

Supplementary Materials

Human GATA2 (NP_116027, 480aa) vs. *A. thaliana* GATA2 (O49741, 264aa)

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NP_116027      MEVAPEQPRWMAHPAVLNAQHPDSHHPGLAHNYMEPAQLLPPDEVDFVFNHLD SQGNPYY 60
O49741         -----MDVYGLS----- 7
                  *      *

NP_116027      ANPAHARARVSYSPA HARLTGGQMC RPHLLHSPGLPWL DGGKAALSAAAHHHN PWTVSP 120
O49741         -----SPDLLRIDDL-----LD 19
                  * . * * . *

NP_116027      FSKTPLHP SAAGPGG PLSVYPGAGGGSGGGSSVASLTPTAAHSGSHLFGFPPTPPKE 180
O49741         FSNED-----IFSAS--SSGGSTAATSS-----SSFPPQNP S 50
** :                : : . * * . : : : : * * * .

NP_116027      --VSPDPSTTGAASPASSSAGGSAARGEDKDGK VQVSLTE-SMKMESGSP LRPGLATMG 237
O49741         FHHHLLPSSADHHS----FLHDICVPSDDAAHLEWLSQFVDDSFADFPANPLGGTMTSVK 106
                  * * : . *      . . . * * : : : * : : * * : : :

NP_116027      T-----QPATHHPIPTYSYV PAAAH D-----YSSGLFHP-----GGFLGGPASSF 278
O49741         TETSFP GKPRSKRSR APAPFAGTWSMPLESEHQQLHSAAKFKPKKEQSGGGGGGGG--R 164
*      . : : * * : : * . .      * : . * * * * * * * * *

NP_116027      TPQRSKARSCSEGRECVNCGATATPLWR RDGTG-HYLCNACGLYHKMNGQN--RPLIK 334
O49741         HQSSSSETTEGGGMRRCTHCASEKTPQWR TGPLPKTLCNACGVRFKSGRLVPEYRPASS 224
. . * : : . . * . * : : * * * * . * : * * * * * : * . * * .

NP_116027      PKRRLSAARRAGTCCANCQT TTTTLWRRN-ANGDPVCNACGLYK LHNVNRPLTMKKEGI 393
O49741         PTFVLTQHS-----NSHRKVMELR RQKEVMRQPQQVQL----- 257
* . * :                * : . . * * : : . : *

NP_116027      QTRNRKMSNKSKSKKGAECFEELSKCMQEKSSPFSAAALAGHMAPVGHLP PFSHSGHIL 453
O49741         -----HHHHHPF----- 264
                  : : . *

NP_116027      PTPPTPIHPSSLSFGHPH PSMVTAMG 480
O49741         ----- 264

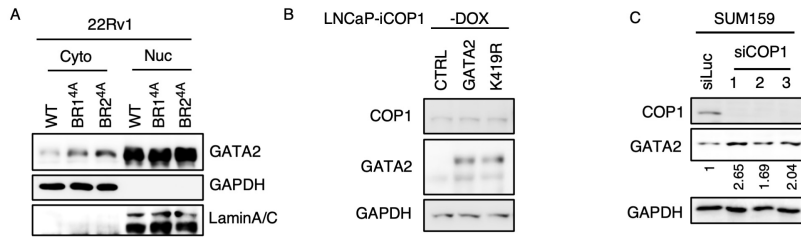
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Supplementary Figure S1. Sequence alignments of human vs. *Arabidopsis thaliana* GATA2 protein. Highlighted in cyan are the cysteine residues making up the Zinc Fingers. *Arabidopsis thaliana* GATA2 only carries on Zin Finger. Highlighted in Yellow are the BR1 and BR2 motifs in human GATA2 and the potential BR motifs in *Arabidopsis thaliana* GATA2.

Human COP1 (NP_071902, 731aa) vs. *A. thaliana* COP1 (P43254, 675aa)



Supplementary Figure S2. Sequence alignments of human vs. *Arabidopsis thaliana* COP1 protein. Highlighted in Yellow are the D/E1 and D/E2 motifs in human GATA2 and the potential D/E motifs in *Arabidopsis thaliana* GATA2.



Supplementary Figure S3. a 22Rv1 cells were transfected with Myc-tagged wild type (WT) vs. BR1^{4A} vs. BR2^{4A}-mutated GATA2. 48 hours later, the cells were subjected to the cytoplasm or nuclear fractionation and Western blots. **b** Western blots on LNCaP-iCOP1 cells in the absence of DOX induction. **c** Western blots on COP1-knockdown SUM159 cells using three different COP1 siRNAs (siCOP1, #1-3) vs. control siRNA against luciferase (siLuc).

Alignment of GATA2 protein sequence across species

Human	MEVAPEQPRWMAHPAVLNAQHPDSSHHPGLAHNYMEPAQLLPDEVVFFNHLDSQGNPYANPAHARARVSYSPA HARLT	80
Gorilla	MEVAPEQPRWMAHPAVLNAQHPDSSHHPGLAHNYMEPAQLLPDEVVFFNHLDSQGNPYANPAHARARVSYSPA HARLT	80
Pig	MEVAPEQPRWMAHPAVLNAQHPDSSHHPGLAHNYMEPAQLLPDEVVFFNHLDSQGNPYANPAHARARVSYSPA HARLT	80
Rat	MEVAPEQPRWMAHPAVLNAQHPDSSHHPGLAHNYMEPAQLLPDEVVFFNHLDSQGNPYANPAHARARVSYSPA HARLT	80
Mouse	MEVAPEQPRWMAHPAVLNAQHPDSSHHPGLAHNYMEPAQLLPDEVVFFNHLDSQGNPYANPAHARARVSYSPA HARLT	80
Human	GGQMC RP HLLHSPGLPWLDGGKAALSAAAAHHHNPWTVPFSKTP LHPSAAGGPGGPLSVYPGAGGGSGGSGSSVASLT	160
Gorilla	GGQMC RP HLLHSPGLPWLDGGKAALSAAAAHHHNPWTVPFSKTP LHPSAAGGPGGPLSVYPGAGGGSGGSGSSVASLT	160
Pig	GGQMC RP HLLHSPGLPWLDGGKAALSAAAAHHHNPWTVPFSKTP LHPSAAGGPGGPLSVYPGAGGGSGGSGSSVASLT	160
Rat	GGQMC RP HLLHSPGLPWLDGGKAALSAAAAHHHNPWTVPFSKTP LHPSAAGGPGGPLSVYPGAGGGSGGSGSSVASLT	160
Mouse	GGQMC RP HLLHSPGLPWLDGGKAALSAAAAHHHNPWTVPFSKTP LHPSAAGGPGGPLSVYPGAGGGSGGSGSSVASLT	160
Human	PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASSSAGGSAARGEDKDGVKYQVSLTESMKMESGSP LRPGLATMGTQP	240
Gorilla	PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASSSAGGSAARGEDKDGVKYQVSLTESMKMESGSP LRPGLAAMGTQP	240
Pig	PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASSSAGGSAARGEDKDGVKYQVSLTESMKMESGSP LRPGLAAMGTQP	240
Rat	PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASSSAGGSAARGEDKDGVKYQVSLTESMKMESGSP LRPGLAAMGTQP	240
Mouse	PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASSSAGGSAARGEDKDGVKYQVSLTESMKMESGSP LRPGLAAMGTQP	240
Human	ATHHPIPTYPSYVPA AAHDYSSGLFHPGGFLGGPASSFTP KQRSKAR SCSEGRCVNCGATATPLWRRDGTGHYLCNACG	320
Gorilla	ATHHPIPTYPSYVPA AAHDYSSGLFHPGGFLGGPASSFTP KQRSKAR SCSEGRCVNCGATATPLWRRDGTGHYLCNACG	320
Pig	ATHHPIPTYPSYVPA AAHDYSSGLFHPGGFLGGPASSFTP KQRSKAR SCSEGRCVNCGATATPLWRRDGTGHYLCNACG	320
Rat	ATHHPIPTYPSYVPA AAHDYSSGLFHPGGFLGGPASSFTP KQRSKAR SCSEGRCVNCGATATPLWRRDGTGHYLCNACG	320
Mouse	ATHHPIPTYPSYVPA AAHDYSSGLFHPGGFLGGPASSFTP KQRSKAR SCSEGRCVNCGATATPLWRRDGTGHYLCNACG	320
Human	LYHKMNGQNRPLI KPKRR LSAARRAGTCCANCQTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIQTRNRKM	400
Gorilla	LYHKMNGQNRPLI KPKRR LSAARRAGTCCANCQTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIQTRNRKM	400
Pig	LYHKMNGQNRPLI KPKRR LSAARRAGTCCANCQTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIQTRNRKM	400
Rat	LYHKMNGQNRPLI KPKRR LSAARRAGTCCANCQTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIQTRNRKM	400
Mouse	LYHKMNGQNRPLI KPKRR LSAARRAGTCCANCQTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIQTRNRKM	400
Human	SNKSKSKKGAECFEELSKCMQEKSSPFSAAALAGHMAPVGHLPFSSHGHILPTPTPIHPSSLSFGHPPSSMVTAMG	480
Gorilla	SNKSKSKKGAECFEELSKCMQEKSSPFSAAALAGHMAPVGHLPFSSHGHILPTPTPIHPSSLSFGHPPSSMVTAMG	480
Pig	SNKSKKNGKGAECFEELSKCMQEKSSPFSAAALAGHMAPVGHLPFSSHGHILPTPTPIHPSSLSFGHPPSSMVTAMG	480
Rat	SSKSKSKKGAECFEELSKCMQEKSSPFSAAALAGHMAPVGHLPFSSHGHILPTPTPIHPSSLSFGHPPSSMVTAMG	480
Mouse	SSKSKSKKGAECFEELSKCMQEKSSPFSAAALAGHMAPVGHLPFSSHGHILPTPTPIHPSSLSFGHPPSSMVTAMG	480

Supplementary Figure S4. Alignment of GATA2 protein sequence across species.

Highlighted in Yellow are the BR1 and BR2 motifs.

Alignment of COP1 protein sequence across species

Human	MSGSRQAGSGSAGTSPGSSAASSVTSASSLSLSSPSPVAVSAAALVSGGVAQAAGSGGLGGPVRPVLVAPAVSGS--G	78
Gorilla	MSGSRQAGSGSAGTSPGSSAASSVTSASSLSLSSPSPVAVSAAALVSGGVAQAAGSGGLGGPVRPVLVAPAVSGS--G	78
Pig	MSGSRQVGSAGTSPGSSAASSVTSASSLSLSSPSPVAVSAAALVSGGVAQAAGSGGLGGPVRPVLVAAAASVGS--A	78
Rat	MSGSRQAGSGSAGTSPGSSAASSVTSASSLSLSSPSPVAVSAAATLVSGGVAQAAGSGGLGGPVRPVLVAAAASVGSASA	80
Mouse	MSGSRQAGSGSAGTSPGSSAASSVTSASSLSLSSPSPVAVSAAATLVSGGVAQAAGSGGLGGPVRPVLVAAAASVGSASA	80
Human	GGAVSTGLSRHSCAARPSAGVGGSSSLGSGSRKRPLLAAPLNCGLINSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK	158
Gorilla	GGAVSTGLSRHSCAARPSAGVGGSSSLGSGSRKRPLLAAPLNCGLINSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK	158
Pig	-GAVSAGLSRLSCAARPSAGVGGSSSLGSGSRKRPLLAAPLNCGLINSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK	157
Rat	GGAVSAGLSRLSCAARPSAGVGGSSSLGSGSRKRPLLAAPLNCGLINSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK	160
Mouse	GGAVSAGQSRSLSCAARPSAGVGGSSSLGSGSRKRPLLVPLNCGLINSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK	160
Human	CIHQSLLEDNNRCPKCNVVDNIDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSTNGHRWQIFQDWLGTQDQNLDLANV	238
Gorilla	CIHQSLLEDNNRCPKCNVVDNIDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSTNGHRWQIFQDWLGTQDQNLDLANV	238
Pig	CIHQSLLEDNNRCPKCNVVDNIDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSTNGHRWQIFQDQLLGTQDQNLDLANV	237
Rat	CIHQSLLEDNNRCPKCNVVDNIDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSTNGHRWQIFQDQLLGTQDQNLDLANV	240
Mouse	CIHQSLLEDNNRCPKCNVVDNIDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSTNGHRWQIFQDQLLGTQDQNLDLANV	240
Human	NLMLELLVQKKKQLEAESHAHQILMEFLKVARRNKREQLQIQKELSVLEEDIKRVEEMSGLYSPVSEDSTVPQFEAP	318
Gorilla	NLMLELLVQKKKQLEAESHAHQILMEFLKVARRNKREQLQIQKELSVLEEDIKRVEEMSGLYSPVSEDSTVPQFEAP	318
Pig	NLMLELLVQKKKQLEAESHAHQILMEFLKVARRNKREQLQIQKELSVLEEDIKRVEEMSGLYSPVSEDSTVPQFEAP	317
Rat	NLMLELLVQKKKQLEAESHAHQILMEFLKVARRNKREQLQIQKELSVLEEDIKRVEEMSGLYSPVSEDSTVPQFEAP	320
Mouse	NLMLELLVQKKKQLEAESHAHQILMEFLKVARRNKREQLQIQKELSVLEEDIKRVEEMSGLYSPVSEDSTVPQFEAP	320
Human	SPSHSSIIDSTEYSQPPGFGSGSQTKKQPWYNSTLASRRKRLTAHFEDLEQCYFSTRMSRISDDSRASQLDEFQCELSK	398
Gorilla	SPSHSSIIDSTEYSQPPGFGSGSQTKKQPWYNSTLASRRKRLTAHFEDLEQCYFSTRMSRISDDSRASQLDEFQCELSK	398
Pig	SPSHSSIIDSTEYIQQPPGFGSGSQTKKQPWYNSTLASRRKRLTAHFEDLEQCYFSTRMSRISDDSRASQLDEFQCELSK	397
Rat	SPSHSSIIDSTEYSQPPGFGSGSQTKKQPWYNSTLASRRKRLTAHFEDLEQCYFSTRMSRISDDSRASQLDEFQCELSK	400
Mouse	SPSHSSIIDSTEYSQPPGFGSGSQTKKQPWYNSTLASRRKRLTAHFEDLEQCYFSTRMSRISDDSRASQLDEFQCELSK	400
Human	FTRYNSVRPLATLSYASDLYNGSSIVSIEFDRDCDYFAIAGVTKKIKVVEYDVTIQDAVDIHYPENEMTCNSKISCISW	378
Gorilla	FTRYNSVRPLATLSYASDLYNGSSIVSIEFDRDCDYFAIAGVTKKIKVVEYDVTIQDAVDIHYPENEMTCNSKISCISW	378
Pig	FTRYNSVRPLATLSYASDLYNGSSIVSIEFDRDCDYFAIAGVTKKIKVVEYDVTIQDAVDIHYPENEMTCNSKISCISW	377
Rat	FTRYNSVRPLATLSYASDLYNGSSIVSIEFDRDCDYFAIAGVTKKIKVVEYDVTIQDAVDIHYPENEMTCNSKISCISW	480
Mouse	FTRYNSVRPLATLSYASDLYNGSSIVSIEFDRDCDYFAIAGVTKKIKVVEYDVTIQDAVDIHYPENEMTCNSKISCISW	480
Human	SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV	558
Gorilla	SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV	558
Pig	SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV	557
Rat	SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV	560
Mouse	SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV	560
Human	CCVKFSPSSRYHLAFGCADHCVHYDLRNTKQPIMVFKGHRKAVSYAKFVSGEEIVSASTDSQLKLWNVGKPYCLRSFKG	638
Gorilla	CCVKFSPSSRYHLAFGCADHCVHYDLRNTKQPIMVFKGHRKAVSYAKFVSGEEIVSASTDSQLKLWNVGKPYCLRSFKG	638
Pig	CCVKFSPSSRYHLAFGCADHCVHYDLRNTKQPIMVFKGHRKAVSYAKFVSGEEIVSASTDSQLKLWNVGKPYCLRSFKG	637
Rat	CCVKFSPSSRYHLAFGCADHCVHYDLRNTKQPIMVFKGHRKAVSYAKFVSGEEIVSASTDSQLKLWNVGKPYCLRSFKG	640
Mouse	CCVKFSPSSRYHLAFGCADHCVHYDLRNTKQPIMVFKGHRKAVSYAKFVSGEEIVSASTDSQLKLWNVGKPYCLRSFKG	640
Human	HINEKNFVGLASNGDYIACGSENNSLYLYYKGLSKTLLTFKFDTVKSVLDKDRKEDDTNEFVSAVCWRALPDGESNVLIA	718
Gorilla	HINEKNFVGLASNGDYIACGSENNSLYLYYKGLSKTLLTFKFDTVKSVLDKDRKEDDTNEFVSAVCWRALPDGESNVLIA	718
Pig	HINEKNFVGLASNGDYIACGSENNSLYLYYKGLSKTLLTFKFDTVKSVLDKDRKEDDTNEFVSAVCWRALPDGESNVLIA	717
Rat	HINEKNFVGLASNGDYIACGSENNSLYLYYKGLSKTLLTFKFDTVKSVLDKDRKEDDTNEFVSAVCWRALSDGESNVLIA	720
Mouse	HINEKNFVGLASNGDYIACGSENNSLYLYYKGLSKTLLTFKFDTVKSVLDKDRKEDDTNEFVSAVCWRALSDGESNVLIA	720
Human	ANSQGTIKVLELV	731
Gorilla	ANSQGTIKVLELV	731
Pig	ANSQGTIKVLELV	730
Rat	ANSQGTIKVLELV	733
Mouse	ANSQGTIKVLELV	733

Supplementary Figure S5. Alignment of COP1 protein sequence across species. Highlighted in Yellow are the D/E1 and D/E2 motifs.