W3.5: Clustal Omega を用いた MSA と分子系統樹の作成

生物種の異なるトリオースリン酸異性化酵素の配列（ヒト TPIS_HUMAN, マウス TPIS_MOUSE

ニワトリ TPIS_CHICK

ショウジョウバエ TPIS_DROME

イネ TPIS_ORYSA

トウモロコシ TPIS_MAIZE

大腸菌 TPIS_ECOLI）のマルチ FASTA 形式のデータを以下に示す。

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>P60174|TPIS_HUMAN Triosephosphate isomerase - Homo sapiens
(Human).
MAPSRKFFVGGNWKMNGRKQSLGELIGTLNAAKVPADTEVVCAPPTAYIDFARQKLDPKI
AVAAQNCYKVTNGAFTGEISPGMIKDCGATWVVLGHSERRHVFGESDELIGQKVAHALAE
GLGVIACIGEKLDEREAGITEKVVFEQTKVIADNVKDWSKVVLAYEPVWAIGTGKTATPQ
QAQEVHEKLRGWLKSNVSDAVAQSTRIIYGGSVTGATCKELASQPDVDGFLVGGASLKPE
FVDIINAKQ
>P17751|TPIS_MOUSE Triosephosphate isomerase - Mus musculus
(Mouse).
MAPTRKFFVGGNWKMNGRKKCLGELICTLNAANVPAGTEVVCAPPTAYIDFARQKLDPKI
AVAAQNCYKVTNGAFTGEISPGMIKDLGATWVVLGHSERRHVFGESDELIGQKVSHALAE
GLGVIACIGEKLDEREAGITEKVVFEQTKVIADNVKDWSKVVLAYEPVWAIGTGKTATPQ
QAQEVHEKLRGWLKSNVNDGVAQSTRIIYGGSVTGATCKELASQPDVDGFLVGGASLKPE
FVDIINAKQ
>P00940|TPIS_CHICK Triosephosphate isomerase - Gallus gallus
(Chicken).
MAPRKFFVGGNWKMNGDKKSLGELIHTLNGAKLSADTEVVCGAPSIYLDFARQKLDAKIG
VAAQNCYKVPKGAFTGEISPAMIKDIGAAWVILGHSERRHVFGESDELIGQKVAHALAEG
LGVIACIGEKLDEREAGITEKVVFEQTKAIADNVKDWSKVVLAYEPVWAIGTGKTATPQQ
AQEVHEKLRGWLKSHVSDAVAQSTRIIYGGSVTGGNCKELASQHDVDGFLVGGASLKPEF
VDIINAKH
>P29613|TPIS_DROME Triosephosphate isomerase - Drosophila
melanogaster (Fruit fly).
MSRKFCVGGNWKMNGDQKSIAEIAKTLSSAALDPNTEVVIGCPAIYLMYARNLLPCELGL
AGQNAYKVAKGAFTGEISPAMLKDIGADWVILGHSERRAIFGESDALIAEKAEHALAEGL
KVIACIGETLEEREAGKTNEVVARQMCAYAQKIKDWKNVVVAYEPVWAIGTGQTATPDQA
QEVHAFLRQWLSDNISKEVSASLRIQYGGSVTAANAKELAKKPDIDGFLVGGASLKPEFV
DIINARQ
>P48494|TPIS_ORYSA Triosephosphate isomerase, cytosolic - Oryza
sativa (Rice).
MGRKFFVGGNWKCNGTTDQVDKIVKILNEGQIASTDVVEVVVSPPYVFLPVVKSQLRPEI
QVAAQNCWVKKGGAFTGEVSAEMLVNLSIPWVILGHSERRSLLGESNEFVGDKVAYALSQ
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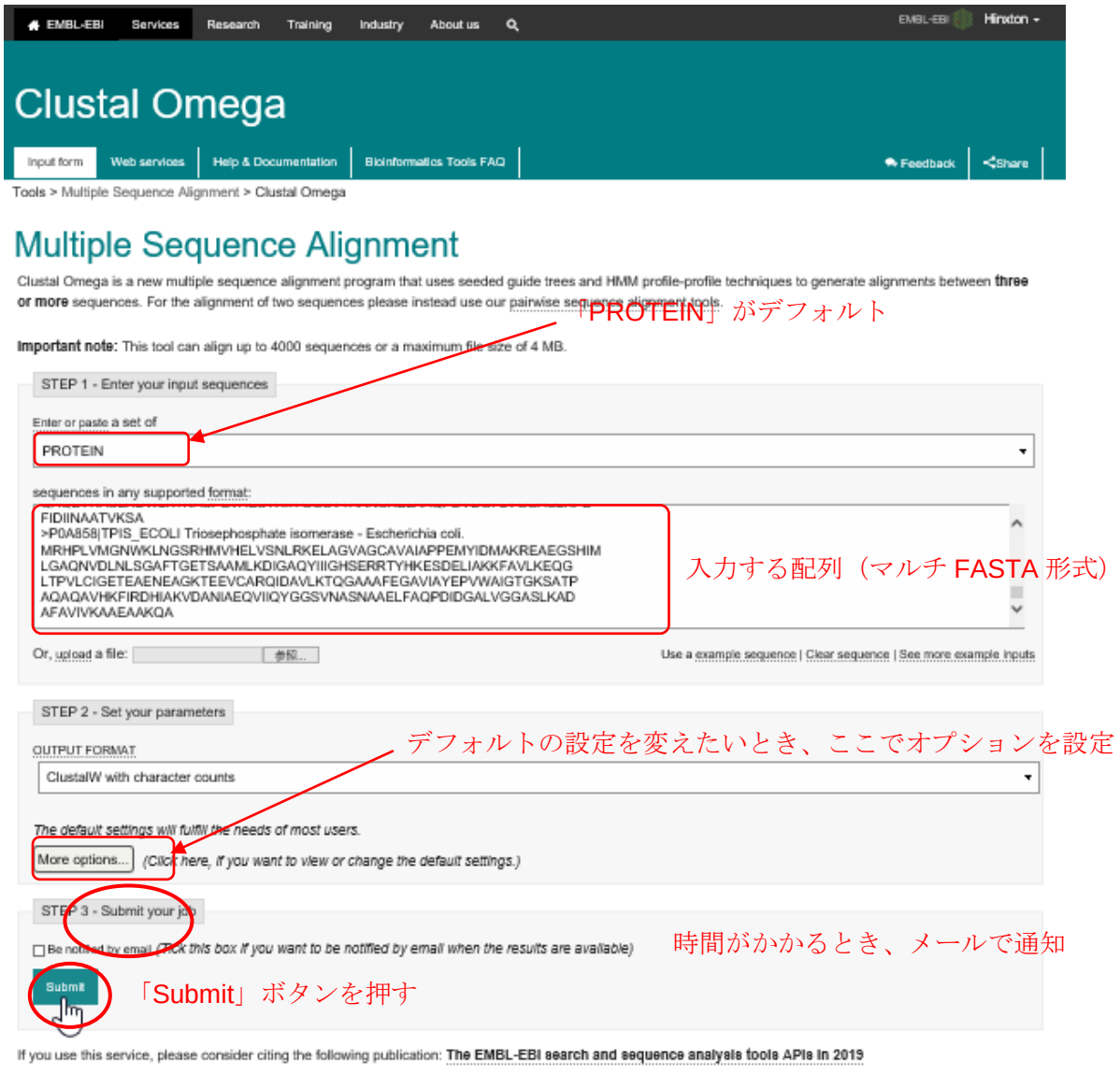
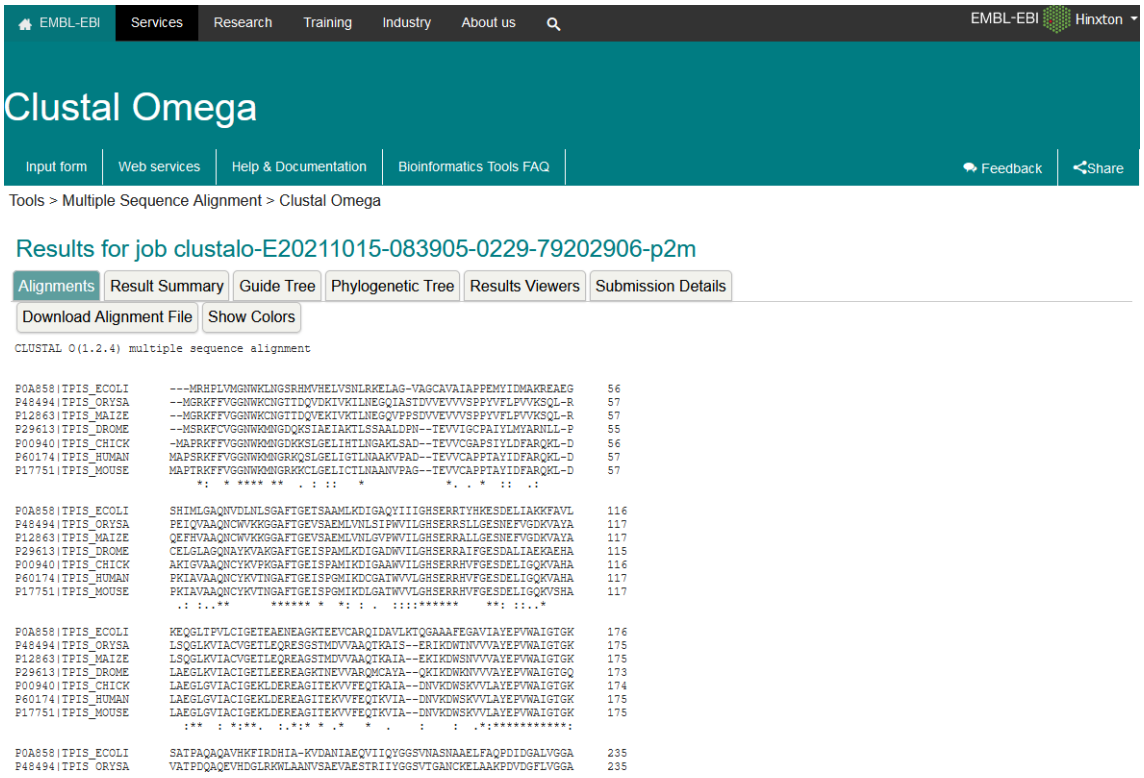
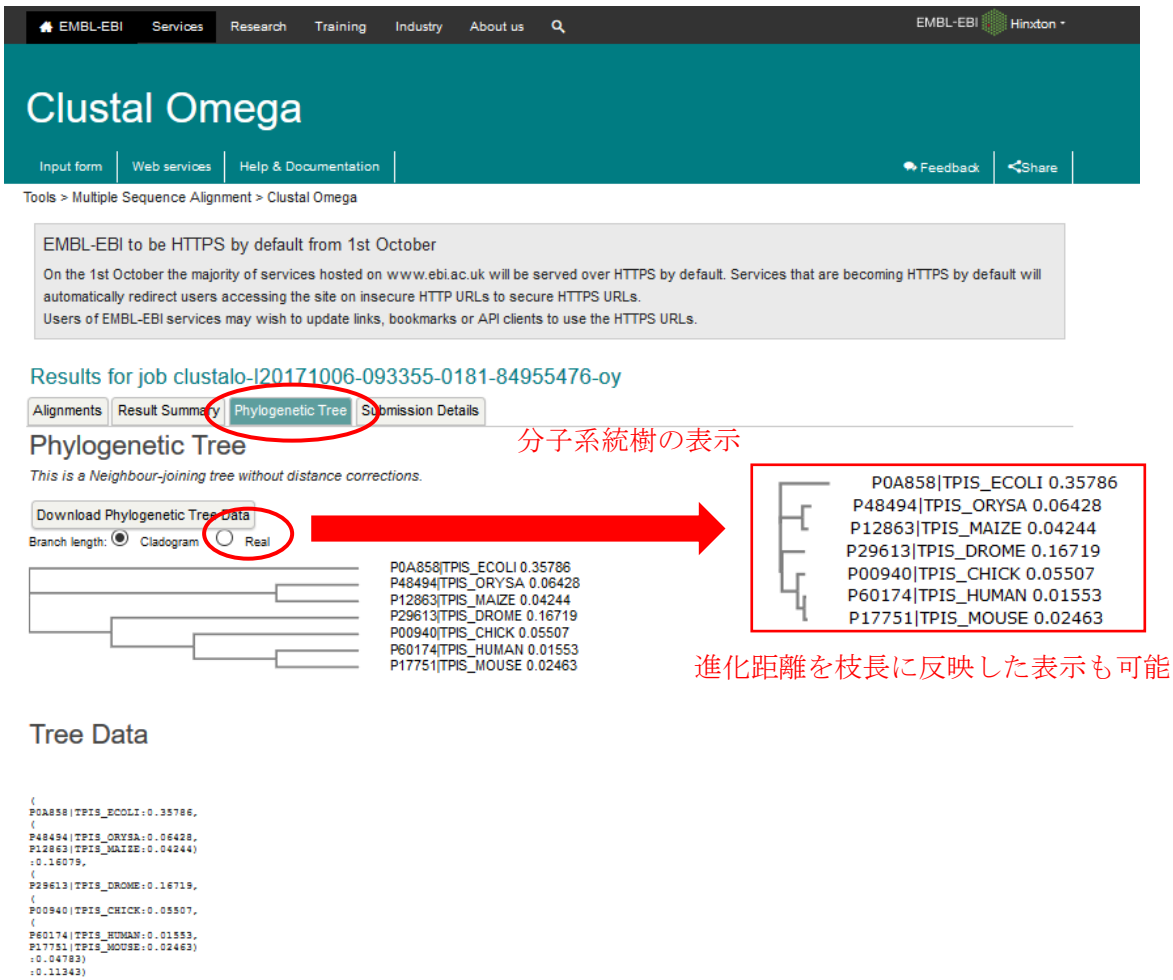
GLKVIACVGETLEQRESGSTMDVVAAQTKAISERIKDWTNVVVAYEPVWAIGTGKVATPD
QAQEVHDGLRKWLAANVSAEVAESTRIIYGGSVTGANCKELAAKPDVDGFLVGGASLKPE
FIDIINSATVKSA
>P12863|TPIS_MAIZE Triosephosphate isomerase, cytosolic - Zea mays
(Maize).
MGRKFFVGGNWKCNGTTDQVEKIVKTLNEGQVPPSDVVEVVVSPPYVFLPVVKSQLRQEF
HVAAQNCWVKKGGAFTGEVSAEMLVNLGVPWVILGHSERRALLGESNEFVGDKVAYALSQ
GLKVIACVGETLEQREAGSTMDVVAAQTKAIAEKIKDWSNVVVAYEPVWAIGTGKVATPA
QAQEVHASLRDWLKTNASPEVAESTRIIYGGSVTAANCKELAAQPDVDGFLVGGASLKPE
FIDIINAATVKSA
>P0A858|TPIS_ECOLI Triosephosphate isomerase - Escherichia coli.
MRHPLVMGNWKLNGSRHMVHELVSNLRKELAGVAGCAVAIAPPEMYIDMAKREAEGSHIM
LGAQNVDLNLSGAFTGETSAAMLKDIGAQYIIIGHSERRTYHKESDELIAKKFAVLKEQG
LTPVLCIGETEAENEAGKTEEVCARQIDAVLKTQGAAAFEGAVIAYEPVWAIGTGKSATP
AQAQAVHKFIRDHIAKVDANIAEQVIIQYGGSVNASNAAELFAQPDIDGALVGGASLKAD
AFAVIVKAAEAAKQA
```

これを [Clustal Omega](#) のサイトで入力する。



MSA の結果



さらに分子系統樹を描くには、Phylogenetic Tree のタブを利用する。