ACX4 (AT3G51840): global tree
File name: ACX4.njtree2.svg
139 aa residues 92 OTU included.
Results of0 partial trees included.
Assemble Job Id: sV0O9t
Tree job id: WiWZBv
BP values out of 100
Analyzed by tomoakin@kenroku.kanazawa-u.ac.jp Originally by K. Mikami
Date: Mon Oct 01 20:28:19 JST 2007

-AT3G51840 = NP\_190752 Q96329 AAB18129 AAC14411 BAA82478 AAM19813 AAM65329 AAM78046 ACX4 (ACYL-COA OXIDASE 4); oxidoreductase/ACOX4\_ARATH Acyl-coenzyme A oxidase 4, peroxisomal (AOX 4) (Short-chain acyl-CoA oxidase) (SAOX) (AtCX4) (G6p) (AtG6) /G6p / AAT11172 Tropaeolum majus putative short-chain acyl-CoA oxidase -XP\_475647 Oryza sativa (japonica cultivar-group) AAT07660 putative glutaryl-CoA dehydrogenase/putative glutaryl-CoA dehydrogenase XP\_550215 Oryza sativa (japonica cultivar-group) BAB08201 BAD61086 putative glutaryl-CoA dehydrogenase/ESTs AU056822(S20908), C26441(C12328), C28477(C61243) correspond to a region of the predicted gene. ~Similar to Arabidopsis thaliana putative acyl-co 100 Ppa\_ACX4\_3\_1 -Ppa\_ACX4\_8\_1 97 100 **<sub>Γ</sub>Smo\_ACX4\_6\_2** Smo\_ACX4\_6\_1 EAR85826 Tetrahymena thermophila SB210 Acyl-CoA dehydrogenase, C-terminal domain containing protein

XP\_643912 Dictyostelium discoideum AX4 AAO51878 Dictyostelium discoideum EAL70185 hypothetical protein DDB0167901/similar to Arabidopsis thaliana (Mouse-ear cress). Putative acyl-CoA dehydrogenase G6P (ATG6) (At3g51840/AtG6) (Acyl-CoA dehydrogenase -ZP\_01020968 Polaromonas naphthalenivorans CJ2 EAQ20548 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase -YP\_158711 Azoarcus sp. EbN1 CAl07810 glutaryl-CoA dehydrogenase/Glutaryl-CoA dehydrogenase ZP 00848004 Rhodopseudomonas palustris BisB18 ABD86602 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region:Acyl-CoA dehydrogenase, N-terminal/acyl-CoA dehydrogenase-like —YP\_525299 Rhodoferax ferrireducens DSM 15236 ABD71768 acyl-CoA dehydrogenase-like/acyl-CoA dehydrogenase-like -YP\_046327 Acinetobacter sp. ADP1 CAG68505 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase 92 — ZP 00945997 Ralstonia solanacearum UW551 EAP71497 Glutaryl-CoA dehydrogenase/Glutaryl-CoA dehydrogenase LNP\_518877 Ralstonia solanacearum GMI1000 CAD14286 Ralstonia solanacearum PROBABLE GLUTARYL-COA DEHYDROGENASE OXIDOREDUCTASE PROTEIN/PROBABLE GLUTARYL-COA DEHYDROGENASE OXIDOREDUCTASE PROTEIN -ZP\_00282837 Burkholderia xenovorans LB400 COG1960: Acyl-CoA dehydrogenases 81 TYP\_441936 Burkholderia thailandensis E264 ABC36725 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase 22-ZP\_00942505 Burkholderia pseudomallei 406e ZP\_00500111 root COG1960: Acyl-CoA dehydrogenases/COG1960: Acyl-CoA dehydrogenases TZP\_00490125 Burkholderia pseudomallei 668 YP\_334609 Burkholderia pseudomallei 1710b YP\_103644 Burkholderia mallei ATCC 23344 ZP\_00936726 Burkholderia mallei JHU ZP\_01095091 root ZP\_00446732 Burkholderia mallei NCTC 10247 ZP\_00496379 root Z 32ZP\_00459842 Burkholderia cenocepacia HI2424 ZP\_00454941 Burkholderia cenocepacia AU 1054 EAM12508 EAM20993 Burkholderia cenocepacia HI2424 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region:Acyl-CoA dehydrogenase, N-termina SP\_368149 Burkholderia sp. 383 ABB07505 Acyl-CoA dehydrogenase-like 16—ZP\_00687655 Burkholderia ambifaria AMMD EAO46448 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, N-terminal/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-terminal ZQLZP\_00426733 Burkholderia vietnamiensis G4 EAM26672 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, Central region:Acyl-CoA dehydrogenase, N-terminal/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-te –ZP 00985579 Burkholderia dolosa AUO158 COG1960: Acyl-CoA dehydrogenases -ZP\_00415848 Azotobacter vinelandii AvOP EAM07702 Glutaryl-CoA dehydrogenase/Glutaryl-CoA dehydrogenase -YP 472434 Rhizobium etli CFN 42 ABC93707 glutaryl-CoA dehydrogenase protein/glutaryl-CoA dehydrogenase protein -YP\_283766 Dechloromonas aromatica RCB AAZ45296 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, N-terminal/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-terminal:Acy -NP\_903588 Chromobacterium violaceum ATCC 12472 AAQ61579 probable glutaryl-CoA dehydrogenase/probable glutaryl-CoA dehydrogenase -ZP\_01146814 Acidiphilium cryptum JF-5 EAR38969 putative glutaryl-CoA dehydrogenase/putative glutaryl-CoA dehydrogenase YP 271311 Colwellia psychrerythraea 34H AAZ26163 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase YP\_264092 Psychrobacter arcticus 273-4 AAZ18658 putative glutaryl-CoA dehydrogenase/putative glutaryl-CoA dehydrogenase ZP\_00654399 Psychrobacter cryohalolentis K5 EAO10764 Glutaryl-CoA dehydrogenase/Glutaryl-CoA dehydrogenase CAE59477 Caenorhabditis briggsae Hypothetical protein CBG02861

NP\_496469 Caenorhabditis elegans Q20772 CAA91333 F54D5.7/GCDH\_CAEEL Probable glutaryl-CoA dehydrogenase, mitochondrial precursor (GCD)/Hypothetical protein F54D5.7 47 -ZP\_01103965 gamma proteobacterium KT 71 EAQ96523 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase –ZP 00858430 Bradyrhizobium sp. BTAi1 EAP32768 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase 97 \_\_\_ZP\_00624821 Nitrobacter hamburgensis X14 EAN61192 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-term 77 ZP\_01044535 Nitrobacter sp. Nb-311A EAQ37316 acyl-CoA dehydrogenase/acyl-CoA dehydrogenase <sup>1</sup>—YP\_317227 *Nitrobacter winogradskyi Nb-255* ABA03875 acyl-CoA dehydrogenase/acyl-CoA dehydrogenase -ZP\_01197714 Xanthobacter autotrophicus Py2 EAS16724 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase enase/hypothetical protein Tc00.1047053510121.40 /acyl-CoA dehydrogenase, putative /hypothetical protein Tc00.1047053510121.40 -YP\_096585 Legionella pneumophila subsp. pneumophila str. Philadelphia 1 YP\_124937 Legionella pneumophila str. Paris YP\_127831 Legionella pneumophila str. Lens AAU28638 Legionella pneumophila subsp. pneumophila str. Philadelphia 1 CAH13785 Legionella pneumophila str. Philadelphia 1 YP\_124937 Legionella pneumophila str. Philadelphia 1 CAH13785 Legionella pneumophila str. Philadelphia 1 YP\_124937 Legionella pneumophila str. Philadelphia 1 CAH13785 Legionella pneumophila str. Philadelphia 1 YP\_124937 Legionella pneumophila str. Philadelphia 1 CAH13785 Legionella pneumophila str. Philadelphia 1 YP\_124937 Legionella pneumophila str. Philadelphia 1 YP\_124937 Legionella pneumophila str. Philadelphia 1 CAH13785 Legionella pneumophila str. Philadelphia 1 YP\_124937 Legionel -ZP\_01119543 Robiginitalea biformata HTCC2501 EAR16071 Acyl-CoA dehydrogenase-like protein/Acyl-CoA dehydrogenase-like protein ZP 01105332 Flavobacteriales bacterium HTCC2170 EAR02417 Acyl-CoA dehydrogenase-like protein/Acyl-CoA dehydrogenase-like protein —ZP\_01117537 Polaribacter irgensii 23-P EAR13844 Acyl-CoA dehydrogenase-like protein/Acyl-CoA dehydrogenase-like protein -ZP\_01053732 Tenacibaculum sp. MED152 EAQ43160 Acyl-CoA dehydrogenase-like/Acyl-CoA dehydrogenase-like -ZP\_01060224 Flavobacterium sp. MED217 EAQ49719 Acyl-CoA dehydrogenase-like/Acyl-CoA dehydrogenase-like 23 100 -ZP\_01049374 Cellulophaga sp. MED134 EAQ39346 Acyl-CoA dehydrogenase-like/Acyl-CoA dehydrogenase-like -ZP\_01200940 Flavobacteria bacterium BBFL7 EAS20358 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase ZP\_00949881 Croceibacter atlanticus HTCC2559 EAP88020 Acyl-CoA dehydrogenase-like protein/Acyl-CoA dehydrogenase-like protein -ZP\_00309163 Cytophaga hutchinsonii COG1960: Acyl-CoA dehydrogenases -YP\_385029 Geobacter metallireducens GS-15 ABB32304 Acyl-CoA dehydrogenase-like/Acyl-CoA dehydrogenase-like -YP\_289129 Thermobifida fusca YX AAZ55106 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase rZP\_00599712 Rubrobacter xylanophilus DSM 9941 EAN37290 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-term -ZP\_00601346 Rubrobacter xylanophilus DSM 9941 EAN35591 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-term -ZP 00381243 Brevibacterium linens BL2 COG1960: Acyl-CoA dehydrogenases -ZP\_00412445 Arthrobacter sp. FB24 EAL97007 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region:Acyl-CoA dehydrogenase, N-terminal/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region:Acyl-CoA dehydrogenase -YP\_445243 Salinibacter ruber DSM 13855 ABC45705 Acyl-CoA dehydrogenase, C-terminal domain family/Acyl-CoA dehydrogenase, C-terminal domain family -YP 327716 Natronomonas pharaonis DSM 2160 CAI50870 acyl-CoA dehydrogenase 8/acyl-CoA dehydrogenase 8 100 -YP\_326960 Natronomonas pharaonis DSM 2160 CAI49401 acyl-CoA dehydrogenase 1/acyl-CoA dehydrogenase 1 YP\_136545 Haloarcula marismortui ATCC 43049 AAV46839 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase -ZP\_00397497 Deinococcus geothermalis DSM 11300 EAL81867 Glutaryl-CoA dehydrogenase/Glutaryl-CoA dehydrogenase r√YP\_144055 Thermus thermophilus HB8 BAD70612 putative glutaryl-CoA dehydrogenase/putative glutaryl-CoA dehydrogenase 1YP\_004410 *Thermus thermophilus HB27* AAS80783 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase -ZP 00523314 Solibacter usitatus Ellin6076 EAM57751 Glutaryl-CoA dehydrogenase/Glutaryl-CoA dehydrogenase -NP\_069824 Archaeoglobus fulgidus DSM 4304 AAB90252 glutaryl-CoA dehydrogenase (gcdH)/glutaryl-CoA dehydrogenase (gcdH) -ZP\_00617773 Kineococcus radiotolerans SRS30216 EAM74486 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-ter 40 -ZP\_00599814 Rubrobacter xylanophilus DSM 9941 EAN37194 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, N-terminal/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-term -NP 736934 Corynebacterium efficiens YS-314 BAC17134 putative acyl-CoA dehydrogenase/putative acyl-CoA dehydrogenase 100 -NP\_737333 Corynebacterium efficiens YS-314 BAC17533 putative glutaryl-CoA dehydrogenase precursor/putative glutaryl-CoA dehydrogenase precursor -ZP\_00601046 Rubrobacter xylanophilus DSM 9941 EAN35875 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, N-terminal/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-term -ZP\_00600638 Rubrobacter xylanophilus DSM 9941 EAN36274 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, N-terminal/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-term -ZP\_00768337 Chloroflexus aurantiacus J-10-fl EAO58580 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, N-terminal:Acyl-CoA dehydrogenase, N-terminal:Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-termi -ZP\_00411006 Arthrobacter sp. FB24 EAL98458 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region -YP\_444269 Salinibacter ruber DSM 13855 ABC45707 glutaryl-CoA dehydrogenase/glutaryl-CoA dehydrogenase -ZP\_00765596 Chloroflexus aurantiacus J-10-fl EAO61148 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-termi um PHSC20C1 EAR24809 putative glutaryl-CoA dehydro enase/putative glutaryl-CoA dehydro -YP\_224587 Corynebacterium glutamicum ATCC 13032 NP\_599540 BAB97681 CAF18858 GLUTARYL-COA DEHYDROGENASE/acyl-CoA dehydrogenase /Acyl-CoA dehydrogenases /GLUTARYL-COA DEHYDROGENASE 12 -ZP\_00410839 Arthrobacter sp. FB24 EAL98291 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-terminal:Acy NP\_821894 Streptomyces avermitilis MA-4680 BAC68429 glutaryl-CoA dehydrogenase/putative glutaryl-CoA dehydrogenase -NP\_822522 Streptomyces avermitilis MA-4680 BAC69057 glutaryl-CoA dehydrogenase/putative glutaryl-CoA dehydrogenase -ZP\_00411798 Arthrobacter sp. FB24 EAL97121 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region -ZP\_00413340 Arthrobacter sp. FB24 EAL95703 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C-terminal:Acyl-Co -NP\_294274 Deinococcus radiodurans R1 AAF10130 glutaryl-CoA dehydrogenase, putative/glutaryl-CoA dehydrogenase, putative -ZP\_00395887 Deinococcus geothermalis DSM 11300 EAL83751 Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, central region:Acyl-CoA dehydrogenase, N-terminal/Acyl-CoA dehydrogenase, C-terminal:Acyl-CoA dehydrogenase, C YP\_372154 Burkholderia sp. 383 ABB11510 Acyl-CoA dehydrogenase/Acyl-CoA dehydrogenase 06817 Anopheles gambiae str. PEST EAA02004 ENSANGP00000000259/ENSANGP0000000025 ZP\_00949248 Croceibacter atlanticus HTCC2559 EAP87387 Acyl-CoA dehydrogenase/Acyl-CoA dehydrogenase -ZP 01059592 Flavobacterium sp. MED217 EAQ51424 Acyl-CoA dehydrogenase/Acyl-CoA dehydrogenase