL-FGGAYSISKHGVEAFSDCLrrELSRFGIKVSIIEPGGFK--TSIF-SFSVCKK  2p.1
SDR9C8 H. sapiens             MGRVSL-FGGGYCISKYGVEAFSDSLrrELSYFGVKVAMIEPGYFK--TAVT-SKERFLK  2p.1
SDR9C8 P. troglodytes         MGRVSL-FGGGYCISKYGVEAFSDSLrrELSYFGVKVAMIEPGYFK--TAVT-SKERFLK  2p.1
SDR9C8 M. musculus            MGRVSL-FGGGYCISKYGVEAFSDSLrrELSYFGVKVAIIEPGFFL--TGVT-SSARLCS  2p.1
SDR9C8 M. domestica           MGRLSL-FGGGYCISKYGVEAFSDSLrrELYHSGVRIAMIEPGFFK--TNIT-NLELFKE  2p.1
SDR9C8 P. humilis             MGRVSF-FGGGYCISKYGVEAFSDSLrlEMNKFGVKVCVIEPGYFK--TMIT-NTDNLEK  2p.1
SDR9C8 A. carolinensis        MGRVSF-FGGGYCPSKYGVEAFSDSLriELARFGVKVCIIEPGYFQ--TAVT-NEKLLVD  2p.1
SDR9C8 X. tropicalis          AGRVSL-CGGGYSISKYGVESFSDSLrrEMAQFGIKVSIVEPGYFK--TPVA-DANTQKK  2p.1
SDR9C8 P. reticulata          FGRISP-FGGPYCVSKYGVESFNDSLrlNMAPFGVKVLCIEPGFFK--TSVT-DTVMLKK  2p.1
                                *         *   *                     *      *

SDR9C1 H. sapiens             IAKKMWEELPEVVRKDYGKKYFDEKIAKMET-YCSSGSTDTSPVIDAVTHALTATTPYTR
SDR9C1 P. paniscus            IAKKMWDELPEVVRKDYGKKYFDEKIAKMET-YCSSGSTDTSPVIDAVTHALTATTPYTR
SDR9C1 M. musculus            IAKKMWDDLPEVVRKDYGRKYFDEKIAKMET-YCNSGSTDTSSVINAVTHALTAATPYTR
SDR9C1 M. domestica           IANKMWNELPEVVRQDYGREYFEESVSKMER-YCTSGSTDTSAVIRAVRHALTSARPHTR
SDR9C1 C. livia               IADKMWDELPEIVRKDYGRKYFDEQVSKMET-YCNSGSTDTSPVIESVAHALMSTTPYTR
SDR9C1 C. picta               IAEKMWKELPETVRKDYGRKYLDEQITKMES-YCNSGSPDTSPVINSITHALTSSSPYAR
SDR9C1 X. tropicalis          IGDKMWADLPEVIKNDYGKKYFDEKIATMNT-YCNSGSTDTSEVIDAITHALTASTPYTR
SDR9C1 D. rerio               TAEKLWKEAPPIVQEDYGKAHFEQYMALMRS-YCNSGQREIEPVLDDITDAIMSQRPYTR
SDR9C2 H. sapiens             LEKDILDHLPAEVQEDYGQDYILAQRNFLLL-INSLASKDFSPVLRDIQHAILAKSPFAY
SDR9C2 P. troglodytes         LEKDILDHLPAEVQEDYGQDYILAQRNFLLL-INSLASKDFSPVLRDIQHAISAKSPFAY
SDR9C2 M. musculus            MEKEILDHFSKDIQENYGQDYVHTQKLIIPT-LKERSNPDITPVLRDIQHAISARNPSSF
SDR9C2 M. domestica           QEKNILDNISPDVLEAYGQDYIHSSIWPFLQ-TSEKCTTDFSPIFTDILNGILCKNPSFL
SDR9C2 G. gallus              QEKELVEHLSVDVQQDYGRDYLLGLKSYLLR-IPSCCDADLTPVLSSILHALLSKRPHGL
SDR9C2 A. mississippiensis    QEKHLMENLMPDVKTDYGEDYILALKNFLLH-MPSSCSSDLSPLLDDVLDALLAKSPHGL
SDR9C2 X. tropicalis          -NQVILDNVMPDVKEDYGEDYIENLKGLYHT-LHKFGSSDLSPVMEDACHALLAQTPNFL
SDR9C2 D. rerio               AQEQILSGLSEEVKDSYGEEYIHSMQKRLLD-MSSASSEDKGPFLQSLKHAILSSNPKHF
SDR9C3 H. sapiens             RKQLLLANLPQELLQAYGKDYIEHLHGQFLH-SLRLAMSDLTPVVDAITDALLAARPRRR
SDR9C3 P. troglodytes         RKQLLLANLPQELLQAYGKDYIEHLHGQFLH-SLRLAMSDLTPVVDAITDALLAARPRRR
SDR9C3 M. musculus            RKQLLLANIPRELLQAYGEDYIEHVHGQFLN-SLRMALPDLSPVVDAIIDALLAAQPRSR
SDR9C3 C. picta               KKEQLLASLPADLLQAYGEEYIHEINKQFVK-FMKTANEDLSSVVNSITDALIAASPAAR
SDR9C3 X. tropicalis          QHKKLLANLPIELLQEYGEEYITETQNRFLK-YGDTACSDFSPVIDSITDAIISENPKVK
SDR9C3 D. rerio               QYKSLLQGLSPNLLEEYGEEYLLETKELFQN-YAKTANEDLSPVIDTIVEALLSPQPQVR
SDR9C4 H. sapiens             KKLAIWEQLSPDIKQQYGEGYIEksLDK-LKGNKSYVNMDLSPVVECMDHALTSLFPKTH  3p.2
SDR9C4 P. troglodytes         KKLAIWEQLSPDIKQQYGEGYIEksLDK-LKGNKSYVNMDLSPVVECMDHALTSLFPKTH  3p.2
SDR9C4 M. musculus            KKLAIWKHLSPDIKQQYGEGYIEksLHR-LKSNTSSVNLDLSLVVGCMDHALTSLFPKTR  3p.2
SDR9C4 M. domestica           KKMAVWNQLSSDIKQQYGDGYIEksLAK-KAKNKPFQNMDLSLVVNCMDHALTSLFPQTH  3p.2
SDR9C4 G. gallus              EKEVIWNRLPPDTKKQYGEEYFQkaA-KKEKFSKACLNTDISLVVECMEHALTSLHPRAH  3p.2
SDR9C4 C. mydas               EREAIWNQLPPAIRKQYGEGYIQkdAARKEKLTQRLQNTNLSLVVQCMEHALTSINPRSR  3p.2
SDR9C4 X. tropicalis          QRTDIWKRLPTEIQKEYGDNYIQidASKKQKLNQRILNTDLSLVVQCMEHALTSRHPRTR  3p.2
SDR9C4 D. rerio               TLHRLWNKLPQEVKDEYGSDYVDktKLTAKELLEKLADGDLMKVVSCMEHAVAAVHPRTR  3p.2
SDR9C5 H. sapiens             TLQACWARLPPATQAHYGGAFLTkyLKMQQRIMNLICDPDLTKVSRCLEHALTARHPRTR  3p.2
SDR9C5 P. troglodytes         TLQACWARLPPATQAHYGGAFLIkyLKMQQRIMNLICDPDLTKVSRCLEHALTARHPRTR  3p.2
SDR9C5 M. musculus            TLKACWARLPPAIQAHYGEAFLDtyLRVQRRIMNLICDPELTKVTSCLEHALTARHPRTR  3p.2
SDR9C5 S. harrisii            ILQASWNRLSPATRATYGENFLSkyLQAQRLIINLICDGDLGKVSGCLEHALTARYPRTR  3p.2
SDR9C5 G. gallus              SLRQLWERLAPETRLSYGEEFFHkyLRVQRFIMNIICDADLGKVTRCMEHALGACHPRTR  3p.2
SDR9C5 A. carolinensis        SLRQIWDRMRPEARQSYGEDFFSnyLKVQKFIMNLICDPDLSKVTNCMEHALEAKHPRTR  3p.2
SDR9C5 X. tropicalis          SLQLLWDQMPPETKMTYGDKYFQqyLKVQRLIMNFICDADISKVPKCIEHALQARYPRTR  3p.2
SDR9C5 D. rerio               ELHRLWNQLTPEVKESYGDKYLDkyIWIQRLIMNAICDSDLSKVTNCMEHALLAVHPRTR  3p.2
SDR9C6 H. sapiens             RMKQSWKEAPKHIKETYGQQYFDalYNIMKEGL-LNCSTNLNLVTDCMEHALTSVHPRTR  3p.2
SDR9C6 P. paniscus            RMKQSWKEAPKHIKETYGQQYFDalYSIMKEGL-LNCSTNLNLVTDCMEHALTSVHPRTR  3p.2
```

```
SDR9C6 M. musculus          RTKKVWEAAPEHIKESYGQQFFDdfCSTTKREL-MKCSRNLSLVTDCMEHALTSTHPRTR  3p.2
SDR9C6 S. harrisii          NFKKSWNDCSVEIKESYGQEFFEktLNFIKVIM-KRCCRNLNLVTDCMEHALTCSYPRYR  3p.2
SDR9C6 A. carolinensis      YLENHWISVTQEIKDSYGQTYFTnlYKLLREDLTSRCNTNLFLVTDCMEHALTSKHPRTR  3p.2
SDR9C6 X. tropicalis        FLEQLWNNLDPETKKSYGEKYYQqyFQNVAC-LTSMTSPKLHKVTDCMEHALTAVHPWTR  3p.2
SDR9C7 H. sapiens           RMRKLWERLPQETRDSYGEDYFRiyTDKLKN-IMQVAEPRVRDVINSMEHAIVSRSPRIR  3p.2
SDR9C7 P. troglodytes       RMRKLWERLPQETRDSYGEDYFRiyTDKLKN-IMQVAEPRVRDVINSMEHAIVSRSPRIR  3p.2
SDR9C7 M. musculus          RMKKLWDRLPQETRDSYGEEYFQtyTKKLVN-LMRSAEPRISDVTNSMEHAIVSRSPRIR  3p.2
SDR9C7 S. harrisii          RMRYLWERLPQETRNSYGEQYYYlyTKNLKN-ITRLAEPKISEVTDCLEHALTSRNPRIR  3p.2
SDR9C7 X. tropicalis        SMEQLWADTSAETKECYGQQYLNetLQTIDE-LINTNSSKLCKVTNCMEHALTACHPWTR  3p.2
SDR9C8 H. sapiens           SFLEIWDRSSPEVKEAYGEKFVAdyKKSAEQ-MEQKCTQDLSLVTNCMEHALIACHPRTR  3p.2
SDR9C8 P. troglodytes       SFLEIWDRSSPEVKEAYGEKFVAdyKKSAEQ-MEQKCTQDLSLVTDCMEHALIACHPRTR  3p.2
SDR9C8 M. musculus          NTQMLWDQTSSEIREIYGEKYLAsyLKRLNK-LDKRCNKDLSGVTDCMEHALTACHPRTR  3p.2
SDR9C8 M. domestica         NFQSLWEQLDPEVRQHYGQKFFDayMRSTVD-MQALCKEDLSLVTNCMQHALTSRHPRSR  3p.2
SDR9C8 P. humilis           NFHSIWNKLPEEIKASYGENYLRrlVSTLKV-LEKTYNTDLSLVTNCMEHALTSLHPRYR  3p.2
SDR9C8 A. carolinensis      TFTRLWDRLPDEIKHAYGERYFEgmKKGTAE-MQAHCNPDLSLVTNCMEHALTAVYPRKR  3p.2
SDR9C8 X. tropicalys        FLNEIWAKLPQHIRETYGQEYFEkyCNNVER-NLEKVSSKLHLVTDCMEHALTAVYPRTR  3p.2
SDR9C8 P. reticulata        HFRSLWDRLPQDLKDDYGYAFLEtgLEQLDERFKQFRDNDLMKVVHCMEHAIASVHPRYR  3p.2
                                          **                                  *

SDR9C1 H. sapiens           YHPMD--YYWWLRMQIMTHLPGAISDMIYIR------------------------------
SDR9C1 P. paniscus          YHPMD--YYWWLRMQIMTHLPGAISDMIYIR------------------------------
SDR9C1 M. musculus          YHPMD--YYWWLRMQIMTHFPGAISDKIYIH------------------------------
SDR9C1 M. domestica         YHPMD--YYWWLRMQIMTHTPAAVSDMLYIH------------------------------
SDR9C1 C. livia             YHPMD--YYWWLRMQIMTHMPAAISDRLYVY------------------------------
SDR9C1 C. picta             YHPMD--YYWWLRVQIMTHLPAAVADRIYIY------------------------------
SDR9C1 X. tropicalis        YHPMD--YYWWLRMQIMTHMPGAISDKIYIH------------------------------
SDR9C1 D. rerio             YSPME--PHWWIRIQIMTHLPGAISDRLYF-------------------------------
SDR9C2 H. sapiens           YTPGKGAYLWICL---AHYLPIGIYDYFAKRHFGQD-KPMPRALRMPNYKKKAT------
SDR9C2 P. troglodytes       YTPGKGAYLWICL---AHYLPIGIYDYFAKRHFGQD-KPMPRALRMPNYKKKAT------
SDR9C2 M. musculus          YYPGRMAYLWVCL---AAYCPTSLLDYVIKKGFYP--QPTPRALRTVH-------------
SDR9C2 M. domestica         YTAGMFSYLCHCL---IFYFPVSVFDYASKKMFPT--KTLPKALT----------------
SDR9C2 G. gallus            YTPGKGAYMMLCI---FCYFPLWFYDFLVSKSLGL--ESIPQALRTSEAENKDL------
SDR9C2 A. mississippiensis  YTPGKNAYLALCI---FCYFPLWFYDFFIGKSLCV--KILPRALRGPDSKSKNT------
SDR9C2 X. tropicalis        YTPGRLAYLIPCL---YYYFPQWISDWMGMQAFQISRNMLPRALRNNNKSI---------
SDR9C2 D. rerio             YYPGAGAWVLSLL---YRYCPTALSDKIFSGMFMSGVQPAELARAIPH-------------
SDR9C3 H. sapiens           YYPGQGLGLMYFI---HYYLPEGLRRRFLQAFFI-S-HCLPRALQPGQPGTTPPQDAAQD
SDR9C3 P. troglodytes       YYPGQGLGLMYFI---HYYLPEGLRRRFLQAFFI-S-HCLPRALQPGQPGTTPPQDAAQD
SDR9C3 M. musculus          YYPGRGLGLMYFI---HHYLPEGLRRCFLQNFFI-N-HLLPRALRPGQHGPAPA------
SDR9C3 C. picta             YYPGVGMWLIYFI---HHYLPSIIRDLFLKAFFI-N-QKLPRALQPKQQNGLKHE-----
SDR9C3 X. tropicalis        YYAGKNLWILYLI---GIYLPHSVSDNFCKCLFLKN-NVLPRSLRKQKTNE---------
SDR9C3 D. rerio             YYAGPGLILMYFI---CSYLPLSISDRFLQKLFVQK-KVMPRALIKQQGLSPNDNNNSIK
SDR9C4 H. sapiens           YAAGKDAKIFWIP---LSHMPAALQDFLLLKQKAELAN----PKAV--------------
SDR9C4 P. troglodytes       YAAGKDAKIFWIP---LSHMPAALQDFLLLKQKAELAN----PKAV--------------
SDR9C4 M. musculus          YIAGKDAKTFWIP---LSHMPAVLQDFLLLKQKVELAN----PKAV--------------
SDR9C4 M. domestica         YIAGVDAKTFWIP---LSLMPAILQDFLLQKHKVKLAD----PKAV--------------
SDR9C4 G. gallus            YVVGQDAKWFWTP---LSRMPADVQDFLLLGNREKPAV----SHRK--------------
SDR9C4 C. mydas             YSAGWDAKLLWIP---LSSMPAALQDFVLLRNKAELAD----PTAG--------------
SDR9C4 X. tropicalis        YSAGSDAAFLWIP---LSYMPTFIQDFVILRNKVKIPT----SGNTVH-------------
SDR9C4 D. rerio             YSPGWDAKFFWLP---LSYMPTFISDALLLKKAVQPKA----SIL---------------
SDR9C5 H. sapiens           YSPGWDAKLLWLP---ASYLPASLVDAVLTWVLPKPAQ----AVY---------------
SDR9C5 P. troglodytes       YSPGWDAKLLWLP---ASYLPASLVDAVLTWVLPKPAQ----AVY---------------
SDR9C5 M. musculus          YSPGWDAKLLWLP---ASYLPARVVDAVLTWILPRPAQ----SVS---------------
SDR9C5 S. harrisii          YSPGWDAKLLWLP---ASYLPASLVDAILTFVLPKPAQ----TVC---------------
SDR9C5 G. gallus            YSAGWDAKLLWLP---ASYLPACIVDFVLATILPKPAH----HVR---------------
SDR9C5 A. carolinensis      YSAGWDAKFMWLP---ISYLPAFMVDIVLATILPKPAQ----RVR---------------
SDR9C5 X. tropicalis        YSPGWDAKLVWLP---ASYMPAFITDAVLAFVLPKPKH----SIH---------------
```

```
SDR9C5 D. rerio              YSAGWDAKFLWIP---LSYMPACFVDIALKLVMPKPAK----GV----------------
SDR9C6 H. sapiens            YSAGWDAKFFFIP---LSYLPTSLADYILTRSWPKPAQ----AV----------------
SDR9C6 P. paniscus           YSAGWDAKFFFIP---LSYLPTSLADYILTRSWPKPAQ----AV----------------
SDR9C6 M. musculus           YSAGWDAKFFFIP---LSYLPASLVDYLLAISRGKPAQ----AA----------------
SDR9C6 S. harrisii           YSAGWDAQFLYIP---MSYLPTRLLDYLLSKNLQKPAH----AI----------------
SDR9C6 A. carolinensis       YSAGWDAQFFFIP---LSYLPTALMDLILTWSSPKPAH----AI----------------
SDR9C6 X. tropicalis         YSVGWDCKLYHLP---LSYLPTAVSDYVLCRSAPKPAH----SAK---------------
SDR9C7 H. sapiens            YNPGLDAKLLYIP---LAKLPTPVTDFILSRYLPRPAD----SV----------------
SDR9C7 P. troglodytes        YNPGLDAKLLYIP---LAKLPTPVTDFILSRYLPRPAD----SV----------------
SDR9C7 M. musculus           YNPGLDVKFLYLT---LAKLPTPVTDFILSRYLPRPAD----SV----------------
SDR9C7 S. harrisii           YNPGLDAKLLYLP---LAKFPTALTDFILSRYLPKPAD----SVL---------------
SDR9C7 X. tropicalis         YSPGWDAKLFYIP---LSYLPTVLSDYVASRFAPRLSQ----GEK---------------
SDR9C8 H. sapiens            YSAGWDAKLLYLP---MSYMPTFLVDAIMYWVSPSPAK----AL----------------
SDR9C8 P. troglodytes        YSAGWDAKLLYLP---MSYMPTFLVDAIMYWVSPSPAK----AL----------------
SDR9C8 M. musculus           YSAGWDAKLFYLP---LSYLPTFLVDALLYWTSLKPEK----AL----------------
SDR9C8 M. domestica          YSAGWDAKLFYLP---LSYLPTALADFLIMWNYPKPSP----TR----------------
SDR9C8 P. humilis            YSAGWDAKLLYLP---ISYLPSALSDALFSLFYPKSVG----KA----------------
SDR9C8 A. carolinensis       YSAGWDAKLFYIP---MSYMPVLVHDLVFGWSYPKPAQ----TS----------------
SDR9C8 X. tropicalis         YSAGWDAKLFFIP---LSYLPTVCIDFLLNRSRAKAAH----SI----------------
SDR9C8 P. reticulata         YSPGWDAKFLWLP---ISYMPTWISDGFFLRYSPKPKA----SVI---------------
                             *                    *

SDR9C1 H. sapiens            ------------------
SDR9C1 P. paniscus           ------------------
SDR9C1 M. musculus           ------------------
SDR9C1 M. domestica          ------------------
SDR9C1 C. livia              ------------------
SDR9C1 C. picta              ------------------
SDR9C1 X. tropicalis         ------------------
SDR9C1 D. rerio              ------------------
SDR9C2 H. sapiens            ------------------
SDR9C2 P. troglodytes        ------------------
SDR9C2 M. musculus           ------------------
SDR9C2 M. domestica          ------------------
SDR9C2 G. gallus             ------------------
SDR9C2 A. mississippiensis   ------------------
SDR9C2 X. tropicalis         ------------------
SDR9C2 D. rerio              ------------------
SDR9C3 H. sapiens            PNLSPGPSPA--VAR---
SDR9C3 P. troglodytes        PNLSPGPSPA--VAR---
SDR9C3 M. musculus           ------------------
SDR9C3 C. picta              ------------------
SDR9C3 X. tropicalis         ------------------
SDR9C3 D. rerio              ENMNDSSSNNSNFTKCID
SDR9C4 H. sapiens            ------------------
SDR9C4 P. troglodytes        ------------------
SDR9C4 M. musculus           ------------------
SDR9C4 M. domestica          ------------------
SDR9C4 G. gallus             ------------------
SDR9C4 C. mydas              ------------------
SDR9C4 X. tropicalis         ------------------
SDR9C4 D. rerio              ------------------
SDR9C5 H. sapiens            ------------------
SDR9C5 P. troglodytes        ------------------
SDR9C5 M. musculus           ------------------
SDR9C5 S. harrisii           ------------------
```

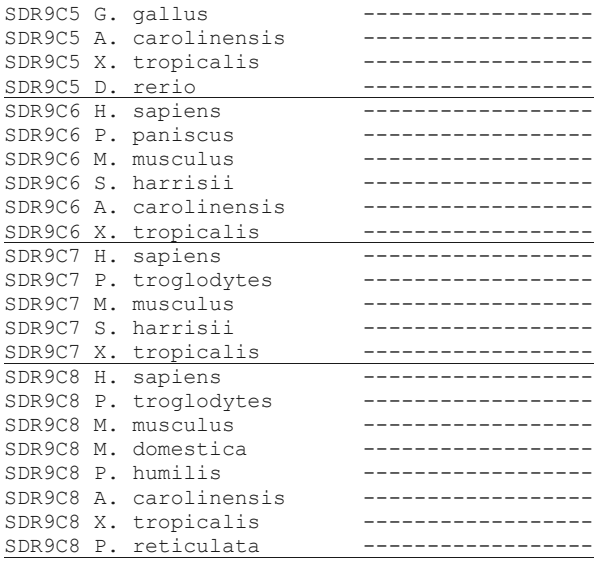


Figure S14. Alignment of the vertebrate SDR9C family variants. For further details see Fig. S13 and Table S14.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
                                    x  x  x
SDR10E1 H. sapiens        MVSIPEYYEGKNVLLTGATGFLGKVLLEKLLRSCPKVNSVYVLVRQKAGQTPQERVEEVL
SDR10E1 P. troglodytes    MVSIPEYYEGKNVLLTGATGFLGKVLLEKLLRSCPKVNSVYVLVRQKAGQTPQERVEEVL
SDR10E1 M. musculus       MVSIPEYYEGKNILLTGATGFLGKVLLEKLLRSCPRVNSVYVLVRQKAGQTPQERVEEIL
SDR10E1 S. harrisii       MVSIPEYYEGKNVLLTGATGFLGKVLLEKLLRSCPKVNSVYVLVRQKAGQTPQERVEEVI
SDR10E1 G. gallus         MVSIPEYYEGKNVLLTGATGFMGKVLLEKLLRSCPKVKAVYVLVRPKAGQTPEARIEEIT
SDR10E1 C. mydas          MVSIPEYYEGKNVLLTGATGFMGKVLLEKLLRSCPKVKAVYILVRHKAGQTPQERMEEMI
SDR10E1 X. tropicalis     MISIPEFYRGKNVLITGATGFMGKVLLEKLLRSCPNVKAVYVLVRPKASQKPRERVAEMM
SDR10E1 D. rerio          MVTIPEYYVGKNVLITGATGFMGKVLLEKLLRSCPGVKAAYVLVRPKAGQAPDARIADMI
SDR10E2 H. sapiens        MSTIAAFYGGKSILITGATGFLGKVLMEKLFRTSPDLKVIYILVRPKAGQTLQQRVFQIL
SDR10E2 P. troglodytes    MSTIAAFYGGKSILITGATGFLGKVLMEKLFRTSPDLKVIYILVRPKAGQTLQQRVFQIL
SDR10E2 M. musculus       MSMIAAFYSNKSILITGATGFLGKVLMEKLFRTSPHLKVIYILVRPKSGQTLQERVFQIL
SDR10E2 M. domestica      MSAIAAYYGGKSILITGATGFMGKVLVEKLFRTSPDLKVIYILVRPKAGQSLQQRVSQMI
SDR10E2 G. gallus         MSSVSAYYNGKTVLITGATGFMGKVLVEKLLRSSPDVKAVYILVRPKAGQSMQERVANML
SDR10E2 A. carolinensis   MSSVATYYNEKSVLVTGATGFMGKVLVEKLLRSSPDVKAIYILVRPKAGQLMQNRVEHMV
SDR10E2 E. lucius         MASIADYYAGKSVLITGATGFMGKVLVEKLLRSCPHVRALYLLVRPKAGQSMQERVSDMM
                          *      *  *  * ****** **** *** *  *     * *** *  *    *

SDR10E1 H. sapiens        SGklFDRLRDENPDFREKIIAINSELTQPKLALSEEDKEVIIDSTNIIFHCAATVRFNEN  1p.0
SDR10E1 P. troglodytes    SGklFDRLRDENPDFREKIIAINSELTQPKLALSEEDKEVIIDSTNIIFHCAATVRFNEN  1p.0
SDR10E1 M. musculus       SSklFDRLRDENPDFREKIIAINSELTQPKLALSEEDKEIIIDSTNVIFHCAATVRFNEN  1p.0
SDR10E1 S. harrisii       SGklFDRLRDENPQFRQKIIAISSELTQPKLALTEEDQEIILDSTNIIFHCAATVRFNEN  1p.0
SDR10E1 G. gallus         SCklFDRLREEQPDFKEKIIVITSELTQPELDLSNPVKEKLIECINIIFHCAATVRFNET  1p.0
SDR10E1 C. mydas          SCklFDRLRDEQPGFKEKIIAVTSELTQSELDLSEEDKEKLIDCINIVFHCAATVRFNET  1p.0
SDR10E1 X. tropicalis     SCklFDRLRDEQPECAQKVIAISSELTQPELDLSKEDQDMLIDCIDIVFHCAATVRFNES  1p.0
SDR10E1 D. rerio          NCklFDRLREDQPDFAGKIVAINSDLTQPNLDLSAEDQETLTGCINVVFHCAATIRFNEP  1p.0
SDR10E2 H. sapiens        DSklFEKVKEVCPNVHEKIRAIYADLNQNDFAISKEDMQELLSCTNIIFHCAATVRFDDT  1p.0
SDR10E2 P. troglodytes    DSklFEKVKEVCPNVHEKIRAIYADLNQNDFAISKEDMQELLSCTNIIFHCAATVRFDDT  1p.0
SDR10E2 M. musculus       NSklFEKVKEVCPNVHEKIRPISADLNQRDFAISKEDVQELLSCTNIIFHCAATVRFDAH  1p.0
SDR10E2 M. domestica      NCklFEKAKEICPNIFEKIRPIYADLTKPDLGISKEDLEELLDHTNIIFHCAATVRFDDS  1p.0
SDR10E2 G. gallus         KCkvFDRVREDCPNFHEKIKPINAELTQPKLAISAEDEEELLTRVNIVFHCAATVRFDEP  1p.0
SDR10E2 A. carolinensis   KCklFDRVREECPNFHEKIKPISAELTHPNLAINPEDTAELLSEVNIVFHCAATVRFDEP  1p.0
SDR10E2 E. lucius         KCklFDRVREYNPDFHQKIVPISSELIQPGLAIGPEDKETLTSCINIIFHCAATIRFDEP  1p.0
                            * *       *    *       *                      ****** **

SDR10E1 H. sapiens        LrdAVQLNVIATRQLILLAQQMKNLEVFMHVSTAYAYCNRKHIDEVVYPPPVDPKKLIDS  2p.1
SDR10E1 P. troglodytes    LrdAVQLNVIATRQLILLAQQMKNLEVFMHVSTAYAYCNRKHIDEVVYPPPVDPKKLIDS  2p.1
SDR10E1 M. musculus       LrdAVQLNVIATRQLILLAQQMKNLEVFMHVSTAYAYCNRKHIDEVVYPPPVDPKKLIDS  2p.1
SDR10E1 S. harrisii       LrdAVQLNVIATRQLILLAQQMKNLEVFMHVSTAYAYCNRKHIDEVVYPPPVDPKKLIDS  2p.1
SDR10E1 G. gallus         LrdAVQLNVLSTKQLLSLAQQMTNLEVFMHVSTAYAYCNRKHIEEVVYPPPVDPKKLMDS  2p.1
SDR10E1 C. mydas          LrdAVQLNVIATQQLIILAQRMKNLEVFMHVSTAYAYCNRKHIEEIIYPPPVDPKKLIGS  2p.1
SDR10E1 X. tropicalis     LrdAMQLNVIATRQLLYLAQKIKKLEVFIHVSTAYANCNRKQIEEMVYPPPVDPKKLIES  2p.1
SDR10E1 D. rerio          LkdAMQLNVLATQKMVSLAHRMKHLEVFIHVSTAYANCDRELIEEVVYPPPVDYRKLIDT  2p.1
SDR10E2 H. sapiens        LrhAVQLNVTATRQLLLMASQMPKLEAFIHISTAYSNCNLKHIDEVIYPCPVEPKKIIDS  2p.1
SDR10E2 P. troglodytes    LrhAVQLNVTATRQLLLMASQMPKLEAFIHISTAYSNCNLKHIDEVIYPCPVEPKKIIDS  2p.1
SDR10E2 M. musculus       LreAVQLNVTATQQLLLMASQMPKLEAFIHISTAFSNCNLSHIDEVIYPCPVEPRKIIDS  2p.1
SDR10E2 M. domestica      LrhALQLNVIATQQLLLMASQMPKLEVFIHFSTAYANCNLKHIDEVIYPCSVEPKKLIDS  2p.1
SDR10E2 G. gallus         LkhALQLNAMGTQRLLELAQQMQKLEAFIHISTAYANCVRKCIDEIIYPPPAEPKKLFDL  2p.1
SDR10E2 A. carolinensis   LkhALLLNVRGTQQLLALARQMKNLETFIHVSTAYANCNQRYIDEIIYPPPMEPKKLLDL  2p.1
SDR10E2 E. lucius         LkhALQLNVMATQQLISLAQQMPHLQAFIHISTAYANCNRRHIDDIIYPPPVEPKKLIDS
                          *  *  **   *      *     *  * * ***   *    *    **      *

                                        +   +
SDR10E1 H. sapiens        LewMDDGLVNDITPKLIGDRPNTYIYTKALAEYVVQQEGAKLNVAIVRPSIVGASWKEPF  3p.1
SDR10E1 P. troglodytes    LewMDDGLVNDITPKLIGDRPNTYIYTKALAEYVVQQEGAKLNVAIVRPSIVGASWKEPF  3p.1
SDR10E1 M. musculus       LewMDDGLVNDITPKLIGDRPNTYIYTKALAEYVVQQEGAKLNVAIVRPSIVGASWKEPF  3p.1
```

```
SDR10E1 S. harrisii      LewMDDGLVNDITPKLIGDRPNTYIYTKALAEYVVQQEGAKLNVAIVRPSIVGASWKEPF  3p.1
SDR10E1 G. gallus        LewMDDSLVNDITPKLIGDRPNTYTYTKALAEYVVQQEGARLNTAIIRPSIVGASWKEPF  3p.1
SDR10E1 C. mydas         LewMDDGLVKDITPKLIGDRPNTYTYTKALAEYIVQQEGAKLNIAIIRPSIVGASWKEPF  3p.1
SDR10E1 X. tropicalis    LewMDDGLVNDITPKLIGDRPNTYTYTKALAEYVVQQEGSKLNIAIVRPSIVGASWKEPF  3p.1
SDR10E1 D. rerio         LewMDDKLVSLMTPRLLGERPNTYTYTKALAEQLVQQECGNLNIAIIRPSIVGASWKEPF  3p.1
SDR10E2 H. sapiens       LewLDDAIIDEITPKLIRDWPNIYTYTKALGEMVVQQESRNLNIAIIRPSIVGATWQEPF  3p.1
SDR10E2 P. troglodytes   LewLDDAIIDEITPKLIRDWPNIYTYTKALGEMVVQQESRNLSIAIIRPSIVGATWQEPF  3p.1
SDR10E2 M. musculus      MewLDDSIIEEITPKLIGDRPNTYTYTKALGEIVVQQESGNLNVAIVRPSIVGATWQEPF  3p.1
SDR10E2 M. domestica     VewLDDSIIEEITPKLIENRPNTYTYTKALGEMVVYQESGNLNIAIIRPSIVGASWQEPF  3p.1
SDR10E2 G. gallus        VewLDESIIQDITPKLLGDWPNTYTYTKALSEYLIQQEKGNLNIAIIRPSIVGASWHEPF  3p.1
SDR10E2 A. carolinensis  VewMDEFLIEEITPKLIGDWPNTYTFTKALAEYLLQQEKGNINVAIVRPSIVGASWHEPF  3p.1
SDR10E2 E. lucius        LewMEDSIVRDITPRLIGDHPNTYTYTKALAECVVQKESSKLSIAIIRPSIVGASWQEPF  3p.1
                          **         ** *    ** *  **** *     *      ** ******* * ***

SDR10E1 H. sapiens       pgWIDNFNGPSGLFIaaGKGILRTIRASNNALADLVPVDVVVNMSLAAAWYSGVN---rp  4p.0 5p.0 6p.1
SDR10E1 P. troglodytes   pgWIDNFNGPSGLFIaaGKGILRTIRASNNALADLVPVDVVVNMSLAAAWYSGVN---rp  4p.0 5p.0 6p.1
SDR10E1 M. musculus      pgWIDNFNGPSGLFIaaGKGILRTMRASNNALADLVPVDVVVNTSLAAAWYSGVN---rp  4p.0 5p.0 6p.1
SDR10E1 S. harrisii      pgWIDNFNGPSGLFIaaGKGILRTMRASNNALADLVPVDVVVNTSLAAAWYSGVN---rp  4p.0 5p.0 6p.1
SDR10E1 G. gallus        pgWIDNFNGPSGLFIaaGKGILRTMRASNGAVADLVPVDVVVNMTLAAAWYSGVN---rp  4p.0 5p.0 6p.1
SDR10E1 C. mydas         pgWIDNFNGPSGLFIaaGKGILRTMRASNSAVADLVPVDVVVNTTLAAAWYSGVN---rp  4p.0 5p.0 6p.1
SDR10E1 X. tropicalis    pgWIDNFNGPSGLFIaaGKGILRTMRASNNAVADLIPVDVVVNTTLAAAWYSGVN---rp  4p.0 5p.0 6p.1
SDR10E1 D. rerio         pgWIDNFNGPSGIFIaaGKGILRTMRASNNAVADLVPVDVVINTTLAAAWYSGSQRHArp  4p.0 5p.0 6p.1
SDR10E2 H. sapiens       pgWVDNINGPNGIIIatGKGFLRAIKATPMAVADVIPVDTVVNLMLAVGWYTAVH---rp  4p.0 5p.0 6p.1
SDR10E2 P. troglodytes   pgWVDNINGPNGIIIatGKGFLRAIKATPMAVADVIPVDTVVNLMLAVGWYTAVH---rp  4p.0 5p.0 6p.1
SDR10E2 M. musculus      pgWVDNLNGPSGLIIatGKGFLRSIKATPMAVADVIPVDTVVNLTIAVGWYTAVH---rp  4p.0 5p.0 6p.1
SDR10E2 M. domestica     pgWVDNLNGPSGLIIatGKGFLRAIKATPRAVADVVPVDLVINLTLAVGWHTAVH---rp  4p.0 5p.0 6p.1
SDR10E2 G. gallus        pgWIDSFNGTSGIFVaaGKGILRTVIANNEAVADMIPVDVVINLTLAAGWYTAVH---rp  4p.0 5p.0 6p.1
SDR10E2 A. carolinensis  pgWIDNFNGTSGIFIaaGKGIIRTVKCNVEAVADIVPVDVAINLILATGWYTAVH---rp  4p.0 5p.0 6p.1
SDR10E2 E. lucius        pgWIDNFNGPSGVFIaaGKGILRTMRANNDAVADLIPVDVVINLTLAAGWYTAVH---rp  4p.0 5p.0 6p.1
                         *** *  **  *   * ***  *       * **  ***   *   *  *        **

SDR10E1 H. sapiens       RNIMVYNCTTGSTNPFHWGEveYHVISTFKRNPLEQAFRRPNVNLTSNHLLYHYWIAVSH  7p.2
SDR10E1 P. troglodytes   RNIMVYNCTTGSTNPFHWGEveYHVISTFKRNPLEQAFRRPNVNLTSNHLLYHYWIAVSH  7p.2
SDR10E1 M. musculus      RNIMVYNCTTGSTNPFHWGEveYHVISTFKRNPLEQAFRRPNVNLTSNHLLYHYWIAVSH  7p.2
SDR10E1 S. harrisii      RNIMVYNCTTGSTNPFHWGEveYHVISTFKRNPLEQAFRRPNVNLTSNHLLYHYWIAVSH  7p.2
SDR10E1 G. gallus        RNIMVYNCTTGGTNPFHWSEveYHVISTFKRNPLEQAFRRPNVNLTSNHLLYHYWIAVSH  7p.2
SDR10E1 C. mydas         RNIMVYNCTTGGTNPFHWGEveYHVISTFKRNPLEQAFRRPNVNLTSNHLLYHYWIAVSH  7p.2
SDR10E1 X. tropicalis    RNILVYNCTTGGTNPFHWGEveYHVISTFKRNPLEQAFRRPNVNLTSNHLLYHYWIAVSH  7p.2
SDR10E1 D. rerio         RSLLVYNCTTGGINPFHWGEveYHVISTFKRNPLEQAFRRPNVNLTTNHLINQYWIAVSH  7p.2
SDR10E2 H. sapiens       KSTLVYHITSGNMNPCNWHKmgVQVLATFEKIPFERPFRRPNANFTSNSFTSQYWNAVSH  7p.2
SDR10E2 P. troglodytes   KSTLVYHITSGNMNPCNWHKmgVQVLATFEKIPFERPFRRPNANFTSNSFTSQYWNAVSH  7p.2
SDR10E2 M. musculus      KSTLIYHSTSGNLNPCNWYKmgLQVLATIEKIPFESAFRRPNADFTTSNFTTHYWNTVSH  7p.2
SDR10E2 M. domestica     KSILIYHCTSGSLNPCSWIDlgFQVLATFEKAPLEKAFRRPKADFTTNSFSTYLWNTISH  7p.2
SDR10E2 G. gallus        KNMLVYNCTTGGINPFFWGEmeQYVMSTFKRNPLEQAFRTPNAHLTSNYLINQYWITVSH  7p.2
SDR10E2 A. carolinensis  KSMLIYNCTTGGMNPFCWGEmeHHVISTYKRNPLEKAFRIPKANMTSNYLMHQYWTAVSH  7p.2
SDR10E2 E. lucius        KAALVYNCTTGGINPFHWGEieHHVMSSFKRNPLEQAFRRPNANITSNYLMNQYWILVSH  7p.2
                              *  * *  **  *      *       * *  ** *    *        *   **

SDR10E1 H. sapiens       KAPAFLYDIYLRMTGRSPrmMKTITRLHKAMVFLEYFTSNSWVWNTENVNMLMNQLNPED  8p.1
SDR10E1 P. troglodytes   KAPAFLYDIYLRMTGRSPrmMKTITRLHKAMVFLEYFTSNSWVWNTDNVNMLMNQLNPED  8p.1
SDR10E1 M. musculus      KAPAFLYDIYLRMTGRSPrmMKTITRLHKAMVFLEYFTSNSWVWNTDNVNMLMNQLNPED  8p.1
SDR10E1 S. harrisii      KAPAFLYDIYLRITGRSPrmMKTITRLHKAMVFLEYFTSNSWVWNTDNVNMLMNQLNPED  8p.1
SDR10E1 G. gallus        KAPAFLYDIYLRITGRSPrmMKTITRLHKAMVFLEYFTSNSWIWNTENMTMLMNQLSPED  8p.1
SDR10E1 C. mydas         KAPAFLYDIYLRITGRSPrmMKTITRLHKAMMLIEYFTSNSWIWNTENVNMLMNQLSPED  8p.1
SDR10E1 X. tropicalis    KAPAFLYDVYLRITGRSPrmMKTITRLHKAMMLLEYFTSNSWVWNNENTNMLMSQLSPDD  8p.1
SDR10E1 D. rerio         KAPAFLYDLFLRMSGREPrmMKTITRLHKAMMVLEYFTSHSWVWNTDNVTMLMNQMGAED  8p.1
```

```
SDR10E2 H. sapiens       RAPAIIYDCYLRLTGRKPrmTKLMNRLLRTVSMLEYFINRSWEWSTYNTEMLMSELSPED  8p.1
SDR10E2 P. troglodytes   RAPAIIYDCYLRLTGRKPrmTKLMNRLLRTVSMLEYFINRSWEWSTYNTEMLMSELSPED  8p.1
SDR10E2 M. musculus      RVPAIIYDFYLRLTGRKPrmLKLMNRLLKTISMLEYFINHSWEWSTNNTEMLLSELSPED  8p.1
SDR10E2 M. domestica     MAPAVIYDFYLRLTGRKPrmAKLMNRMLKTISMLEYFINHSWEWSTYNTEMLMSQLSNED  8p.1
SDR10E2 G. gallus        KAPAILYDLYMRLTGRKPrmMKIINRLHKSMMLLQYFSTQSWDWSSDNMNMLMGQLNTED  8p.1
SDR10E2 A. carolinensis  KAPAFLYDLYLRLTGRKPrmMKLFSRLHKSMTFFEYFTSRTWEWSSDNMNMLMNQLSPKD  8p.1
SDR10E2 E. lucius        RFPALLYDLYLRLSGQKPqmMRIFNRLHKAIGLLEYFSSQDWEWNSENMNMLMSHLSPED  8p.1
                           **  **   *  *  * *     *         **    * *   *  **       *

SDR10E1 H. sapiens       KktFNIDVRQLHWAEYIENYCLGTKKYVLNEEMSGLPAARKHLNklRNIRYGFNTILVIL  9p.0 10p.1
SDR10E1 P. troglodytes   KktFNIDVRQLHWAEYIENYCLGTKKYVLNEEMSGLPAARKHLNklRNIRYGFNTILVIL  9p.0 10p.1
SDR10E1 M. musculus      KktFNIDVRQLHWAEYIENYCMGTKKYVLNEEMSGLPAARKHLNklRNIRYGFNTILVIL  9p.0 10p.1
SDR10E1 S. harrisii      KktFNIDVRQLHWAEYIENYCMGTKKYVLNEEMSGLPAARKHLNklRNIRYGFNTILVIL  9p.0 10p.1
SDR10E1 G. gallus        KktFNFDVRQLHWAEYMENYCMGTKKYVLNEEMSGLPAARKHLNklRNIRYGFNTILVIL  9p.0 10p.1
SDR10E1 C. mydas         KkvFNFDVRQLHWAEYMENYCMGTKKYVLNEEMSGLPAARKHLKklRNIRYGFNTVLVIL  9p.0 10p.1
SDR10E1 X. tropicalis    KkaFNFDVRQLHWAEYMENYCMGTKKYVLNEEMSGLPAARKHLNklRNIRYGFNTILVVL  9p.0 10p.1
SDR10E1 D. rerio         KkvFNFDVRQLHWAEYMENYCMGTKKYVLNEELSGLPAARKHLNklRNIRYTFNTVLVVL  9p.0 10p.1
SDR10E2 H. sapiens       QrvFNFDVRQLNWLEYIENYVLGVKKYLLKEDMAGIPKAKQRLKrlRNIHYLFNTALFLI  9p.0 10p.1
SDR10E2 P. troglodytes   QrvFNFDVRQLNWLEYIENYVLGVKKYLLKEDMAGIPEAKQRLKrlRNIHYLFNTALFLI  9p.0 10p.1
SDR10E2 M. musculus      QrvFNFDVRQLNWLEYIENYVLGVKKYLLKEDLAGIPKAKQHLRrlRNIHYLFNTALFLI  9p.0 10p.1
SDR10E2 M. domestica     QklFNFDVRHLNWLEYTENYCIGVKKYLLKEDMAGIPAAKKHLRmlRNIYYLFNTVVFLI  9p.0 10p.1
SDR10E2 G. gallus        KklYNFDVRQLHWSEYIESYCLGAKKYLLNEDMSGIPAAKQHLRklRNIRYAFNTTLLVI  9p.0 10p.1
SDR10E2 A. carolinensis  KklFCFDVRQLHWSEYIENYCLGTKKYLLNEDMAGIPAAKQHLRklRNIQYALNTIFLVI  9p.0 10p.1
SDR10E2 E. lucius        RktFNFDVRQLNWPEYIENYCIGTKKYVLNEDMSDIPAARQHLRklRNIRYTFNTLLLVF  9p.0 10p.1
                               *** * * ** * *  * *** * *     * *   *  **** *  **

SDR10E1 H. sapiens       IWRIFIARSQMARNIWYFVVSLCYKFLSYFRASSTMRY
SDR10E1 P. troglodytes   IWRIFIARSQMARNIWYFVVSLCYKFLSYFRASSTMRY
SDR10E1 M. musculus      IWRIFIARSQMARNIWYFVVSLCYKFLSYFRASSTMRY
SDR10E1 S. harrisii      IWRIFIARSQMARNIWYFVVSLCYKFLSYFRASSTMRY
SDR10E1 G. gallus        IWRIFIARSQMARNIWYFVVSLCYKFLSYFRASSTMRY
SDR10E1 C. mydas         IWRIFIARSQMARNIWYFVVSLCYKFLSYFRASSTMRY
SDR10E1 X. tropicalis    IWRVFIARSQMARNIWYFVVSMCFKFLSYFRASSTMRY
SDR10E1 D. rerio         IWRIFIARSQMARNIWYFVVSLCFKFLSYFRASSTMRY
SDR10E2 H. sapiens       AWRLLIARSQMARNVWFFIVSFCYKFLSYFRASSTLKV
SDR10E2 P. troglodytes   AWRLLIARSQMARNVWFFIVSFCYKFLSYFRASSTLKV
SDR10E2 M. musculus      IWRLLIARSQMARNVWFFIVSFCYKFISYFRASSTLKV
SDR10E2 M. domestica     IWRFFIARSQMARNIWYFVVSLCYKFLSYFRASSTFRH
SDR10E2 G. gallus        IWRIFIARSQMARNIWYFVVSLCYKFLSYFRASSTLRH
SDR10E2 A. carolinensis  IWRIFIARSQMAQNIWYFVVNLCYKFLSYFRASSTLRH
SDR10E2 E. lucius        IWRVFIARSQMARNIWYFVVSLCFKFLSYFRASSTLTN
                          **  ******* * * * *  * ** ********
```

Figure S15. Alignment of the vertebrate SDR10E family variants. For further details see Fig. S13.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
                                    x  x  x
SDR11E1 H. sapiens       ----MAMTGWSCLVTGAGGFLGQRIIRLLVK-EKELKEIRVLDKAFGPELREEFskLQNK  1p.2
SDR11E1 P. troglodytes   ----MAMTGWSCLVTGAGGFLGQRIIRLLVK-EKELKEIRVLDKAFRPELREEFskLQNK  1p.2
SDR11E1 M. musculus      ------MAGWSCLVTGAGGFVGQRIIKMLVQ-EKELQEVRALDKVFRPETKEEFskLQTK  1p.2
SDR11E1 M. domestica     ---MLPTDRWSCLVTGAGGFLGQRIVRLLLEEEKELEEIRVLDKFFSPQLLLEFseLKHK  1p.2
SDR11E1 N. nippon        ----MSLAGVSCLVTGAGGFLGQRIVGLLLEEKEALAEIRLLDKAFSSEALGRFgkFQGK  1p.2
SDR11E1 T. sirtalis      ----MSLGGIRCLVTGAGGFLGQRIVCQLLTEKESLAEVRLLDKTISAEALQDFkkVRSN  1p.2
SDR11E1 L. crocea        ----MSLKGDVCVVTGACGFLGKRLVRLLLE-EENVAEIRLMDKHIQPQLLHSLedCRGD  1p.2
SDR11E2 H. sapiens       -------MGWSCLVTGAGGLLGQRIVRLLVE-EKELKEIRALDKAFRPELREEFskLQNR  1p.2
SDR11E2 P. troglodytes   -------MGWSCLVTGAGGLLGQRIVRLLVE-EKELKEIRALDKAFRPELREEFskLQNK  1p.2
SDR11E2 M. musculus      ------MPGWSCLVTGAGGFLGQRIIQLLVQ-EEDLEEIRVLDKVFRPETRKEFfnLETS  1p.2
SDR11E2 S. harrisii      ---MLQMNKWSCLVTGAGGFLGQRIVHLLLEEEQELEEIRLLDKVFSPQLLLEFseLKHK  1p.2
SDR11E2 G. gallus        ----MSLAGVSCLVTGAGGFLGQRIVRLLLEEDEALAEIRLLDKAFSREALWSFgkFQGK  1p.2
SDR11E2 G. japonicus     ----MSLVGVKCLVTGAGGFLGQRIVCQLLEEGEKLAEVRALDKAFSSETLQRFadLKST  1p.2
SDR11E2 D. rerio         ----MALSGEVCVVTGACGFLGEKLVRLLLE-EENLSEIRLLDRNIRSELIQTLedGRGE  1p.2
SDR11E3 H. sapiens       MADSAQAQKLVYLVTGGCGFLGEHVVRMLLQREPRLGELRVFDQHLGPWLEELKtgP---  1p.2
SDR11E3 P. troglodytes   MADSAQAQKLVYLVTGGCGFLGEHVVRMLLQREPRLGELRVFDRHLGPWLEELKtgP---  1p.2
SDR11E3 M. musculus      MADSAQVPTLVYLVTGGCGFLGEHIVRMLLEREPRLRELRVFDLHLSSWLEELKagP---  1p.2
SDR11E3 S. harrisii      --MTDGGRNLVYLVTGGCGFLGEHMIRTLLEMEPRLKELRVFDLHLGPWLEALNpgS---  1p.2
SDR11E3 Z. albicollis    -----MDGAWVYLVTGGCGFVGERIVELL-SQQDYIKEVRVFDSVAREEVEKFStaP---  1p.2
SDR11E3 A. carolinensis  --MGSTSRNQIYLVTGGCGFLGKHLVQMLLEQEPDLAEVRVFDLHLDESMRHLNrv----  1p.2
SDR11E3 X. tropicalis    ---MTAGSGQVYVVTGGCGFLGSHLVRMLLEHEKNISEIRVFDLHLDESLRSLSnnR---  1p.2
SDR11E3 D. rerio         -MSNNNKSKLTYVITGGCGFLGQHLLRVLLEKKKNVKEIRLFDKNVFPSLQSESteD---  1p.2
                                     **  *  *      *        * *  *

SDR11E1 H. sapiens        TKLTVLEGDILDEPFLKRACQDVSVIIHTACIIDVFGVTHRESIMNVNVkgTQLLLEACV  2p.2
SDR11E1 P. troglodytes    TKLTVLEGDILDEPFLKRACQDVSVIIHTACIIDVFGVTHRESIMNVNVkgTQLLLEACV  2p.2
SDR11E1 M. musculus       TKVTVLEGDILDAQCLRRACQGISVVIHTAAVIDVTGVIPRQTILDVNLkgTQNLLEACV  2p.2
SDR11E1 M. domestica      TKVTVLEGDILDEQFVHKACQGISAVIHTACIIDTGICIKKEVIMkvNLkgTQLLLEACI  2p.2
SDR11E1 N. nippon         TEVKILEGDIRDATFLHRACQGVSLVIHTASIIDTLGLIDKQLLWEVNVtgTQLLLEACV  2p.2
SDR11E1 T. sirtalis       TLLTVLQGDIRDVVFLETAVQGVSLVIHAACIIDPRGFIDRKILWDVNVrgTQLLLEACL  2p.2
SDR11E1 L. crocea         TKLSVFEGDIRDGDFLKKVCRGASIVFHIASIIDVNDSVEYSEIYGVNVkgTQLLLEACI  2p.2
SDR11E2 H. sapiens        TKLTVLEGDILDEPFLKRACQDVSVVIHTACIIDVFGVTHRESIMNVNVkgTQLLLEACV  2p.2
SDR11E2 P. troglodytes    TKLTVLEGDILDEPFLKRACQDISVIIHTACIIDVFGVTHRESIMNVNVkgTQLLLEACV  2p.2
SDR11E2 M. musculus       IKVTVLEGDILDTQYLRRACQGISVVIHTAAIIDVTGVIPRQTILDVNLkgTQNLLEACI  2p.2
SDR11E2 S. harrisii       TKVTLLQGDILDKEFLHKACQGVTAVIHSACIIDTGLWRRKETIMNVNIkgTQFLLEACI  2p.2
SDR11E2 G. gallus         TEVKILEGDIRDVEFLHRACQGVSLVIHTASIIDTLGLVEKQLLWEVNVtgTQMLLEACA  2p.2
SDR11E2 G. japonicus      TPLTIMKGDIRDMSFLRKAVQGISLVIHSACVIDILGLVDKPVLWDINVtgTRLLLEMCL  2p.2
SDR11E2 D. rerio          TKVSVIEGDIRDRELLRRACKGATLVFHTASLIDYNGAVEYSELHAVNVkaTRLLLETCI  2p.2
SDR11E3 H. sapiens        VRVTAIQGDVTQAHEVAAAVAGAHVVIHTAGLVDVFGRASPKTIHEVNVqgTRNVIEACV  2p.2
SDR11E3 P. troglodytes    VRVTAIQGDVTQAHEVAAAVAGAHVVIHTAGLVDVFGRASPETIHEVNVqgTRNVIEACV  2p.2
SDR11E3 M. musculus       VQVTAIQGDVTQAHEVAAAMSGSHVVIHTAGLVDVFGKASPKTIHKVNVqgTQNVIDACV  2p.2
SDR11E3 S. harrisii       VQVTPIQGDVTRAEDVVAAVAGTDVVIHMAGLVDVWGQNDPEVIHRVNVqgTQNVIEACV  2p.2
SDR11E3 S. harrisii       TRVTVMRGDIRDPNALLAAMRGVHVVLHTAAVVDYRGTVPFWEMRAVNVggTENVVRACC  2p.2
SDR11E3 A. carolinensis   ---TLIQGDITNPEDVRTAVQGANVVIHTASLVDVWGRFSPEKINAVNVcgTQNVIEACV  2p.2
SDR11E3 X. tropicalis     VRVRLISGDISHLDDVREALHGSHLVIHTASLVDVWGRVPASKINEVNVtgTENVLQACK  2p.2
SDR11E3 D. rerio          VKVVIIQGDITKYEDVRNAFLGADLVFHAASLVDVWYKIPEKVIFAVNVqgTENAIKACV  2p.2
                                 **                * *   *           *   *      *
                                                                    +   +
SDR11E1 H. sapiens        QASVPVFIYTSSIEVAGPNSYKEIIQNGHEEEPLENTWPAPYPHSKKLAEKAVLAANGWN
SDR11E1 P. troglodytes    QASVPVFIYTSSIEVAGPNSYKEIIQNGHEEEPLENTWPAPYPHSKKLAEKAVLAANGWN
SDR11E1 M. musculus       QASVPAFIFCSSVDVAGPNSYKKIVLNGHEEQNHESTWSDPYPYSKKMAEKAVLAANGSM
SDR11E1 M. domestica      SANVPVFLHTSTLEVAGPNSFIKHVRNGHEGEPLETKWSNAYPYSKKLAEKTILAANGQL
SDR11E1 N. nippon         RCNVQHFIYTSTIEVTGPNCKGDPVFNGDEDTAYESVSKSPYAQSKRLAEDSVLKADGQV
SDR11E1 T. sirtalis       RNDVQYFIYTSSLEVTGPNNRGDPIYDGDEDTIYQMTQGQPYAETKREAEKCVLQLDGLP
SDR11E1 L. crocea         QENVVSFIYTSTVEVMGPNLKGEPIVNGNEDTVYDSSLKFNYSKTKREAEQRTLQAHSEV
```

```
SDR11E2 H. sapiens        QASVPVFIYTSSIEVAGPNSYKEIIQNGHEEEPLENTWPTPYPYSKKLAEKAVLAANGWN
SDR11E2 P. troglodytes    QASVPVFIYTSSIEVAGPNSYKEIIQNGHEEEPLENTWRTPYPYSKKLAEKAVLAANGWN
SDR11E2 M. musculus       QASVPAFIFSSSVDVAGPNSYKEIVLNGHEEECHESTWSDPYPYSKKMAEKAVLAANGSM
SDR11E2 S. harrisii       AAEVPVFLYTSSVEVAGPNSYMKSVRNGHEDDLLESKWSNAYPYSKKLAEKAVLAADGQL
SDR11E2 G. gallus         HCNVQHFIYTSTIEVAGPNCRGDPIFNGDEDTPYESTSKFPYAQSKRLAEECVLKADGQM
SDR11E2 G. japonicus      LQDVKYFIYTSSLEVTGPNRKGDPMCNGDEDSVYRVTDGFPYAETKREAEKSVLELDGLP
SDR11E2 D. rerio          QQSVSSFIYTSSIEVACPNRSGEPIINGHEDTPYSSYPISNYSKTKQEAEQICLQANGEL
SDR11E3 H. sapiens        QTGTRFLVYTSSMEVVGPNTKGHPFYrgNEDTPYEAVHRHPYPCSKALAEWLVLEANGRk  3p.1 4p.0
SDR11E3 P. troglodytes    QTGTRFLVYTSSMEVVGPNTKGHPFYrgNEDTPYEAVHRHPYPCSKALAEWLVLEANGRk  3p.1 4p.0
SDR11E3 M. musculus       QTGTQYLVYTSSMEVVGPNIKGHPFYrgNEDTPYEAVHSHPYPCSKALAEQLVLEANGRk  3p.1 4p.0
SDR11E3 S. harrisii       QTGTRFLVYTSSMEALGPNKKRQPFYrgNEDTPYEVIHTEPYPRSKALAERLVLEANGRk  3p.1 4p.0
SDR11E3 S. harrisii       ALSIPYLLYTSSIAAVGPNTSCEPLLrgNEDTQYTGEVELPYGKTKAMAEKIVLEANGAk  3p.1 4p.0
SDR11E3 A. carolinensis   SEGTQYLVYTSSMEVVGPNTKGDHFYrgNENTPYKSIHELPYPVSKTKAEKLVLEANGRp  3p.1 4p.0
SDR11E3 X. tropicalis     EEGVQYLVYTSSMEVVGPNIHGDHFYrgNEETEYRIYHKEPYPLSKAKAEKLVLEANGTk  3p.1 4p.0
SDR11E3 D. rerio          EIGIQYLVYTSSMEVVGPNVKGDEFVrgNEDTPYNIFHEMPYPKSKAAAEKIVLEANGTk  3p.1 4p.0
                                     *      **        * *           *   *  **   *

SDR11E1 H. sapiens        LKNGGTLYTCALRPMYIYGEGSRFLSASINEALNNNGILSSVG-KFSTVNPVYVGNVAWA
SDR11E1 P. troglodytes    LKNGGTLYTCALRPMYIYGEGSRFLSASVNEALNNNGILSSVG-KFSTVNPVYVGNVAWA
SDR11E1 M. musculus       LKNGGTLNTCALRPMYIYGERSPFIFNAIIRALKNKGILCVTG-KFSIANPVYVENVAWA
SDR11E1 M. domestica      LRNGATMHTCALRPMYIYGEGSQLLQDQIIRALDNDKTFIRNK-EGAQANPVYVGNVAWA
SDR11E1 N. nippon         LKDGGMLMTCALRSMYIFGEGCPFLQGHLDKCLLNKNVYLRFSRKEALVNPVYVGNIAWA
SDR11E1 T. sirtalis       LKGGNSFVTCALRSMYIYGEGSSFLLGHLDESILNNNVFLRLSRKEAIVNPVYVGNIAWA
SDR11E1 L. crocea         LQNGGRLATCTLRPMYIYGEGCRFLLGHMGDAIRNKDVLFRMSLPEARVNPVYVGNVAMA
SDR11E2 H. sapiens        LKNGDTLYTCALRPTYIYGEGGPFLSASINEALNNNGILSSVG-KFSTVNPVYVGNVAWA
SDR11E2 P. troglodytes    LKNGDTLYTCALRPTYIYGEGGPFLSASINEALNNNGILSSVG-KFSTVNPVYVGNVAWA
SDR11E2 M. musculus       LKNGGTLQTCALRPMCIYGERSPLISNIIIMALKHKGILRSFG-KFNTANPVYVGNVAWA
SDR11E2 S. harrisii       LRNGTVLRTCSLRPVYIYGEGSIFLQNEINHALKNDKTFTRKS-KGSMANQVYVDNVAWA
SDR11E2 G. gallus         LKDGGVLVTCALRSMYIFGEGCPFLQGHLDKCLLNKNVYLRFSRKEALVNPVYVGNIAWA
SDR11E2 G. japonicus      LKDGSSFVTCALRSMYIFGEGSPFLLKHVDEAILNNRVFLRISRKEALVNPVYVGNVAWA
SDR11E2 D. rerio          LRDGGHLATCALRPMFIYGPGCRFTLNKLRDAIRSGNVQHRLSQQSAKVNPVYVGNAALA
SDR11E3 H. sapiens        vRGGLPLVTCALRPTGIYGEGHQIMRDFYRQGLRLGGWLFRAIPASVEHGRVYvgNVAWM  5p.2
SDR11E3 P. troglodytes    vRGGLPLVTCALRPTGIYGEGHQIMRDFYRQGLRLGGWLFRAIPASVEHGRVYvgNVAWM  5p.2
SDR11E3 M. musculus       vNGGLPLVTCALRPTGIYGEGHQVMRDFYYQGLRFGGRLFRAVPASVEHGRVYvgNVAWM  5p.2
SDR11E3 S. harrisii       vRGGLPLVTCALRPTGIFGEGHELMLSFYEKAQNTGGWLLRSIPPAVEHGRVYagNVAWM  5p.2
SDR11E3 S. harrisii       lSNGGTLRTCILRANTVYGEKAGFLQELYLLARARRGVLNYLEPEDTERNHTYvgNVAWM  5p.2
SDR11E3 A. carolinensis   mKGGKHLVTCALRPTGIYGENHPLIKEFYKQGLLTGRWMFRAIPASVEHGRVYvgNVAWM  5p.2
SDR11E3 X. tropicalis     mKGGKMLYTCSLRPTGIYGEGHELMKKFHRQGLRTGRCMFRAIPPAIEHGRVYvgNVAWM  5p.2
SDR11E3 D. rerio          vEGGNILYTCCLRPTGIYGEQHQLMKDFYLNSVRNGGWVMRGVPPHTEHGRVYagNVAWM  5p.2
                             *    ** **     *                                 *  * *

SDR11E1 H. sapiens        HILALRALQDPKKAPSIRGQFYYISDDTPHQSYDNLNYTLSKEFGLR-LDSRWSFPLSLM
SDR11E1 P. troglodytes    HILALRALQDPKKAPSIRGQFYYISDDTPHQSYDNLNYTLSKEFGLR-LDSRWSLPLSLM
SDR11E1 M. musculus       HILAARGLRDPKKSTSIQGQFYYISDDTPHQSYDDLNYTLSKEWGLR-PNASWSLPLPLL
SDR11E1 M. domestica      HVLALRTLQDSEKAQSIGGQFYYISDDTPHQSYSEFNYEMTKEWGFK-LGSKIGIPLTFL
SDR11E1 N. nippon         HVQAAKALQVPQKAKHIRGQFYYISDDTPHMSYADLNYELTRELGFG-IEPRLPMPLKML
SDR11E1 T. sirtalis       HIQVAKAMRNPTKVKQIQGRFYYISDDSPHTSYSDFNYELTKELGFG-IEPKPMMPVTLL
SDR11E1 L. crocea         HLQAARSLKDPQKRNVVGGKFYFISDDTPHVSYSDFNHVMMSPLGFI-IQEKLMLPLRLF
SDR11E2 H. sapiens        HILALRALRDPKKAPSVRGQFYYISDDTPHQSYDNLNYILSKEFGLR-LDSRWSLPLTLM
SDR11E2 P. troglodytes    HILALRALRDPKKAPSVRGQFYYISDDTPHQSYDNLNYILSKEFGLR-LDSRWSLPLTLM
SDR11E2 M. musculus       HILAARGLRDPKKSPNIQGEFYYISDDTPHQSFDDISYTLSKEWGFC-LDSSWSLPVPLL
SDR11E2 S. harrisii       HVLALRALRDPEKAQSIGGQFYFITDDTPPQSYSEFNYEVSKEWGFK-LGSKLGIPLTLL
SDR11E2 G. gallus         HVQAAKALQVPQKARHIRGQFYYISDDTPHMSYADLNYELTKELGFG-IEPWLPMPLTML
SDR11E2 G. japonicus      HVQVAKAMRNPAKAKQVRGRFYYISDDSPHLSYADFNHELAKELGFG-VEPRLRMPLTML
SDR11E2 D. rerio          HLQAGRALRDPEKRAVVGGNFYYVSDDTPHISYCDLTHALMSPLGFS-IQNKPILPIFLL
SDR11E3 H. sapiens        HVLAARELEQ--RATLMGGQVYFCYDGSPYRSYEDFNMEFLGPCGLRLVGARPLLPYWLL
SDR11E3 P. troglodytes    HVLAARELEQ--RAALMGGQVYFCYDGSPYKSYEDFNMEFLGPCGLRLVGARPLLPYWLL
SDR11E3 M. musculus       HILVARELEQ--RAALMGGQVYFCYDKSPYKSYEDFNMEFLSPCGLRLIGAHPLLPYWLL
```

```
SDR11E3 S. harrisii       HTLAARELGS--RPSTMGGQVYFCYDDSPYKSYEDFNMEILGRCGIRILGTRPLLPYCLL
SDR11E3 S. harrisii       HVLAARHLQL--KAELLAGQVYYCYDDTPGRKGFLVRHQLLSSAD-PSVKLGSHIPYWKM
SDR11E3 A. carolinensis   HLLAARKIQE--SPVSMGGQVYYCYDSSPYKSYEDFNMEILRPCGFRLLGSRPLIPYFLL
SDR11E3 X. tropicalis     HLLAARQLQI--HPSTLGGQVYFCYDSSPYKSYEDFNMEFLSACGFKMIGSRPLVPYFLL
SDR11E3 D. rerio          HLLAARALQE--HPNRLGGECYFCYDDSPYKPYDEFNMQFLSAFNFRSL----RLPVWML
                          *                *  *   *  *                          *

SDR11E1 H. sapiens        YWIGFLLEIVSFLLRPIYTYRPPFNRHIVTLSNSVFTFSYKKAQRDLAYKPLYSWEEAKQ
SDR11E1 P. troglodytes    YWIGFLLEIVSFLLRPIYTYRPPFNRHIVTLSNSVFTFSYKKAQRDLAYKPLYSWEEAKQ
SDR11E1 M. musculus       YWLAFLLETVSFLLRPVYRYRPLFNRHLITLSNSTFTFSYKKAQRDLGYEPLVNWEEAKQ
SDR11E1 M. domestica      YWAAFLLEMISFMLGPIFMYEPPFNRHLLTLTNSIFTFSYKKAQKDFGYKPRFSWLEAKQ
SDR11E1 N. nippon         YYFSLLLEIVSFLLRPFVRYIPSTNRHLVTLLNTPFTFSYRKAQKDFGYMPRYTWEEAKQ
SDR11E1 T. sirtalis       YYYALFLEILSFLLRPFFRYVPSINRFLVILLNTPFSFSYKKAQRDFNYTPRYSWEEAKQ
SDR11E1 L. crocea         YVVCFLLEVLCMMLRPFVRITPPLNRQLLTMLNTPFSFSYQKAKRDLGYIPRYTWEEARK
SDR11E2 H. sapiens        YWIGFLLEVVSFLLSPIYSYQPPFNRHTVTLSNSVFTFSYKKAQRDLAYKPLYSWEEAKQ
SDR11E2 P. troglodytes    YWIGFLLEVVSFLLSPIYSYQPPFNRHTVTLSNSVFTFSYKKAQRDLAYKPLYSWEEAKQ
SDR11E2 M. musculus       YWLAFLLETVSFLLSPIYRYIPPFNRHLVTLSGSTFTFSYKKAQRDLGYEPLVSWEEAKQ
SDR11E2 S. harrisii       YWAAFVLEMISFMLSPIFIYEPPFNCHFLTLTNSVFTLSCKKAKKDLGYEPRVSWLEARK
SDR11E2 G. gallus         YYFSLLLEIVSFMLRPFVRYIPSTNRHLVTLLNTPFTFSYRKAQKDFGYVPRYTWEEAKR
SDR11E2 G. japonicus      YCYALLLEIMSFLLRPFVRYIPVINRHLLTVLNTPFTFSFQKAQRDFGYAPRYSWEEAKQ
SDR11E2 D. rerio          YLLAFFMEILQAVLRPVLRFTPPLNRQLVTMVNTPFSFSYQKACREFGYSPRYDWEEARR
SDR11E3 H. sapiens        VFLAALNALLQWLLRPLVLYAPLLNPYTLAVANTTFTVSTDKAQRHFGYEPLFSWEDSRT
SDR11E3 P. troglodytes    VFLAALNALLQWLLRPLVLYAPLLNPYTLAVANTTFTVSTDKAQRHFGYEPLFSWEDSRT
SDR11E3 M. musculus       VLLATLNALLQWLLRPLVLYTPLLNPYTLAMANTTFTVSTNKAQRHFGYKPLFSWEESRT
SDR11E3 S. harrisii       FFLATLNAFLQWLLRPLVVYTALLNPYTLATANTTFTVCTDKAQRHFGYQPLYGWEESRD
SDR11E3 S. harrisii       WLMIQLHRIIRAILSPFWRPQPFLNVPLLNTIVTTFSFETDKASRHFGYKPLFTWQESRL
SDR11E3 A. carolinensis   HLIAFLNVFLQWVLKPFFTYAPILNPYTLVIASTTFTVATDKAQRHFGYKPQYTWEESLS
SDR11E3 X. tropicalis     YLLALLNTLLQWVLHRFFIYAPILNPYTLAVASTTFTVQTDKAEKHFGYRPLYAWEEAKK
SDR11E3 D. rerio          WIIAWMNDMVRWVLKPIYNYTPLLNKYTLAVACTSFTVSTDKAFRHFQYQPLYSWQQCLS
                                       *          *          *     **     * *   *

SDR11E1 H. sapiens        KTVEWVGSLVDRHKETLKSKTQ------
SDR11E1 P. troglodytes    KTVEWVGSLVDRHKETLKSKTQ------
SDR11E1 M. musculus       KTSEWIGTIVEQHREILDTKCQ------
SDR11E1 M. domestica      KTSQWIGTLVAQNSEYQKTKTP------
SDR11E1 N. nippon         RTAQWIASMVPQRREYLKSKAA------
SDR11E1 T. sirtalis       RTSQWIADITPLRAAYLKSKTT------
SDR11E1 L. crocea         HTIEWLASQLPKERERIRAK--------
SDR11E2 H. sapiens        KTVEWVGSLVDRHKETLKSKTQ------
SDR11E2 P. troglodytes    KTVEWVGSLVDRHKETLKSKTQ------
SDR11E2 M. musculus       KTSEWIGTLVEQHRETLDTKSQ------
SDR11E2 S. harrisii       KTSQWVGTLLAKNRENLKIKTP------
SDR11E2 G. gallus         YTSQWIASIVPQRREYLKSKKA------
SDR11E2 G. japonicus      RTSRWIAEVTPLRTTYLRSKEV------
SDR11E2 D. rerio          STTDWLASVLPAERRLANKT--------
SDR11E3 H. sapiens        RTILWVQAATGSAQ--------------
SDR11E3 P. troglodytes    RTILWVQAATGSAQ--------------
SDR11E3 M. musculus       RTIQWVQAMEGSAR--------------
SDR11E3 S. harrisii       RTVSWVKTKKGCSGPRH-----------
SDR11E3 S. harrisii       RTAQWLKAAAGSLGPPQLQEKKN-----
SDR11E3 A. carolinensis   RTVKWLQEVDTQTQAGK-----------
SDR11E3 X. tropicalis     RTITWIKSLEVREKDLKDVGAKGNYCCN
SDR11E3 D. rerio          RTQSWVNTFPFETSTKDK----------
                           *  *
```

Figure S16. Alignment of the vertebrate SDR11E family variants. For further details see Fig. S13.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
SDR12C1 H. sapiens       ---------------MESALPAAGFLYWVGAGTVAY--LALR-ISYSLFTALRVWGVGNE
SDR12C1 P. troglodytes   ---------------MESALPAAGFLYWVGAGTVAY--LALR-ISYSLFTALRVWGVGNE
SDR12C1 M. musculus      ---------------MECAPPAAGFLYWVGASTIAY--LALR-ASYSLFRAFQVWCVGNE
SDR12C1 M. domestica     -------------------MESYGFLYWVGVSTVAY--LSLR-LSYSLFSAIRVWGLAHE
SDR12C1 A. carolinensis  -----------MEASESFLAPWTGFFYWVGVAGVAY--WTVL-LLRYLRYIVRVWVTGNP
SDR12C1 Z. albicollis    -------------MVAPAALPAVGLFYWVGALGALY--AAAL-ASYRLLAGLRVWVLGSG
SDR12C1 X. tropicalis    ---------MATESLAEVPVPGCNCFWYLGVVAAVW--WGLR-AAWCLLDGARVWVLGSG
SDR12C1 P. latipinna     ---------MNRDSVDEMMSRAETPLFWVGAFTVAS--MALW-LLYRLLTGFRIWILGNG
SDR12C2 H. sapiens       -----------------MGDVLEQFFILTGLLVCLA--CLAKCVRFSRCVLLNYWKVLP-
SDR12C2 P. troglodytes   -----------------MGDVLEQFFILTGLLVCLA--CLAKCVRFSRRILLNYWKVLP-
SDR12C2 M. musculus      ----------------------MEKLFIAAGLFVGLV--CLVKCMRFSQHLFLRFCKALP-
SDR12C2 S. harrisii      -----------------MGEIQDQLFILIGALVCLK--YLLKCVKFSKYFLLRLWNPLP-
SDR12C2 G. gallus        -----------------MEDFQHQLLIVTGALICFS--ALLKCIRFMKYTFPHVWSALP-
SDR12C2 A. carolinensis  ------------------------------------------------------------
SDR12C2 X. tropicalis    ---------------------MEQFLFVVGLITCLY--LTVKFFGFLMYLFQHLRGVLP-
SDR12C2 D. rerio         ------------------MTLTEIIFVLTGTCAILV--FGGKIASLIMMLITKLFCPLP-
SDR12C3 H. sapiens       MAAVDSFYLLYREIARSCNCYME-ALALVGAWYTARKSITVICDFYSLIRL-HFIPRLGS
SDR12C3 P. troglodytes   MAAVDSFYLLYREIARSCNCYME-ALALVGAWYTARKSITVICDFYSLIRL-HFIPRLGS
SDR12C3 M. musculus      MAAVDSFYLLYREIARSCNCYME-ALALVGAWYTARKSITVICDFYSLVRL-HFIPRLGS
SDR12C3 S. harrisii      MAAVDSFYLLYREIARSCNCYME-ALALVGAWYTARKSITIICDFYSLIRL-HFIPRLVS
SDR12C3 G. gallus        MAAVDRFNLLYREISRSCSVYIE-ALAIVGAWYTVRKCLTLVFNTYSMIRL-HALPKLVG
SDR12C3 G. japonicus     MAAVDSFSLLLRDIGRTCNCYME-TLALIGALYTAKMCFTFVNDTYTLVRL-HFIPRLVR
SDR12C3 X. tropicalis    MAAVDSFHLLYRQVAWSCQSHME-FLAVVGALYTAGKGLKLICQSYNLIRL-HITPLLFS
SDR12C3 L. oculatus      MAAVDSFYLLYREIARSCNCYVE-TLALVGAFYTASTAVAIARDCYSLIRL-HFIPRLMS

                                        ×   × ×
SDR12C1 H. sapiens       -AGVGPGLGEWavVTGSTDGIGKSYAEelAKHGMKVVLISRSKDKLDQVSSEikEKFKVE  1p.2 2p.0 3p.2
SDR12C1 P. troglodytes   -AGVGPGLGEWavVTGSTDGIGKSYAEelAKHGMKVVLISRSKDKLDQVSSEikEKFKVE  1p.2 2p.0 3p.2
SDR12C1 M. musculus      -ALVGPRLGEWavVTGGTDGIGKAYAEelAKRGMKIVLISRSQDKLNQVSNNikEKFNVE  1p.2 2p.0 3p.2
SDR12C1 M. domestica     -DGVGPALGEWavVTGSTDGIGRSYAEelAKRGMKIVLISRSQEKLKEVANDikEKFKVE  1p.2 2p.0 3p.2
SDR12C1 Z. albicollis    AAAVGPALGAWavVTGATDGIGKAYAEelARRGMKVVLISRSKEKLDQVSTEirEKYKVE  1p.2 2p.0 3p.2
SDR12C1 A. carolinensis  -GAVGPHLGAWavVTGATDGIGKAYTEelAKRGLKVVLISRSQEKLDQVASDirEKFKVE  1p.2 2p.0 3p.2
SDR12C1 X. tropicalis    -AQVGPRIGKWavVTGATDGIGKAYAEelAKRGMNIVLISRSPEKLEEVAKQikEKFKVE  1p.2 2p.0 3p.2
SDR12C1 P. latipinna     -QLLTPKLGKWavVTGATDGIGKSYAEelARRGFAMMLISRSQEKLDDVARSleEQFKVE  1p.2 2p.0 3p.2
SDR12C2 H. sapiens       -KSFLRSMGQWavITGAGDGIGKAYSFelAKRGLNVVLISRTLEKLEAIATEieRTTGRS  1p.2 2p.0 3p.2
SDR12C2 P. troglodytes   -KSFLQSMGQWavITGAGDGIGKAYSFelAKRGLNVVLISRTLEKLEAIATEieRTTGRS  1p.2 2p.0 3p.2
SDR12C2 M. musculus      -SSFLRSMGQWavITGAGDGIGKAYSFelARHGLNVVLISRTLEKLQTIAEEieRTTGSC  1p.2 2p.0 3p.2
SDR12C2 S. harrisii      -KSFFRSMGEWavITGAGDGIGKAYSYelAKHGLNIVMISRTLEKLQAVAKGieQTTGSQ  1p.2 2p.0 3p.2
SDR12C2 G. gallus        -QAFFRSLGEWavVTGAGDGLGKAYSFelAKRGLNIVMISRTLEKLQRVANEieQATGQK  1p.2 2p.0 3p.2
SDR12C2 A. carolinensis  -------MGEWavITGAGDGIGRAYSIelAKRGLNIVLISRTFQKMQRVALDieQTTGQR  1p.2 2p.0 3p.2
SDR12C2 X. tropicalis    -QSFFQSLGEWavVTGAGDGIGKAYSTelANRGMNIVMISRTLEKMQAVAMDieQSTGKN  1p.2 2p.0 3p.2
SDR12C2 D. rerio         -EAFFTSLGKWavITGGSDGIGRAYAEelSKQGMSVIIISRNQEKLDRAAKKieLNTGGK  1p.2 2p.0 3p.2
SDR12C3 H. sapiens       RADLIKQYGRWAVVsgATDGIGKAYAEELASRGLNIILISRNEEKLQVVAKDIADTYKVE  1p.2
SDR12C3 P. troglodytes   RADLIKQYGRWAVVsgATDGIGKAYAEELASRGLNIILISRNEEKLQVVAKDIADTYKVE  1p.2
SDR12C3 M. musculus      RPDLIKQYGRWAVIsgATDGIGKAYAEELASHGLNVILISQEEEKLQAAAKHIADTYRVE  1p.2
SDR12C3 S. harrisii      RADLIKQYGRWAVVsgATDGIGKAYAEELASRGLNIVLISQNEEKLHKLSKTLAETYKVE  1p.2
SDR12C3 G. gallus        EIDIVKRYGRWAVVtgSTDGIGKAYAEELAKRGVNIILISRSKEKLEAVSRSISETYKVE  1p.2
SDR12C3 G. japonicus     KADLVKLYGQWAVVtgGTSGIGKYYAKELASRKVNIILVSRNQEKLEALAREIADTYEVE  1p.2
SDR12C3 X. tropicalis    RTNLGRQYGAWAVVtgATSGIAQAYAEELARCGMNVVLVDNNREKLQKMSDSITATHGVN  1p.2
SDR12C3 L. oculatus      RRDLVHQYGQWAVVcgASDGLGRAYTEELAREGVSIILISRSESGLQSFAKAIADAYGVE  1p.2
                                  * ***  *   *    *  **

SDR12C1 H. sapiens       TRTIAVDFAS-EDIYDKIKTGLAGLEIGIlvNNVGMSY-EYPEYFLDVPDLDnvIKKMIN  4p.2 5p.0
SDR12C1 P. troglodytes   TRTIAVDFAS-EDIYDKIKTALAGLEIGIlvNNVGMSY-EYPEYFLDVPDLDnvIKKMIN  4p.2 5p.0
SDR12C1 M. musculus      TRTIAVDFSL-DDIYDKIKTGLSGLEIGVlvNNVGMSY-EYPEYFLEIPDLDntIKKLIN  4p.2 5p.0
SDR12C1 M. domestica     TKTIAVDFGA-VDIYNKIEASLTGLEIGVlvNNVGMSY-EYPEYFLDIPDLDntINKLIN  4p.2 5p.0
```

```
SDR12C1 Z. albicollis    TKVIVADFGEREDIYNGIKTGLEGLEIGVlvNNVGISY-AYPEYFIDIPELEktIDKMVN  4p.2 5p.0
SDR12C1 A. carolinensis  TKTIVADFQDRETIYSKIKAGLEGLEIGIlvNNVGVSY-SYPENFLDVPELDklIDNMIN  4p.2 5p.0
SDR12C1 X. tropicalis    TKIIAADFGKPTEIYGRIESGLRDLEIGVlvNNVGVSY-EHPEYFLEIPDLEntLDKMIN  4p.2 5p.0
SDR12C1 P. latipinna     TRTIAVDFVK-LDIYSKIEEGLADLEIGVlvNNVGVSY-PYPEYYLHIPNLEnfITNTIN  4p.2 5p.0
SDR12C2 H. sapiens       VKIIQADFTK-DDIYEHIKEKLAGLEIGIlvNNVGMLPNLLPSHFLNAPDEIqsL---IH  4p.2 5p.0
SDR12C2 P. troglodytes   VKIIQADFTK-DDIYEHIKEKLAGLEIGIlvNNVGMLPNLLPSHFLNAPDEIqsL---IH  4p.2 5p.0
SDR12C2 M. musculus      VKIVQADFTR-EDIYDHIKEHLEGLEIGIlvNNVGMLPSFFPSHFLSTSGESqnL---IH  4p.2 5p.0
SDR12C2 S. harrisii      VKIIQADFTK-DDIYENIKESLQGLEIGIlvNNVGMVHNYLPSHFLSGPDKIqnL---IH  4p.2 5p.0
SDR12C2 G. gallus        VKVIQADFTR-NSVYKNIEKDLEGLEIGVlvNNVGMLHNPLPCRFLNAPDVDenL---VN  4p.2 5p.0
SDR12C2 A. carolinensis  VKIIQADFTK-MDIYSDIE-SLQGLEVGIlvNNVGMLQTSIPCHFLDAPDNDqaL---IN  4p.2 5p.0
SDR12C2 X. tropicalis    VKIIQADFTK-DNIYEHIEEGLKGLKIGIliNNVGMLHNPDPCRFLSGPDNDknV---IN  4p.2 5p.0
SDR12C2 D. rerio         VKVIAADFTK-DDIYGHITENIEGLDIGVlvNNVGILPSQIPCKLLETSDLEerIYDIVN  4p.2 5p.0
SDR12C3 H. sapiens       TDIIVADFSSGREIYLPIREALKDKDVGILVNNVGVFY-PYPQYFTQLSE--DKLWDIIN
SDR12C3 P. troglodytes   TDIIVADFSSGREIYLPIREALKDKDIGILVNNVGVFY-PYPQYFTQLSE--DKLWDIIN
SDR12C3 M. musculus      TLVLVADFSRGREIYAPIREALRDRDIGILVNDVGAFY-PYPQYFSQVPE--DTLWDIVN
SDR12C3 S. harrisii      TEIIVADFSNGRGIYLLIREALQDRDIGILVNNVGVFY-PYPQYFTQVSE--EKLWDIID
SDR12C3 G. gallus        TDFIVADFSKGREAYQAIKEGLKDREIGILVNNVGLFY-TYPDYFTNLSE--DMLWDMIN
SDR12C3 G. japonicus     TAIIVVDFNKGSEIYPALKNVLEDKEIGILVNNVGVFY-THPDYFANLTW--DKIWELIN
SDR12C3 X. tropicalis    TSFIEVDFCKGHEAYRPIKDALRHVEVGILVNCVGNFL-EYPQSVIECPE--EQLWKIIH
SDR12C3 L. oculatus      TATIGADFSQGQEAYKPIKDAVKDKEIGFLVNNICVPS-EYPQHFTNVPE--NKLWDIIN
                               **      *            * * *         *


                                                                 +   +
SDR12C1 H. sapiens       INILSVCkmTQLVLPGMVErsKGAILNISSGSGMLPVPLLTIYSATktFVDFFSQCLHEE  6p.0 7p.1 8p.0
SDR12C1 P. troglodytes   INILSVCkmTQLVLPGMVErsKGAILNISSGSGMLPVPLLTIYSATktFVDFFSQCLHEE  6p.0 7p.1 8p.0
SDR12C1 M. musculus      INVLSVCkvTRLVLPGMVErsKGVILNISSASGMLPVPLLTIYSATkaFVDFFSQCLHEE  6p.0 7p.1 8p.0
SDR12C1 M. domestica     INIFSVCkmTQLVLPGMVKrsKGAILNISSASGMLPAPLLTIYSATkaFVDFFSQCLHVE  6p.0 7p.1 8p.0
SDR12C1 Z. albicollis    INIMSVCkmTRLVLPGMLErsKGIILNIASASGMCPTPLLTLYSATkaFVDYFSRGLNAE  6p.0 7p.1 8p.0
SDR12C1 A. carolinensis  INCISVCkmTQLVLPGMLKrsKGVIVNVSSIAAVSPTPFLAVYSATkaFVNYFSHCLNVE  6p.0 7p.1 8p.0
SDR12C1 X. tropicalis    INITSVCqmTRLVLPGMLGrgRGVILNISSASGMYPVPLLTVYSATkaFVDFFSRGLQAE  6p.0 7p.1 8p.0
SDR12C1 P. latipinna     VNMTSVCqmTRLVLPKMVArsKGVILNISSASGMYPVPLLTVYSATkaFVDFFSRGLHEE  6p.0 7p.1 8p.0
SDR12C2 H. sapiens       CNITSVVkmTQLILKHMESrqKGLILNISSGIALFPWPLYSMYSASkaFVCAFSKALQEE  6p.0 7p.1 8p.0
SDR12C2 P. troglodytes   CNITSVVkmTQLILKHMESrrKGLILNISSGIALFPWPLYSMYSASkaFVCAFSKALQEE  6p.0 7p.1 8p.0
SDR12C2 M. musculus      CNITSVVkmTQLVLKHMESrrKGLILNISSGAALRPWPLYSLYSASkaFVYTFSKALSVE  6p.0 7p.1 8p.0
SDR12C2 S. harrisii      CNISSVVkmTRLILRDMEIrrKGLILNISSGAGRFPCPLYSLYSSTkaFVCTFSKALQAE  6p.0 7p.1 8p.0
SDR12C2 G. gallus        CNIISVTkmTQIILKQMELrqKGLILNLSSGLGTFPCPLYTIYSASkaFICTFSKALQAE  6p.0 7p.1 8p.0
SDR12C2 A. carolinensis  CNIMSVTqmTRIVLKQMVPrqKGLILNISSavGTFPCPLYAIYSASkaFGCTFSKALQAE  6p.0 7p.1 8p.0
SDR12C2 X. tropicalis    CNITSTIkmTRIILKQMEKrkSGLILNISSAVGRFPCPLYAVYSASkaFVTTFSKALQAE  6p.0 7p.1 8p.0
SDR12C2 D. rerio         CNVKSMVkmCRIVLPGMQQrrRGVILNVSSGIAKIPCPIYTLYAASkvFVERFSQGLQAE  6p.0 7p.1 8p.0
SDR12C3 H. sapiens       VNIAAASLMVHVVLPGMVERKKGAIVTISSGSCCKPTPQLAAFSASkaYLDHFSRALQYE  2p.0
SDR12C3 P. troglodytes   VNIAAASLMVHVVLPGMVERKKGAIVTISSGSCCKPTPQLAAFSASkaYLDHFSRALQYE  2p.0
SDR12C3 M. musculus      VNIAAASLMVHIVLPGMVERKKGAIVTVSSGSCCKPTPQLAAFSASkaYLDHFSRALQYE  2p.0
SDR12C3 S. harrisii      VNIAAASLMVHIVLPGMVARRKGAIVNISSGSCCKPTPQMTAYSASkaYLDHFSRALQYE  2p.0
SDR12C3 G. gallus        VNIASANMMVHIVLPGMVEKRKGAIVNVSSASCCQPTPMLTTYGASkaYLDYFSRALYYE  2p.0
SDR12C3 G. japonicus     VNIGAATMMVHMVLPGMVERKKGAIVNISSMSCCQPTPLMTAYSASkaYLDHFSRALHYE  2p.0
SDR12C3 X. tropicalis    VSVSAATIMAKIVVPGMAQRRRGAIVNVSFRSCCKPNFPMTMYTPCqlYMDGFTKELQSE  2p.0
SDR12C3 L. oculatus      INIAAATMMVHIVLPGMVERKKGAIINISSGSCCKPTPKMTAYSASkaYLDHFSRALYYE  2p.0
                                       *     * *          *                *   *  *

SDR12C1 H. sapiens       YRSKGVFVqsVLPYFVATKLAKIRKP----TLDKPSPETFVKSAIKTVGLQSRTNGYLIH  9p.0
SDR12C1 P. troglodytes   YRSKGVFVqsVLPYFVATKLAKIRKP----TLDKPSPETFVKSAIKTVGLQSRTNGYLIH  9p.0
SDR12C1 M. musculus      YKSKGIFVqsVMPYLVATKLAKIQKP----TLDKPSAETFVKSAIKTVGLQTRTTGYVIH  9p.0
SDR12C1 M. domestica     YRSKGIIVqsVLPYFVATKLAKIRKP----TFDKPSAEAFVRSAIKTVGLQSRTNGYPVH  9p.0
SDR12C1 Z. albicollis    YKSKGIIVqsVLPYYVATKMSKIRKP----TLDKPSPERYVRAALGTVGLQSQTNGYLPH  9p.0
SDR12C1 A. carolinensis  YKRKGIIVqsLVPHLVVTNMSKLRKA----SRFRPMPGWFVKYAINTVGLESETAGYPYH  9p.0
```

```
SDR12C1 X. tropicalis    YRSKGVTVqsVLPFYVATKLAKIRKP----TWDKPSPETYVQSALNTVGLQTQTNGYLPH  9p.0
SDR12C1 P. latipinna     YRRQGIIIqsVLPFFVATKMTRIRKP----TLDKPTPERYVAAELNTVGLQNQTNGYFPH  9p.0
SDR12C2 H. sapiens       YKAKEVIIqvLTPYAVSTAMTKYLNT----NVITKTADEFVKESLNYVTIGGETCGCLAH  9p.0
SDR12C2 P. troglodytes   YKAKEVIIqvLTPYAVSTAMTKYLNT----NVITKTADEFVKESLNYVTIGGETCGCLAH  9p.0
SDR12C2 M. musculus      YRDKGIIIqvLTPYSISTPMTKYLNN----K-MTKTADEFVKESLKYVTIGAESCGCLAH  9p.0
SDR12C2 S. harrisii      YKEKGIIIqvVTPYSISTPMTKHINP----NKITKTADEFVKESLDFVAVGDETCGCLAH  9p.0
SDR12C2 G. gallus        YKEKGIIIqvVAPYGISTPMTMHQKP----GLITKTAEEFVSESLHYVTFGDEIFGCLAH  9p.0
SDR12C2 A. carolinensis  YNTKGIIIqaVTPYSVSTPMTKWSKP----NLINKTAEDFVRESLEYVTLGDETFGCLAH  9p.0
SDR12C2 X. tropicalis    YKSKGIIIqaVTPYGVSTPMTRNART----NAITKRPVDFVRQSLNCVTIGDETFGCFAH  9p.0
SDR12C2 D. rerio         YISKGIIIqtVAPFGVSTAMTGHQKP----DMVTFTAEEFVRSSLKYLKTGDQTYGSITH  9p.0
SDR12C3 H. sapiens       YASKGIFVQSLIPFYVATSMTAPSNFLHRCSWLVPSPKVYAHHAVSTLGISKRTTGYWSH
SDR12C3 P. troglodytes   YASKGIFVQSLIPFYVATSMTAPSSFLHRCSWLVPSPKVYAHHAVSTLGISKRTTGYWSH
SDR12C3 M. musculus      YASKGIFVQSLIPFYVTSSGAAPASFLHRCPWLAPSPRVYAQHAVSTLGISKRTTGYWSH
SDR12C3 S. harrisii      YASKGIFVQSLIPFSVATNVKACRSFLHGCSWLVPSPKVYAHHAIATLGISKRTTGYWFH
SDR12C3 G. gallus        YASKGIFVQSLTPFVIATRMVSCSRVTSKRSFFFPSAEEYASHAISTLGLSKRTPGYWKH
SDR12C3 G. japonicus     YAPQGIFVQSLIPFFISTNMTKFSKELTPKNFLVPSAEVYAHHAVTTLGISRRTTGYWLH
SDR12C3 X. tropicalis    LSSKGIFVQSLTPLCVAKERTLHYRPSFRFPFLVPSPEVYARHAVQMLGVSHRTTGYWAH
SDR12C3 L. oculatus      YASKGVFVQSLVPFYISEVGAAS------GGWLVPHPQVYARHAISTLGISHRTTGYWPH
                                  *   *                                   *   *

SDR12C1 H. sapiens       ALmgSIIS-NLPSWIYLKIVMNMNK-STRAHYLKKTKKN-----------  10p.0
SDR12C1 P. troglodytes   ALmgSIIS-NLPSWIYLKIVMNMNK-STRAHYLKKTKKN-----------  10p.0
SDR12C1 M. musculus      SLmgSINS-IMPRWMYFKIIMGFSK-SLRNRYLKKRKKN-----------  10p.0
SDR12C1 M. domestica     AImgWFLSCLLPSWLSMKLAYSVNK-GSRAHYLKKHKKA-----------  10p.0
SDR12C1 Z. albicollis    ALmgWVIS-LLPTSTAINLIMKTNK-QIRARYFKKMKEK-----------  10p.0
SDR12C1 A. carolinensis  ELwvWLIH-MLPRWVVDESATRLAV-KSKYNLLKKQKAN-----------  10p.0
SDR12C1 X. tropicalis    AIwiWISTSLVPVSTAISLGMKMNK-GLRARFLKRAKQK-----------  10p.0
SDR12C1 P. latipinna     AVmgWVTTRLVPSSIVIFLGARMNR-LQRTGYLHRRKLREQRNGASLKTE  10p.0
SDR12C2 H. sapiens       EIlaGFLS-LIPAWAFYSGAFQRLLLTHYVAYLKLNTKVR----------  10p.0
SDR12C2 P. troglodytes   EIlaGFLS-LIPAWAFYSGAFQRLLLTHYVAYLKLNTKVR----------  10p.0
SDR12C2 M. musculus      EIiaIILN-RIPSRIFYSSTAQRFLLTRYSDYLKRNISNR----------  10p.0
SDR12C2 S. harrisii      EIlaHLLD-FIPSWVIYSDLAQNIFLIHCTNYLKQNSNIQ----------  10p.0
SDR12C2 G. gallus        ELlaCVLQ-LVPLWVLHSDRLQEVALQAFTSYLKKRWRKS----------  10p.0
SDR12C2 A. carolinensis  EIlaRLVQ-CIPLWIFHSERVQNMLKDAISGQLKKNSNST----------  10p.0
SDR12C2 X. tropicalis    AVlgCIMD-CIPLWVIHSTAVQEKFLHRFNRKKKKI--------------  10p.0
SDR12C2 D. rerio         TLlgRIVQ-SIPTWVLQSETFQHHFQ----EYVKNRDRR-----------  10p.0
SDR12C3 H. sapiens       SIqfLFAQ-YMPEWLWVWGANILNRSLRKEALSCTA--------------   3p.0
SDR12C3 P. troglodytes   SIqfLFAQ-YMPEWLWVWGANILNRSLRKEALSCTA--------------   3p.0
SDR12C3 M. musculus      SIqfLFAQ-YMPEWLWVWGANLLNRSLRKEALSCQA--------------   3p.0
SDR12C3 S. harrisii      SIqfLFAQ-YMPEWLWAWGANIINNSLRHEALSHRL--------------   3p.0
SDR12C3 G. gallus        SIefTLGE-RLPEWIWAWFAQYFCRIIRKEALTHKAK-------------   3p.0
SDR12C3 G. japonicus     TIlfLLGQ-YIPEWLWAWGTYRMNNTLRLEATLQGPH-------------   3p.0
SDR12C3 X. tropicalis    SMqlAAAC-WLPDFICQLMGRFLHTASE----------------------   3p.0
SDR12C3 L. oculatus      SIqfWLSR-YMPEWMWVWGSNMLSRTI-----------------------   3p.0
                                    *
```

Figure S17. Alignment of the vertebrate SDR12C family variants. For further details see Fig. S13 and Table S17.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
                                                                  ×   × ×
SDR16C1 H. sapiens           ---MVWKRLGALVMFPLQMIYLVVKAAVGLVLPAKLRDLSRENVLITGGGRGIGRQLARE
SDR16C1 P. troglodytes       ---MVWKRLGALVMFPLQMIYLVVKAAVGLVLPAKLRDLSRENVLITGGGRGIGRQLARE
SDR16C1 M. musculus          ---MVWKWLGALVVFPLQMIYLVTKAAVGMVLPPKLRDLSRESVLITGGGRGIGRHLARE
SDR16C1 G. gallus            ---MVWKWLGAVLLLPVQMLYLVLKAAVCALLPPKLRDLSGDAVLVTGGGRGIGRQLAKE
SDR16C1 G. japonicus         ---MVWKWLAAWLLLPVQLLGLVAKALVGTLLPSKLRDLSGDSVLITGGGRGIGRHLARE
SDR16C1 X. tropicalis        ---MDMRSVGRLLLFPVQMLFAILKAAANLLMPTRLRDLSGDTVLITGGGRGIGRHLARE
SDR16C1 D. rerio             ---MEMKVLGCALLFPFQIVFSILKATVRFFTRQKRRDLGTDVVLITGGGRGIGRHLAKE
SDR16C2 H. sapiens           -MKF----LLDILLLLPLLIVCSLESFVKLFIPKRRKSVTGEIVLITGAGHGIGRLTAYE
SDR16C2 P. troglodytes       -MKF----LLDILLLLPLLIVCSLESFVKLFIPKRRKSVTGEIVLITGAGHGIGRLTAYE
SDR16C2 M. musculus          -MKY----LLDLILLLPLLIVFSIESLVKLFIPKKKKSVAGEIVLITGAGHGIGRLTAYE
SDR16C2 S. harrisii          -MYV----VLELLLLLPILIYSTLESFVKFFIPKKRKSVSGEIVLITGAGHGIGRLTAYE
SDR16C2 G. gallus            -MNP----ALGLLVFLGTLLYAYAEALVKLLLPAKRKAVRGELVLVTGAARGLGRATARE
SDR16C2 A. mississippiensis  -MHT----ALELLRLLPLLLLAYLEALARLLLPPRRKSVQGETVLVTGAGHGLGRSTALE
SDR16C2 X. tropicalis        -MHV----LLEIVWLLLVIVYSYLESFVKLFIPLKRKSVKGEVVLITGAGHGIGKITAQI
SDR16C3 H. sapiens           -MNI----ILEILLLLITIIYSYLESLVKFFIPQRRKSVAGEIVLITGAGHGIGRQTTYE
SDR16C3 P. troglodytes       -MNI----ILEILLLLITIIYSYLESLVKFFIPQRRKSVAGEIVLITGAGHGIGRQTAYE
SDR16C3 M. musculus          -MNL----ILEFLLLVGVIIYSYLESLVKFFIPRRRKSVTGQTVLITGAGHGIGRLTAYE
SDR16C3 S. harrisii          -MNI----IAELFLLLAIVIYSYLEALVRLFIPVKRKSVSGEIVLITGAGHGIGRLTAYE
SDR16C3 F. albicollis        -MNV----FVELLLFLATLLYSYLEAFVKLFVPARRKSLSGELVLITGAGHGVGRATALE
SDR16C3 A. carolinensis      -------------------MYSCLEALVKLFIPKNRKSVYGEIVLITGAGHGLGRATAYE
SDR16C3 X. tropicalis        -MNI----ILEYMFLLFIAVYSYMESFVKLFLPVNRKSVAGNIVLITGSGHGIGRRTALE
SDR16C4 H. sapiens           -MNI----VVEFFVVTFKVLWAFVLAAARWLVRPKEKSVAGQVCLITGAGSGLGRLFALE
SDR16C4 P. troglodytes       -MNI----VVEFFVVTFKVLWAFVLAAARWLVRPKEKSVAGQVCLITGAGSGLGRLFALE
SDR16C4 M. musculus          -MNI----VVEFFVVTFKVLWAFVLAAARWLVRPKEKSVAGQVCLITGAGSGLGRLFALE
SDR16C4 M. domestica         -MNI----VVEFFVVTFKVLWAFVLAAAKWLVRPKEKSVAGQVCLITGAGSGLGRLFALE
SDR16C4 G. gallus            -MNI----LLELFVVTFRVLWAFVLAAAKWLVRPKEKSVAGQVCLITGAGSGLGRLFALE
SDR16C4 G. japonicus         -MNI----ILEFFVVTFKVLWAFVVAAAKWFMRPKEKSVAGQVCLITGAGSGLGRLFALE
SDR16C4 X. tropicalis        -MHI----VLEFFLVTFKVLWAFVLAAAKWLVRPKDKSVAGQVCLITGAGSGLGRLFALE
SDR16C4 P. latipinna         MMMI----IAEFFVVILKVLWAFVTAGARWVVRPKEKSVTGQVCVITGAGSGLGRLFAKE
SDR16C5 H. sapiens           -MSFNLQSSKKLFIFLGKSLFSLLEAMIFALLPKPRKNVAGEIVLITGAGSGLGRLLALQ
SDR16C5 P. troglodytes       -MSFNLQSSKKLFIFLGKSLFSLLEAMIFALLPKPRKNVAGEIVLITGAGSGLGRLLALQ
SDR16C5 M. musculus          -MSQNLESVKNLLVFLGKSLLSVLEALLFHVISKPRKNVAGEIVLITGAGSGLGRLLALQ
SDR16C5 M. domestica         -MLSKMNDLNHLLIFLGKFTYGFLEALFYMIAPKPKKNVSGEIVLITGAGSGIGRLLALR
SDR16C5 G. gallus            -MNF----FLELLKVIGLTTYYMLEALVLLFVPKRKKNVSGEIVLITGAGSGIGRLLSLK
SDR16C5 P. bivittatus        -MNF----FLETLRVILMCIYYLLEFFL-SFIFARKKNIAGEIVLITGAGSGIGRLMALK
SDR16C5 X. tropicalis        -MNI----FLETLKVLFLTIYLNLESFVLWFIPSRKKNVAGEIVLITGAGSGIGRLMALE
SDR16C5 D. rerio (a)         -MNI----LLETLRLIFLTVYYNLEAFLKFFIPLRKKDVSGEIVLITGSGSGIGRLMALE
SDR16C5 D. rerio (b)         -MNF----LLETLRVLFLSLVLGLEAFVRLFIPPRRKNVSGELVLLTGAGSGIGRLMALE
                                                                **   * *

SDR16C1 H. sapiens           FAERGARkiVLWGRTEKCLKETTEEIRQMG--------------------------TECH  1p.0
SDR16C1 P. troglodytes       FAERGARkiVLWGRTEKCLKETTEEIRQMG--------------------------TECH  1p.0
SDR16C1 M. musculus          FAERGARkiVLWGRTEKCLKETTEEIRQMG--------------------------TECH  1p.0
SDR16C1 G. japonicus         FAKRGARkvILWGRTEKCLKETTEEIRVMG--------------------------TECY  1p.0
SDR16C1 G. gallus            FARRGARkiILWGRTEKCLKETTEEIRMMG--------------------------TECH  1p.0
SDR16C1 D. rerio             FAKQGARkvILWGRTEKCLKETCEEISMTG--------------------------TECH  1p.0
SDR16C1 X. tropicalis        FAKQNAKkiILWGRTERCLKETTEEIKQMG--------------------------TDCS  1p.0
SDR16C2 H. sapiens           FAKLKSK-LVLWDINkhGLEETAAKCKGLG--------------------------AKVH  1p.0
SDR16C2 P. troglodytes       FAKLKSK-LVLWDINkhGLEETAAKCKGLG--------------------------AKVH  1p.0
SDR16C2 M. musculus          FAKLNTK-LVLWDINknGIEETAAKCRKLG--------------------------AQAH  1p.0
SDR16C2 S. harrisii          FAKLKSK-LVLWDINkhGIEETAAECRKLG--------------------------ARAH  1p.0
SDR16C2 G. gallus            FARRQSR-LVLWDVEahGLKETATECEGLG--------------------------ATVH  1p.0
SDR16C2 A. mississippiensis  FAQHRSR-LVLWDVNqhGIEETAAECQRLG--------------------------ATVH  1p.0
```

```
SDR16C2 X. tropicalis        FGELESV-LVLWDINkqGVEETAEKCRKGG--------------------------AKVY  1p.0
SDR16C3 H. sapiens           FAKRQSI-LVLWDINkrGVEETAAECRKLG--------------------------VTAH  1p.0
SDR16C3 P. troglodytes       FSKQQSI-LVLWDINkrGVEETAAECRKLG--------------------------VTAH  1p.0
SDR16C3 M. musculus          FAKQKSR-LVLWDINkrGVEETADKCRKLG--------------------------AVVH  1p.0
SDR16C3 S. harrisii          FAKHKSK-LVLWDINkhGIEETAAECRKLG--------------------------APTH  1p.0
SDR16C3 F. albicollis        FARRQSR-LVLWDINkhGVEETAAECQKLG--------------------------ATVQ  1p.0
SDR16C3 A. carolinensis      FAKRQSV-LVLWDINkqGVEETAEECRKLG--------------------------AIAH  1p.0
SDR16C3 X. tropicalis        FAKHESI-LVLWDINqkGVEETADECRKLG--------------------------ATAY  1p.0
SDR16C4 H. sapiens           FARRRAL-LVLWDINTQSNEETAGMVRHIYRDLEAAD-AAALqaGNGEEEILPHCNLQVF  1p.2
SDR16C4 P. troglodytes       FARRRAL-LVLWDINTQSNEETAGMVRHIYRDLEAAD-AAALqaGNGEEEILPHCNLQVF  1p.2
SDR16C4 M. musculus          FARRRAL-LVLWDINTQSNEETAGMVRHIYRDLEAAD-AAALqaGKGEEEILPPCNLQVF  1p.2
SDR16C4 M. domestica         FARRRAL-LVLWDINTQSNEETAGMVRHIYQDLEAAD-AAALqaGNGEEEVLPPCNLQVF  1p.2
SDR16C4 G. gallus            FARRRAL-LVLWDINTQSNEETAGMVRHIYRELAE---AAPkvAGDGEKDALPHCSLQVY  1p.2
SDR16C4 G. japonicus         FARRRAR-LVLWDINTQSNEAQAGMVRHIYREVAEEAAAAAQkaGHGEEEVLPHYNLQVH  1p.2
SDR16C4 X. tropicalis        FARRRAQ-LVLWDINSQSNEETAEMVRSIYRELEAEDSAR-raGNATEEEVQPCCNFQVY  1p.2
SDR16C4 P. latipinna         FARRRAV-LVLWDINSQSNEETAEMVRQIYHETETPIA---KdgPVGGVEEVPAFQPQVY  1p.2
SDR16C5 H. sapiens           FARLGSV-LVLWDINKEGNEETCKMAREAG--------------------------ATRVH
SDR16C5 P. troglodytes       FARLGSV-LVLWDINKEGNEETCKMAREAG--------------------------ATRVH
SDR16C5 M. musculus          FARLGAV-LVLWDVNKEANDETHQLAREAG--------------------------AARVH
SDR16C5 M. domestica         FAHLGAT-LVLWDINPEGNQETSKLAKEAG--------------------------ASRVY
SDR16C5 G. gallus            FAKLGAT-LVLWDINQDGLKETLRLAEENG--------------------------AVRIH
SDR16C5 P. bivittatus        FARLGAV-LVLWDVNLEGNKETARLACKIG--------------------------AARVH
SDR16C5 X. tropicalis        FAHLGAT-LVLWDINEEGNKETCRLAKKNG--------------------------AVRVH
SDR16C5 D. rerio (a)         FASLDVS-LVLWDINVDGLKETAEQVKEKG--------------------------ASRVH
SDR16C5 D. rerio (b)         FARLDAR-LVLWDINEDGNKETARLIKEKY--------------------------GARAH
                             *         **

SDR16C1 H. sapiens           YFICDVGNREEVYQTAKAVREkvGDITILVNNAAVVHGKSLMDSDDDALLKSQHINTLGQ  2p.0
SDR16C1 P. troglodytes       YFICDVGNREEVYQTAKAVREkvGDITILVNNAAVVHGKSLMDSDDDALLKSQHINTLGQ  2p.0
SDR16C1 M. musculus          YFICDVGNREEVYQMAKAVREkvGDITILVNNAAVVHGKSLMDSDDDALLKSQHVNTLGQ  2p.0
SDR16C1 G. gallus            YFICDVGNREEVYRQAKAVREkvGDITILVNNAAVVHGKSLMDSDDDALLKSQHINTLGQ  2p.0
SDR16C1 G. japonicus         YFICDVGNREEVYQQAKAVREkvGDITILVNNAAVVHGRSLMESDDDALLKSQHINTLGQ  2p.0
SDR16C1 X. tropicalis        YFVCDVGNREEVYQQAKAVREkvGDVTILVNNAAVVHGKSLMDSDDDALLKSQHINTLGQ  2p.0
SDR16C1 D. rerio             YFVCDVGNREEVYQQAKVLREkvGDVTILVNNAAVVHGKSLMESDDDALLKTQHINTLGQ  2p.0
SDR16C2 H. sapiens           TFVVDCSNREDIYSSAKkvKAEIGDVSILVNNAGVVYTSDLFATQDPQIEKTFEVNVLAH  2p.0
SDR16C2 P. troglodytes       TFVVDCSNREDIYSSAKkvKAEIGDVSILVNNAGVVYTSDLFATQDPQIEKTFEVNVLAH  2p.0
SDR16C2 M. musculus          PFVVDCSQREEIYSAAKkvKEEVGDVSILVNNAGVVYTADLFATQDPQIEKTFEVNVLAH  2p.0
SDR16C2 S. harrisii          AYVVDCSNKEDIYNYAKkvKAEVGDVSILVNNAGVVYTADLFSTQDPQIEKTFEVNVLAH  2p.0
SDR16C2 G. gallus            TLVVDCSKREEIYSAAEkvKKDIGDVSILVNNAGVITAADLLSTQDHQIEKMFEVNILAH  2p.0
SDR16C2 A. mississippiensis  TFVVDCSKREEIYRAAEkvKKEIGDISILVNNAGVITPADLLSTQDHQIEQTFAVNILAH  2p.0
SDR16C2 X. tropicalis        TYVVDCSKREEINTAANkvKQEVGDVTILINNAGIIFCADVLTLQDQQIEKIFEVNILAH  2p.0
SDR16C3 H. sapiens           AYVVDCSNREEIYRSLNqvKKEVGDVTIVVNNAGTVYPADLLSTKDEEITKTFEVNILGH  2p.0
SDR16C3 P. troglodytes       AYVVDCSNREEIYRSLNqvKKEVGDVTIVVNNAGTVYPADLLSTKDEEITKTFEVNILGH  2p.0
SDR16C3 M. musculus          VFVVDCSNRAEIYNSVDqvKREVGDVEIVVNNAGAIYPADLLSAKDEEITKTFEVNILGH  2p.0
SDR16C3 S. harrisii          AFVVDCSKKEEIYSMIDkiKKEVGDVTIVVNNAGTIYPADLLSTKDEEITKTFEVNILGH  2p.0
SDR16C3 F. albicollis        TFVVDCSKREEIYSTADkvKKDIGDVTILVNNVGIITAADFLSTQDHQIEKMFEVNILGH  2p.0
SDR16C3 A. carolinensis      ALVVNCKNREEIYTVADkvKKDIGDVSILVNNAGVITTAKLLSTKDEQIQEMFDVNVLAH  2p.0
SDR16C3 X. tropicalis        AFVVDCSTRNDIYRCAEkvKQDIGDVDILINNAGVVFGTEFLKLQDHQIEKTFSVNILAH  2p.0
SDR16C4 H. sapiens           TYTCDVGKRENVYLTAERVRKEVGEVSVLVNNAGVVSGHHLLECPDELIERTMMVNCHAH
SDR16C4 P. troglodytes       TYTCDVGKRENVYLTAERVRKEVGEVSVLVNNAGVVSGHHLLECPDELIERTMMVNCHAH
SDR16C4 M. musculus          TYTCDVGKRENVYLTAERVRKEVGEVSVLVNNAGVVSGHHLLECPDELIERTMMVNCHAH
SDR16C4 M. domestica         TYTCDVGKRENVYLTAERVRKEVGEVSVLVNNAGVVSGHHLLECPDELIERTMMVNCHAH
SDR16C4 G. gallus            TYTCDVGKRENVYTTAERVRKEVGEVSVLVNNAGVVSGHHLLECPDELIERTMMVNCHAH
SDR16C4 G. japonicus         TYTCDVSKRENVYTTAERVRKEVGEVSVLVNNAGVVSGHHLLECPDELIERTMMVNCHAH
SDR16C4 X. tropicalis        TYTCDVGKRESVYSTAERVRREVGDVYLLLNNAGVVSGHHLLECPDELIERTMMVNCHAH
SDR16C4 P. latipinna         TYVCDVGKRESVYSTAEKVRREVGEVDILINNAGVVSGHHLLECPDELIERTMVVNCHAH
```

```
SDR16C5 H. sapiens           AYTCDCSQKEGVYRVADqvKKEVGDVSILINNAGIVTGKKFLDCPDELMEKSFDVNFKAH  1p.0
SDR16C5 P. troglodytes       AYTCDCSQKEGVYRVADqvKKEVGDVSILINNAGIVTGKKFLDCPDELMEKSFDVNFKAH  1p.0
SDR16C5 M. musculus          AYTCDCSRREEVYRVADqvKKEVGDVSILINNAGIVTGRNFLDCPDDLMEKSFDVNFKAH  1p.0
SDR16C5 M. domestica         TYTCNCGQRQDVYRVADqvKKEVGDVTILINNAGVVTGKRFLEIPDECIEKAFDVNIKAH  1p.0
SDR16C5 G. gallus            SYICDCSKRQEVYRVADqvKKEVGDVSILVNNAGIVTGRSFIESPDSLVEKTMEVNTMAH  1p.0
SDR16C5 P. bivittatus        EYICDCSKRQEVYQVADqvKKEVGDVSILINNAGIITGQMFLDTPDMLLEKSIQVNTMAH  1p.0
SDR16C5 X. tropicalis        AYLCDCSKRQEVYKVADqvKKEVGDVSILINNAGIVTGKKFIDSPDALVEKTMQVNCMAH  1p.0
SDR16C5 D. rerio (a)         YYQCDCSDREAVYRVADqvKSEIGDVTILINNAGIVSGKKFMDTPDALIEKTLRVNAMSH  1p.0
SDR16C5 D. rerio (b)         TYTCDCSDREEVYRVANqvKREVGDVTILINNAGIVTGKKFMDSPDSLIEKSMEVNSLAH  1p.0
                                                *     **           *        *

                                                          +   +
SDR16C1 H. sapiens           FwtTKAFLPRMLELQNGHIVCLNSVLALSAIPGAIDYCTSKASAFAFMESLTLGL--LDC  3p.0
SDR16C1 P. troglodytes       FwtTKAFLPRMLELQNGHIVCLNSVLALSAIPGAIDYCTSKASAFAFMESLTLGL--LDC  3p.0
SDR16C1 M. musculus          FwtTKAFLPRMLELQNGHIVCLNSVLALSAIPGAIDYCTSKASAFAFMESLTLGL--LDC  3p.0
SDR16C1 G. gallus            FwtTKAFLPRMLELQNGHIVCLNSVLALSAIPGAIDYCTSKASSFAFMESLTLGL--LDC  3p.0
SDR16C1 G. japonicus         FwtTKAFLPRMLELQNGHIVCLNSVLALSAIPGAIDYCTSKASSFAFMESLTLGL--LDC  3p.0
SDR16C1 X. tropicalis        FwtTKAFLPRMLELQNGHIVCINSVLALSAIPGAIDYCTSKASSFAFMESLTLGL--LDC  3p.0
SDR16C1 D. rerio             FwtTKAFLPRMLELCNGHVVCINSILSLSSIPGAIDYCTSKASSYAFMESLTLGL--LDC  3p.0
SDR16C2 H. sapiens           FwtTKAFLPAMTKNNHGHIVTVASAAGHVSVPFLLAYcsSKFAAVGFHKTLTDELAALQI  3p.0 4p.1
SDR16C2 P. troglodytes       FwtTKAFLPAMTKNNHGHIVTVASAAGHVSVPFLLAYcsSKFAAVGFHKTLTDELAALQI  3p.0 4p.1
SDR16C2 M. musculus          FwtTKAFLPVMMKNNHGHIVTVASAAGHTVVPFLLAYcsSKFAAVGFHRALTDELAALGR  3p.0 4p.1
SDR16C2 S. harrisii          FwtTKAFLPAMMKNNHGHIVTVASAAGHTVVPFLLAYcsSKFAAVGFHRALTAEMDALEK  3p.0 4p.1
SDR16C2 X. tropicalis        FwtTRAFLPSMLRNNHGHIVTVASSAGFVGVQFMVDYcsTKFAALGYHKALTAELLALGK  3p.0 4p.1
SDR16C2 G. gallus            IwtTRAFLPTMMKNNHGHIVTVASAAGQFVTSFMVAYcsSKFAAVGFHKALTEELSSLGK  3p.0 4p.1
SDR16C2 A. mississippiensis  FwtTKAFLPTMMKNNHGHIVTVSSAAGHMPASFMLSYcsSKFAAVGFHKALTQELSALGK  3p.0 4p.1
SDR16C3 H. sapiens           FwiTKALLPSMMERNHGHIVTVASVCGHEGIPYLIPYcsSKFAAVGFHRGLTSELQALGK  3p.0 4p.1
SDR16C3 P. troglodytes       FwiTKALLPSMMERNHGHIVTVASVCGHEGIPYLIPYcsSKFAAVGFHRGLTSELQALEK  3p.0 4p.1
SDR16C3 M. musculus          FwiIKALLPSMLRRNSGHIVTVASVCGHGVIPYLIPYcsSKFAAVGFHRALTAELDTLGK  3p.0 4p.1
SDR16C3 S. harrisii          FwiIKALLPPMMKRNHGHIITVASICGHGVIPYLIPYcsSKFAAVGFHRALTSELAAMGK  3p.0 4p.1
SDR16C3 F. albicollis        MwtTRAFLPVMMNNNYGHIVTVASAAGHFVVPYMVTYcsSKFAAVGFHKALTEELSALGK  3p.0 4p.1
SDR16C3 A. carolinensis      YwtTKAFLPAMIKNNHGHIVTVASISGHIGIPFTVTYtsSKFAAVGFHNGLKEELRFLRK  3p.0 4p.1
SDR16C3 X. tropicalis        FwtTKSFLSAMMKKDRGHIVTVASIAGQLGVPYLVDYcaSKFGLVGFHESLTSELKLLGK  3p.0 4p.1
SDR16C4 H. sapiens           FwtTKAFLPTMLEINHGHIVTVASSLGLFSTAGVedYCASKFGVVGFHESLSHELKAAEK  2p.0 3p.0
SDR16C4 P. troglodytes       FwtTKAFLPTMLEINHGHIVTVASSLGLFSTAGVedYCASKFGVVGFHESLSHELKAAEK  2p.0 3p.0
SDR16C4 M. musculus          FwtTKAFLPTMLEINHGHIVTVASSLGLFSTAGVedYCASKFGVVGFHESLSHELKAAEK  2p.0 3p.0
SDR16C4 M. domestica         FwtTKAFLPTMLEINHGHIVTVASSLGLFSTAGVedYCASKFGVVGFHESLSHELKAAEK  2p.0 3p.0
SDR16C4 G. japonicus         FwtAKAFLPKMLELNHGHIVTVASSLGLFSTAGVedYCASKFGAVGFHESLSHELKAAEK  2p.0 3p.0
SDR16C4 G. gallus            FwtTKAFLPKMLEMNHGHIVTVASSLGLFSTAGVedYCASKFGAVGFHESLSHELKAAEK  2p.0 3p.0
SDR16C4 X. tropicalis        FwtTKAFLPKMMEMNHGHIVSVASSLGLFSTAGVedYCASKFGVVGFHESLSHELKAADK  2p.0 3p.0
SDR16C4 P. latipinna         FwtTKAFLPKMLELNHGHIVTVASSLGLFSTAGVedYCASKFGAIGFHESLSHEIKASEK  2p.0 3p.0
SDR16C5 H. sapiens           LwtYKAFLPAMIANDHGHLVCISSSAGLSGVNGLadYCASKFAAFGFAESVFVETFVQKQ  2p.0 3p.2
SDR16C5 P. troglodytes       LwtYKAFLPAMIANDHGHLVCISSSAGLSGVNGLadYCASKFAAFGFAESVFVETFVQKQ  2p.0 3p.2
SDR16C5 M. musculus          LwmYKAFLPAMIANNHGHLVCISSSAGLIGVNGLsdYCASKFAALGFAESMFIETLAKKQ  2p.0 3p.2
SDR16C5 M. domestica         FwiYKAFLPAMMANNHGHLVCISSSAGLLGVNKLsdYCASKFAAFGFAESIFLELHAERK  2p.0 3p.2
SDR16C5 G. gallus            FwtYKAFLPAMIASNHGHLVSIASSAGLIGVNRLadYCASKFAAVGFAESMSSEMRAQGK  2p.0 3p.2
SDR16C5 P. bivittatus        FwtVKAFLPAMVASNHGHVVTISSAAGFNGVNKMadYCTSKFAVLGFAESLASEMLAMKK  2p.0 3p.2
SDR16C5 X. tropicalis        FwtYKAFLPAMMASNHGHLVSIASSAGLIGVNGLadYCASKFAAVGFAESVGLEMLALGK  2p.0 3p.2
SDR16C5 D. rerio (a)         FwtYKAFLPAMMDKNHGHLVSVASSAGLIGVNGLadYCASKFAAVGFAESVALELLSAGK  2p.0 3p.2
SDR16C5 D. rerio (b)         FwtYKAFLPAMIAGNHGHLVSIASSAGLIGVNGLadYCASKFAAVGFAESMGLELLATGC  2p.0 3p.2
                              *     *  *     **     *            *   *

SDR16C1 H. sapiens           PGVSATTVLPFHTSTEMFQGMRVrfPN--LFPPLKPETVARRTVEAVQLNQALLLLPWTM  4p.1
SDR16C1 P. troglodytes       PGVSATTVLPFHTSTEMFQGMRVrfPN--LFPPLKPETVARRTVEAVQLNQALLLLPWTM  4p.1
SDR16C1 M. musculus          PGVSATTVLPFHTSTEMFQGMRVrfPN--LFPPLKPETVARRTVDAVQQNQALLLLPWTM  4p.1
SDR16C1 G. gallus            PGVNATTVLPFHTSTEMFQGMRIrfPN--LFPPLKPETVARRTVEAVQMNQAFLLLPWTM  4p.1
```

```
SDR16C1 G. japonicus          PGVNATTVLPFHTSTEMFQGMRIrfPN--LFPPLKPEVVARRTVEAVQQNQAFLLLPWTM  4p.1
SDR16C1 X. tropicalis         PGVNATTVLPFHTNTEMFQGMRVrfPN--LFPPLKPETVATKTVEAVQKNKAFLLLPWTM  4p.1
SDR16C1 D. rerio              PGVGCTTVLPFHTDTEMFQGMRVrfPK--LFPPLNPEMVAERTVDAVRTNTAFVVLPWTM  4p.1
SDR16C2 H. sapiens            TGVKTTCLCPNFVNTGFIKNPSTslGP-----TLEPEEVVNRLMHGILTEQKMIFIPSSI  5p.1
SDR16C2 P. Troglodytes        TGVKTTCLCPNFVNTGFIKNPSTslGP-----TLEPEEVVNRLMHGILTEQKMIFIPSSI  5p.1
SDR16C2 M. musculus           TGVRTSCLCPNFINTGFIKNPSTnlGP-----TLEPEEVVEHLMHGILTEKQMIFVPSSI  5p.1
SDR16C2 S. harrisii           NGIKTSCLCPNFINTGFIKNPNSrfLP-----TLEPEEVVNKLMKGILTEQKMIFVPSSL  5p.1
SDR16C2 G. gallus             DGIKTTCLCPVFMNTGFVKNPSTrlGK-----ILEVDEVVKALMEGILTNQKMVFVPPQL  5p.1
SDR16C2 A. mississippiensis   DGIKTTCLCPIFINTGFVKNPKMrlTP-----ILEPDMVAKKLLEGILINQKMIFVPSSL  5p.1
SDR16C2 X. tropicalis         SGIKTSCLCPVFVDTGFVKNPSLrlAP-----VLQPEEVAQTLVDGILINKKMICVPSSV  5p.1
SDR16C3 H. sapiens            TGIKTSCLCPVFVNTGFTKNPSTrlWP-----VLETDEVVRSLIDGILTNKKMIFVPSYI  5p.1
SDR16C3 P. troglodytes        TGIKTSCLCPVFVNTGFTKNPSTrlWP-----VLETDEVVRSLIDGILTNKKMIFVPSYT  5p.1
SDR16C3 M. musculus           TGIQTSCLCPVFVNTGFTKNPSTrlWP-----VLEPEEVARSLINGILTNKKMIFVPSYI  5p.1
SDR16C3 S. harrisii           NGIKTSCLCPVFVNTGFTKNPSTrlWP-----ILETDDVVRKLMDGILTDKKMIFVPSYL  5p.1
SDR16C3 F. albicollis         DGIKTTCLCPVFINTGFVKNPSTrlGK-----ILEIEEVVETLMEGIVTNKKMVFVPPNQ  5p.1
SDR16C3 A. carolinensis       DGIQMTCLCPSIINTGFLKISKTliLP-----VLKAEDTAKDLMEGILTNQKIVFSPPWA  5p.1
SDR16C3 X. tropicalis         DGVKTTCLCPVFVNTGFVQNPSTrvWP-----VLKTEDVVKCLMEGILTNKKMIIVPSSV  5p.1
SDR16C4 H. sapiens            DGIKTTLVCPYLVDTGMFRGCRIrkEIEPFLPPLKPDYCVKQAMKAILTDQPMICTPRLM  4p.1
SDR16C4 P. troglodytes        DGIKTTLVCPYLVDTGMFRGCRIrkEIEPFLPPLKPDYCVKQAMKAILTDQPMICTPRLM  4p.1
SDR16C4 M. musculus           DGIKTTLVCPYLVDTGMFRGCRIrkEIEPFLPPLKPDYCVKQAMRAILTDQPMVCTPRLM  4p.1
SDR16C4 G. gallus             DGIKTTLVCPYLVDTGMFRGCRIrkEIEPFLPPLKPEYCVKQAMRAILTDQPMICTPRLM  4p.1
SDR16C4 M. domestica          DGIKTTLVCPYLVDTGMFRGCRIrkEIEPFLPPLKPDYCVKQAMKAILTDQPMICTPRLM  4p.1
SDR16C4 G. japonicus          DGIKTTLVCPYLVDTGMFRGCRIrkEIEPFLPPLKPDYCVKQAMRAILTDQPMICTPRLM  4p.1
SDR16C4 X. tropicalis         DGIKTTLVCPYLVDTGMFRGCRIrkEIEPFLPPLKPDYCVKQAMRAILTDQPMICTPRLM  4p.1
SDR16C4 P. latipinna          DGINMTLVCPYLVNTGMFKGCRIrkEIEPFLPPLSPDFCVKQAMRAILTDQPMVCTPRII  4p.1
SDR16C5 H. sapiens            KGIKTTIVCPFFIKTGMFEGCTTgcPS--LLPILEPKYAVEKIVEAILQEKMYLYMPKLL  4p.1
SDR16C5 P. troglodytes        KGIKTTIVCPFFIKTGMFEGCTTgcPS--LLPILEPKYAVEKIVEAILQEKMYLYMPKLL  4p.1
SDR16C5 M. musculus           WGIKTTIVCPFFIKTGMFEGCTTkcPT--LLPILDPEYAVRKIIDAILQEQLYLYMPKFL  4p.1
SDR16C5 M. domestica          TGIKTTIVCPFFIKTGMFEGCTTanSH--LLPILEPKYVVDKIMDAILTEQVYLYLPKFL  4p.1
SDR16C5 G. gallus             TGVKTTTVCPYFINTGMFNGCSTkvSL--LLPILEPEYVAEKTMTAIRRDEPILLLPRSL  4p.1
SDR16C5 P. bivittatus         NGIKSTIVCPYLVNTGMFDGCETkwPC--LLPIINPEYAAERIVSGILRNERYILMPRVL  4p.1
SDR16C5 X. tropicalis         TGIKTTIVCPYFINTGMFDGCSTkvPR--LLPILEAEYASKKIVDAILKDQVYLVMPRSL  4p.1
SDR16C5 D. rerio (a)          DGIKTTIVCPFLINTGLFDGCGTkwPL--LMPMLEPDYVAKRIVSAILTDQVFVLLPRSL  4p.1
SDR16C5 D. rerio (b)          DGVKTTIVCPFFINTGMFDGANTkwPR--LMPILDPDYACRKIVDAIRREQVYLYMPRSI  4p.1
                               *       *    *                                 *

SDR16C1 H. sapiens            HALVILKsiLPQAALEEIHKFSGTYTCMNTFKGRT-------------  5p.1
SDR16C1 P. troglodytes        HALVILKsiLPQAALEEIHKFSGTYTCMNTFKGRT-------------  5p.1
SDR16C1 M. musculus           NILIILKsiLPQAALEEIHRFSGTYTCMNTFKGRT-------------  5p.1
SDR16C1 G. japonicus          HILIILKslLPQAALEEIHKFSGSYTCMNTFKGRT-------------  5p.1
SDR16C1 G. gallus             NVLVILKsiLPQAALEEIHKFSGSYTCMNTFKGRT-------------  5p.1
SDR16C1 X. tropicalis         HALVILKslLPQSALEEIHRFSGAYTCMNTFKGRT-------------  5p.1
SDR16C1 D. rerio              HFLVILKslLPQSALEEIHKFSGSYTCMNTFKGRT-------------  5p.1
SDR16C2 H. sapiens            AFLTTLEriLPERFLAVLKRKISVK-F-DAVIGYKMKAQ---------  6p.1
SDR16C2 P. troglodytes        AFLTTLEriLPERFLAVLKRKISVK-F-DAVIGYKMKAQ---------  6p.1
SDR16C2 M. musculus           ALLTVLEriVPERFLQVLKHRINVK-F-DAVVGYKDK-----------  6p.1
SDR16C2 S. harrisii           SVITLLEriFPERFQKALRRIFNIK-F-DAVIAFKNKTQ---------  6p.1
SDR16C2 G. gallus             SFALLSEmlIPERASNVLKKLTDVK-F-DAVVGHGSNQ----------  6p.1
SDR16C2 X. tropicalis         SLVPVLAffLPERALNALNEFQNLK-F-EAKVHSRDKDK---------  6p.1
SDR16C2 A. mississippiensis   NIFLFMEkiLPERALAAWNKLQAIQ-F-DKVVGYRNKE----------  6p.1
SDR16C3 H. sapiens            NIFLRLQkfLPERASAILNRMQNIQ-F-EAVVGHKIKMK---------  6p.1
SDR16C3 P. troglodytes        NIFLRLQkfLPERASAILNRMQNIQ-F-EAVVGHKIKMK---------  6p.1
SDR16C3 M. musculus           NISLILEkfLPERALKAISRIQNIQ-F-EAIVGHKTKMK---------  6p.1
SDR16C3 S. harrisii           NFCLVLEkfLPERALAAINRVQNIQ-F-EAVVSYKHKKN---------  6p.1
SDR16C3 F. albicollis         SVALLLErvFPERALNLLKKMSEVK-F-DAVIGQRSTQ----------  6p.1
SDR16C3 A. carolinensis       KIIVVSSkfLPERACNAILDTEKSN-Y-HKLLQ---------------  6p.1
```

```
SDR16C3 X. tropicalis        KYSLIMNqfLPERVIATMTKMQDIQ-F-STPYRCDKKED---------  6p.1
SDR16C4 H. sapiens           YIVTFMKsiLPFEAVVCMYRFLGADKCMYPFIAQRKQATNNNEAKNGI  5p.1
SDR16C4 P. troglodytes       YIVTFMKsiLPFEAVVCMYRFLGADKCMYPFIAQRKQATNNNEAKNGI  5p.1
SDR16C4 M. musculus          YIVTFMKsiLPFEAVVCMYRFLGADKCMYPFIAQRKQATNNNEAKNGI  5p.1
SDR16C4 M. domestica         YIVTFMKsiLPFEAVVCMYRFLGADKCMYPFIAQRKQATNNNEAKNGI  5p.1
SDR16C4 G. gallus            YMVTFMKsiLPFEAVVCMYRFLGADKCMYPFIAQRKQATNNNEAKNGI  5p.1
SDR16C4 G. japonicus         YMVTFMKsiLPFEAVVCMYRFLGADKCMYPFIAQRKQATNNNEAKNGI  5p.1
SDR16C4 X. tropicalis        YIVTCMKsiLPFEAVVCMYRFLGADKCMYPFIAQRKQATNNNEAKNGI  5p.1
SDR16C4 P. latipinna         YMVNFMKsiLPFEAIVCMYRFLGADKCMYPFLAQRKEAMNNNEAKNGI  5p.1
SDR16C5 H. sapiens           YFMMFLKsfLPLKTGLLIADYLGILHAMDGFVDQKKKL----------  5p.1
SDR16C5 P. troglodytes       YFMMFLKsfLPLKTVLLIADYLGILHAMDGFVDQKKKL----------  5p.1
SDR16C5 M. musculus          YFIVFLKsiLPIKTGILIADYLGVFHMTEGFTGQKKKT----------  5p.1
SDR16C5 M. domestica         YYALFLKsfLPAKSGVAVCEYMKIFDVMNSFKGQLKKF----------  5p.1
SDR16C5 G. gallus            YFFLALKniLPVKVGVLLADFVGALHFMDSFKGRAKKD----------  5p.1
SDR16C5 P. bivittatus        YFCNVMKsiLPAKMVDVLYDYFGVLQVMNRFKGRTKMTED--------  5p.1
SDR16C5 X. tropicalis        YIMFALKniMSTKLGVVLGNYFGAFHFMDHFKGRQKKE----------  5p.1
SDR16C5 D. rerio (a)         YFLMALKgvIPYKQSVILGMYFGAFNFMDAFKGREKKRD---------  5p.1
SDR16C5 D. rerio (b)         YIIIGLRnlLPTKVGVLLGEYLGAFNFMAKFKGHGQKSD---------  5p.1
```

Figure S18. Alignment of the vertebrate SDR16C family variants. For further details see Fig. S13.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
                                  ×   × ×
SDR21C1 H. sapiens      MSSGIHVALVTGGNKGIGLAIVRDLCRLFSGDVVLTARDVTRGQAAVQQLQ-AEGLSPRF
SDR21C1 P. troglodytes  MSSGIHVALVTGGNKGIGLAIVRDLCRLFSGDVVLTARDVTRGQAAVQQLQ-AEGLSPRF
SDR21C1 M. musculus     MSSSRPVALVTGANKGIGFAITRDLCRKFSGDVVLAARDEERGQTAVQKLQ-AEGLSPRF
SDR21C1 M. domestica    MSSSSRVAVVTGSNKGIGFAIVRDLCQKFSGDVILTSRDTTRGQAATKKLQ-EEGLNPIF
SDR21C1 G. gallus       -MSNVPVAVVTGSNKGIGLAIVRDLCKQFKGDVYLTARDPARGQGAVAKLQ-EEGLHPLF
SDR21C1 C. picta        -MSSTPVAVVTGGNKGIGFAIVRALCKQFTGDVYLTARDPGRGQVAVTKLQ-QEGLNPLF
SDR21C1 X. tropicalis   -MASAKVAVVTGGNKGIGLAIVRALCKQFKGDVYLTARDPKLGEEAVRALKEQEGLSPHF
SDR21C1 D. rerio        -MSQCKVALVTGANKGIGFAIVRALCKEYTGDVYLSSRDVGRGTAAVDSLK-KEGLHPLF
SDR21C2 H. sapiens      MSSCSRVALVTGANRGIGLAIARELCRQFSGDVVLTARDVARGQAAVQQLQ-AEGLSPRF
SDR21C2 P. troglodytes  MSSCSRVALVTGANRGIGLAIARELCRQFSGDVVLTARDVARGQAAVQQLQ-AEGLSPRF
SDR21C2 M. musculus     MSSCSRVALVTGANKGIGFAITRDLCRKFSGDVVLTARDEARGRAAVQQLQ-AEGLSPRF
SDR21C2 M. domestica    MSSSSRVAVVTGSNKGIGFAIVRDLCQKFSGDVILTSRDPTRGQEAVKELQ-EEGLNPIF
SDR21C2 X. tropicalis   -MASAKVAVVTGGNKGIGLAIVRALCKQFKGDVYLTARDPKLGEEAVRALKEQEGLSPHF
                              ** *** * *** ** * **    *** *  **   *  *   *   *** * *

SDR21C1 H. sapiens      HQLDIDDLQSIRALRDFLRKEYGGLDVLVNNAGIAFkvADPTPFHIQAEVTMKTNFFGTR  1p.2
SDR21C1 P. troglodytes  HQLDIDDLQSIRALRDFLRKEYGGLDVLVNNAGIAFkvADPTPFHIQAEVTMKTNFFGTR  1p.2
SDR21C1 M. musculus     HQLDIDNPQSIRALRDFLLKEYGGLDVLVNNAGIAFkvNDDTPFHIQAEVTMKTNFFGTR  1p.2
SDR21C1 G. gallus       HQLDIDDLQSIKVLRDFLKEKYGGLNVLVNNAGIAFkvSDRTPFAVQAEVTLKTNFFGTR  1p.2
SDR21C1 C. picta        HQLDIEDLQSIRTLQDFLKEKYGGLNVLVNNAGIAFkvADTTPFAIQAEVTMRTNFFATR  1p.2
SDR21C1 M. domestica    HQLDIDDPQSIRTLRDFLKERYGGVDVLVNNAGIAFkvADPTPFPIQAEVTMKTNFFGTK  1p.2
SDR21C1 X. tropicalis   HQLDINDLQSIRALGSFLKEKYGGIDVLINNAGIAFkgTDPTPFGTQANVTLQTNFFATR  1p.2
SDR21C1 D. rerio        HQLDINDPNSVRTARDFFQEKYGGLDVLINNAGIAFkmADTTPFGTQADVTLKTNFFATR  1p.2
SDR21C2 H. sapiens      HQLDIDDLQSIRALRDFLRKEYGGLNVLVNNAAVAFksDDPMPFDIKAEMTLKTNFFATR  1p.2
SDR21C2 P. troglodytes  HQLDIDDLQSIRALRDFLRKEYGGLNVLVNNAAVAFksDDPMPFDIKAEMTLKTNFFATR  1p.2
SDR21C2 M. musculus     HQLDIDDPQSIRALRDFLRKEYGGLNVLVNNAGIAFrmDDPTPFDIQAEVTLKTNFFATR  1p.2
SDR21C2 M. domestica    HQLDIDDPQSIRTLRDFLKERYGGVDVLVNNAGIAFkvTDTTPFPIQAEVTMKTNFFGIK  1p.2
SDR21C2 X. tropicalis   HQLDINDLQSIRALGGFLKEKYGGIDVLINNAGIAFkvADTTPFGTQAEVTLKTNFFATR  1p.2
                        *****    *      *    ***  ** ***  **   *  **   *  *  ****

SDR21C1 H. sapiens      DVCTELLPLIKPqgRVVNVSSIMSVRALKSCSPELQQKFRSETITEEELVGLMNKFVEDT  2p.2
SDR21C1 P. troglodytes  DVCTELLPLIKPqgRVVNVSSIMSVRALKSCSPELQQKFRSETITEEELVGLMNKFVEDT  2p.2
SDR21C1 M. musculus     DVCKELLPLIKPqgRVVNVSSMVSLRALKNCRLELQQKFRSETITEEELVGLMNKFVEDT  2p.2
SDR21C1 G. gallus       NICTELLPLIKPygRVVNVSSMVSISALGGCSQELQKKFRSDTITEDELVELMTKFVEDT  2p.2
SDR21C1 C. picta        DVCTELLPLIKPhgRVVNVSSMGSVSALARCSRDLQQKFRSDTITEEELVKLMTKFVEDT  2p.2
SDR21C1 X. tropicalis   DVCNELLPQVRPqgRVVNVSSMLSSSALQGCSPELQKVFRSDTITEEELVTLMEKFVEDA  2p.2
SDR21C1 D. rerio        DMCNVFLPIIKPggRLVNVSSGMGSMALGRCSPELQARFRSDDITEEELNGLMERFVREA  2p.2
SDR21C2 H. sapiens      NMCNELLPIMKPhgRVVNISSLQCLRAFENCSEDLQERFHSETLTEGDLVDLMKKFVEDT  2p.2
SDR21C2 P. troglodytes  NMCNELLPIMKPhgRVVNISSLQCLRAFENCSEDLQERFHSETLTEGDLVDLMKKFVEDT  2p.2
SDR21C2 M. musculus     NVCTELLPIMKPhgRVVNISSLQGLKALENCREDLQEKFRCDTLTEVDLVDLMKKFVEDT  2p.2
SDR21C1 M. domestica    AVSAELLPLVKPrgRVVNVSSMVSLRSLKSCSPELQQKFRSDTITEEELVRLMEKFVEDT  2p.2
SDR21C2 M. domestica    AVSAELLPLVKPggRVVNISSMMSLRALEGCSPELQQKFRSDTITEEELVRLMEKFVEDT  2p.2
SDR21C2 X. tropicalis   DACHELLPLIKPrgRVVNVSSMASYMALGRCSQELQKVFRSDTITEEELVTLMEKFVEDA  2p.2
                              **   * ** ** **         *   **  *     **  *  **  **
                                       +   +
SDR21C1 H. sapiens      KKGVHQKEGWPSSAYGVTKIGVTVLSRIHARKLSEQRKGDKILLNACCPGWVRTDMAGPK
SDR21C1 P. troglodytes  KKGVHQKEGWPSSAYGVTKIGVTVLSRIHARKLSEQRKGDKILLNACCPGWVRTDMAGPK
SDR21C1 M. musculus     KKGVHAEEGWPNSAYGVTKIGVTVLSRILARKLNEQRRGDKILLNACCPGWVRTDMAGPK
SDR21C1 M. domestica    KKGVHQKEGWPNSAYGVTKIGVTVLSRIHARQLNEQRKGDKILLNACCPGWVRTDMAGPK
SDR21C1 G. gallus       KKSVHEKEGWPNTAYGVSKIGVTVLSRIQARMLNEKRKGDHILLNACCPGWVRTDMAGPK
SDR21C1 C. picta        KNGVHEKEGWPNTAYGVTKIGVTVLSRIQARMLNKERKADRILLNACCPGWVRTDMAGPN
SDR21C1 X. tropicalis   KKGAHQKEGWPNTAYGVSKVGVTVLSRIQARELNEKRKDDGILLNACCPGWVRTDMAGPK
SDR21C1 D. rerio        QEGVHSERGWPSTAYGISKTGLTTLTRIQARNLTKERPGDGILCNACCPGWVRTDMAGPN
SDR21C2 H. sapiens      KNEVHEREGWPNSPYGVSKLGVTVLSRILARRLDEKRKADRILVNACCPGPVKTDMDGKD
```

```
SDR21C2 P. troglodytes  KNEVHEREGWPNSPYGVSKLGVTVLSRILARHLDEKRKADRILVNACCPGPVKTDMDGKD
SDR21C2 M. musculus     KNEVHEREGWPDSAYGVSKLGVTVLTRILARQLDEKRKADRILLNACCPGWVKTDMARDQ
SDR21C2 M. domestica    KKGVHQKEGWPNSAYGVTKIGVTVLSRIHARQLNEQRKGDKILLNACCPGWVRTDMAGPK
SDR21C2 X. tropicalis   KKGAHQKEGWPNTAYGVSKIGVTVLSRIQARELNEKRKDDGILLNACCPGWVRTDMAGPN
                            *   ***   **  * * * * ** ** *   *  * ** ****** * ***

SDR21C1 H. sapiens      ATKSPEEGAETPVYLALLPPDAEGPHGQFVSEKRVEQW
SDR21C1 P. troglodytes  ATKSPEEGAETPVYLALLPPDAEGPHGQFVSEKRVEQW
SDR21C1 M. musculus     ATKSPEEGAETPVYLALLPPDAEGPHGQFVQDKKVEPW
SDR21C1 M. domestica    ATKSPEEGAETPVYLALLPPDATEPHGQFVTEKRVEKW
SDR21C1 G. gallus       APKSPEEGAETPVYLALLPSDADGPHGQFVSEKTVRTW
SDR21C1 C. picta        ATKSADEGAETPVYLALLAPDADGPHGQFVSEKKVQKW
SDR21C1 X. tropicalis   APKSPDEGAETPVYLALLPNNAHSPHGELVSEKKVVPW
SDR21C1 D. rerio        ATKSPDEGAITPVYLALLPAGAKEPHGQFVSEMKVQPW
SDR21C2 H. sapiens      SIRTVEEGAETPVYLALLPPDATEPQGQLVHDKVVQNW
SDR21C2 P. troglodytes  SIRTVEEGAETPVYLALLPPDATEPQGQLVHDKVVQNW
SDR21C2 M. musculus     GSRTVEEGAETPVYLALLPPDATEPHGQLVRDKVVQTW
SDR21C2 M. domestica    ATKSPEEGAETPVYLALLPPDATEPHGQFVMEKRVEKW
SDR21C2 X. tropicalis   ATKSPDEGAETPVYLALLPNNAHSPHGELVSEKKVVPW
                              *** ********   *  * *  *    *  *
```

Figure S19. Alignment of the vertebrate SDR21C family variants. For further details see Fig. S13.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
SDR25C1 H. sapiens      ---------------------------------------------MLSAVARGYQ-GWFHP
SDR25C1 P. paniscus     ---------------------------------------------MLSAVARGYW-GWFHP
SDR25C1 M. musculus     ------------------------------------------MAAIFRPIPWAFRGSL---
SDR25C1 M. domestica    ---------------------------------------------MLRTLAFV-HGVLFSP
SDR25C2 H. sapiens      ---------------------------------------------MHKAG---LLG-LCAR
SDR25C2 P. troglodytes  ---------------------------------------------MHKTG---LLG-LCAR
SDR25C2 M. musculus     ---------------------------------------------MQKAGR---LLG-GWTQ
SDR25C2 M. domestica    MATGLHPLQLPVRISGNMSKGAKKSGKQGTPGFSKHISLLIKnrMLRTL---LKT-TCAQ  1p.2
SDR25C2 G. gallus       ------------------------------------------------------MWGA
SDR25C2 A. carolinensis ------------------------------MFPRAFSSFA-------A---IPQ-ARQA
SDR25C2 X. tropicalys   ------------------------------------------------------------
SDR25C2 D. rerio        ---------------------------------------------MLKAI---TRC-LWSN

                                                 ×   × ×
SDR25C1 H. sapiens      CARLSVRMSSTG----IDRKGVLANRVAVVTGSTSgiGFAIARRLARDGAHVVISSRKQQ  1p.1
SDR25C1 P. paniscus     CARLSVRMSSTG----IDGKGVLANRVAVVTGSTSgiGFAIARRLARDGAHMVISSRKQQ  1p.1
SDR25C1 M. musculus     CLPLSARRFSKT----ADENRSLAGKVAVITGSTRgiGFAIARRLAQDGAHVVISSRKQE  1p.1
SDR25C1 M. domestica    RTPPSVRMSSTG----VDKKGVLADKVALITGSTQgiGFAIAQRLARDGAHVVVSSRKQE  1p.1
SDR25C2 H. sapiens      AW-NSVRMASSG----MTRRDPLANKVALVTASTDgiGFAIARRLAQDGAHVVVSSRKQQ  1p.1
SDR25C2 P. troglodytes  AW-NSVRMASSG----MTRRDPLANKVALVTASTDgiGFAIARRLAQDGAHVVVSSRKQQ  1p.1
SDR25C2 M. musculus     AW-MSVRMASSG----LTRRNPLSNKVALVTASTDgiGFAIARRLAEDGAHVVVSSRKQQ  1p.1
SDR25C2 M. domestica    TL-KSIRTNASTTTMSRSNRLLLQDKVALVTASTEgiGFAIAQRLARDGAHVIVSSRKQQ  2p.1
SDR25C2 G. gallus       VGRAGLRAFSGG--GSPNVGRTLEGKVAVVTAATDgiGLAVAQRLGEAGARVLLSSRRQP  1p.1
SDR25C2 A. carolinensis MS-RFVRMN------ATDSKSRLANKVAVVTASTEgiGFAIARRLAQDGAHVVLSSRKKA  1p.1
SDR25C2 X. tropicalys   -------MQSAG---GVQTPKKLQGKVALVTASTEgiGLAIARRLGQDGARVLLSSRKQQ  1p.1
SDR25C2 D. rerio        PV-AGRRM------MSHHISQNLSGKVAIVTASTDgiGLAAAEALGQRGAHVVVSSRRQT  1p.1
                                      *   **  *  * *** * *  *   **    ***

SDR25C1 H. sapiens      NVDRAMAKLQGEGLSVAGIVCHVGKAEDREQLVAkaLEHCGGVDFLVCSAGVNPLVGSTL  2p.0
SDR25C1 P. paniscus     NVDWAMAKLQGEGLSVAGIVCHVGKAEDREQLVAkaLEHCGGVDFLVCSAGVNPLVGSTL  2p.0
SDR25C1 M. musculus     NVDEAVTILKEEGLSVTGTMCHVGKAEDRQHLVTtaLKHSGGIDFLVCVAGVNPLVGSTL  2p.0
SDR25C1 M. domestica    NVDQAVALLKEEGLIAKGMVCHAGKAEDRDKLVTmvADQYGGVDFLICAAGVNPLVGSTL  2p.0
SDR25C2 H. sapiens      NVDQAVATLQGEGLSVTGTVCHVGKAEDRERLVAtaVKLHGGIDILVSNAAVNPFFGSIM  2p.0
SDR25C2 P. troglodytes  NVDQAVATLQGEGLSVTGTVCHVGKAEDRERLVAtaVKLHGGIDILVSNAAVNPFFGSIM  2p.0
SDR25C2 M. musculus     NVDRAVATLQGEGLSVTGIVCHVGKAEDREKLITtaLKRHQGIDILVSNAAVNPFFGNLM  2p.0
SDR25C2 M. domestica    NVDRAVAELQKEGLSVRGTVCHVAKAEDRKRLVNtaLEYYGGIDILVSNAAVNPFFGKLL  3p.0
SDR25C2 G. gallus       NVDAAVQKLRAQGLEVSGVVCHVGQPQDRQHLVQtaLDTYGAIDILVSNAAVNPVMGSTL  2p.0
SDR25C2 A. carolinensis NVDRAVAELQTENLSVSGLVCHVGKAEDRKRLIEtaVERHGGIDILVSNAAVNPYFGSIL  2p.0
SDR25C2 X. tropicalys   NVDRAVQDLRKEGIEVEGTVCHVGNKEDRERLIEtaVQRFGGVDILVSNAAVNPFAGSIL  2p.0
SDR25C2 D. rerio        NVDKAVSLLRSKNIKVIGTTCNVGKAEDREKLINmtVEQCGGVDILVSNAAVNPFFGNIL  2p.0
                        *** *   *        *  *      **  *           * *   * ***  *

                                                                          +   +
SDR25C1 H  sapiens      GTSEQIWDkiLSVNVKSPALLLSQLLPYMEN-rrGAVILVSSIAAYNPVvaLGVYNVSKT  3p.0 4p.1 5p.0
SDR25C1 P. paniscus     GTSEQIWDkiLSVNVKSPALLLSQLLPYMEN-rrDAVILVSSIAAYNPVvaLGVYNVSKT  3p.0 4p.1 5p.0
SDR25C1 M. musculus     GASEQIWDkiLDVNVKSPALLLSKVLPYMENRrgGSVVLVSSGVAYVPVpkLGVYNTSKT  3p.0 4p.1 5p.0
SDR25C1 M. domestica    GASEQVWDkiLDVNVKSPALLLAKLLPYMEKRgsSSVVLVSSVTGYVPVpkLGPYNISKT  3p.0 4p.1 5p.0
SDR25C2 H. sapiens      DVTEEVWDktLDINVKAPALMTKAVVPEMEKRggGSVVIVSSIAAFSPSpgFSPYNVSKT  3p.0 4p.1 5p.0
SDR25C2 P. troglodytes  DVTEEVWDktLDINVKAPALMIKAVVPEMEKRggGSVVIVSSIAAFSPSpgFSPYNVSKT  3p.0 4p.1 5p.0
SDR25C2 M. musculus     DVTEEVWDkvLSINVTATAMMIKAVVPEMEKRggGSVVIVGSVAGFTRFpsLGPYNVSKT  3p.0 4p.1 5p.0
SDR25C2 M. domestica    DATEEVWDkiLDINVKSAALLVNVVVPEMVKRggGSVVFVSSIAAYSPFqyLGPYNVSKT  4p.0 4p.1 5p.0
SDR25C2 G. gallus       EVEESAWEkiFQVNVTAAAMLVKLVVPHMEKRggGAVVLVTSVAGFMPFpaLGPYSVSKT  3p.0 4p.1 5p.0
SDR25C2 A. carolinensis DTPGEVWDkiLDINVKAAAMLVQSVVPHMEKRggGAIVLVSSIAAYSPFpgLGPYNVSKT  3p.0 4p.1 5p.0
SDR25C2 X. tropicalys   ESNEEVWDkiLDVNVKATFLLVKLVVPKMQERggGSIVIVSSVAGFTPFpsLGPYSVSKT  3p.0 4p.1 5p.0
SDR25C2 D. rerio        DSTEEVWDkiLGVNVKASFLLTKMVVPHIEKRggGSVVIVSSVAGYQPMpaLGPYSVSKT  3p.0 4p.1 5p.0
```

```
                              * *    **          *           * *           *  ***

SDR25C1 H. sapiens      ALLGLTRTLALELAPKDIRVNCVVPGIIKTDFSKvfHGNESLWKNFKEHHQLQriGESED  6p.0 7p.1
SDR25C1 P. paniscus     ALLGLTRTLALELAPKDIRVNCVVPGIIKTDFSKvfYGNEPFWKNFKEHHQLQriGESED  6p.0 7p.1
SDR25C1 M. musculus     ALLGLCKSLAVELAPKGIRVNCLVPGIIKTDFSLreKTMPNMLPDMNKIFGVKrlGEPEE  6p.0 7p.1
SDR25C1 M. domestica    ALLGLTKTLAVELAPKGIRVNCLVPGLIKTDFSHilHEDEAFKKDFKNLYGMQrtGQPED  6p.0 7p.1
SDR25C2 H. sapiens      ALLGLTKTLAIELAPRNIRVNCLAPGLIKTSFSRmlWMDKEKEESMKETLRIRrlGEPED  6p.0 7p.1
SDR25C2 P. troglodytes  ALLGLNKTLAIELAPRNVRVNCLAPGLIKTSFSRmlWMDKEKEESMKETLRISrlGEPED  6p.0 7p.1
SDR25C2 M. musculus     ALLGLTKNFAAELAPKNIRVNCLAPGLIKTRFSSvlWEEKAREDFIKEAMQIRrlGKPED  6p.0 7p.1
SDR25C2 M. domestica    ALLGLTKNYASELEPKGIRVNCLAPGLIKTNFSSllWKDESSENTSKNVMKISrlGEPHE  7p.0 8p.1
SDR25C2 G. gallus       ALLGLVKVLAPELRARGVRINAVAPGLIQTRFSAalWQNEATKEQLMSSMGIDrlGTPSD  6p.0 7p.1
SDR25C2 A. carolinensis ALLGLVRNFVPELSSRKIRINCLAPGLIETKFSLalREDEATLEKTMESLRIQriGVPSD  6p.0 7p.1
SDR25C2 X. tropicalys   ALLGLTKALAPELSPLNIRVNCLAPGLIRTKFSSalWKNEAVCEHLMSTLGISriGQPDD  6p.0 7p.1
SDR25C2 D. rerio        ALLGLTRALAPELAQSNIRVNCVAPGIIKTRFSSalWENEGVLEEFLKQTSIKrlGQPEE  6p.0 7p.1
                        *****      **     * *   ** * * **                    * *

SDR25C1 H. sapiens      CAGIVSFLCSPDASYVNGENIAVAGYSTRL-
SDR25C1 P. paniscus     CAGIVSFLCSPDASYINGENIAVAGYSTRL-
SDR25C1 M. musculus     CAGLVSFLCSSDASYITGENIMVAGFSSKL-
SDR25C1 M. domestica    CAGIVSFLCSPDASYITGENIIVAGFSPKL-
SDR25C2 H. sapiens      CAGIVSFLCSEDASYITGETVVVGGGTPSRL
SDR25C2 P. troglodytes  CAGIVSFLCSEDASYITGETVVVGGGTPSRL
SDR25C2 M. musculus     CAGIVSFLCSEDASYINGETVVVGGGTPSRL
SDR25C2 M. domestica    CAGIVSFLCSPDAGYITGETIVVAGGSPSRL
SDR25C2 G. gallus       VAEVVAFLCSPAASYVVGETMVVAGGTPSRL
SDR25C2 A. carolinensis CSGIVSFLCSPDADYITGETIVVAGGAPSRL
SDR25C2 X. tropicalys   CAGAVSFLCSPDASYITGETIVVSGGSHSRL
SDR25C2 D. rerio        IGGVIAFLCSDEASYITGETITVTGGMNSRL
                              ****  * *  **   * *
```

Figure S20. Alignment of the vertebrate SDR25C family variants. For further details see Fig. S13, Table S20.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
                                                          x     x x
SDR26C1 H. sapiens           MAFMKKYLLPILGLFMAYYYYSANEEFRpeMLQGKKVIVTGA--SKGIGREMAYHLAKMG  1p.2
SDR26C1 P. troglodytes       MAFMKKYLLPILGLFMAYYYYSANEEFRpeMLQGKKVIVTGA--SKGIGREMAYHLAKMG  1p.2
SDR26C1 M. musculus          MAVMKNYLLPILVLFLAYYYYSTNEEFRpeMLQGKKVIVTGA--SKGIGREMAYHLSKMG  1p.2
SDR26C1 S. harrisii          MALLKMTFLPALGLLLAYYFYPTTDNFRseMLQGKRVIVTGA--STGIGEQIAYHLARMG  1p.2
SDR26C1 G. gallus            MGLLQKILIPVLGLVLAFCFYSSRENFRpeMLKGKRVIVTGA--STGIGEQMAYHLARMG  1p.2
SDR26C1 A. carolinensis      MGFFQKLLIPSVALVLAVCFYSRKEDFKpeMLKGKYVIVTGA--STGIGEQMAYHLARMG  1p.2
SDR26C1 X. tropicalis        MAGVKLVLLSLFV-GYTVNYFYRSESMNpeLVRGKRVLITGS--STGIGEQIAYEFAQMG  1p.2
SDR26C2 H. sapiens           ----MKVLL-LTGLGALFFAYYWDDNFDpaSLQGARVLLTGA--NAGVGEELAYHYARLG  1p.2
SDR26C2 P. abelii            ----MKVLL-LTGLGALFFAYYWDDNFDpaSLQGARVLLTGA--NAGVGEELAYHYARLG  1p.2
SDR26C2 I. tridecemlineatus  ----MKVLL-LAGLGALFSAYYWDDNFEpaRLQGARVLLTGAAGDAGVGEELAYHYARLG  1p.2
SDR26C2 N. nippon            MKPVGKVLC-AAAIVAGLLAFFWKDPFNpeSLSGARVLLTGA--SAGIGEQMAYHYARFG  1p.2
SDR26C2 A. carolinensis      MRAAGLLLL-VLGIAALWVAFSWRDTFEpgSLSGARVLLTGA--SDGIGEQMAYHYARFG  1p.2
SDR26C2 X. tropicalis        MGIHIKRWC-F-IILVASAAYILRDSFDpeTLANTRVLVTGA--STGIGEEIAYHYARAG  1p.2
SDR26C2 S. grahami           ---MKGYLG-FFLLIAALTAYMWRDTFDpeSVRGARVLITGA--SSGIGEQMAYHYAKFG  1p.2
                                                       *  **     * *   **     *

SDR26C1 H. sapiens           AHVVVTARSKETLQkvVSHCLELGAASAHYIAGTMEDMTFAEQFVAQAGKLmgGLDMLIL  2p.0 3p.2
SDR26C1 P. troglodytes       AHVVVTARSKETLQkvVSHCLELGAASAHYIAGTMEDMTFAEQFVAQAGKLmgGLDMLIL  2p.0 3p.2
SDR26C1 M. musculus          AHVVLTARSEEGLQkvVSRCLELGAASAHYIAGTMEDMTFAEQFIVKAGKLmgGLDMLIL  2p.0 3p.2
SDR26C1 S. harrisii          AHLVVTARTEAKLKkvIAECLKLGAASAHFISGTMEDLVFAEQVVIKAEKLmgGLDMLIL  2p.0 3p.2
SDR26C1 G. gallus            AHVLVTARTEAKLQqvVERCRALGAGSARLVSGSMEDMATTRQLVEVAEAElgGLDMLIL  2p.0 3p.2
SDR26C1 A. carolinensis      SHILITARTEAKLQkvVSRCLELGAASARYVNGSMEDIIFAQLVVKKAEELwgNLDMLIL  2p.0 3p.2
SDR26C1 X. tropicalis        AHIMLTARRHQRLQevANQCLKLGAASADYVASDMGNLTSAQYVAQETVKKlgGLDYLVL  2p.0 3p.2
SDR26C2 H. sapiens           SHLVLTAHTEALLQkvVGNCRKLGAPKVFYIAADMASPEAPESVVQFALDKlgGLDYLVL  2p.0 3p.2
SDR26C2 P. abelii            SHLVLTAHTEALLQkvVGNCRKLGAPKVFYIAADMASPEAPESVVQFALDKlgGLDYLVL  2p.0 3p.2
SDR26C2 I. tridecemlineatus  SHLVLSAQAEALLQkvVGNCRKLGAPKVFYIAADMASPEAPERVVQFALDKlgGLDYLVL  2p.0 3p.2
SDR26C2 N. nippon            AEIVLTARREAVLQkvVEKCLTLGAKKIFYIPADMSSPSEPEKVVQFAVQKlgGLDYLVL  2p.0 3p.2
SDR26C2 A. carolinensis      AQIVLTARREAVLQkvMAKCLELGAKKAVYFVADMASPTEPEKLVRFASEQlgGLDFVVL  2p.0 3p.2
SDR26C2 X. tropicalis        AKLVLTARREHALQevKSRCLELGAKNVFLVVADMASHNAREQVVAEALSAlgGLDYLVL  2p.0 3p.2
SDR26C2 S. grahami           AQIVITARRVDALKkvVQKCVKLGAQKAMYVTGDMSDPADPERVFKYAVEKlgGLDFLVL  2p.0 3p.2
                                   *     *  *   *  ***         *                 * **   *

SDR26C1 H, sapiens           NHITN-TSLNLFHDDIHHVRKSMEVNFLSYVVLTVAALPMLKQSNGSIVVVSSLagKVAY  4p.2
SDR26C1 P. troglodytes       NHITN-TSLNLFHDDIHHVRKSMEVNFLSYVVLTVAALPMLKQSNGSIVVVSSLagKVAY  4p.2
SDR26C1 M. musculus          NHITQ-TSLSLFHDDIHSVRRVMEVNFLSYVVMSTAALPMLKQSNGSIAVISSLagKMTQ  4p.2
SDR26C1 S. harrisii          NHIEH-SSLDYFNGDIARLRKSMDINFFSYITMTSAALPMLKHTNGSIVVVSSVagKITI  4p.2
SDR26C1 G. gallus            NHVGK-SYFNYFDGDVGHVQKLLNINFLSYVAMTVSALPMLKRSGGSIVVVSSMagKVGF  4p.2
SDR26C1 A. carolinensis      NHVGS-SYFKFFDSDVGHVQKLLNINFLSYVSMTVAALPMLKKSGGSIVVVSSMagKVGF  4p.2
SDR26C1 X. tropicalis        NHIGGSASFGFFKGDMDPVVGSITINFLSYVQLTSTALRALQESQGSIVVMSSMsgRIGA  4p.2
SDR26C2 H. sapiens           NHIGG-APAGTRARSPQATRWLMqvNFVSYVQLTSRALPSLTDSKGSLVVVSSLlgRVPT  4p.0 5p.2
SDR26C2 P. abelii            NHIGG-APAGTRARSPQATRWLMqvNFLSYVQLTSRALPSLTDSKGSLVVVSSLlgRVPT  4p.0 5p.2
SDR26C2 I. tridecemlineatus  NHLGG-IPAGMRARSAQATHWLVqvNFLSYVQLTKLALPSLTDSKGSLVVVSTLlgRVPV  4p.0 5p.2
SDR26C2 N. nippon            NHIGM-TRFQMWAGDVEYTRWLMqvNFFSYVALATAALPTLEKNKGSLVVVSSLtgKIPT  4p.0 5p.2
SDR26C2 A. carolinensis      NHIGA-SPFEMWAGDVDHLRWLMqvNFFSYVALASAALPALAESKGSLVVVSSLagRVST  4p.0 5p.2
SDR26C2 X. tropicalis        NHIGW-TPFKMWDGDVNHTRWLMevNFLSYIHLATAALPYLTQSKGSIIVLSSLtaKTPI  4p.0 5p.2
SDR26C2 S. grahami           NHVGN-TNVELWKGDADHVRSLMqvNFVSYVQMAAAALPVLETSGGSIIVVSSVagKLAS  4p.0 5p.2
                             **                     ** **      **  *    *   * *

                                  +   +
SDR26C1 H, sapiens           PMVAAYSASKFALDGFFSSIRKEYSVSRVNVSITLCVLGLIDteTAMKAVSGIV-HMQAA  5p.2
SDR26C1 P. troglodytes       PMVAAYSASKFALDGFFSSIRKEYSVSKVNVSITLCVLGLIDteTAMKAVSGIV-HMQAA  5p.2
SDR26C1 M. musculus          PMIAPYSASKFALDGFFSTIRTELYITKVNVSITLCVLGLIDteTAMKEISGII-NAQAS  5p.2
SDR26C1 S. harrisii          PLLAGYSATKFALDGFYSSLRVELQMMKVNISITLCILGLIDtdNAVKAISEVMENLIPA  5p.2
SDR26C1 G. gallus            PFTVPYSATKFALDGFFSSLRQEFSIQSVNVSITLCILGFIDteNAMRAAADVL-LMSPA  5p.2
SDR26C1 A. carolinensis      PFTVPYSATKFALDGFFSSLRQEFVMQNTNVSITLCILGLIDteSAMKAISGVF-TSPAA  5p.2
```

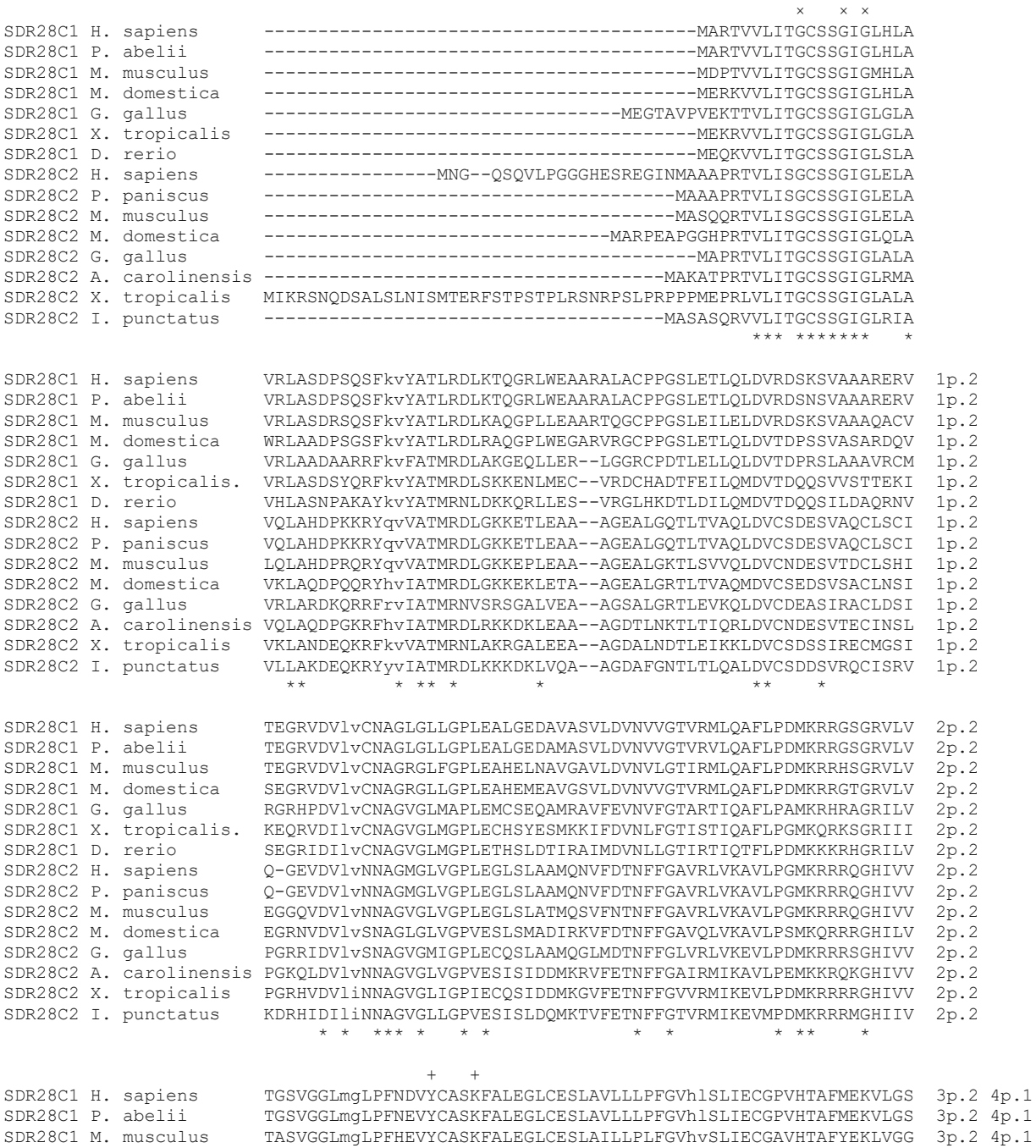
```
SDR26C1 X. tropicalis        PFTTSYCASKFALEGFYSSLRREFDLQKNNMSVTVAILGYIDteNAVKKVGNKV-TMTAS  5p.2
SDR26C2 H. sapiens           SFSTPYSAAKFALDGFFGSLRRELDVQDVNVAITMCVLGLRDRASAAEAVrsST-SRPRQ  6p.1
SDR26C2 P. abelii            SFSTPYSAAKFALDGFFGSLRRELDVQDVNVAITMCVLGLRDRASAAEAVrgVT-RVKAA  6p.1
SDR26C2 I. tridecemlineatus  SFSTPYSAAKFALDSFFGSLRRELDVQDVNVAITMCVLGLRDPASTVEGVrgVR-RAKAA  6p.1
SDR26C2 N. nippon            PFTTSYSATKFALDGFFSSLRHELIMQKRNISITLCILGLIDTDSALENTrgKV-HLTAS  6p.1
SDR26C2 A. carolinensis      PFVAPYSATKFALEGFFGSLRHELVMQQKEISITLCFLGLIDTESAISKTqgKV-AMTAA  6p.1
SDR26C2 X. tropicalis        PYTTSYAASKFALEGFFSSLRHELTMQNNPVSITLCILGLIDTQSAMEKIkdKI-TMSAY  6p.1
SDR26C2 S. grahami           PFVAPYTSTKFAMNGFFGALQNELAIRKSNVSVSILILGLIDTESAMNKIrgFT-TMTAY  6p.1
                                  *   ***   *      *              **

SDR26C1 H, sapiens           PKEECALEIIKGGALRQEEVYYDSS----LW-TTLLIRNPCRKILEFLYSTSYNMDRFIN
SDR26C1 P. troglodytes       PKEECALEIIKGGALRQEEVYYDSS----LW-TTLLIRNPCRKILEFLYSTSYNMDRFIN
SDR26C1 M. musculus          PKEECALEIIKGTALRKSEVYYDKS----PL-TPILLGNPGRKIMEFFSLRYYNKDMFVS
SDR26C1 S. harrisii          PKEECALKIIEGGVLRQEEIAYPF------F-PKFLLWNPIRMIMEYFYFLNIKIDKFNR
SDR26C1 G. gallus            PKEECALEIIKGGTLRQREVYYRYA----STKLPLLLRDWAAELLDLLVRQRYRPERLRA
SDR26C1 A. carolinensis      PKEECALEIIKGGALRQREVYYEYT----STKIPLLIREWAPDLLDYLIRRSYNMEKLKE
SDR26C1 X. tropicalis        SKEDCAREVVKAAVLRRPELFYPYW----GIKPIVLLRDWFPGLVAKFLDKFYILENIQ-
SDR26C2 H. sapiens           PEHRGVPLQ------SQTAMFLPPTVPGARTLTETPLRGWPQ-PKMKSSRQKSKTEKNDG
SDR26C2 P. abelii            PGPKAALAVIRGGATRAAGVFYPWR-----FHLLCLLRRWLPRPRAWFIRQELNVTAAAA
SDR26C2 I. tridecemlineatus  PGPKAALAVIRGGATRASCVFYPWR-----LHLLCLLRGWLPHPRAWFIRQDLNISAVAA
SDR26C2 N. nippon            PAPEAALAIIWGGATRVQEVFYPWW-----LQYTCCLWVLFPHDRDQVLQSYYNYSSP--
SDR26C2 A. carolinensis      PASEAALSIVKGGATRAQEVFYPWT-----VRILFLVRDFFPAQRDAMIRGAYVYPPPSA
SDR26C2 X. tropicalis        PASDAALAVVSAGAGRQREMYYPWF-----VRPLCFFRDWFPQHRDWFIQRMYHYNS---
SDR26C2 S. grahami           PASEAALSIIKAGATRQKEAYYPWF-----HYFTCLINNIFPFMKDILLSSLSAENMD--


SDR26C1 H. sapiens           K------------------------------
SDR26C1 P. troglodytes       K------------------------------
SDR26C1 M. musculus          N------------------------------
SDR26C1 S. harrisii          KLFMKEN-PQQYKRV--DSRPLLVP------
SDR26C1 G. gallus            A------------------------------
SDR26C1 A. carolinensis      D------------------------------
SDR26C1 X. tropicalis        ------------------------------
SDR26C2 H. sapiens           HLEPVTAWEVQVPRVRRLCRGLARPHLFGHD
SDR26C2 P. abelii            A------------------------------
SDR26C2 I. tridecemlineatus  ------------------------------
SDR26C2 N. nippon            ------------------------------
SDR26C2 A. carolinensis      ------------------------------
SDR26C2 X. tropicalis        ------------------------------
SDR26C2 S. grahami           ------------------------------
```

Figure S21. Alignment of the vertebrate SDR26C family variants. For further details see Fig. S13 and Table S21.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.


SDR28C1 H. sapiens
SDR28C1 P. abelii
SDR28C1 M. musculus
SDR28C1 M. domestica
SDR28C1 G. gallus
SDR28C1 X. tropicalis
SDR28C1 D. rerio
SDR28C2 H. sapiens
SDR28C2 P. paniscus
SDR28C2 M. musculus
SDR28C2 M. domestica
SDR28C2 G. gallus
SDR28C2 A. carolinensis
SDR28C2 X. tropicalis
SDR28C2 I. punctatus
1p.2
2p.2
3p.2 4p.1

```
SDR28C1 M. domestica     TGSVGGLmgLPFNAVYCASKFALEGLCESLAVLLLPFGVhiSLIECGPVRTAFQEKLEGG  3p.2 4p.1
SDR28C1 G. gallus        SSSVGGLqgLPFNAVYCASKFALEGLCESLAIVLRPFNIhmTLVECGPVHTAFMDNAWRA  3p.2 4p.1
SDR28C1 X. tropicalis    SSSVGGLqgIPFNDIYCASKFAVEGLCESLAIVLQHFNIhvSLIECGPVSTNFMNNLHGV  3p.2 4p.1
SDR28C1 D. rerio         TGSMGGLqgLPFNEVYCASKFAIEGACESLAILLQHFNIhiSLIECGPVNTDFLMNLKRT  3p.2 4p.1
SDR28C2 H. sapiens       ISSVMGLqgVIFNDVYAASKFALEGFFESLAIQLLQFNIfiSLVEPGPVVTEFEGKLLAQ  3p.2 4p.1
SDR28C2 P. paniscus      ISSVMGLqgVIFNDVYAASKFALEGFFESLAIQLLQFNIfiSLVEPGPVVTEFEGKLLAQ  3p.2 4p.1
SDR28C2 M. musculus      VSSVMGLqgVMFNDVYAASKFALEGFFESLAIQLRQFNIfiSMVEPGPVTTDFEGKLLAQ  3p.2 4p.1
SDR28C2 M. domestica     ISSVMGLqgVIFNDIYSASKFALEGFCESLAVQLLQFNIfvSLVEPGPVNTDFESKLMDQ  3p.2 4p.1
SDR28C2 G. gallus        ISSVMGLqgIVFNDVYAAAKFAVEGFCESLVVQALRFNVaiSLVEPGPVTTEFEAKVYEE  3p.2 4p.1
SDR28C2 A. carolinensis ISSVMGLqgVPFNDVYAASKFAMEGFCESLAVQLLKFNIfvSMVEPGPVNTEFEMKLMEE  3p.2 4p.1
SDR28C2 X. tropicalis.  ISSVMGLqgIMFNDIYAASKFAVEGFCESLLYQTMNFNIflTLVEPGPVVTEFELKVNEE  3p.2 4p.1
SDR28C2 I. punctatus     MSSVMGMqgVVFNDVYTASKFAIEGFCESLAVQLLKFNVklSLIEPGPVHTEFEAKMMEE  3p.2 4p.1
                           *  *  *  *   * * *** **  ***      *       * * * * *

SDR28C1 H. sapiens       PEE---VLDRTDIHTFHRF-YQYLAHSKQVFREAAQNPEEVAevFLTALRAPKPTLRYFT  5p.0
SDR28C1 P. abelii        PDE---VLDRTDIHTFHRF-YQYLAHSKQVFREAAQNPEEVAevFLTALRAPKPTLRYFT  5p.0
SDR28C1 M. musculus      PGG---ALERADAQTRHLF-AHYLRGYEQALSE-AQDPEEVTelFLTAMRAPQPALRYFS  5p.0
SDR28C1 M. domestica     PGG---VLGSADLDTRALF-SRYQRHCERVFREVAQDPEDVVevFVQALCAPRPVLRYFS  5p.0
SDR28C1 G. gallus        DPDGRELRA-LDAETQQLY-RRYLQHCTQLFLDAAQEVDEVLqvFLEAIAAPRPPLRCIT  5p.0
SDR28C1 X. tropicalis.   DANDSRLQA-GDSDTRSLY-AQYLQHCHSLFQDVAQDTEEILqvFLEAIEAPTPSLRYFT  5p.0
SDR28C1 D. rerio         ETGDKELEVEVDAHTRSLY-DQYLQHCQSVFQNAAQDTEDIIqvYLEAMEAQTPFLRYYT  5p.0
SDR28C2 H. sapiens       VSM--AEFPGTDPETLHYFRDLYLPASRKLFCSVGQNPQDVVqaIVNVISSTRPPLRRQT  5p.0
SDR28C2 P. paniscus      VST--AEFPGTDPETLHYFRDLYLPASRELFRSVGQNPQDVVqaIVNVISSTRPPLRRQT  5p.0
SDR28C2 M. musculus      VSK--AEFPDTDPDTLGYFRDLYLPASRELFRSVGQSPRDVAqvIAKVIGTTRPPLRRQT  5p.0
SDR28C2 M. domestica     VSK--ADFPGTDHDTLNYFRNVYLPASKEIFQTLGQSPEDVAqaIVRVIDSTQPPLRYQT  5p.0
SDR28C2 G. gallus        AER--ADYSQTDPETAAIFTDLYLRNSRDVFASLGQSPEDIAehTLRVIEAARPPFRHQT  5p.0
SDR28C2 A. carolinensis VAR--SEFPGADAATVRYFKEVYLPASHEIFTTMGQTPESVAkaVVNVIAKERPPFRTQT  5p.0
SDR28C2 X. tropicalis.   AIR--GDYSKTDLETAEMFINFYLKNTKAIFSSLGQTPEDVAehILRVITMEEPPFRHQT  5p.0
SDR28C2 I. punctatus     VAK--MEFPGADADTVRYFKDVYMPSSIDIFEAMGQTPDDIAkcTKKVIESSNPRFRNLT  5p.0
                                    *  *       *            *                 *  *

SDR28C1 H. sapiens       TERFLPLLRMRLDDPSGSNYVTAMHREVFGDVPAKAEAGAEAGGGAGPGAEDEAGRGAVG
SDR28C1 P. abelii        TERFLPLLRMRLDDPSGSNYVTAMHREVFGDDPAKAE----AGGGAGPGAGAEAGPSGVG
SDR28C1 M. musculus      TNRFLPLARMRTEDPSGSSYVAAMHQEAFSNLQTQENAK---AGAQVPGVSDTASSALIC
SDR28C1 M. domestica     TEHFLPLAGLRFSDPGGSQYVEAMHHAVFTELEEGEAQ----SGSFHPEASPQ-------
SDR28C1 G. gallus        ARLPAPLARLRPGGPDGADYVRAMHDFVFGPGEAAEEQP----------------------
SDR28C1 X. tropicalis.   TQFFMPLIKLKLSCTGGSEYVRAMHKFVFSGTKQKEHEK----------------------
SDR28C1 D. rerio         NRALLPMSSLKLTSMDGSQYIRAMSKLIFSSPGTDAQK-----------------------
SDR28C2 H. sapiens       NIRYSPLTTLKTVDSSGSLYVRTTHRLLFRCPRLLNLGL-----------QCL---SCGC
SDR28C2 P. paniscus      NIRYSPLTTLKTVDSSGSLYVRTTHRLLFRCPRLLNLGL-----------QCL---SCGC
SDR28C2 M. musculus      NTRYLPLTALKAMDPSGSLYVKTAHRLLFRWPHLLNLGL-----------RCL---ACGC
SDR28C2 M. domestica     NARYMPLIALKYADPSGDLSVRTSYRLLFRGQHFFRLSL-----------CCLRFLSGNC
SDR28C2 G. gallus        NAAYTPMAALKHADPSGALMTEAFYKLVFKYGAVLRFGL-----------RAIRLLRWKA
SDR28C2 A. carolinensis NTLYTPLVALKYADTSGDLSVGTYYNLLFRFTGLFHLSM-----------SCLKCITCSC
SDR28C2 X. tropicalis    NQVYTPVTALKYADPSGELVNDIFYKLVFHHDTLMQASL-----------RAIKLIRWKA
SDR28C2 I. punctatus     NSLYTPIVAMKYADETGGLSVHTFYNLLFNFGSLMHITM-----------SILKCLTCSC
                              *          *          *

SDR28C1 H. sapiens       DPELGDPPAAPQ--------------------
SDR28C1 P. abelii        DPELGDPPAARQ--------------------
SDR28C1 M. musculus      LPECAIPRVASELGWSASDKPGQDNSCYQQKI
SDR28C1 M. domestica     --------------------------------
SDR28C1 G. gallus        --------------------------------
SDR28C1 X. tropicalis    --------------------------------
SDR28C1 D. rerio         --------------------------------
SDR28C2 H. sapiens       LPTRVRPR------------------------
```

```
SDR28C2 P. paniscus     LPMRVRPR------------------------
SDR28C2 M. musculus     LPTRVWPR---QTEQN----------------
SDR28C2 M. domestica    LRPKVSPM------------------------
SDR28C2 G. gallus       QKVKAGAR---LLGFK----------------
SDR28C2 A. carolinensis FRRRVTPA------------------------
SDR28C2 I. punctatus    LRRRTISP---D--------------------
SDR28C2 X. tropicalis   HKVQQGAR---MLGLI----------------
```

Figure S22. Alignment of the vertebrate SDR28C family variants. For further details see Fig. S13.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
SDR32C1 H. sapiens      ----------------------------------------MVSPATrkSLPKVKAMDFIT  1p.1
SDR32C1 P. troglodytes  ----------------------------------------MVSPATrkSLPKVKAMDFIT  1p.1
SDR32C1 M. musculus     ----------------------------------------MISPSFrkGMLKERVMDLAS  1p.1
SDR32C1 M. domestica    MALRHFLLGREKLIYHGLSGNqdEDLLTLKIFKGVCQKILKPNASVerIVLKGKLMDYIT  1p.0 2p.1
SDR32C1 G. gallus       ------------------------------------------------------MDL-T
SDR32C1 A. carolinensis ------------------------------------------------------MGL-P
SDR32C1 X. tropicalis   ----------------------------------------MFIPFRKRVYGVKPMDL-T
SDR32C1 D. rerio        ------------------------------------------------MGQSLRHMERAL
SDR32C2 H. sapiens      ------------------------------------------------------MGV-M
SDR32C2 P. troglodytes  ------------------------------------------------------MGV-M
SDR32C2 M. musculus     ------------------------------------------------------------
SDR32C2 M. domestica    ----------------------------MSLFKTL-----IVLSSYPT-LTLKSKMGI-M
SDR32C2 G. gallus       ------------------------------------------------------MGI-L
SDR32C2 A. carolinensis ------------------------------------------------------MGV-L
SDR32C2 X. tropicalis   ------------------------------------------------------MGF-L
SDR32C2 D. rerio        ------------------------------------------------------MAV-P

                                                        ×   × ×
SDR32C1 H. sapiens      STAILP-LLFGCLGVFGLFRLLQWVRGKAYLRNAVVVITGATSGLGkeCAKVFYAAGAKL  2p.2
SDR32C1 P. troglodytes  STAILP-LLFGCLGVFGLFRLLQWVRGKAYLRNAVVVITGATSGLGkeCAKVFYAAGAKL  2p.2
SDR32C1 M. musculus     QTTILP-LLFGCLGIFSLFRLLQRIRSKAYLRNAVVVVTGATSGLGreCAKVFHAAGAKL  2p.2
SDR32C1 M. domestica    SIAIIP-LLVGCMGIFGLFRFLQWIRMKAYIQDSVVVITGATSGLGkeCAKVFYTAGAKL  3p.2
SDR32C1 G. gallus       STVIIP-LLFGSLGLFSLFRLLQWMRMRAYLRGAVVVVTGATSGLGkeCAKAFHAAGSRL  1p.2
SDR32C1 A. carolinensis SAAVLP-LLFGSLGLYGVFWLLRRMRAKAYLKDAVVVITGATSGLGkeCAKTFHAAGSKL  1p.2
SDR32C1 X. tropicalis   TWAIFP-LLLGSIGVYSLYKLLQRLRSGAYLQDAVVVITGATSGLGreCAKVFYAAGTRL  1p.2
SDR32C1 D. rerio        GVGIGP-LAAGTVGLLILLKVIQRLRRRPNIQDKVVVITGASSGLGkeCARVFHAAGARL  1p.2
SDR32C2 H. sapiens      AMLMLPLLLLGISGLLFIYQEVSRLWSKSAVQNKVVVITDAISGLGkeCARVFHTGGARL  1p.2
SDR32C2 P. troglodytes  AMLMLPLLLLGISGLLFIYQEVSRLWSKSAVQNKVVVITDAISGLGkeCARVFHTGGARL  1p.2
SDR32C2 M. musculus     ---MLPLLLLGISGLLFIYQEASRLWSKSAVQNKVVVITDAISGLGkeCARVFHAGGARL  1p.2
SDR32C2 M. domestica    AVLMLPLLLLAISGILFIYQEVSRLWSKSAVQNKVVVITDAISGLGkeCSRLFHAGGARL  1p.2
SDR32C2 A. carolinensis GVLILPLLVVVISGVVYIYRTVIQMMSKSAVRSKVVVITDALSGVGkeCSHVFHAGGARL  1p.2
SDR32C2 G. gallus       AVFALPLLLLGISGIIYIYQTVIWLVSKSAVQNKVVVITDAISGLGkeCSRVFHSGGARL  1p.2
SDR32C2 X. tropicalis   TFLIVPLLILGISGIVYIYREVVRLMSRSALKNKVVVITDAISGLGkeCSRVFHSAGARL  1p.2
SDR32C2 D. rerio        SVMVLPLLIVVFAGVYYVYNEVMRFMSKSVVRNKVVVITDAVSGMGseCARLFHAGGARL  1p.2
                             * *     *                  *** * * ** * **   *   *  *

SDR32C1 H. sapiens      VLCGRNGGALEELIRELTASHATkvQTHKPYLVTFDLTDSGAIVAAAAEILQCFGYVDIL  3p.0
SDR32C1 P. troglodytes  VLCGRNGGALEELIRELTASHATkvQTHKPYLVTFDLTDSGAIVAAAAEILQCFGYVDIL  3p.0
SDR32C1 M. musculus     VLCGRNVKALEELSRELAGSS--qgQTHQPFVVTFDLADPGTIAAAAAEILQCFGYVDVL  3p.0
SDR32C1 M. domestica    ILCGRNNERLEELIRELIATNIKkt--HRPHAVVFDLAESKTIVPAANEILKYSGHVDIL  4p.0
SDR32C1 G. gallus       VLCGRDSEKLKDLAQELSAMTDHRKniHKPHTVVFDLSDTKTILNAAEEILKHLGHVDIL  2p.0
SDR32C1 A. carolinensis VLCGRNGERLRDLLRELSATADPTKnpHQHHTVVFDLSDIKAVVSAAEEILKCVDHVDIL  2p.0
SDR32C1 X. tropicalis   VLCGRSEEGLKNLVQELSQMRIKSAqlHKPHMVIFDLSDVEAVNSAANEILHLTGRVDIL  2p.0
SDR32C1 D. rerio        ILCGRDQRRLQEVVEELRNKTYGKTqtYTPCTVTFDLSNTSVVCSAAAEILKCHGHIDVL  2p.0
SDR32C2 H. sapiens      VLCGKNWERLENLYDALISVADPSkqTFTPKLVLLDLSDISCVPDVAKEVLDCYGCVDIL  2p.0
SDR32C2 P. troglodytes  VLCGKNWERLENLYDALISVADPSkqTFTPKLVLLDLSDISCVPDVAKEVLDCYGCVDIL  2p.0
SDR32C2 M. musculus     VLCGKNWEGLESLYATLTSVADPSkt-FTPKLVLLDLSDISCVQDVAKEVLDCYGCVDIL  2p.0
SDR32C2 M. domestica    VLCGKNWEKLEILYDALISVADPSkt-FTPKLVLLDLSDISCVQDVAKEILDCYGCVDIL  2p.0
SDR32C2 G. gallus       VLCGRTWEKLEALYDALISVADPStt-YTPKLVLLDISDTDYIQDVAKEILNCYGSVDIL  2p.0
SDR32C2 A. carolinensis VLCGKHLDNLEALYDSLTSAADPTat-FTPKLVLLDLSDVNCIQDVAKEILDCYGCVDIL  2p.0
SDR32C2 X. tropicalis   VLCGKTWEKLEALHDALISVADPSvt-FTPKLVLLDISDINNMEAMGKEIQDCYGCVDVL  2p.0
SDR32C2 D. rerio        VLCGPSWDKLESLYDSLCSGSDPSqt-FTPKLVLLDFSDMENISDVVSEICECYGCVDVL  2p.0
                         ***     *      *               *  *           *        * *

SDR32C1 H. sapiens      VNNAGISYRGTIMDTTVDVDKRVMETNYFGPVALTkaLLPSMIKRRQGHIVAISSIQGKM  4p.2
SDR32C1 P. troglodytes  VNNAGISYRGTIMDTTVDVDKRVMETNYFGPVALTkaLLPSMIKRRQGHIVAISSIQGKI  4p.2
```

```
SDR32C1 M. musculus     INNAGISYRGTISDTIVDVDRKVMEINYFGPVALTkaLLPSMVERKQGHIVAISSIQGKI  4p.2
SDR32C1 M. domestica    INNAGVSYRGTIMDTALEVDKKVMETNYFGPVALTkaILPSMIEKKQGHIVVISSIQGKI  5p.2
SDR32C1 G. gallus       INNAGISYRGTIVDTGLDVDKKVMETNYFGPIALTkaLLPSMIKRRQGHIVAISSVQGKI  3p.2
SDR32C1 A. carolinensis INNAGISYRGSIAETVIEVDRKVMETNYFGPIALTkaLLPSMIRRRKGHVVAISSVQGKF  3p.2
SDR32C1 X. tropicalis   INNAGISYRGTILDTKVSVDRMVMDTNYFGPVALTkaLIPSMIKNRRGHIVVISSVQGKI  3p.2
SDR32C1 D. rerio        INNAGVSYRGNILDTHVSVQREVMETNYFGPVALTqaILPSMVDRGSGHIVVISSVQGKI  3p.2
SDR32C2 H. sapiens      INNASVKVKGPAHKISLELDKKIMDANYFGPITLTkaLLPNMISRRTGQIVLVNNIQGKF  3p.2
SDR32C2 P. troglodytes  INNASVKVKGPAHKISLELDKKIMDANYFGPITLTkaLLPNMISRRTGQIVLVNNIQGKF  3p.2
SDR32C2 M. musculus     INNASVKVKGPAHKISLELDKKIMDANYFGPITLTkvLLPNMISRRTGQIVLVNNIQAKF  3p.2
SDR32C2 M. domestica    INNASMKVKGPAQNISLELDKKIMDVNYFGPITLTkaLLPNMISRRTGQIVLVNNIQGRF  3p.2
SDR32C2 G. gallus       INNASMKVKGAVQSISLELDKKIMDANYFGPITLTkaILPNMISRRTGQIVLINSIQGKI  3p.2
SDR32C2 A. carolinensis INNASTKLKGTVQNISLELDKKIMDANYFGPITLTkaLIPNMISRRTGQVILVNNIQGKV  3p.2
SDR32C2 X. tropicalis   INNASMKMKGPLQSVSLELDKKIMDANYFGPITLVkaILPHMISRRTGQIVLVNTIQGKI  3p.2
SDR32C2 D. rerio        ICNSSMKVKAPVQNLSLEMDKTIMDVNYFGPITLAkgVLPLMITRRTGQFVLVNSIQGKL  3p.2
                          *                   *  *****  *     * *     *        *

                                +   +
SDR32C1 H. sapiens      SIPFRSayAASKHATQAFFDCLRAEMEQYEIEVTVISPGYIHTNLSVNAIT---------  5p.2
SDR32C1 P. troglodytes  SIPFRSayAASKHATQAFFDCLRAEMEQYEIEVTVISPGYIHTNLSVNAIT---------  5p.2
SDR32C1 M. musculus     SIPFRSaySASKHATQAFFDCLRAEMEEANIKVTVISPGYIHTNLSVNAVT---------  5p.2
SDR32C1 M. domestica    SVPFRSayAASKHATQAFFDCLRAEVEQHDIEVTVISPGYIQTNLSLNALT---------  6p.2
SDR32C1 G. gallus       SIPFRSayAASKHATQAFFDCLRAEVEQYDIDVTVISPGYIQTNLSLNAVT---------  4p.2
SDR32C1 A. carolinensis GLPFRSayAASKHAFQAFFDCLRAEVEQYGVVVTVVSPGYIQTNLSLNAIT---------  4p.2
SDR32C1 X. tropicalis   SIPFRSaySASKHATQAFFDCLRAEMSPYEIDVTVVNPGYIKTNLSLNAVT---------  4p.2
SDR32C1 D. rerio        SIPYRSayAASKHAMQAYYDCLRAEVDSLGLHVSVLSPGYVRTNMSINAVT---------  4p.2
SDR32C2 H. sapiens      GIPFRTtyAASKHAALGFFDCLRAEVEEYDVVISTVSPTFIRSYHVY------------P  4p.2
SDR32C2 P. troglodytes  GIPFRTtyAASKHAALGFFDCLRAEVEEYDVVISTVSPTFIRSYHVY------------P  4p.2
SDR32C2 M. musculus     GIPFRTayAASKHAVMGFFDCLRAEVEEYDVVVSTVSPTFIRSYRAS------------P  4p.2
SDR32C2 M. domestica    GIPLRTayAASKHAAQGFFDCLRAEVEEFEVVISTVSPTFIRSYHMY------------T  4p.2
SDR32C2 G. gallus       GVPFRAayAASKHAAVGFFDCLRAEMEEFDISVSTVNPTFICSYHHQ------------P  4p.2
SDR32C2 A. carolinensis GVPFRAayAASKHAALGFFDCLRAELQEFGVCVSTVTPSFIRSYSVQ------------P  4p.2
SDR32C2 X. tropicalis   GVPFRAayAASKHAIQGFFDCLRAEVEEFDVSVSTVSPTFIRSYHVQ------------P  4p.2
SDR32C2 D. rerio        ALPFRTcyAASKHAVQAFFDCLRAEVEEFGISVSTISHTFINAGAENATPTEATPITATP  4p.2
                          * *  * *****     ******

SDR32C1 H. sapiens      ----ADGSRYgv-MDTTTAQGRSPVEVAQDVLAAVGKKKKDVILADLLPSLAVYLRTLAP  6p.2
SDR32C1 P. troglodytes  ----ADGSRYgv-MDTTTAQGRSPVEVAQDVLAAVGKKKKDVILADLLPFLAVYLRTLAP  6p.2
SDR32C1 M. musculus     ----ADGSRYga-LDKNTAQGRSAAEVAQDVFDAVGKKKKDVLLTDFVPSMAVYIRTLAP  6p.2
SDR32C1 M. domestica    ----ADGSTYgv-MDKNTANGRSPTEVAYAVLTAVGKKKKEVMVADLLPCLAVSLRTLFP  7p.2
SDR32C1 G. gallus       ----ADGSRYgv-MDKNTAEGKTAAEVAQVVLCAVGQKKKEVLIAGLKPSLAVYLRNLFP  5p.2
SDR32C1 A. carolinensis ----ADGSQYgv-MDKATARGKAAAEVAQVVLDAVGEKRKEVVVAGFLPSLVVYLRTLCP  5p.2
SDR32C1 X. tropicalis   ----GDGSNYgv-MDNNTAEGRTPEEVAQTVLRAVGERRKELLVAGLVPTLAVYLRTLAP  5p.2
SDR32C1 D. rerio        ----GDGSKYgv-MDRTTATGADPVDVAKDILKAVCQKKKDVVMAGLGPTTAIYLRTLWP  5p.2
SDR32C2 H. sapiens      EQGNWEASIWkfFFRKLT-YGVHPVEVAEEVMRTVRRKKQEVFMANPIPKAAVYVRTFFP  5p.2
SDR32C2 P. troglodytes  EQGNWEASIWkfFFRKLT-YGVHPVEVAEEVMRTVRRKKQEVFMANPIPKAAVYVRTFFP  5p.2
SDR32C2 M. musculus     EQRNWETSICkfFCRKLA-YGVHPVEVAEEVMRTVRRKKQEVFMANPVPKAAVFIRTFFP  5p.2
SDR32C2 M. domestica    EPGNWEASIWkfFFRKFA-YGVHPVEVAEEVMKTIRRKKQEVFIANPIPKAAIYIRTFFP  5p.2
SDR32C2 G. gallus       APGNWEASIWkfFFRKVT-YGVHPAEVAEEVLRTVSSKKQEVLMANPIPRAAVYIRTFFP  5p.2
SDR32C2 A. carolinensis QPSNWESSVWkfLCRKLA-YGVHPIEVADEILRTVNRKKQEVFMANPIAKAAVYIRTFFP  5p.2
SDR32C2 X. tropicalis   QPGNWEASIWkfFFRKLS-YGAHPVEVAEEVLSTVSRKKQEVFMANPIPRAAVYIRTFLP  5p.2
SDR32C2 D. rerio        TKATPTNPIWayVCSKLNTHGVGPQILAREIVRSVNRQSREVFLAHPVPTVALYIRALMP  5p.2
                                            *     *                              *   *

SDR32C1 H. sapiens      GLFFSLMASRARKERKSKNS-
SDR32C1 P. troglodytes  GLFFSLMASRARKERKSKNS-
SDR32C1 M. musculus     GLFFRIMASRARKERKSKSS-
```

```
SDR32C1 M. domestica    RLFFYIMAMRARKERKGKTS-
SDR32C1 G. gallus       RLFFNLMAARAKKERKTKDS-
SDR32C1 A. carolinensis RLFFAIMASRAQKERKAKAS-
SDR32C1 X. tropicalis   TIFFSFMAARAKKERKLKDS-
SDR32C1 D. rerio        ALYFRVMASRARKQTGKEE--
SDR32C2 H. sapiens      EFFFAVVACGVKEKLNVPEEG
SDR32C2 P. troglodytes  EFFFAVVACGVKEKLNVPEEG
SDR32C2 M. musculus     EFFFAVVACGVKEKLNVPEEG
SDR32C2 M. domestica    EFFFAVVACGVKEKLNVPEDR
SDR32C2 G. gallus       EMFFAIVASGIREKLKTEQEN
SDR32C2 A. carolinensis ELFFAVVAAGVKEKQKIEDEK
SDR32C2 X. tropicalis   ELFFAVVATGVKEKHFVEEEK
SDR32C2 D. rerio        GCFFSVVSAGVRDGAMAEQLK
                           *
```

Figure S23. Alignment of the vertebrate SDR32C family variants. For further details see Fig. S13, Table S23.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

```
SDR42E1 H. sapiens     ------------------------------------------------------------
SDR42E1 P. troglodytes ------------------------------------------------------------
SDR42E1 M. musculus    ------------------------------------------------------------
SDR42E1 S. harrisii    ------------------------------------------------------------
SDR42E1 G. gallus      ------------------------------------------------------------
SDR42E1 P. bivittatus  ------------------------------------------------------------
SDR42E1 X. tropicalis  ------------------------------------------------------------
SDR42E1 L. oculatus    ------------------------------------------------------------
SDR42E2 H. sapiens     MKSNPPRSSLEACKAAGQGEKSCPVCQACGEVSGPRSGSGSESRPAPKPGAIPGPGLGPK
SDR42E2 P. troglodytes MKSNPPRSSLEACKAAGQGEKSCPVCQACGEVSGPRSGSGSESRPAPKPGAIPGPGLGPK
SDR42E2 M. musculus    MKTNPAGSPLETCQTAGQGEKGCPVCQACRGTSGLGSASESGSGLRPGPGVVLDSGLGPG
SDR42E2 S. harrisii    ------------------------------------------------------------
SDR42E2 G. gallus      ------------------------------------------------------------
SDR42E2 P. bivittatus  ------------------------------------------------------------
SDR42E2 X. tropicalis  ------------------------------------------------------------
SDR42E2 L. oculatus    ------------------------------------------------------------

SDR42E1 H. sapiens     ------------------------------------------------------------
SDR42E1 P. troglodytes ------------------------------------------------------------
SDR42E1 M. musculus    ------------------------------------------------------------
SDR42E1 S. harrisii    ------------------------------------------------------------
SDR42E1 G. gallus      ------------------------------------------------------------
SDR42E1 P. bivittatus  ------------------------------------------------------------
SDR42E1 X. tropicalis  ------------------------------------------------------------
SDR42E1 L. oculatus    ------------------------------------------------------------
SDR42E2 H. sapiens     AIPGPQAGSGTVPRPGAISGTGPGLGPGPGAGSVPGPGAGSVPGLGARSVPGPGAGSVPG
SDR42E2 P. troglodytes AIPGPQAGSDTVPRPGAISGTGPSLGPGPGAGSVPGPGTGSVP--------GPGAGSVPG
SDR42E2 M. musculus    SGTSAVPGSGPQPSAVSVTGLRPGTTSGPNATLGPGLGAGSLPGPGARSGLRPGSESVPQ
SDR42E2 S. harrisii    -MAQPKSDSLTVPQAQAPQGKVPQSQPP-QT--------QALQGQAPQSKPSQSQVLQAQ
SDR42E2 G. gallus      ------------------------------------------------------------
SDR42E2 P. bivittatus  ------------------------------------------------------------
SDR42E2 X. tropicalis  ------------------------------------------------------------
SDR42E2 L. oculatus    ------------------------------------------------------------

SDR42E1 H. sapiens     ------------------------------------------------------------
SDR42E1 P. troglodytes ------------------------------------------------------------
SDR42E1 M. musculus    ------------------------------------------------------------
SDR42E1 S. harrisii    ------------------------------------------------------------
SDR42E1 G. gallus      ------------------------------------------------------------
SDR42E1 P. bivittatus  ------------------------------------------------------------
SDR42E1 X. tropicalis  ------------------------------------------------------------
SDR42E1 L. oculatus    ------------------------------------------------------------
SDR42E2 H. sapiens     PGAGSVPGPGAGSVPGPGAGSGPG--LGGGLGPGVGAGPGAGSVPGPGAGSVPGPGAGS-
SDR42E2 P. troglodytes LGAGSVPGPGAGSVPGPGAGSGPG--LGAGLGPGLGAGPGAGSVPGPGAGSVPG------
SDR42E2 M. musculus    PGAGSVPQPGAGPVPQPG----------------------VGPVPHPGAGSVSQPGAGS-
SDR42E2 S. harrisii    ALQGKVPQSQAPQAQTP-QGQAPQAQIPQGQAP-----QGQAPQAKISQGQAPQGQAPQ-
SDR42E2 G. gallus      -------------------------MKLAG-------------------------IVCIG
SDR42E2 P. bivittatus  ------------------------------------------------------------
SDR42E2 X. tropicalis  -------------------------MR---------EKEGAYE-----------------
SDR42E2 L. oculatus    -------------------------MKPLGEA-----ARAAGAGRDLSHGSSGAPRCCRD

SDR42E1 H. sapiens     ------------------------------------------------------------
SDR42E1 P. troglodytes ------------------------------------------------------------
```


SDR42E1 M. musculus ----------
SDR42E1 S. harrisii ----------
SDR42E1 G. gallus ----------
SDR42E1 P. bivittatus ----------
SDR42E1 X. tropicalis ----------
SDR42E1 L. oculatus ----------
SDR42E2 H. sapiens -VPGPGAGSVPGAGAGSTPEPELGPGLRQGSG--TGPRPS---ESTTTPTPAPQQK----
SDR42E2 P. troglodytes ----------PGAGSTPEPELGPGLRQGSG--TGPKPS---ESTTTPTPAPQQK----
SDR42E2 M. musculus -VSQPVSESVTSPGSAPLPGLGLGPGTRRGSG--TGSDPI---ESVRTPVPVQQQK----
SDR42E2 S. harrisii -SQAPQDQ----------VLQSQVPQSQAPQAQALQD---KPPQSQVPNSKPK----
SDR42E2 G. gallus EHYGAI-FNMEKKLLC-------ASGH-RGHYFSDRKLPVSEAANPWHQPPSSGVR----
SDR42E2 P. bivittatus ----------MEKPNDPKPSRFY--KCT
SDR42E2 X. tropicalis --LEGLRSRVEMGDLCSTCL--------RNSRPFRGS----IKHRANGVVPHQSQASACT
SDR42E2 L. oculatus rcWCAARQRM---ALCRTKGPPARPGQPAGTK------RR---S--NGVVP-HRSR---- 1p.1
× × ×
SDR42E1 H. sapiens ----------MDPKRSQKESVLITGGSGYFGFrlGCALNQNGVHVILFDISSPAQT 1p.1
SDR42E1 P. troglodytes ----------MDPKRSQKETVLITGGSGYFGFrlGCALNQKGVHVILFDISSPAQT 1p.1
SDR42E1 M. musculus ----------MDSPRFPEETVLITGGGGYFGFrlGCALNQKGARVILFDITQPAQN 1p.1
SDR42E1 S. harrisii ----------MDLQKSPQETVLITGGGGYFGFrlGCTLCKKGITVILFDINISIQD 1p.1
SDR42E1 G. gallus ----------MEAGSSAKETVLITGGGGYFGFrlGCTIYKKGVDVILFDVTKPLQP 1p.1
SDR42E1 P. bivittatus ----------MERENPNKEAVLITGGSGYFGFrlGSALAKNKVDVILFDVSRPTQE 1p.1
SDR42E1 X. tropicalis ----------MSSSQHARQTVVITGGGGYFGHrlGCTLHQKGVNVILFDIRKPDLE 1p.1
SDR42E1 L. oculatus ----------MEQLNQGKTKEMVLITGGGGYFGFrlACALHEAGALVTLFDVQPPSEA 1p.1
SDR42E2 H. sapiens ----------TQAKPTKAARQKVLVTGGGGYLGFSLGSHLAKSGTSVILLDRRRPQWE
SDR42E2 P. troglodytes ----------TQAKPTKAARQKVLVTGGGGYLGFSLGSHLAKSGTSVILLDCRRPQWE
SDR42E2 M. musculus ----------TQAKHTQAPRQKVLVTGGGGYLGFSLGSSLAKRGTSVILLDLRRPQWP
SDR42E2 S. harrisii ----------EQAKPPYPSSQKALVTGGGGYFGFSLGSSLVRKGVSVVLLDIQHPKWE
SDR42E2 G. gallus ----------GNAGALKDKAMRAVVTGGGGYFGYKLGCALASSGASVVLYDIHKPIWE
SDR42E2 P. bivittatus KEDAKLVEKLPESCQSPLKKVSDKTVITGGAGYFGFTLGCALAKSGTKVILYDVNLPIWD
SDR42E2 X. tropicalis P----------SAHLGTLLHAGITKVLVTGGGGYVGHNLACALAQSGISVLLFDINRSQWE
SDR42E2 L. oculatus ----------GPGWQAAPAGGRALVTGGAGYFGRSLGRALASSGVSVVLLDLHEPRWE
*** ** * * * * *
SDR42E1 H. sapiens IPEGIKFIQGDIRHLSDVEKAFQDAD-VTCVFHIASYGMSGREQLNRNLIKEVNVRGTDN
SDR42E1 P. troglodytes IPEGIKFIQGDIRHLSDVEKAFQDAD-VTCVFHIASYGMSGREQLNRNLIEEVNVRGTDN
SDR42E1 M. musculus LPEGIKFVCGDIRCLADVETAFQDAEKVACVFHVASYGMSGREQLNKTQIEEVNVGGTEN
SDR42E1 S. harrisii IPRGMKLICGDIRCIADLENALQN---VTCVFHIASFGMSGKEQLNHKRIEDVNVKGTEN
SDR42E1 G. gallus VPEGIKFMQGNVCCLAEVEEALKD---VICVFHIASYGMSGREQLNRKLIEDVNVKGTEN
SDR42E1 P. bivittatus IPKGVKFVKGDVCDIQEVEAALQG---MSCVFHIASFGMSGREQLNQKRIEEVNIKGTEN
SDR42E1 X. tropicalis VPEGIQFVQGDVRSLSQLEDVMTG---ASCVFHTASYGMSGREQLQWQKIEAVNVKGTEN
SDR42E1 L. oculatus IPDGMAFLRGDVREYLEVEGATRG---VGCVFHTASYGMSGREQLDRALIEEVNMRGTEH
SDR42E2 H. sapiens LSPETKFIqaDVRDEEALYRAFEG---VDCVFHVASYGMSGAEklQKEQIESINVGGTKL 1p.0 2p.0
SDR42E2 P. troglodytes LSPETKFIqaDVRDEEALYRAFEG---VDCVFHVASYGISGAEklQKEQIESINVGGTKL 1p.0 2p.0
SDR42E2 M. musculus LPSGTEFVqaDVRDEEALYQAFQG---VDCVFHVASYGMSGAEklQKQEIESINVGGTKL 1p.0 2p.0
SDR42E2 S. harrisii LPKGVAFIqaDIRDGEALYQACEG---VDCVFHVASYGMSGAEklHKEQIESVNIGGTKI 1p.0 2p.0
SDR42E2 G. gallus IPNGVVCIqaDVRDYDAVFAACEG---ADCVFHVASYGMSGREqlHREEIETVNINGTRF 1p.0 2p.0
SDR42E2 P. bivittatus IPKGIILIksDVRNFSDLYSACEG---VDCLFHAAAYGMTGIEqlHKKHIRSVNIGGTGI 1p.0 2p.0
SDR42E2 X. tropicalis IPSGAVFIqgDIRDYNCLYTACEG---VDCIFHVASYGMSGYQqlEKEKIDSINIGGTKL 1p.0 2p.0
SDR42E2 L. oculatus IPEGAVFQqsDIRDYDALYKACEG---VDCVFHTASYGMSGPEqlKKEQIESVNVGGTNN 2p.0 3p.0
* ** * * * * * * **
+ +
SDR42E1 H. sapiens ILQVCQRRRVPRLVYTSTFNVIFGGQVIRNGDE-SLPYLPLHLHPDHYSRTKSIAEQKVL
SDR42E1 P. troglodytes ILQVCQRRSVPRLVYTSTFNVIFGGQVIRNGDE-SLPYLPLHLHPDHYSRTKSIAEQKVL
SDR42E1 M. musculus ILRACLERGVPRLVYTSTFNVIFGGQVIRNGDE-SLPYLPLHLHPDHYSRTKSIAEKKVL

```
SDR42E1 S. harrisii    VLEACRRKGVSRLVYTSTYNVVFGGQVIMNGDE-SLPYLPLHLHPDHYSRTKSVADKKVL
SDR42E1 G. gallus      VIQACKSTGVSSLVYTSTYNVIFGGQIIENGDE-SLPYLPLHLHPDHYSRTKSLAEMKVL
SDR42E1 P. bivittatus  VIETCRKVGISKLVYTSTYNVVFGGQVIENGDE-SWPYLPLHLHPDHYSRTKALAEMKVL
SDR42E1 X. tropicalis  IIQACINKNVKRLVYTSTFNVVFGGQTIRNGDE-SLPYLPQDAFVDNYSRTKTIAEAFVL
SDR42E1 L. oculatus    VIRACVGNAVPRLVYTSTFNVVFGGQVIENGDE-SLPYLPLHLHPDHYSRTKSLAEMAVL
SDR42E2 H. sapiens     VIdvCVRRRVPRLIYTSTVNVAFGGKPIEQGDEDSVPYFPLDehVDHYSRTKAIADQLTL  3p.2 4p.0
SDR42E2 P. troglodytes VIdvCVRRRVPRLIYTSTVNVAFGGKPIEQGDEDSVPYFPLDehVDHYSRTKAIADQLTL  3p.2 4p.0
SDR42E2 M. musculus    VInvCVRRRVPRLVYTSTVNVTFGGKPIEQGNEESIPYFPLDkhMDHYSRTKAIADQLTL  3p.2 4p.0
SDR42E2 S. harrisii    VIdvCIKRQIPRLVYTSTVNVVFGGKPIVQGDEDSVPYFPLEkhIDHYSRTKAVADQMIL  3p.2 4p.0
SDR42E2 G. gallus      IIdaCKQRNITRLIYTSTVNVVFGGLPIEDGDEETVPYFPIEkhVDHYSRTKSIAEQMVL  3p.2 4p.0
SDR42E2 P. bivittatus  VLevCKRQSIPRLIYTSSVNVVFAGQTIIDGDEATVPYFPLEqqVNEYSRTKSIAEQMVL  3p.2 4p.0
SDR42E2 X. tropicalis  VIdvCVQRSIPRLIYTSTVNVVFGGNPIEDGDEETVTYFPLEkqIDPYSRSKTIADQMIL  3p.2 4p.0
SDR42E2 L. oculatus    VInvCLQRSIPRLVYTSSVNVVFAGSPIEQGDEETVPCVPLDrhVDHYSKTKAIADQAVL  4p.2 5p.0
                           *       * ***  ** * *  *  * *      *       **  *  *    *

SDR42E1 H  sapiens     EANATPLDRGDGVLRTCALRPAGIYGPGEQRHLPRIVSYIEKGLFKFVYGDPRSLVEFVH
SDR42E1 P. troglodytes EANATPLDRGDGVLRTCALRPAGIYGPGEQRHLPRIVSYIEKGLFKFVYGDPRSLVEFVH
SDR42E1 M. musculus    EANGLAFKQGDGILRTCAIRPAGIYGAGEQRHLPRIVSYIERGLFRFVYGDPQSLVEFVH
SDR42E1 S. harrisii    EANGTALDRGTGVLRTCVLRSAGIYGPGEQRHLPRIVKYIEKGLFKFVYGDPKSLVDFVH
SDR42E1 G. gallus      KANGTELGNGKGVLRTCALRPAGIYGPGEQRHLPRIVSYIERGLFKFVYGDPLSLVEFVH
SDR42E1 P. bivittatus  EANGTVLRDGQGILRTCALRPAGIYGPGEQRHLPRIVNYIERGWFRFVYGDPSSLVDFVH
SDR42E1 X. tropicalis  KMNNQELKNKSGFLKTCSLRAAGIYGPGEQRHLPRIRSVLEKGMFLFIYGDN-PLVQFVH
SDR42E1 L. oculatus    RANGTALRGGAGLLRTCALRPAGIYGPGERRHLPRIVRYIESGIFRFVYGDAGSLVEFVH
SDR42E2 H. sapiens     MANGMPLpg-GGTLRTCVLRPPGIYGPEEQRHLPRVagHIKKRLFMFRFGDHKARMNWVH  5p.2 6p.0
SDR42E2 P. troglodytes MANGTPLpg-GGTLRTCVLRPPGIYGPEEQRHLPRVagHIKKRLFMFRFGDRKARMNWVH  5p.2 6p.0
SDR42E2 M. musculus    MANGTPLlg-GGTLRTCVLRPPGIYGPEEQRHLPRVasHIKKRLFMFRFGDRKTRMNWVH  5p.2 6p.0
SDR42E2 S. harrisii    TCNGTPLpg-GGTLRTCVLRPPGIYGPEEQRHLPRVagSIRKRLFTFKFGDPRTRMNWVH  5p.2 6p.0
SDR42E2 G. gallus      AANGTPLag-GGVLYTSVLRPPGIYGPEEQRHLPRLakNIERGILSFKFGDPSAKMNWVH  5p.2 6p.0
SDR42E2 P. bivittatus  AANGSRLag-GGKLHTCAIRPPGIYGPEEQRHLPRLalNIERGIFNTRVGDPETLMNWVH  5p.2 6p.0
SDR42E2 X. tropicalis  AADGRPLkg-GGKLHTCVLRPPGIYGPDEQRHLPRLvsNIEKGLIFFTVGSQKTFLNWIH  5p.2 6p.0
SDR42E2 L. oculatus    AANGRTLrg-GGLLRTCVLRPPGIYGPEERRHLQRVavNIERRLFSFSFGDREAKMNWVH  6p.2 7p.0
                                  * * *   *  ****  * *** *             *        *

SDR42E1 H. sapiens     VDNLVQAHILASEALRADKGHIASGQPYFISDGRPVNNFEFFRPLVEGLGYTFPSTRLPL
SDR42E1 P. troglodytes VDNLVQAHILASEALRADKGHIASGQPYFISDGRPVNNFEFFRPLVEGLGYTFPSTRLPL
SDR42E1 M. musculus    VDNLAKAHILASEALKADKGHVASGQPYFISDGRPVNNFEFFRPLVEGLGYTFPSTRLPL
SDR42E1 S. harrisii    VDNLVQAHILASEALKADKKHIASGQAYFISDGRPVNNFEFFRPLVEGLGYPFPTIRLPL
SDR42E1 G. gallus      VDNLVQAHILAFEALKANKKHIAAGQAYFISDGRPVNNFEFFRPLVEGLGYKFPTCRLPL
SDR42E1 P. bivittatus  VDNLVQAHILAAEALGATKKHIAAGQPYFISDGRPVNNFEFFRPLVENLGYAFPTLHLPL
SDR42E1 X. tropicalis  VDNLISAHILAAEALTSEKKYIAAGQPYFISDGPPVNNFDFFRPFVEGLGYKFPTLQLPL
SDR42E1 L. oculatus    VDNLAAAHVLAAEALTAAKRHRAAGQAYFISDGRPVNNFEFFRPLVEGLGYPFPRLRLPV
SDR42E2 H. sapiens     VHNLVQAHVLAAEALTTAKGYVasGQAYYINDGESVNLFEWMAPlfEKLGYSQPWIQVPT  7p.0 8p.0
SDR42E2 P. troglodytes VHNLVQAHVLAAEALTTAKGYVasGQAYYINDGESVNLFEWMAPlfEKLGYSQPWIQVPT  7p.0 8p.0
SDR42E2 M. musculus    VQNLVQAHMLAAEGLTMAKGYVasGQAYYINDGESVNLFEWMAPlfEKLGYSQPWIQVPT  7p.0 8p.0
SDR42E2 S. harrisii    VQNLVQAHILAAEALTANKKYIasGQAYYINDGESVNLFEWMSPlfDKMGYSRPWIQIPT  7p.0 8p.0
SDR42E2 G. gallus      VENLVQAQILAAEALTPEKNYIasGQVYFIHDGEKFNLFEWLAPlfERLGCSKPWIPIPT  7p.0 8p.0
SDR42E2 P. bivittatus  VENLVQAHILAAKALTPEMNYIagGQVYFINDDEKVNLFEWLSPlfEGLGSHNPWIRVPV  7p.0 8p.0
SDR42E2 X. tropicalis  LYNLVEAHILAAEALTASKGYIasGQSYFIHDGENVNIYEFLHPlfEKLAFSDPWISLPY  7p.0 8p.0
SDR42E2 L. oculatus    VDNLVMAHVLAAEGLTAGKGFVasGQAYYINDGESVNLFEWLTPlfEKLGYSRPLIHLPV  8p.0 9p.0
                         **  *  **   *       * ** * * *    *      *         *    *

SDR42E1 H. sapiens     TLVYCFAFLTEMVHFILGRLYNFQPFLTRTEVYKTGVTHYFSLEKAKKELGYKAQPFDLQ
SDR42E1 P. troglodytes TLVYCFAFLTEMVHFILGRLYNFQPFLTRTEVYKTGVTHYFSLEKAKKELGYKAQPFDLQ
SDR42E1 M. musculus    TLIYCLAFLVEMTHFIVGRLYNFQPFLTRTEVYKTGVTHYFSLEKAKKELGFEPQPFDLQ
SDR42E1 S. harrisii    NLIYFIAFMTEMVYFLLGRFYNFQPFLTRAEVYKTGVTHYFSMEKARKELHYEPQPFDLK
SDR42E1 G. gallus      SLVYFFAFLTEVVHLLVGHVYNFQPLLTRTEVYKTGVTHYFSMEKARKELGYEPQKYSLN
```

```
SDR42E1 P. bivittatus  SLVYFFAFFTELVHFVVGRLYNFQPLLTRTEVYKTGVTHFFSLAKARRELGYEPQQYSLG
SDR42E1 X. tropicalis  WFIYFLAFLIEWIHFFVSPVCDFQPFLTRSEVCKTGVTHYFSIEKAKRELGFEPQPFTMQ
SDR42E1 L. oculatus    SLVYFFAFLTEMVHFLVGRLYNFQPLLTRTEVYKTGVTHYFSMAKAEEELGYEPRRYSLD
SDR42E2 H. sapiens     SWVYLtaAVMERLHLALRPICSLPPLLTRSevRSVAVTHTFQIAKARAQLGYAPDKFRFA  9p.2 10p.0
SDR42E2 P. troglodytes SWVYLtaAVMERLHLALRPICSLPPLLTRSevRSVAVTHTFQIAKARAQLGYAPDKFRFA  9p.2 10p.0
SDR42E2 M. musculus    SCVYLtaAVMEYLHLALRPICTIPPLLTRSevLSVAVTHTFQIAKARTQLGYAPDKFSFA  9p.2 10p.0
SDR42E2 S. harrisii    SLAYLsaSGMEYLHLALKPICDFPPLLTRSevWSIAVTHTFQIRKARDHLGYTPEKFAFA  9p.2 10p.0
SDR42E2 G. gallus      SLVYAsaTVMEHLHLILKPLVELSPLLTRNevQNISTTHTFRIDKARRQLGYSPEKFTFA  9p.2 10p.0
SDR42E2 P. bivittatus  FLVHLsaVIMENVHSMLLPIVEITPPITRNevHNMACTHTFKIDKARAHLGYAPQKYSFA  9p.2 10p.0
SDR42E2 X. tropicalis  SLVYDsaIFFEYLHLALRPFVNLNPVLTRYevLKISKTHTFRINKACKELGYCPKKFSFA  9p.2 10p.0
SDR42E2 L. oculatus    SLVYTaaILMECLHVALRPVVGIPLLFTRNevRNIAVTHTFRIDKARRQLGFTPQRRDLA 10p.2 11p.0
                             *   *               ** **     ** *   **   *

SDR42E1 H. sapiens     EAVEWFKAHGHGRSSGSRDS--ECFVWDGLLVFLLIIA-VLMWLP---SSVILSL-----
SDR42E1 P. troglodytes EAVEWFKAHGHGRSSGSRDS--ECFVWDGLLVFLLIIA-VLMWLP---SSVILSL-----
SDR42E1 M. musculus    EVVEWFKAHGHGRGAAGQDS--EFMLWDGILILLLALS-VLTWIL---PSTTLSI-----
SDR42E1 S. harrisii    EVVDWFKAEGHGRKFQNYTL--KHLIWNGMLIFFLAIA-ILTWFS---NDHGDSS--LKD
SDR42E1 G. gallus      EVVEWFRSQGCGPKPRKYTI--THLLRDGGLLLLFIAV-LVSWFP---PAVIFSP-----
SDR42E1 P. bivittatus  EVVEWFQAHGHGQKFSMSSG--KHFMRNAALAFLVVGM-VFLWFP---RFSWSFF-----
SDR42E1 X. tropicalis  EVAEWFKNHGYGKQDKKFKR--NYFIWDIIFILLVAVV-LLSWHS---KLIGTSE-----
SDR42E1 L. oculatus    DVVQWFKDKGHGRKPRSPSF--KQLLRDVFLMAMLVAV-IFSYIP---VVGT--------
SDR42E2 H. sapiens     DAVELYVQSTTRRPRGSTARTLL--------RLLLRLLLFLGLLALALH-----FLGLQP
SDR42E2 P. troglodytes DAVELYVQSTTRRPRGSTARTLL--------RLLLGLLLFLGLLALALH-----FLGLQP
SDR42E2 M. musculus    DAVERYVQATTPQPRCCIVLTLL--------RLLLMLLLLFALLGLALY-----FLGLQP
SDR42E2 S. harrisii    DSVDHYIQTWHKQQRHSP--RFL--------RLLMVLICLLGTLLLLSLSLLDPSFLGLSH
SDR42E2 G. gallus      DSVEHYIKTRAEARSEHGFP-----------RVMLLFLAILSLIFLSLRFDD-----LSV
SDR42E2 P. bivittatus  DCVDHFLKKGPRSRNFFL-C-----------KCLFLLVLLTGLIVLAVKFSqtSLccKGR  11p.2 12p.1
SDR42E2 X. tropicalis  DSVDFYIKTRPQPLQPHYILMR---------KLFLLLLGFFSLFAFLYYSGS--ALSLAR
SDR42E2 L. oculatus    EAVDGYLKTRARSPRRLPACLRAALLLGGALALLLLLSCAWGDLAAPRSLNS-----TRP


SDR42E1 X. tropicalis  ------------------------------------------------------------
SDR42E1 L. oculatus    ------------------------------------------------------------
SDR42E1 S. harrisii    -LF---------------------------------------------------------
SDR42E1 M. musculus    ------------------------------------------------------------
SDR42E1 H. sapiens     ------------------------------------------------------------
SDR42E1 P. troglodytes ------------------------------------------------------------
SDR42E1 G. gallus      ------------------------------------------------------------
SDR42E1 P. bivittatus  ------------------------------------------------------------
SDR42E2 H. sapiens     --LHAAVERL-------------------------------------------------
SDR42E2 P. troglodytes --LHAAVERL-------------------------------------------------
SDR42E2 M. musculus    --LQAVVERL-------------------------------------------------
SDR42E2 S. harrisii    --GNYM-----------------------------------------------------
SDR42E2 G. gallus      --LHFFKEAQH------------------------------------------------
SDR42E2 P. bivittatus  ALPKRPRERAGSLQGPRREEKPGRSGLGETRSKGLRSAPDRQRGSPGGCYCTRRAPGGAA
SDR42E2 X. tropicalis  ------------------------------------------------------------
SDR42E2 L. oculatus    ------------------------------------------------------------


SDR42E1 H. sapiens     ------------------------------------------------------------
SDR42E1 P. troglodytes ------------------------------------------------------------
SDR42E1 M. musculus    ------------------------------------------------------------
SDR42E1 S. harrisii    ------------------------------------------------------------
SDR42E1 G. gallus      ------------------------------------------------------------
SDR42E1 P. bivittatus  ------------------------------------------------------------
SDR42E1 X. tropicalis  ------------------------------------------------------------
```

```
SDR42E1 L. oculatus    ------------------------------------------------------------
SDR42E2 H. sapiens     ------------------------------------------------------------
SDR42E2 P. troglodytes ------------------------------------------------------------
SDR42E2 M. musculus    ------------------------------------------------------------
SDR42E2 S. harrisii    ------------------------------------------------------------
SDR42E2 G. gallus      ------------------------------------------------------------
SDR42E2 P. bivittatus  LQRFRLQLHRSFRKKSraFGGGALSWLQERLAALEMELHYGDPIFSEGQPEQGAKAKGSSG 13p.1
SDR42E2 X. tropicalis  ------------------------------------------------------------
SDR42E2 L. oculatus    ------------------------------------------------------------
```

Figure S24. Alignment of the vertebrate SDR42E family variants. For further details see Fig. S13.

* symbol marks the position of identical amino acid residues of the aligned SDR protein sequences.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalytic consensus
Homo sapiens	RDH11	51109	14	SDR7C1	7	122221	100.00	318	GANTGIG	YCHSK
Gorilla gorilla		101134301	14				99.69			
Mus musculus		17252	12				85.08	316		
Monodelphis domestica		100028370	1				77.71	316		
Poecilia formosa		103144764	-				60.38	318		YCQSK
Homo sapiens	RDH12	145226	14	SDR7C2	7	122221	100.00	316	GANTGIG	YCHSK
Pan troglodytes		100615509	14				100.00			
Mus musculus		77974	12				86.39			
Monodelphis domestica		100028379	1				80.19	313		
Gallus gallus		423274	5				68.67	326		
Anolis carolinensis	LOC100556987	100556987	-				67.55	302		YCQSK
Danio rerio	RDH12	436597	13				62.62		GANSGIG	
Homo sapiens	RDH13	112724	19	SDR7C3	7	122222	100.00	331	GANTGIG	YCQSK
Pan troglodytes		456293	19				99.70			
Mus musculus	Rdh13	108841	7				84.29	334		
Xenopus tropicalis	rdh13	496409,	-				72.64	329		
Oryzias latipes	LOC101164512	101164512	19				68.88	336		
Homo sapiens	RDH14	57665	2				100	336		
Pan troglodytes		470316	2A				100.00			

Mus musculus	Rdh14	105014	12	SDRC4	2	0	90.09	334	GANSGLG	YSRSK
Monodelphis domestica	RDH14	103093572	-				78.85	338		YSQSK
Pseudopodices humilis		102101217	-				81.93	321		
Anolis carolinensis	LOC100557468	100557468	1				79.09	330		YSRSK
Xenopus tropicalis	rdh14	549985	-				77.19	323	GANCGIG	
Danio rerio		334665	20				67.18			YSQSK
Homo sapiens	DHRS13	147015	17	SDRC5	5	2022	100.00	377	GANSGIG	YADTK
Pongo abelii		100452796	17				98.67			
Mus musculus	Dhrs13	70451	11				84.76	375		YADSK
Monodelphis domestica	DHRS13	100025100	2				73.64	349	GGNTGIG	
Haliaeetus leucocephalus		104835594	-				59.15	328	GGSSGIG	YCDSK
Gekko japonicus		107119410	-				58.33	313	GGNTGIG	YCNSK
Xenopus tropicalis	dhrs13	394935	-				57.32	314	GANVGIG	YCDSK
Oryzias latipes	LOC101160574	101160574	13				49.84	318	GSNTGIG	
Homo sapiens	DHRS12	79758	13	SDR40C1	10	120020022	100%	317	GGNSGIG	YAQNK
Pan troglodytes		743256	13				96.53			
Bos taurus		507276	12				85.49			
Gallus gallus		770438	1				71.61	327	GSNSGIG	
Anolis carolinensis	dhrs12	10056528	1				70.66	319	GANSGIG	
Xenopus tropicalis		780002	-				67.82	323		
Oryzias latipes	LOC101155475	101155475	21				66.25	318		

Table S15. Genetic and molecular data of the vertebrate SDR7C family and of the SDR40C variants. Chr, chromosome; Phases formula contains the phase types symbols aligned according to the sequence of their relative splicing sites; conserved amino acids of the consensus sequences are in red; aa n., number of the variant amino acids.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	BDH1	622	3	SDR9C1	6	10022	100.00	343	GCDSGFG	YCITK
Pan paniscus		100967469	3				99.42			
Mus musculus	Bdh1	71911	16B2				85.71			
Monodelphis domestica	BDH1	100032119	-				69.71	340		
Columba livia		102092067	-				72.59	343		
Chrysemys picta		101941677	-				71.72	344		
Xenopus tropicalis	bdh1	100495647	-				74.85	330		
Danio rerio		100037356	24				54.71	359	GCDTGFG	YCISK
Homo sapiens	HSD17B2	3294	16	SDR9C2	5	2222	100.00	387	GGDCGLG	YGSSK
Pan troglodytes		454269	16				99.48			
Mus musculus	Hsd17b2	15486	8				59.37	381	GADSGFG	YAATK
Monodelphis domestica	LOC100031815	100031815	1				52.28	383	GGDSGIG	YCASK
Gallus gallus	HSD17B2	415807	11				53.40	384	GSDTGIG	YGASK
Alligator mississippiensis	HSD17B2	102574309	-				61.61	310	GSDSGIG	
Xenopus tropicalis	hsd11b2	100497002	-				45.92	381	GCDSGFG	YASSK
Danio rerio		449537	25				38.97	358	SCDSGFG	YGASK
Homo sapiens	HSD11B2	3291	16				100.00	405	GCDSGFG	YGTSK
Pan troglodytes		468001	16				99.75			
Mus musculus	Hsd11b2	15484	8				86.53	385	GCDTGFG	

Gallus gallus	HSD11B2	100858361	11	SDR9C3	5	2222	58.49	388	GCDSGFG	YGASK
Chrysemys picta	HSD11B2	101949646	-				59.79	383		
Xenopus tropicalis	hsd11b2	100489854	-				45.95	368	GCDSGFG	YGSSK
Danio rerio		334098	7				42.47	414		YGASK
Homo sapiens	DHRS9	10170	2	SDR9C4	4	212	100.00	319	GCDSGFG	YTPSK
Pan troglodytes		470578	2B				99.37			
Mus musculus	Dhrs9	241452	2				85.89		GCDTGFG	
Monodelphis domestica	DHRS9	100017287	4				77.43			
Gallus gallus		424169	7				59.75	321		YCPSK
Chelonia mydas	dhrs9	102934689	-				65.20	322	GCDSGFG	YVPSK
Xenopus tropicalis		407852	-				57.55		GCDTGFG	YFSSK
Danio rerio		322529	9				45.74	319		YCITK
Homo sapiens	RDH5	5959	12	SDR9C5	4	212	100.00	318	GCDSGFG	YCVSK
Pan troglodytes		467029	12				99.37			
Mus musculus	Rdh5	19682	10				87.11			
Sarcophilus harrisii	RDH5	100926680	-				76.73			
Gallus gallus		395452	33				66.04	319		
Anolis carolinensis	rdh5	100561257	-				61.32		GCDTGFG	YCISK
Xenopus tropicalis	RDH5	496830	-				58.49			YCVSK
Danio rerio		556528	22			1212	53.31	328	GCDSGFG	YCISK
Homo sapiens	HSD17B6	8630	12				100.00	317		YCVSK
Pan paniscus		100996145	12				99.05			
Mus										

musculus	Hsd17b6	27400	10	SDR9C6	4	212	73.19		GCDSGFG YSCSK
Sarcophilus harrisii	LOC100931687	100931687	5				65.30		YCSSK
Anolis carolinensis	hsd17b6	100564174	2				64.04	318	YCPSK
Xenopus tropicalis		496749,	-				54.29		YCLSK
Homo sapiens	SDR9C7	121214	12	SDR9C7	4	212	100.00	313	GCDSGFG YCVSK
Pan troglodytes		467039	12				99.36		
Mus musculus	Sdr9c7	70061	10				84.66		
Sarcophilus harrisii	SDR9C7	100929345	-				78.91	314	
Xenopus tropicalis	LOC100170425	100170425	-				48.88	319	YSISK
Homo sapiens	RDH16	8608	12	SDR9C8	4	212	100.00	317	GCDSGFG YCISK
Pan troglodytes		467206	12				99.05		
Mus musculus	Rdh16	19683	10				73.19		
Monodelphis domestica	RDH16	100011050	-				67.82		
Pseudopodices humilis	LOC102113964	102100504	-				64.67	318	
Anolis carolinensis	LOC100567570	100567570	2				67.51	317	YCPSK
Xenopus tropicalis	RDH16	100135184	-				57.91		YSISK
Poecilia reticulata	LOC103461718	103461718	-				51.10	319	YCVSK

Table S16. Genetic and molecular data of the vertebrate SDR9C family variants. The atypical amino acid of *Danio rerio* SDR9C2 structure consensus is highlighted in turquoise. For further details see Table S15.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% 1dentity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	FAR1	84188	11	SDR10E1	11	0110012101	100	515	GATGFLG	YIYTK
Pan troglodytes		451036	11				99.81			
Mus musculus	Far1	67420	7				98.06			
Sarcophilus harrisii	FAR1	100920845	-				97.48			
Gallus gallus		423028	5				89.71		GATGFMG	YTYTK
Chelonia mydas		102930779	-				89.71			
Xenopus tropicalis	far1	100038270	-				85.63			
Danio rerio		406829	25				78.06	518		
Homo sapiens	FAR2	55711	12	SDR10E2	11	0110012101	100	515	GATGFLG	YTYTK
Pan troglodytes		473394	12				99.61			
Mus musculus	Far2	330450	6				87.96			
Monodelphis domestica	FAR2	100013219	8				78.83		GATGFMG	
Gallus gallus		419043	1				63.50			
Anolis carolinensis	far2	100565436	5				62.14			YTFTK
Esox lucius		105023414	-				62.14			YTYTK

Table S17. Genetic and molecular data of the vertebrate SDR10E family variants. For further details see Table S15.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	HSD3B1	3283	1	SDR11E1	3	22	100.00	375	GAGGFLG	YPHSK
Pan troglodytes		469446	1				99.20			
Mus Musculus	Hsd3B1	15492	3				71.58	373	GAGGFVG	YPYSK
Monodelphis domestica	LOC100012668	100012668	2				62.93	377	GAGGFLG	YAETK
Nipponia nippon	LOC104008615	104008615	-				55.73			YAQSK
Thamnophis sirtalis	LOC106542700	106542700	-				50.67			
Larimichthys crocea	hsd3B1	104921488	-				46.65	374	GACGFLG	YSKTK
Homo sapiens	HSD3B2	3284	1	SDR11E2	3	22	100	372	GAGGLLG	YPYSK
Pan troglodytes	LOC457165	457165	1				98.92			
Mus musculus	Hsd3b2	15493	3				70.70	373	GAGGFLG	
Sarcophilus harrisii	HSD3B2	100913530	-				61.83	377		
Gallus Gallus		396015	1				55.91			YAQSK
Gekko japonicus	LOC107114856	107114856	-				49.73			YAETK
Danio rerio	hsd3b2	373131	20				44.50	374	GACGFLG	YSKTK
Homo sapiens	HSD3B7	80270	16	SDR11E3	6	22102	100	369	GGCGFLG	YPCSK
Pan troglodytes		454059	16				98.92			
Mus musculus	Hsd3b7	101502	7				86.99			
Sarcophilus harrisii	HSD3B7	100929800	-				73.02	370		YPRSK
Zonotrichia albicollis		102073947	-				43.37	371	GGCGFVG	YGKTK
Anolis carolinensis	hsd3b7	100555869	-				65.01	366	GGCGFLG	YPVSK
Xenopus tropicalis		100145626	-				60.38	380		YPLSK
Danio rerio		327462	3				54.12	368		YPKSK

Table S18. Genetic and molecular data of the vertebrate SDR11E family variants. For further details see Table S15.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	HSD17B12	51144	11	SDR12C1	11	2022001000	100	312	GSTDGIG	YSATK
Pan troglodytes		741010	11				99.68			
Mus musculus	Hsd17b12	56348	2				81.09		GGTDGIG	
Monodelphis domestica	HSD17B12	100013277	5				77.27	309	GSTDGIG	
Zonotrichia albicollis		102062927	-				67.31	316	GATDGIG	
Anolis carolinensis	hsd17b12	100557660	1				57.05	317		
Xenopus tropicalis		549988	-				60.90	320		
Poecilia latipinna		106964816	-				60.58			
Homo sapiens	HSD17B3	3293	9	SDR12C2	11	2022001000	100	310	GAGDGIG	YSASK
Pan troglodytes		742116	9				98.71			
Mus musculus	Hsd17b3	15487	13				73.11	305		
Sarcophilus harrisii	HSD17B3	100935109	2				69.68	310		YSSTK
Gallus gallus		427474	Z				59.35		GAGDGLG	YSASK
Anolis carolinensis	hsd17b3	100561157	2				55.20	264	GAGDGIG	
Xenopus tropicalis		101730254	-				57.28	302		
Danio rerio		393335	8				45.07	307	GGSDGIG	YAASK
Homo sapiens	HSDL1	83693	16				100	330	GATDGIG	FSASK
Pan troglodytes		741546	16				99.39			
Mus musculus	Hsdl1	72552	8				87.88			
Sarcophilus harrisii		100918948	-				86.06			YSASK

Gallus gallus	HSDL1	415703	11	SDR12C3	4	100	65.15	331	GSTDGIG	YGASK
Gekko japonicus		107106023	-				65.76		GGTSGIG	YSASK
Xenopus tropicalis	hsdl1	100489686	-				50.00	322	GATSGIA	YTPCQ
Lepisosteus oculatus		102682551	LG1				69.84	319	GASDGLG	YSASK

Table S19. Genetic and molecular data of the vertebrate SDR12C family variants. The atypical amino acids of the structure and catalytic consensuses are highlighted in turquoise. For further details see Table S15 and Consensuses in Online Resources 1.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	DRSH3	9249	1	SDR16C1	6	00011	100	302	GGGRGIG	YCTSK
Pan troglodytes		737006	1							
Mus musculus	dhrs3	20148	4				95.03			
Gallus gallus	DHRS3	419480	21				90.07			
Gekko japonicus		107124081	-				87.75			
Xenopus tropicalis	dhrs3	493258	-				83.77			
Danio rerio	dhrs3a	445083	23				77.15			
Homo sapiens	HSD17B11	51170	4	SDR16C2	7	000111	100	300	GAGHGIG	YCSSK
Pan troglodytes		461364	4				100			
Mus musculus	Hsd17b11	14664	5				83.22	298		
Sarcophilus harrisii	HSD17B11	100917981	6				78.00	300		
Gallus gallus	LOC428754	42875	4				61.87	299	GAARGLG	
Alligator mississippiensis	HSD17B11	102560079	-				63.88		GAGHGLG	
Xenopus tropicalis	hsd17b11	496757	-				59.67	300	GAGHGIG	YCSTK
Homo sapiens	HSD17B13	345275	4				100			
Pan troglodytes		471245	4				98.33			

Mus musculus	Hsd17b13	243168	5	SDR16C3	7	000111	81.33	300	GAGHGIG	YCSSK
Sarcophilus harrisii	HSD17B13	100918501	6				79.33			
Ficedula albicollis	LOC101813950	101813950	4				62.88	299	GAGHGVG	
Anolis carolinensis	LOC100561108	100561108	5				59.29	280	GAGHGLG	YTSSK
Xenopus tropicalis	hsd17b13	496682	-				61.33	300	GSGHGIG	YCASK
Homo sapiens	RDH10	157506	8	SDR16C4	6	20011	100	341	GAGSGLG	YCASK
Pan troglodytes		472795	8				100			
Mus musculus	Rdh10	98711	1				98.83	340		
Monodelphis domestica	RDH10	100020635	3				98.83	341		
Gallus gallus		420183	2				92.92	339		
Gekko japonicus		107114646	-				91.50	342		
Xenopus tropicalis	rdh10	496504	-				88.86	341		
Poecilia latipinna		106955667	-				80.53	340		
Homo sapiens	SDR16C5	195814	8	SDR16C5	6	00211	100	309	GAGSGLG	YCASK
Pan troglodytes		472773	8				99.68			
Mus musculus	Sdr16c5	242285	4				79.94%			
Monodelphis domestica	LOC100029976	100029976	3				67.64		GAGSGIG	
Gallus gallus	SDR16C5	421130	2				60.33	305		
Python bivittatus		103063029	-				57.24	306		YCTSK
Xenopus tropicalis	sdr16c5	448386	-				63.28	305		YCASK
Danio rerio	sdr16c5a	405814	2				56.39	306	GSGSGIG	
	sdr16c5b	406799	7				60.66		GAGSGIG	

Table S20. Genetic and molecular data of the vertebrate SDR16C family variants. For further details see Table S15.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	CBR1	873	21	SDR21C1	3	22	100.00	277	GGNKGIG	YGVTK
Pan troglodytes		473983	21				100.00			
Mus musculus	Cbr1	12408	16				87.73		GANKGIG	
Monodelphis domestica	LOC100015233	100015233	4				84.12		GSNKGIG	
Gallus gallus	CBR1	418512	1				78.26	276		YGVSK
Chrysemys picta		101937374	-				78.26		GGNKGIG	YGVTK
Xenopus tropicalis	cbr1	496612	2				72.83	277		YGVSK
Danio rerio		373866	1				65.94	276	GANKGIG	YGISK
Homo sapiens	CBR3	874	21	SDR21C2	3	22	100.00	277	GANRGIG	YGVSK
Pan troglodytes		458533	21				99.64			
Mus musculus	Cbr3	109857	16				85.20		GANKGIG	
Monodelphis domestica	LOC100015187	100015187	4				66.43		GSNKGIG	YGVTK
Xenopus tropicalis	cbr3	100145008	2				61.96		GGNKGIG	YGVSK

Table S21. Genetic and molecular data of the vertebrate SDR21C family variants. For further details see Table S15.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	DHRS2	10202	14	SDR25C1	8	1001001	100.00	280	GSTSGIG	YNVSK
Pan paniscus		100976049	14				96.79			
Mus musculus	Dhrs2	71412	14				65.47	282	GSTRGIG	YNTSK
Monodelphis domestica	DHRS2	100030637	1				67.50	281	GSTQGIG	YNISK

Homo sapiens	DHRS4	10901	14	SDR25C2	8	1001001	100.00	278	ASTDGIG	YNVSK
Pan troglodytes		452804	14				98.20			
Mus musculus	Dhrs4	28200	14				79.14	279		
Monodelphis domestica	DHRS4	100030652	1		9	21001001	69.42	326	ASTEGIG	
Gallus gallus		426247	-		8	1001001	54.89	273	AATDGIG	YSVSK
Anolis carolinensis	LOC100553479	100553479	-				67.41	282	ASTEGIG	YNVSK
Xenopus tropicalis	dhrs4	548501	-				66.28	261		YSVSK
Danio rerio	dhrs4	393539	7				58.39	276	ASTDGIG	

Table S22. Genetic and molecular data of the vertebrate SDR25C family variants. Alanine (A), diagnostic of the vertebrate SDR25C2 structure consensus, is highlighted in turquoise. For further details see Table S15 and Consensuses in Online resources 1.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	HSD11B1	3290	1	SDR26C1	6	20222	100.00	292	GASKGIG	YSASK
Pan troglodytes		457698	1				99.66			
Mus musculus	Hsd11b1	15483	1				78.42			
Sarcophilus harrisii	HSD11B1	100923255	4				60.69	312	GASTGIG	YSATK
Gallus gallus	HSD11B1	771930	26				57.53	293		
Anolis carolinensis	hsd11b1	100555338	4				59.93		GASTGIG	
Xenopus tropicalis	hsd11b1l.2	100038278	-				42.51	291	GSSTGIG	YCASK
Homo sapiens	HSD11B1L	374875	19	SDR26C2	7	202021	100.00	315	GANAGVG	YSAAK
Pongo abelii		100460111	19				82.86	287		
Ictidomys tridecemlineatus	Hsd11b1l	101978515	-				75.27	288	GAAGDAGVG	
Nipponia nippon	HSD11B1L	104016278	-				52.11	288	GASAGIG	YSATK
Anolis carolinensis	hsd11b1l	100565341	-				51.30	290	GASDGIG	
Xenopus tropicalis		100037875	-				45.45	286	GASTGIG	YAASK

Sinocyclocheilus grahami	LOC107596225	107596225	-				43.43	285	GASSGIG	YTSTK

Table S23. Genetic and molecular data of the vertebrate SDR21C family variants. The atypical structure consensus of *Ictidomys tridecemlineatus* is highlighted in turquoise. For further details see Table S15.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	HSD17B1	3292	17	SDR28C1	6	22210	100	328	GCSSGIG	YCASK
Pongo abelii		100456666	17				96.30	324		
Mus musculus	Hsd17b1	15485	11				68.83	344		
Monodelphis domestica	HSD17B1	100011776	2				71.15	305		
Gallus gallus		395641	27				53.92	302		
Xenopus tropicalis	hsd17b1	100489679	-				53.24	295		
Danio rerio		402842	3				51.03			
Homo sapiens	RDH8	50700	19	SDR28C2	6	22210	100	331	GCSSGIG	YAASK
Pan paniscus		100984041	19				98.71	311		
Mus musculus	Rdh8	235033	9				82.96	317		
Monodelphis domestica	RDH8	100013649	3				68.14	321		YSASK
Gallus gallus	LOC100858293	100858293	27				56.63	318		YAAAK
Anolis carolinensis	rdh8	100560987	-				61.86	316		YAASK
Xenopus tropicalis	LOC100491569	100491569	-				51.06	358		
Ictalurus punctatus	rdh8	108257408	24				54.81	317		YTASK

Table S24. Genetic and molecular data of the vertebrate SDR28C family variants. For further details see Table S15.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	DHRS7B	25979	17	SDR32C1	7	120222	100	325	GATSGLG	YAASK
Pan troglodytes		454512	17				99.38			
Mus musculus	Dhrs7b	216820	11				78.02	323		YSASK
Monodelphis domestica	DHRS7B	100017149	6		8	0120222	72.14	363		YAASK
Gallus gallus		416499	14		6	20222	72.49	309		
Anolis carolinensis	dhrs7b	100561191	-				67.96			
Xenopus tropicalis		779695	-				66.87	323		YSASK
Danio rerio		550454	3				56.01	316	GASSGLG	YAASK
Homo sapiens	DHRS7C	201140	17	SDR32C2	6	20222	100	312	DAISGLG	YAASK
Pan troglodytes		455079	17				100			
Mus musculus	Dhrs7c	68460	11				91.78	304		
Monodelphis domestica	DHRS7C	100031331	2				89.39	332		
Gallus gallus		417304	18				77.17	311		
Anolis mississippiensis	dhrs7c	100556174	2				72.99		DALSGVG	
Xenopus tropicalis		100135266	-				77.17		DAISGLG	
Danio rerio	dhrs7cb	553684	12				56.27	324	DAVSGMG	

Table S25. Genetic and molecular data of the vertebrate SDR32C family variants. The asparagine (D) diagnostic amino acids of the vertebrate structure consensus are highlighted in turquoise. For further details see Table S15 and Consensuses in Online Resources 1.

Species	Gene symbol	Gene ID	Chr	Enzyme symbol	Exons n.	Phases formula	% identity	aa n.	Structure consensus	Catalysis consensus
Homo sapiens	SDR42E1	93517	16				100.00	393	GGSGYFG	
Pan troglodytes		468047	16				98.98			

Mus Musculus	Sdr42e1	74032	8	SDR42E1	2	1	79.64	394	GGGGYFG	YSRTK
Sarcophilus harrisii	SDR42E1	100921033	1				72.12	396		
Gallus gallus		415806	11				70.59	391		
Python bivittatus		103058160	-				67.26		GGSGYFG	
Xenopus tropicalis	Sdr42e1	100496843	4				59.49		GGGGYFG	
Lepisosteus oculatus		102689558	LG23				65.46	390		
Homo sapiens	SDR42E2	100288072	16	SDR42E2	11	0020200020	100.00	626	GGGGYLG	YSRTK
Pan troglodytes		100615511	16				97.84	602		
Mus musculus	Gm5737	436008	7				75.41	608		
Sarcophilus harrisii	SD43E2	100916789	2				58.76	540	GGGGYFG	
Gallus gallus		416618	14				53.59	454		
Python bivittatus		103065881	-		14	0020200020211	51.96	541	GGAGYFG	
Xenopus tropicalis	sdr42e2	101731274	9		11	0020200020	52.15	451	GGGGYVG	YSRSK
Lepisosteus oculatus		102689689	LG13		11	10020200020	55.70	470	GGAGYFG	YSKTK

Table S26a. Genetic and molecular data of the vertebrate SDR42E family variants. For further details see Table S15.

Variants	Species	% Identity	Variants	Species	% Identity
SDR42E1	*H. sapiens*	100.00	SDR42E2	*H. sapiens*	100.00
	P. troglodytes	98.98		*P. troglodytes*	97.84
	M. musculus	79.64		*M. musculus*	75.41
	S. harrisii	72.12		*S. harrisii*	58.76
	G. gallus	70.59		*G. gallus*	53.39
	P. bivittatus	67.26		*P. bivittatus*	51.84
	X. tropicalis	59.49		*X. tropicalis*	53.21
	L. oculatus	65.46		*L. oculatus*	55.70
SDR42E2	*H. sapiens*	48.81	SDR42E1	*H. sapiens*	48.81
	P. troglodytes	48.81		*P. troglodytes*	48.81
	M. musculus	48.01		*M. musculus*	46.42
	S. harrisii	48.42		*S. harrisii*	45.93
	G. gallus	47.35		*G. gallus*	46.15
	P. bivittatus	46.05		*P. bivittatus*	45.89

	X. tropicalis	45.91		*X. tropicalis*	45.21
	L. oculatus	46.77		*L. oculatus*	46.03

Table S26b. Percent identity of the vertebrate SDR42E1 and SDR42E2 variants.