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# PyMOL script for display of the 80S ribosome of *Triticum aestivum* #

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#

# Created by lanting, followed the scripts created by Felix Voigts-Hoffmann and Basil Greber.

# For questions and comments please contact lantingchn@foxmail.com

#

# last modified: 06/06/2020

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# A full PyMOL session of this script in .pse format can be downloaded from

# http://www.plantcrp.cn

#

# Reference:

# The structure of the eukaryotic ribosome at 3.0 resolution.

# Ben-Shem A, Garreau de Loubresse N, Melnikov S, Jenner L, Yusupova G, Yusupov M.

# Science. 334(6062):1524-9. (2011)

#

# Nomenclature according to:

# A new system for naming ribosomal proteins.

# Ban N, Beckmann R, Cate JH, Dinman JD, Dragon F, Ellis SR, Lafontaine DL, Lindahl L, Liljas A, Lipton JM, McAlear MA,

# Moore PB, Noller HF, Ortega J, Panse VG, Ramakrishnan V, Spahn CM, Steitz TA, Tchorzewski M, Tollervey D, Warren AJ,

# Williamson JR, Wilson D, Yonath A, Yusupov M.

# Curr Opin Struct Biol. 24:165-9. (2014)

#

# PyMOL Script according to PyMOL script created by the Ban Lab

#

# Abbreviations:

# T.a. *Triticum aestivum*

# uS../uL.. universally conserved proteins (eukaryotes, archaea and bacteria)

# eS../eL.. archaeal- and eukaryotic-specific proteins

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# INSTRUCTIONS FOR RUNNING THIS SCRIPT #

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#

# 1) Start PyMOL

# The structure of the *Triticum aestivum* 80S ribosome has been deposited at

# the PDB in mmCIF format. Only recent versions of PyMOL can properly retrieve and handle files

# in mmCIF format. If you do not have a recent version of PyMOL installed (this script has been

# tested with PyMOL v1.7 and may not work properly with older versions), please go to

# http://www.pymol.org/ to download and install the application.

#

# 2) The following command will download the PDB coordinate file from the database and save it in your working

# directory. To load the file, paste the command into the command line of the PyMOL GUI Window

# (titled "The Pymol Molecular Graphics System")

#

# to activate distance-based display of bonds to properly show non-standard bases (to be set prior to loading mmCIF)

#

set connect\_mode, 3

#

fetch 4V7E, type=cif

#

# 3) Wait until the file is loaded and you can see the ribosome shown as lines.

#

# 4) Paste the rest of the script below "DISPLAY INSTRUCTIONS" into the command line of

# the PyMOL GUI Window (titled "The Pymol Molecular Graphics System")

# These commands will set up the display and nomenclature of RNAs, proteins, ions and cofactors

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# DISPLAY INSTRUCTIONS #

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# to activate differentiation between lowercase and uppercase chain IDs used for large molecules

set ignore\_case, 0

# temporary subselections #

create 4v7e\_molB, 4v7e and (chain A\* or chain B\* or chain C\*)

create 4v7e\_molB\_wo\_cofactors, 4v7e\_molB

delete 4v7e

delete 4v7e-assembly

delete 4v7e\_molB

#################################

# SELECTIONS OF PROTEIN and RNA #

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# 40S and 60S proteins and rRNAs#

create eS1\_\_BB\_T.a.S1E , 4v7e\_molB\_wo\_cofactors and chain BB

create uS2\_\_BA\_T.a.S2 , 4v7e\_molB\_wo\_cofactors and chain BA

create uS3\_\_BD\_T.a.S3 , 4v7e\_molB\_wo\_cofactors and chain BD

create uS4\_\_BJ\_T.a.S4 , 4v7e\_molB\_wo\_cofactors and chain BJ

create eS4\_\_BE\_T.a.S4E , 4v7e\_molB\_wo\_cofactors and chain BE

create uS5\_\_BC\_T.a.S5 , 4v7e\_molB\_wo\_cofactors and chain BC

create eS6\_\_BG\_T.a.S6 , 4v7e\_molB\_wo\_cofactors and chain BG

create uS7\_\_BF\_T.a.S7 , 4v7e\_molB\_wo\_cofactors and chain BF

create eS7\_\_BH\_T.a.S7E , 4v7e\_molB\_wo\_cofactors and chain BH

create uS8\_\_BW\_T.a.S8 , 4v7e\_molB\_wo\_cofactors and chain BW

create eS8\_\_BI\_T.a.S8E , 4v7e\_molB\_wo\_cofactors and chain BI

create uS9\_\_BQ\_T.a.S9 , 4v7e\_molB\_wo\_cofactors and chain BQ

create uS10\_BU\_T.a.S10 , 4v7e\_molB\_wo\_cofactors and chain BU

create eS10\_BK\_T.a.S10E , 4v7e\_molB\_wo\_cofactors and chain BK

create uS11\_BO\_T.a.S11 , 4v7e\_molB\_wo\_cofactors and chain BO

create uS12\_BX\_T.a.S12 , 4v7e\_molB\_wo\_cofactors and chain BX

create eS12\_BM\_T.a.S12E , 4v7e\_molB\_wo\_cofactors and chain BM

create uS13\_BS\_T.a.S13 , 4v7e\_molB\_wo\_cofactors and chain BS

create uS14\_Bd\_T.a.S14 , 4v7e\_molB\_wo\_cofactors and chain Bd

create uS15\_BN\_T.a.S15 , 4v7e\_molB\_wo\_cofactors and chain BN

create uS17\_BL\_T.a.S17 , 4v7e\_molB\_wo\_cofactors and chain BL

create eS17\_BR\_T.a.S17E , 4v7e\_molB\_wo\_cofactors and chain BR

create eS19\_BT\_T.a.S19E , 4v7e\_molB\_wo\_cofactors and chain BT

create uS19\_BP\_T.a.S19 , 4v7e\_molB\_wo\_cofactors and chain BP

create eS21\_BV\_T.a.S21E , 4v7e\_molB\_wo\_cofactors and chain BV

create eS24\_BY\_T.a.S24E , 4v7e\_molB\_wo\_cofactors and chain BY

create eS25\_BZ\_T.a.S25E , 4v7e\_molB\_wo\_cofactors and chain BZ

create eS26\_Ba\_T.a.S26E , 4v7e\_molB\_wo\_cofactors and chain Ba

create eS27\_Bb\_T.a.S27E , 4v7e\_molB\_wo\_cofactors and chain Bb

create eS28\_Bc\_T.a.S28E , 4v7e\_molB\_wo\_cofactors and chain Bc

create eS30\_Be\_T.a.S30E , 4v7e\_molB\_wo\_cofactors and chain Be

create eS31\_Bf\_T.a.S31e , 4v7e\_molB\_wo\_cofactors and chain Bf

create T.a.RACK1\_Bg , 4v7e\_molB\_wo\_cofactors and chain Bg

create T.a.18S\_\_\_\_rRNA\_Ad , 4v7e\_molB\_wo\_cofactors and chain Ad

create T.a.P\_site\_tRNA\_Ae , 4v7e\_molB\_wo\_cofactors and chain Ae

create T.a.\_\_\_\_\_\_\_rRNA\_Af , 4v7e\_molB\_wo\_cofactors and chain Af

create uL1\_\_Cz\_T.a.L1 , 4v7e\_molB\_wo\_cofactors and chain Cz

create uL2\_\_CA\_T.a.L2 , 4v7e\_molB\_wo\_cofactors and chain CA

create uL3\_\_CB\_T.a.L3 , 4v7e\_molB\_wo\_cofactors and chain CB

create uL4\_\_CC\_T.a.L4 , 4v7e\_molB\_wo\_cofactors and chain CC

create uL5\_\_CJ\_T.a.L5 , 4v7e\_molB\_wo\_cofactors and chain CJ

create uL6\_\_CH\_T.a.L6 , 4v7e\_molB\_wo\_cofactors and chain CH

create eL6\_\_CE\_T.a.L6E , 4v7e\_molB\_wo\_cofactors and chain CE

create eL8\_\_CG\_T.a.L8E , 4v7e\_molB\_wo\_cofactors and chain CG

create uL10\_Cq\_T.a.P0 , 4v7e\_molB\_wo\_cofactors and chain Cq

create uL11\_CK\_T.a.L11 , 4v7e\_molB\_wo\_cofactors and chain CK

create uL13\_CO\_T.a.L13 , 4v7e\_molB\_wo\_cofactors and chain CO

create eL13\_CL\_T.a.L13E , 4v7e\_molB\_wo\_cofactors and chain CL

create uL14\_CV\_T.a.L14 , 4v7e\_molB\_wo\_cofactors and chain CV

create eL14\_CM\_T.a.L14E , 4v7e\_molB\_wo\_cofactors and chain CM

create uL15\_Ca\_T.a.L15 , 4v7e\_molB\_wo\_cofactors and chain Ca

create eL15\_CN\_T.a.L15E , 4v7e\_molB\_wo\_cofactors and chain CN

create uL16\_CI\_T.a.L16 , 4v7e\_molB\_wo\_cofactors and chain CI

create uL18\_CD\_T.a.L18 , 4v7e\_molB\_wo\_cofactors and chain CD

create eL18\_CQ\_T.a.L18E , 4v7e\_molB\_wo\_cofactors and chain CQ

create eL19\_CR\_T.a.L19E , 4v7e\_molB\_wo\_cofactors and chain CR

create eL20\_CS\_T.a.L20 , 4v7e\_molB\_wo\_cofactors and chain CS

create eL21\_CT\_T.a.L21E , 4v7e\_molB\_wo\_cofactors and chain CT

create uL22\_CP\_T.a.L22 , 4v7e\_molB\_wo\_cofactors and chain CP

create eL22\_CU\_T.a.L22E , 4v7e\_molB\_wo\_cofactors and chain CU

create uL23\_CX\_T.a.L23 , 4v7e\_molB\_wo\_cofactors and chain CX

create uL24\_CY\_T.a.L24 , 4v7e\_molB\_wo\_cofactors and chain CY

create eL24\_CW\_T.a.L24E , 4v7e\_molB\_wo\_cofactors and chain CW

create eL27\_CZ\_T.a.L27E , 4v7e\_molB\_wo\_cofactors and chain CZ

create eL28\_Cr\_T.a.L28E , 4v7e\_molB\_wo\_cofactors and chain Cr

create uL29\_Ch\_T.a.L29 , 4v7e\_molB\_wo\_cofactors and chain Ch

create eL29\_Cb\_T.a.L29E , 4v7e\_molB\_wo\_cofactors and chain Cb

create uL30\_CF\_T.a.L30 , 4v7e\_molB\_wo\_cofactors and chain CF

create eL30\_Cc\_T.a.L30E , 4v7e\_molB\_wo\_cofactors and chain Cc

create eL31\_Cd\_T.a.L31E , 4v7e\_molB\_wo\_cofactors and chain Cd

create eL32\_Ce\_T.a.L32E , 4v7e\_molB\_wo\_cofactors and chain Ce

create eL33\_Cf\_T.a.L33E , 4v7e\_molB\_wo\_cofactors and chain Cf

create eL34\_Cg\_T.a.L34E , 4v7e\_molB\_wo\_cofactors and chain Cg

create eL36\_Ci\_T.a.L36E , 4v7e\_molB\_wo\_cofactors and chain Ci

create eL37\_Cj\_T.a.L37E , 4v7e\_molB\_wo\_cofactors and chain Cj

create eL38\_Ck\_T.a.L38E , 4v7e\_molB\_wo\_cofactors and chain Ck

create eL39\_Cl\_T.a.L39E , 4v7e\_molB\_wo\_cofactors and chain Cl

create eL40\_Cm\_T.a.L40E , 4v7e\_molB\_wo\_cofactors and chain Cm

create eL41\_Cn\_T.a.L41E , 4v7e\_molB\_wo\_cofactors and chain Cn

create eL42\_Co\_T.a.L44E , 4v7e\_molB\_wo\_cofactors and chain Co

create eL43\_Cp\_T.a.L43E , 4v7e\_molB\_wo\_cofactors and chain Cp

create P1\_\_\_Cu\_T.a.P1 , 4v7e\_molB\_wo\_cofactors and chain Cu

create P1\_\_\_Cv\_T.a.P1 , 4v7e\_molB\_wo\_cofactors and chain Cv

create P2\_\_\_Cs\_T.a.P2 , 4v7e\_molB\_wo\_cofactors and chain Cs

create P2\_\_\_Ct\_T.a.P2 , 4v7e\_molB\_wo\_cofactors and chain Ct

create T.a.26S\_\_rRNA\_Aa , 4v7e\_molB\_wo\_cofactors and chain Aa

create T.a.5.8S\_rRNA\_Ac , 4v7e\_molB\_wo\_cofactors and chain Ac

create T.a.5S\_\_\_rRNA\_Ab , 4v7e\_molB\_wo\_cofactors and chain Ab

delete 4v7e\_molB\_wo\_cofactors

# subselections for the 80S #

select T.a.80S\_proteins, P1\_\* or P2\_\* or eL\* or uL\* or eS\* or uS\* or T.a.RACK1\_Bg

select T.a.80S\_rRNAs, T.a.18S\_\_\_\_rRNA\_Ad or T.a.P\_site\_tRNA\_Ae or T.a.\_\_\_\_\_\_\_rRNA\_Af or T.a.26S\_\_rRNA\_Aa or T.a.5.8S\_rRNA\_Ac or T.a.5S\_\_\_rRNA\_Ab

select T.a.80S\_bases, (T.a.80S\_rRNAs and (name C4 or name N3 or name N9 or name C8 or name N7 or name C5 or name C6 or name N1 or name N6 or name C2 or name O2 or name O4 or name O6 or name N2 or name N4))

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# COLOR SETTINGS #

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color grey60, T.a.80S\_rRNAs

color white, T.a.80S\_bases

color aquamarine, uL\* or uS\*

color oxygen, eL6\_\* or eL22\_\* or eL27\_\* or eL28 or eL29\_\* or eL36\_\*

color oxygen, eS7\_\* or eS10\_\* or eS12\_\* or eS21\_\* or eS26\_\* or T.a.RACK1\_Bg

color orange, eL\* and not (eL6\_\* or eL22\_\* or eL27\_\* or eL28\_\* or eL29\_\* or eL36\_\*)

color orange, P1\_\* or P2\_\*

color orange, eS\* and not (eS7\_\* or eS10\_\* or eS12\_\* or eS21\_\* or eS26\_\*)

hide everything

####################

# DISPLAY SETTINGS #

####################

show cartoon, T.a.80S\_proteins or T.a.80S\_rRNAs

set cartoon\_loop\_radius,0.40000

set cartoon\_tube\_radius,0.8000

set cartoon\_ladder\_radius,0.4000

set cartoon\_oval\_length,1.200

set cartoon\_oval\_width,0.4000

delete T.a.80S\_proteins

delete T.a.80S\_rRNAs

delete T.a.80S\_bases

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# VIEW SETTINGS #

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# side view of the 80S #

set\_view (\

-0.987847030, 0.021754943, 0.153153449,\

0.034389943, -0.934180319, 0.354742438,\

0.150809333, 0.355729073, 0.922201931,\

0.000000000, 0.000000000, -855.260559082,\

179.838546753, 3.613739014, 232.099822998,\

723.269958496, 987.251403809, -20.000000000 )