

Human Actin Sequence Alignment

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ACTA1  MCDEDETTALVCDNGSGLVVKAGFAGDDAPRAVFPSSIVGRPRHQGVVMVGMGQKDSYVGDEA 60
ACTA2  MCEEEEDSTALVCDNGSGLCKAGFAGDDAPRAVFPSSIVGRPRHQGVVMVGMGQKDSYVGDEA 60
ACTC1  MCDDEETTALVCDNGSGLVVKAGFAGDDAPRAVFPSSIVGRPRHQGVVMVGMGQKDSYVGDEA 60
ACTB   MDDD--IAALVVDNGSGMCKAGFAGDDAPRAVFPSSIVGRPRHQGVVMVGMGQKDSYVGDEA 58
ACTG1  MEEEE--IAALVIDNGSGMCKAGFAGDDAPRAVFPSSIVGRPRHQGVVMVGMGQKDSYVGDEA 58
ACTG2  MCEEEET-TALVCDNGSGLCKAGFAGDDAPRAVFPSSIVGRPRHQGVVMVGMGQKDSYVGDEA 59
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ACTA1  QSKRGIILTLKYPIEHGIIITNWDMEKIWHHTFYNELRVAPEEHPTLLTEAPLNPKANREK 120
ACTA2  QSKRGIILTLKYPIEHGIIITNWDMEKIWHHSFYNELRVAPEEHPTLLTEAPLNPKANREK 120
ACTC1  QSKRGIILTLKYPIEHGIIITNWDMEKIWHHTFYNELRVAPEEHPTLLTEAPLNPKANREK 120
ACTB   QSKRGIILTLKYPIEHGIVTNWDMEKIWHHTFYNELRVAPEEHPVLLTEAPLNPKANREK 118
ACTG1  QSKRGIILTLKYPIEHGIVTNWDMEKIWHHTFYNELRVAPEEHPVLLTEAPLNPKANREK 118
ACTG2  QSKRGIILTLKYPIEHGIIITNWDMEKIWHHSFYNELRVAPEEHPTLLTEAPLNPKANREK 119
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ACTA1  MTQIMFETFNVPAMYVAIQAVLSLYASGRRTTGIVLDSGDGVTHNVPIYEGYALPHAIMRL 180
ACTA2  MTQIMFETFNVPAMYVAIQAVLSLYASGRRTTGIVLDSGDGVTHNVPIYEGYALPHAIMRL 180
ACTC1  MTQIMFETFNVPAMYVAIQAVLSLYASGRRTTGIVLDSGDGVTHNVPIYEGYALPHAIMRL 180
ACTB   MTQIMFETFNTPAMYVAIQAVLSLYASGRRTTGIVMDSGDGVTHTVPIYEGYALPHAILRL 178
ACTG1  MTQIMFETFNTPAMYVAIQAVLSLYASGRRTTGIVMDSGDGVTHTVPIYEGYALPHAILRL 178
ACTG2  MTQIMFETFNVPAMYVAIQAVLSLYASGRRTTGIVLDSGDGVTHNVPIYEGYALPHAIMRL 179
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ACTA1  DLAGRDLTDYLMKILTERGYSFVTTAEREIVRDIKEKLCYVALDFENEMATAASSSSLEK 240
ACTA2  DLAGRDLTDYLMKILTERGYSFVTTAEREIVRDIKEKLCYVALDFENEMATAASSSSLEK 240
ACTC1  DLAGRDLTDYLMKILTERGYSFVTTAEREIVRDIKEKLCYVALDFENEMATAASSSSLEK 240
ACTB   DLAGRDLTDYLMKILTERGYSFTTTAEREIVRDIKEKLCYVALDFEQEMATAASSSSLEK 238
ACTG1  DLAGRDLTDYLMKILTERGYSFTTTAEREIVRDIKEKLCYVALDFEQEMATAASSSSLEK 238
ACTG2  DLAGRDLTDYLMKILTERGYSFVTTAEREIVRDIKEKLCYVALDFENEMATAASSSSLEK 239
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ACTA1  SYELPDGQVITIGNERFRCPETLFPQSFIGMESAGIHETTYNSIMKCDIDIRKOLYANNV 300
ACTA2  SYELPDGQVITIGNERFRCPETLFPQSFIGMESAGIHETTYNSIMKCDIDIRKOLYANNV 300
ACTC1  SYELPDGQVITIGNERFRCPETLFPQSFIGMESAGIHETTYNSIMKCDIDIRKOLYANNV 300
ACTB   SYELPDGQVITIGNERFRCPEALFPQSFLGMESCGIHETTENSIMKCDVDIRKOLYANTV 298
ACTG1  SYELPDGQVITIGNERFRCPEALFPQSFLGMESCGIHETTENSIMKCDVDIRKOLYANTV 298
ACTG2  SYELPDGQVITIGNERFRCPETLFPQSFIGMESAGIHETTYNSIMKCDIDIRKOLYANNV 299
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ACTA1  MSGGTTMYPGIADRMQKEITALAPSTMKIKIIPAPPERKYSVWIGGSILASLSTFQQMWIT 360
ACTA2  LSGGTTMYPGIADRMQKEITALAPSTMKIKIIPAPPERKYSVWIGGSILASLSTFQQMWIS 360
ACTC1  LSGGTTMYPGIADRMQKEITALAPSTMKIKIIPAPPERKYSVWIGGSILASLSTFQQMWIS 360
ACTB   LSGGTTMYPGIADRMQKEITALAPSTMKIKIIPAPPERKYSVWIGGSILASLSTFQQMWIS 358
ACTG1  LSGGTTMYPGIADRMQKEITALAPSTMKIKIIPAPPERKYSVWIGGSILASLSTFQQMWIS 358
ACTG2  LSGGTTMYPGIADRMQKEITALAPSTMKIKIIPAPPERKYSVWIGGSILASLSTFQQMWIS 359
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ACTA1  KQEYDEAGPSIVHRKCF 377
ACTA2  KQEYDEAGPSIVHRKCF 377
ACTC1  KQEYDEAGPSIVHRKCF 377
ACTB   KQEYDESGPSIVHRKCF 375
ACTG1  KQEYDESGPSIVHRKCF 375
ACTG2  KPEYDEAGPSIVHRKCF 376
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Actins were originally classified as α , β and γ isotypes based on their charge as seen on 2-dimensional SDS-PAGE. Subsequently the α spot was found to contain three proteins, α -skeletal actin (ACTA1), α -vascular smooth muscle actin (ACTA2) and α -cardiac muscle actin (ACTC1). The β spot contained a single protein called simply β actin (ACTB), while the γ spot may contain both γ -1 actin (ACTG1) and γ -2 enteric and smooth muscle actin (ACTG2). Charged amino acids are hatched and hydrophobic amino acids are blocked out. The different actins are between 94 and 97% identical.