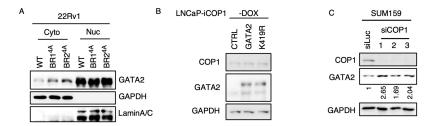
## **Supplementary Materials**

Human GATA2 (NP 116027, 480aa) vs. A. thaliana GATA2 (049741, 264aa) NP\_116027 MEVAPEQPRWMAHPAVLNAQHPDSHHPGLAHNYMEPAQLLPPDEVDVFFNHLDSQGNPYY 60 ------7 049741 NP\_116027 ANPAHARARVSYSPAHARLTGGQMCRPHLLHSPGLPWLDGGKAALSAAAAHHHNPWTVSP 120 -----LD 19 NP\_116027 FSKTPLHPSAAGGPGGPLSVYPGAGGGSGGSGSSVASLTPTAAHSGSHLFGFPPTPPKE 180 049741 FSNED------IFSAS--SSGGSTAATSS-----SSFPPPQNPS 50 : .: .\*\*\* : : : NP\_116027 --VSPDPSTTGAASPASSSAGGSAARGEDKDGVKYQVSLTE-SMKMESGSPLRPGLATMG 237 049741 FHHHHLPSSADHHS----FLHDICVPSDDAAHLEWLSQFVDDSFADFPANPLGGTMTSVK 106 \*\*::. \* . . \* \* NP\_116027 T-----QPATHHPIPTYPSYVPAAAHD----YSSGLFHP----GGFLGGPASSF 278 049741 TETSFPGKPRSKRSRAPAPFAGTWSPMPLESEHQQLHSAAKFKPKKEQSGGGGGGG-R 164 . .: \* \* .: \* .. :\*:. \*:\* NP\_116027 TPKQRSKARSCSEGRECVNCGATATPLWRRDGTG-HYLCNACGLYHKMNGQN---RPLIK 334 049741 HQSSSSETTEGGGMRRCTHCASEKTPQWRTGPLGPKTLCNACGVRFKSGRLVPEYRPASS 224 .. \*:: . . \*.\*.: \*\* \*\* . \* : \*\*\*\*\* . \* . \*. \*: \* \* \*: . \* \*: . \* . . \* NP\_116027 PTPTPIHPSSSLSFGHPHPSSMVTAMG 480 049741 ----- 264

**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)	
NP_071902 P43254	MSGSRQAGSGSAGTSPGSSAASSVTSASSSLSSSPSPPSVAVSAAALVSGGVAQAAGSGGMEEIS:*	
NP_071902 P43254	LGGPVRPVLV-APAVSGSGGGAVSTGLSRHSCAARPSAGVGGSSSSLGSGSRKRPLLAPL -TDPVVPAVKPDPRTSSVGEGANRHENDDGGSG** *.: * .*. * .*. * .*. *	
NP_071902 P43254	CNGLINSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYKCIHQSLEDNNRCPKCNYVVDNGSEIGAPDLDKDLLCPICMQIIKDAFLTACGHSFCYMCIITHLRNKSDCPCCSQHLTN * . * .:*::****:::*::* ******* ** * .::. ** *. : *	
NP_071902 P43254	IDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSSTNGHRWQIFQDWLGTDQDNLDLANVN-NQLYPNFLLDKLLKKTSARHVSKTASPLDQFREALQR-GCDVSIKEVD::*****::*: * . * * . : *:: *::::::::	
NP_071902 P43254	LMLELLVQKKKQLEAESHAAQLQILMEFLKVARRNKREQLEQIQKELSVLEEDIKRVEEM NLLTLLAERKRKMEQEEAERNMQILLDFLHCLRKQKVDELNEVQTDLQYIKEDINAVERH :* **.::*::* *. ::***::**: *::**::**: **.	
NP_071902 P43254	S-GLYSPVSEDSTVPQFEAPSPSHSSIIDSTEYS-QPPGFSGSSQ RIDLYRARDRYSVKLRMLGDDPSTRNAWPHEKNQIGFNSNSLSIRGGNFVGNYQNKKVEG .** * * * * * * *	
NP_071902 P43254	TKKQPWY-NSTLASRRKRLTAHFEDLEQCYFSTRMSRISD KAQGSSHGLPKKDALSGSDSQSLNQSTVSMARKKRIHAQFNDLQECYLQKRRQLADQPNS :* ::::::::::::::::::::::::::::::::::	381 322
NP_071902 P43254	DSRTASQLDEFQECLSKFTRYNSVRPLATLSYASDLYNGSSIVSSIEFDR KQENDKSVVRREGYSNGLADFQSVLTTFTRYSRLRVIAEIR-HGDIFHSANIVSSIEFDR . :. * :**. *:.**** : * : * : * : ********	431 381
NP_071902 P43254	DCD YFAIAGVTKKIKVYEYDTVIQDAVDIHYPENEMTCNSKISCISWSSYHKNLLASSDY DDELFATAGVSRCIKVFDFSSVVNEPADMQCPIVEMSTRSKLSCLSWNKHEKNHIASSDY * : ** ***: ***::: * **: * **: ***: **	
NP_071902 P43254	EGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVAS EGIVTVWDVTTRQSLMEYEEHEKRAWSVDFSRTEPSMLVSGSDDCKVKVWCTRQEASVIN ** * :** * * * :**********************	
NP_071902 P43254	IEAKANVCCVKFSPSSRYHLAFGCADHCVHYYDLRNTKQPIMVFKGHRKAVSYAKFVSGE IDMKANICCVKYNPGSSNYIAVGSADHHIHYYDLRNISQPLHVFSGHKKAVSYVKFLSNN *: ***:***:.*.* ::*.*.**:**************	
NP_071902 P43254	EIVSASTDSQLKLWNVGKPYCLRSFKGHINEKNFVGLASNGDYIACGSENNSLYLYYKGL ELASASTDSTLRLWDVKDNLPVRTFRGHTNEKNFVGLTVNSEYLACGSETNEVYVYHKEI *:.***** *:**:* : :*:*:**:*:*:*:*:*:*:*:	
NP_071902 P43254	SKTLLTFKFDTVKSVLDKDRKEDDTNEFVSAVCWRALPDGESNVLIAANSQGTIKVLELV TRPVTSHRFGSPDMDDAEEEAGSYFISAVCWKSDSPTMLTANSQGTIKVLVLA ::::::::::::::::::::::::::::::::::	
NP_071902 P43254	- 731 <b>A</b> 675	

**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<sup>4A</sup> *vs*. BR2<sup>4A</sup>-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

```
MEVAPEQPRWMAHPAVLNAQHPDSHHPGLAHNYMEPAQLLPPDEVDVFFNHLDSQGNPYYANPAHARARVSYSPAHARLT 80
Gorilla MEVAPEQPRWMAHPAVLNAQHPDSHHPGLAHNYMEPAQLLPPDEVDVFFNHLDSQGNPYYANPAHARARVSYSPAHARLT 80
Piq
        MEVAPEOPRWMAHPAVLNAOHPDSHHPGLAHNYMEPAOLLPPDEVDVFFNHLDSOGNPYYANPAHARARVSYSPAHARLT 80
Rat
        MEVAPEQPRWMAHPAVLNAQHPDSHHPGLAHNYMEPAQLLPPDEVDVFFNHLDSQGNPYYANPAHARARVSYSPAHARLT 80
        MEVAPEQPRWMAHPAVLNAQHPDSHHPGLAHNYMEPAQLLPPDEVDVFFNHLDSQGNPYYANPAHARARVSYSPAHARLT 80
Mouse
Human
        GGQMCRPHLLHSPGLPWLDGGKAALSAAAAHHNPWTVSPFSKTPLHPSAAGGPGGPLSVYPGAGGGSGGGSGSSVASLT 160
Gorilla GGOMCRPHLLHSPGLPWLDGGKAALSAAAAHHHNPWTVSPFSKTPLHPSAAGGPGGPLSVYPGAGGGSGGGSGSSVASLT 160
Pig
        GGQMCRPHLLHSPGLPWLDGGKAALSAAAAHHNPWTVNPFSKTPLHPSAAGGPGGPLSVYPGAGGGGGGGGSGSSVASLT 160
Rat
        GGQMCRPHLLHSPGLPWLDGGKAALSAAAAHHHSPWTVSPFSKTPLHPSAAGAPGGPLSVYPGAAGGSGGGSGSSVASLT 160
        GGQMCRPHLLHSPGLPWLDGGKAALSAAAAHHHSPWTVSPFSKTPLHPSAAGAPGGPLSVYPGAAGGSGGGSGSSVASLT 160
Mouse
        PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASSSAGGSAARGEDKDGVKYQVSLTESMKMESGSPLRPGLATMGTQP 240
Human
Gorilla PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASSSAGGSAARGEDKDGVKYQVSLTESMKMESGSPLRPGLAAMGTQP 240
Pig
        PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASSSAGGSAARGEDKDGVKYQVSLTESMKMESGSPLRPGLAAMGTQP 240
Rat
        PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASPSAGGSVARGEDKDGVKYQVSLSESMKMEGGSPLRPGLAPMGTQP 240
        PTAAHSGSHLFGFPPTPPKEVSPDPSTTGAASPASSSAGGSVARGEDKDGVKYQVSLSESMKMEGGSPLRPGLATMGTQP 240
Mouse
        ATHHPIPTYPSYVPAAAHDYSSGLFHPGGFLGGPASSFTPKQRSKARSCSEGRECVNCGATATPLWRRDGTGHYLCNACG 320
Human
Gorilla ATHHPIPTYPSYVPAAAHDYSSGLFHPGGFLGGPASSFTPKQRSKARSCSEGRECVNCGATATPLWRRDGTGHYLCNACG 320
        ATHHPIPTYPSYVPAAAHDYSSGLFHPGGFLGGPASSFTP<mark>KQRSKAR</mark>SCSEGRECVNCGATATPLWRRDGTGHYLCNACG 320
Pig
Rat
        ATHHPIPTYPSYVPASAHEYGSGLFHPGGFLGGPASSFTPKQRSKARSCSEGRECVNCGATATPLWRRDGTGHYLCNACG 320
Mouse
       ATHHPIPTYPSYVPAAAHDYGSSLFHPGGFLGGPASSFTPKQRSKARSCSEGRECVNCGATATPLWRRDGTGHYLCNACG 320
       LYHKMNGONRPLIKPKRRLSAARRAGTCCANCOTTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIOTRNRKM 400
Human
Gorilla LYHKMNGQNRPLI<mark>KPKRR</mark>LSAARRAGTCCANCQTTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIQTRNRKM 400
Pig
        LYHKMNGQNRPLIKPKRRLSAARRAGTCCANCQTTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIQTRNRKM 400
        LYHKMNGQNRPLIKPKRRLSAARRAGTCCANCQTTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIQTRNRKM 400
Rat
        LYHKMNGQNRPLIKPKRRLSAARRAGTCCANCQTTTTTLWRRNANGDPVCNACGLYYKLHNVNRPLTMKKEGIQTRNRKM 400
Mouse
       SNKSKKSKKGAECFEELSKCMOEKSSPFSAAALAGHMAPVGHLPPFSHSGHILPTPTPIHPSSSLSFGHPHPSSMVTAMG 480
Human
Gorilla SNKSKKSKKGAECFEELSKCMOEKSSPFSAAALAGHMAPVGHLPPFSHSGHILPTPTPIHPSSSLSFGHPHPSSMVTAMG 480
Pia
        SNKSKKNKKGAECFEELSKCMOEKASPFSAAALAGHMAPVGHLPPFSHSGHILPTPTPIHPSSSLSFGHPHPSSMVTAMG 480
Rat
        SSKSKKSKKGAECFEELSKCMQEKSSPFSAAALAGHMAPVGHLPPFSHSGHILPTPTPIHPSSSLSFGHPHPSSMVTAMG 480
        SSKSKKSKKGAECFEELSKCMQEKSPPFSAAALAGHMAPVGHLPPFSHSGHILPTPTPIHPSSSLSFGHPHPSSMVTAMG 480
Mouse
```

## 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

```
MSGSROAGSGSAGTSPGSSAASSVTSASSSLSSSPSPPSVAVSAAALVSGGVAOAAGSGGLGGPVRPVLVAPAVSGS--G 78
Gorilla MSGSRQAGSGSAGTSPGSSAASSVTSASSSLSSSPSPPSVAVSAAALVSGGVAQAAGSGGLGGPVRPVLVAPAVSGS--G 78
        MSGSROVGSGSAGTSPGSSAASSVTSASSSLSSSPSPPSLAASAAALGSGGAAOAAGSGGLGGPVRPVLVAAAVSGS--A
Pig
Rat
        MSGSRQAGSGSAGTSPGSSAASSVTSASSSLSSSPSPPSVAASAATLVSGGVAPAAGSGGLGGPGRPVLVAAAVSGSASA 80
Mouse
        MSGSRQAGSGSAGTSPGSSAASSVTSASSSLSSSPSPPSVAASAATLVSGGVAPAAGSGGLGGPGRPVLVAAAVSGSASA 80
        GGAVSTGLSRHSCAARPSAGVGGSSSSLGSGSRKRPLLAPLCNGLINSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK 158
Gorilla GGAVSTGLSRHSCAARPSAGVGGSSSSLGSGSRKRPLLAPLCNGLINSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK 158
Pig
        -GAVSAGLSRLSCAARPSAGVGGSSSSLGSGSRKRPLLAPLCNGLINSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK 157
        GGAVSAGLSRLSCAARPSAGVGGSSSSLGSSSRKRPLIAPLCNGLLNSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK 160
Rat
        GGAVSAGOSRLSCAARPSAGVGGSSSSLGSSSRKRPLLVPLCNGLLNSYEDKSNDFVCPICFDMIEEAYMTKCGHSFCYK 160
Mouse
        CIHQSLEDNNRCPKCNYVVDNIDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSSTNGHRWQIFQDWLGTDQDNLDLANV 238
Human
       CIHQSLEDNNRCPKCNYVVDNVDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSSTNGHRWQIFQDWLGTDQDNLDLANV 238
Gorilla
Pig
        CIHQSLEDNNRCPKCNYVVDNIDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSSTNGHRWQIFQDLLGTDQDNLDLANV 237
Rat
        CIHQSLEDNNRCPKCNYVVDNIDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSSTNGHRWQIFQDLLGTDQDNLDLANV 240
        CIHQSLEDNNRCPKCNYVVDNIDHLYPNFLVNELILKQKQRFEEKRFKLDHSVSSTNGHRWQIFQDLLGTDQDNLDLANV 240
Mouse
        NLMLELLVQKKKQLEAESHAAQLQILMEFLKVARRNKREQLEQIQKELSVLEEDIKRVEEMSGLYSPVSEDSTVPQFEAP 318
Human
Gorilla NLMLELLVOKKKOLEAESHAAOLOILMEFLKVARRNKREOLEOIOKELSVLEEDIKRVEEMSGLYSPVSEDSTVPOFEAP 318
        NLMLELLVOKKKOLEAESHAAOLOILMEFLKVARRNKREOLEOIOKELSVLEEDIKRVEEMSGLYSPVSEDSTVPOFEAP
Piq
Rat
        NLMLELI.VOKKKOLEAESHAAOLOILMEFLKVARRNKREOLEOTOKELSVLEEDIKRVEEMSGLYSPVSEDSTVPOFEAP 320
        NLMLELLVQKKKQLEAESHAAQLQILMEFLKVARRNKREQLEQIQKELSVLEEDIKRVEEMSGLYSPVSEDSTVPQFEAP 320
Mouse
Human
        SPSHSSIIDSTEYSQPPGFSGSSQTKKQPWYNSTLASRRKRLTAHFEDLEQCYFSTRMSRISDDSRTASQLDEFQECLSK 398
       SPSHSSIIDSTEYSQPPGFSGSSQTKKQPWYNSTLASRRKRLTAHFEDLEQCYFSTRMSRISDDSRTASQLDEFQECLSK 398
Pig
        SPSHSSIIDSTEYIÖPPGFSGSSÖTKKÖPWYNSTLASRRKRLTAHFEDLEÖCYFSTRMSRISDDSRTASÖLDEFÖECLSK 397
        SPSHSSIIDSTEYSQPPGFSGTSQTKKQPWYNSTLASRRKRLTAHFEDLEQCYFSTRMSRISDDSRTASQLDEFQECLSK 400
Rat
Mouse
        SPSHSSIIDSTEYSQPPGFSGTSQTKKQPWYNSTLASRRKRLTAHFEDLEQCYFSTRMSRISDDSRTASQLDEFQECLSK 400
        FTRYNSVRPLATLSYASDLYNGSSIVSSIEFDRDCDYFAIAGVTKKIKVYEYDTVIODAVDIHYPENEMTCNSKISCISW 378
Human
Gorilla FTRYNSVRPLATLSYASDLYNGSSIVSSIEFDRDCDYFAIAGVTKKIKVYEYDTVIODAVDIHYPENEMTCNSKISCISW 378
        FTRYNSVRPLATLSYASDLYNGSSIVSSIEFDRDCDYFAIAGVTKKIKYYEYGTVIQDAVDIHYPENEMTCNSKISCISW 377
Piq
        FTRYNSVRPLATLSYASDLYNGSSIVSSI<mark>EFDRDCD</mark>YFAIAGVTKKIKVYEYGTVIQDAVDIHYPENEMTCNSKISCISW 480
Rat
        FTRYNSVRPLATLSYASDLYNGSSIVSSI<mark>EFDRDCD</mark>YFAIAGVTKKIKVYEYGTVIQDAVDIHYPENEMTCNSKISCISW 480
Mouse
        SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV 558
Human
Gorilla
       SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV 558
Piq
        SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV 557
Rat
        SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV 560
Mouse
        SSYHKNLLASSDYEGTVILWDGFTGQRSKVYQEHEKRCWSVDFNLMDPKLLASGSDDAKVKLWSTNLDNSVASIEAKANV 560
        CCVKFSPSSRYHLAFGCADHCVHYYDLRNTKOPIMVFKGHRKAVSYAKFVSGEETVSASTDSOLKLWNVGKPYCLRSFKG 638
Human
Gorilla
       CCVKFSPSSRYHLAFGCADHCVHYYDLRNTKQPIMVFKGHRKAVSYAKFVSGEEIVSASTDSQLKLWNVGKPYCLRSFKG 638
        CCVKFSPSSRYHLAFGCADHCVHYYDLRNTKQPIMVFKGHRKAVSYAKFVSGEEIVSASTDSQLKLWNVGKPYCLRSFKG 637
Pia
Rat
        CCVKFSPSSRYHLAFGCADHCVHYYDLRNTKQPIMVFKGHRKAVSYAKFVSGEEIVSASTDSQLKLWNVGKPYCLRSFKG 640
        CCVKFSPSSRYHLAFGCADHCVHYYDLRNTKQPIMVFKGHRKAVSYAKFVSGEEIVSASTDSQLKLWNVGKPYCLRSFKG 640
Mouse
Human
        HINEKNFVGLASNGDYIACGSENNSLYLYYKGLSKTLLTFKFDTVKSVLDKDRKEDDTNEFVSAVCWRALPDGESNVLIA 718
       HINEKNFVGLASNGDYIACGSENNSLYLYYKGLSKTLLTFKFDTVKSVLDKDRKEDDTNEFVSAVCWRALPDGESNVLIA 718
Gorilla
        HINEKNFVGLASNGDYIACGSENNSLYLYYKGLSKTLLTFKFDTVKSVL<mark>DKDRKEDD</mark>TNEFVSAVCWRALPDGESNVLIA 717
Piq
        HINEKNFVGLASNGDYIACGSENNSLYLYYKGLSKTLLTFKFDTVKSVLDKDRKEDDTNEFVSAVCWRALSDGESNVLIA 720
Rat
        HINEKNEVGLASNGDYTACGSENNSLYLYYKGLSKTLLTEKEDTVKSVLDKDRKEDDTNEEVSAVCWRALSDGESNVLTA 720
Mouse
Human
        ANSQGTIKVLELV 731
Gorilla
       ANSQGTIKVLELV 731
        ANSQGTIKVLELV 730
Pig
        ANSQGTIKVLELV 733
Rat
Mouse
        ANSOGTIKVLELV 733
```

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