

# Appendix

## **Endothelial MT1-MMP targeting limits intussusceptive angiogenesis and colitis via TSP1-nitric oxide axis**

Sergio Esteban, Cristina Clemente, Agnieszka Koziol, Pilar Gonzalo, Cristina Rius, Fernando Martínez, Pablo M. Linares, María Chaparro, Ana Urzainqui, Vicente Andrés, Motoharu Seiki, Javier P. Gisbert, and Alicia G. Arroyo

### **Appendix table of contents**

**Appendix Figure S1.** MT1-MMP is expressed in endothelial cells of the mucosal plexus in the inflamed colon.

**Appendix Figure S2.** MT1-MMP deletion in endothelial cells reduces vascular leakage but does not influence myeloid cell infiltrate during early colitis.

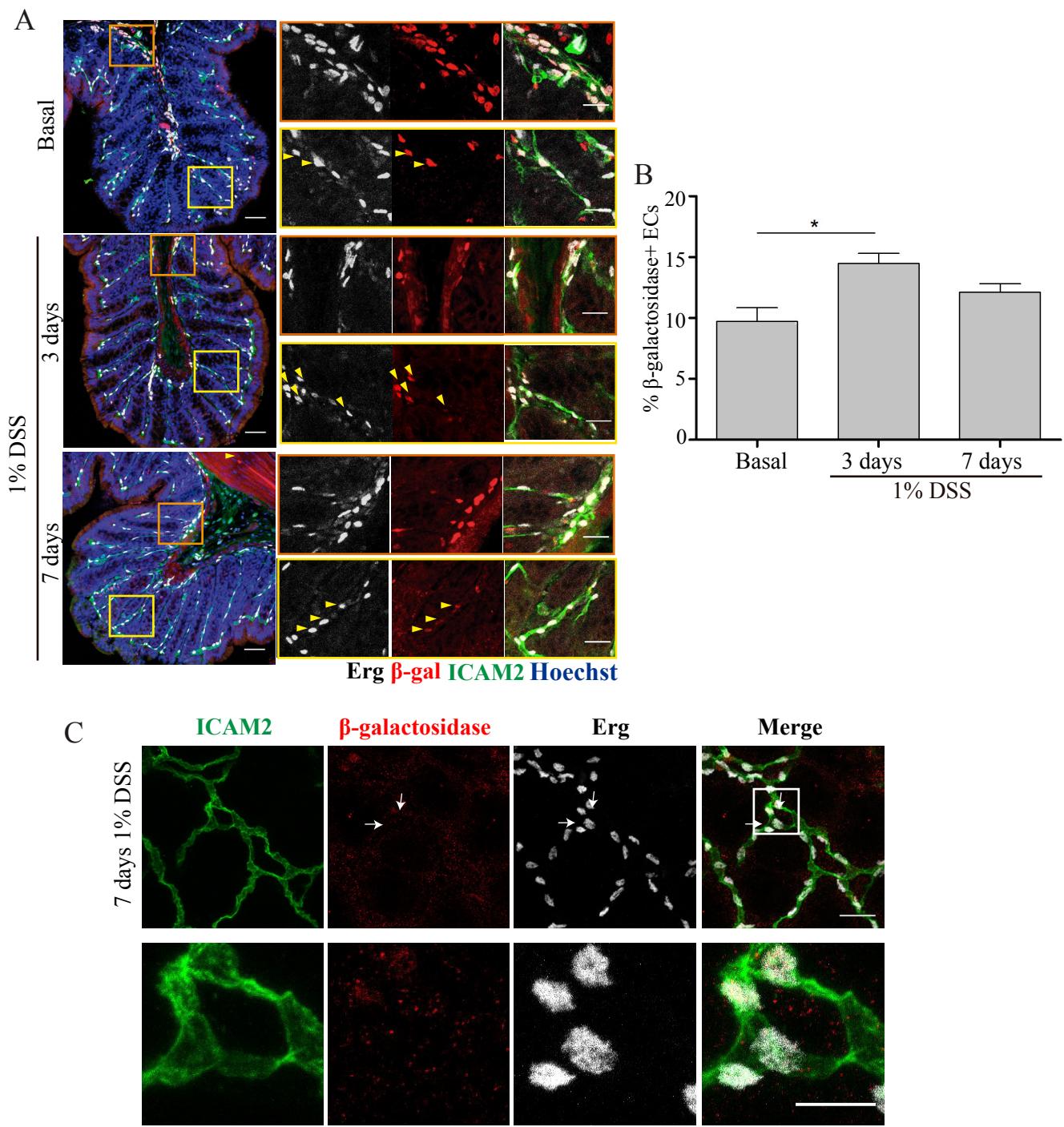
**Appendix Figure S3.** Mouse aortic endothelial cells from MT1<sup>iΔEC</sup> mice produce lower amounts of nitric oxide.

**Appendix Figure S4.** Effects of MT1-MMP inhibition and of TSP1 on nitric oxide production by human endothelial cells.

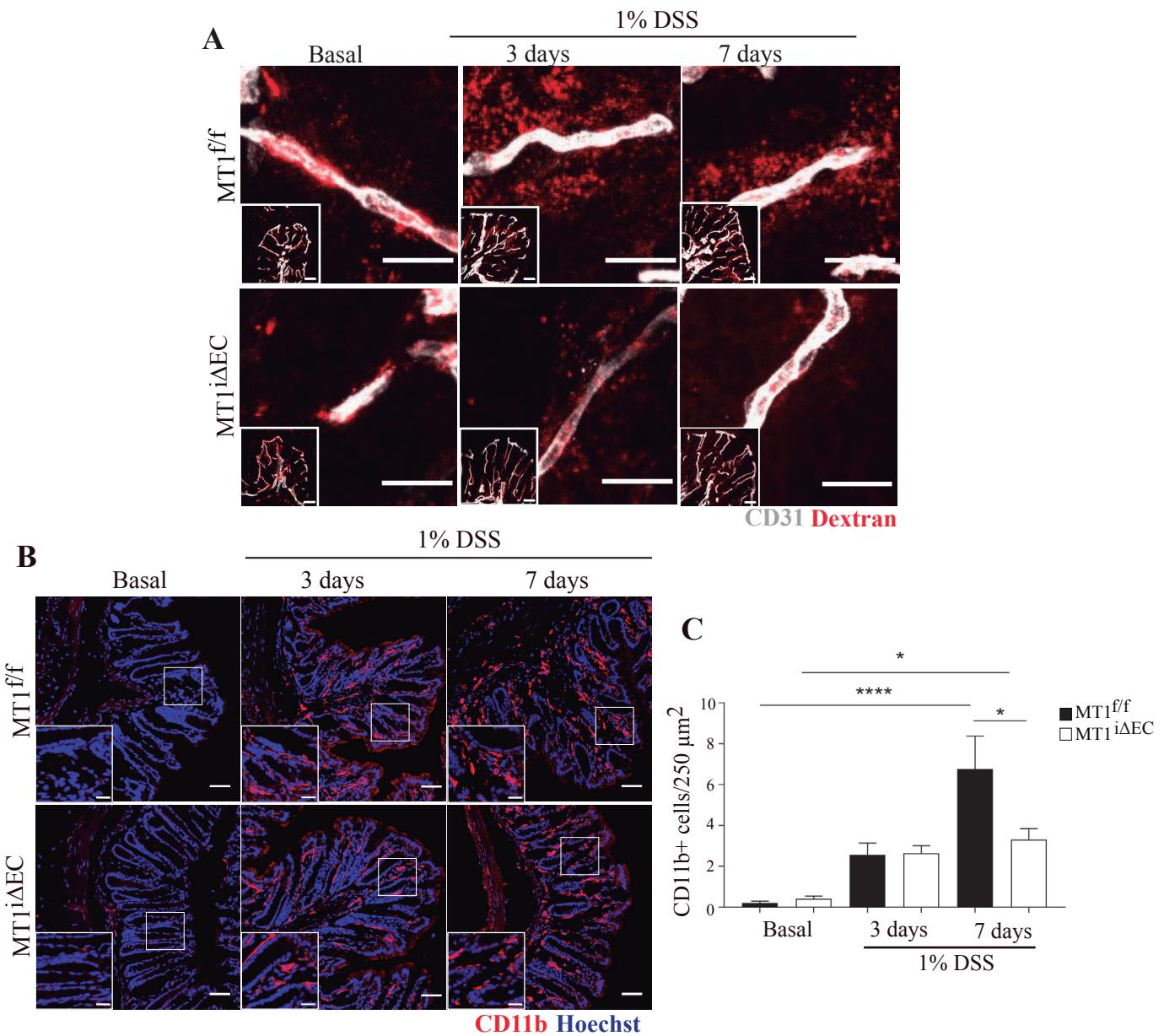
**Table S1.** List of potential cleavage sites for MT1-MMP (MMP14) in thrombospondin-1 (TSP1).

**Table S2.** List of qPCR primers used for mouse (m) and human (h) genes in this study.

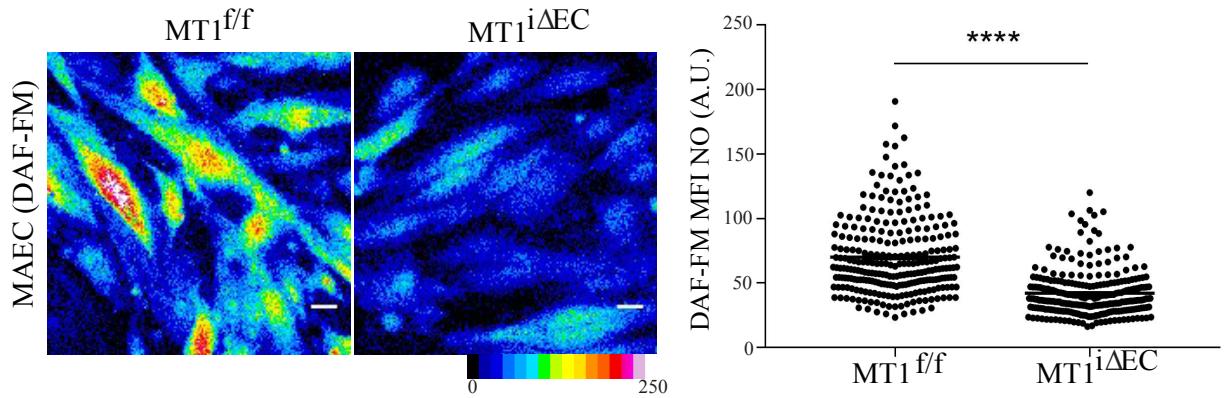
**Table S3.** List of exact p-values for graphs in Main Figures and Expanded View Figures.



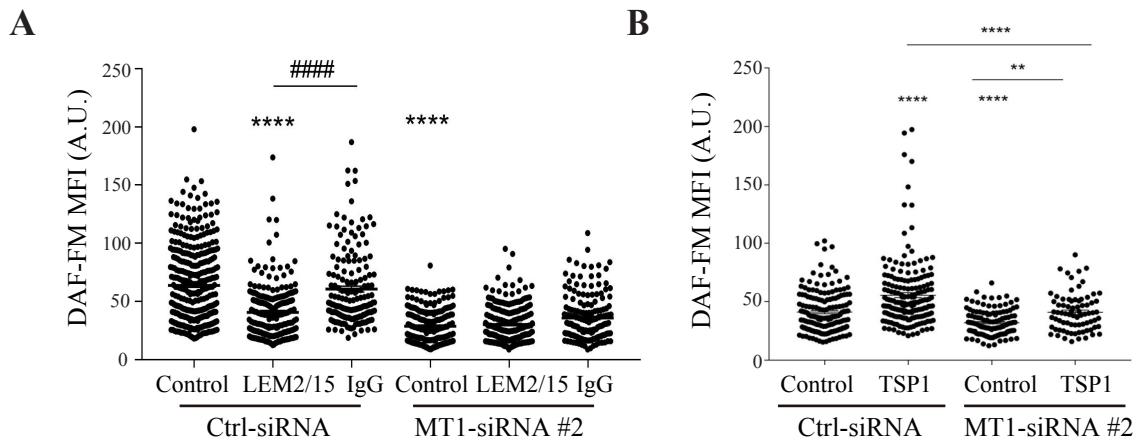
**Appendix Figure S1. MT1-MMP is expressed in endothelial cells of the mucosal plexus in the inflamed colon.** (A) Representative maximum intensity projection images of colon sections stained for ICAM2 (green),  $\beta$ -galactosidase (red), Erg (gray), and Hoechst (blue, nuclei) from MT1 $^{lacZ/+}$  reporter mice left untreated (basal) or treated for 3 or 7 days with 1% DSS. Magnified regions including mucosal arterioles (orange box) or capillaries (yellow box) are shown to the right. Arrowheads indicate  $\beta$ -gal-positive ECs in the capillaries. Scale bar, 50  $\mu$ m (left panels) and 25  $\mu$ m (magnified views). (B) Bar graph shows the percentage of endothelial cells (Erg) positive for  $\beta$ -galactosidase; n=3-5 mice per condition. Data are shown as mean  $\pm$  SEM and were tested by Student t-test; \*p<0.05. (C) Representative maximum intensity projection images of staining for ICAM2 (green),  $\beta$ -galactosidase (red), and Erg (gray) in whole-mount distal colon mucosal plexus from MT1 $^{lacZ/+}$  reporter mice treated for 7 days with 1% DSS. Scale bar, 20  $\mu$ m. White arrows indicate patches of  $\beta$ -galactosidase-positive endothelial cells.



**Appendix Figure S2. MT1-MMP deletion in endothelial cells reduces vascular leakage but does not influence myeloid cell infiltrate during early colitis.** (A) Representative maximum intensity projection images of whole-mount distal colons stained for CD31 (gray) and 70 KD Dextran (red) in MT1<sup>f/f</sup> and MT1<sup>iΔEC</sup> mice left untreated (basal) or treated with 1% DSS for 3 or 7 days. Scale bar, 50  $\mu\text{m}$  and 20  $\mu\text{m}$  in the magnified views. (B) Representative maximum intensity projection images of staining for CD11b (red) and Hoechst (blue, nuclei) in colon sections from MT1<sup>f/f</sup> and MT1<sup>iΔEC</sup> mice left untreated (basal) or treated with 1% DSS for 3 or 7 days. Magnified views are shown in the insets. Scale bar, 50  $\mu\text{m}$  and 25  $\mu\text{m}$  in the magnified. (C) Quantification of CD11b+ cells in sections as in A; n=4-5 mice per genotype and time point. Data are shown as mean  $\pm$  SEM and were tested by one-way ANOVA with Benjamini and Hochberg post-test; \*p<0.05, \*\*\*\*p<0.0001.



**Appendix Figure S3. Mouse aortic endothelial cells from  $MT1^{i\Delta EC}$  mice produce lower amounts of nitric oxide.** Representative images are shown of mouse aortic endothelial cells from  $MT1^{f/f}$  and  $MT1^{i\Delta EC}$  mice loaded with the DAF-FM nitric oxide probe (pseudocolor representation of green channel intensity); scale bar, 25  $\mu$ m. The graph shows DAF-FM mean fluorescence intensity (MFI) in n= 263-266 cells analyzed per genotype in 3 independent experiments. Data are shown as individual cell values and the means and were analyzed by Mann-Whitney test; \*\*\*p<0.0001



**Appendix Figure S4. Effects of MT1-MMP inhibition and of TSP1 on nitric oxide production by human endothelial cells.** (A) DAF-FM mean fluorescence intensity (MFI) in HUVEC expressing control or MT1-MMP siRNA and left untreated (Control) or treated with the inhibitory anti-MT1-MMP antibody LEM-2/15 (10 µg/ml for 24 h) or its corresponding IgG1 isotype control (IgG); n=128-360 cells analyzed per condition in 3 independent experiments. (B) DAF-FM mean fluorescence intensity (MFI) values in HUVEC expressing control or MT1-MMP siRNA cultured on plates coated with 1% gelatin or with 1% gelatin plus 200 ng/ml TSP1; n= 78-184 cells in 3 independent experiments. Single cell values and the means are shown. Data were tested by Mann-Whitney test \*\*p<0.01 ##### or \*\*\*\*p<0.0001. \* mark comparison with Ctrl-siRNA; # mark comparison with isotype IgG.

| P1 position | Residues    | PWM ^ Score | Sec Struct pred | Disorder       | Transmemb domain | N-mass    | C-mass    |
|-------------|-------------|-------------|-----------------|----------------|------------------|-----------|-----------|
| 6           | GLAWG-LGVLF | 3.71        | ____HHHEEE      | .....          | OOOOOO<br>OOOO   | 633.28    | 128683.54 |
| 11          | LGVLF-LMHVC | 5.27        | HHEEEEEEE_      | .....          | OOOOOO<br>OOOO   | 1162.60   | 128154.22 |
| 93          | LLLAS-LRQMK | 6.64        | HHHHHHHHHHH     | .....          | OOOOOO<br>OOOO   | 9933.05   | 119383.77 |
| 193         | RDLAS-IARLR | 1.17        | HHHHHHHHHHH     | .....          | OOOOOO<br>OOOO   | 21025.78  | 108291.04 |
| 225         | TTPED-ILRNK | 3.00        | ____EE__        | .....          | OOOOOO<br>OOOO   | 24538.63  | 104778.19 |
| 253         | GSSPA-IRTNY | 0.54        | ____EEE_E       | .....          | OOOOOO<br>OOOO   | 27366.04  | 101950.78 |
| 286         | LELRG-LRTIV | 7.90        | HHHH__EEE       | .....          | OOOOOO<br>OOOO   | 31010.84  | 98305.98  |
| 440         | GGWSH-WSPWS | 1.33        | _____           | .....          | OOOOOO<br>OOOO   | 48377.51  | 80939.31  |
| 467         | NSPSP-QMNGK | 1.11        | _____           | *****<br>***** | OOOOOO<br>OOOO   | 51266.82  | 78050.00  |
| 578         | ACPPG-YSGNG | 0.89        | _____           | .....          | OOOOOO<br>OOOO   | 62958.91  | 66357.91  |
| 668         | NYLGH-YSDPM | 1.56        | _____           | .....          | OOOOOO<br>OOOO   | 72791.09  | 56525.73  |
| 1024        | DDYAG-FVFGY | 0.75        | __EEEEEE        | .....          | OOOOOO<br>OOOO   | 112343.48 | 16973.34  |
| 1060        | QGYSG-LSVKV | 4.42        | __EEEEEE        | .....          | OOOOOO<br>OOOO   | 116595.46 | 12721.36  |
| 1075        | GPGEH-LRNAL | 1.85        | __EEEEEE        | .....          | OOOOOO<br>OOOO   | 118101.23 | 11215.59  |
| 1092        | GQVRT-LWHDP | 1.76        | _EEEEEE__       | .....          | OOOOOO<br>OOOO   | 120003.22 | 9313.60   |
| 1099        | HDPRH-IGWKD | 5.66        | _____H          | .....          | OOOOOO<br>OOOO   | 120944.68 | 8372.14   |

**Appendix Table S1. List of potential cleavage sites for MT1-MMP (MMP14) in thombospondin-1 (TSP1).** Predicted sites for human MT1-MMP-mediated cleavage in TSP1 are shown with their cleavage scores (<http://cleavpredict.sanfordburnham.org/>). Candidate sites were filtered by *in silico* modeling and scored according to the peptide cleavage matrix in the MEROPS database (<http://merops.sanger.ac.uk/>). The selected cleavage sites in TSP1 are highlighted in yellow.

| <b>Gene</b>   | <b>Direction</b> | <b>Primer Sequence</b>        |
|---------------|------------------|-------------------------------|
| <i>mMmp14</i> | Forward          | 5'- CAGTATGGCTACCTACCTCCAG-3' |
|               | Reverse          | 5'- GCCTTGCCTGTCAGTGAAA -3'   |
| <i>mCdh5</i>  | Forward          | 5'-AAAGAACTGGACAGAGAAA-3'     |
|               | Reverse          | 5'- GGTTGTCATTCTCATCCAAG -3   |
| <i>mTbp</i>   | Forward          | 5'- GCTCTGGAATTGTACCGCAG-3'   |
|               | Reverse          | 5'- CTGGCTCATAGCTCTGGCTC-3'   |
| <i>mGapdh</i> | Forward          | 5'- AATGCATCCTGCACCACCAA-3'   |
|               | Reverse          | 5'- GTGGCAGTGATGGCATGGAC-3'   |
| <i>hNOS3</i>  | Forward          | 5'-GGCTGGGTTAGGGCTGTG-3'      |
|               | Reverse          | 5'-TGAGGGTGTGCTAGGTGATG-3'    |
| <i>hMMP14</i> | Forward          | 5'-GGCTACAGCAATATGGCTACC-3'   |
|               | Reverse          | 5'-GATGGCCGCTGAGAGTGAC-3'     |
| <i>hGAPDH</i> | Forward          | 5'-GGAGCGAGATCCCTCCAAAAT-3'   |
|               | Reverse          | 5'-GGCTGTTGTCATACTTCTCATGG-3' |
| <i>hHPRT</i>  | Forward          | 5'-CCTGGCGTCGTGATTAGTGAT-3'   |
|               | Reverse          | 5'-AGACGTTCAGTCCTGTCCATAA-3'  |
| <i>hYWHAB</i> | Forward          | 5'-CCTGCATGAAGTCTGTAACTGAG-3' |
|               | Reverse          | 5'-GACCTACGGGCTCCTACAACA-3'   |

**Appendix Table S2.** List of qPCR primers used for mouse (m) and human (h) genes in this study.

| Comparison |                                   | p-value |
|------------|-----------------------------------|---------|
| Figure 1B  | CN MT1f/f vs. CN MT1EC            | 0,861   |
|            | CN MT1f/f vs. 3d 1DSS MT1f/f      | 0,0057  |
|            | CN MT1f/f vs. 3d 1DSS MT1EC       | 0,6013  |
|            | CN MT1f/f vs. 7d 1DSS MT1f/f      | 0,066   |
|            | CN MT1f/f vs. 7d 1DSS MT1EC       | 0,9492  |
|            | CN MT1EC vs. 3d 1DSS MT1f/f       | 0,0028  |
|            | CN MT1EC vs. 3d 1DSS MT1EC        | 0,4774  |
|            | CN MT1EC vs. 7d 1DSS MT1f/f       | 0,038   |
|            | CN MT1EC vs. 7d 1DSS MT1EC        | 0,7927  |
|            | 3d 1DSS MT1f/f vs. 3d 1DSS MT1EC  | 0,0225  |
|            | 3d 1DSS MT1f/f vs. 7d 1DSS MT1f/f | 0,2181  |
|            | 3d 1DSS MT1f/f vs. 7d 1DSS MT1EC  | 0,0026  |
|            | 3d 1DSS MT1EC vs. 7d 1DSS MT1f/f  | 0,198   |
|            | 3d 1DSS MT1EC vs. 7d 1DSS MT1EC   | 0,6026  |
|            | 7d 1DSS MT1f/f vs. 7d 1DSS MT1EC  | 0,0426  |
|            | Comparison                        | p-value |
| Figure 1C  | MT1f/f CN vs. MT1ΔEC CN           | 0,7134  |
|            | MT1f/f CN vs. MT1f/f DSS          | 0,0013  |
|            | MT1f/f CN vs. MT1ΔEC DSS          | 0,4721  |
|            | MT1ΔEC CN vs. MT1f/f DSS          | 0,0005  |
|            | MT1ΔEC CN vs. MT1ΔEC DSS          | 0,2821  |
|            | MT1f/f DSS vs. MT1ΔEC DSS         | 0,007   |
|            | Comparison                        | p-value |
| Figure 2B  | cre- 3dias vs. cre + 3 dias       | 0,0937  |
|            | cre- 3dias vs. cre-7dias          | >0,9999 |
|            | cre- 3dias vs. cre+7 dias         | >0,9999 |
|            | cre + 3 dias vs. cre-7dias        | 0,3824  |
|            | cre + 3 dias vs. cre+7 dias       | 0,3775  |
|            | cre-7dias vs. cre+7 dias          | 0,0032  |
|            | Comparison                        | p-value |
| Figure 2E  | 1                                 |         |
|            | CONTROL CRE- vs. CONTROL CRE+     | 0,8605  |
|            | CONTROL CRE- vs. 1% DSS CRE-      | 0,9948  |
|            | CONTROL CRE- vs. 1% DSS CRE+      | 0,6912  |
|            | CONTROL CRE+ vs. 1% DSS CRE-      | 0,8501  |
|            | CONTROL CRE+ vs. 1% DSS CRE+      | 0,5559  |
|            | 1% DSS CRE- vs. 1% DSS CRE+       | 0,6845  |
|            |                                   |         |
|            | 2                                 |         |
|            | CONTROL CRE- vs. CONTROL CRE+     | 0,8111  |
|            | CONTROL CRE- vs. 1% DSS CRE-      | 0,9635  |
|            | CONTROL CRE- vs. 1% DSS CRE+      | 0,6467  |
|            | CONTROL CRE+ vs. 1% DSS CRE-      | 0,8403  |
|            | CONTROL CRE+ vs. 1% DSS CRE+      | 0,8322  |
|            | 1% DSS CRE- vs. 1% DSS CRE+       | 0,6685  |
|            |                                   |         |
|            | 3                                 |         |
|            | CONTROL CRE- vs. CONTROL CRE+     | 0,6478  |

|                               |               |         |
|-------------------------------|---------------|---------|
| CONTROL CRE- vs. 1% DSS CRE-  | 0,8754        |         |
| CONTROL CRE- vs. 1% DSS CRE+  | 0,8069        |         |
| CONTROL CRE+ vs. 1% DSS CRE-  | 0,7529        |         |
| CONTROL CRE+ vs. 1% DSS CRE+  | 0,8138        |         |
| 1% DSS CRE- vs. 1% DSS CRE+   | 0,9299        |         |
|                               |               |         |
| 4                             |               |         |
| CONTROL CRE- vs. CONTROL CRE+ | 0,9049        |         |
| CONTROL CRE- vs. 1% DSS CRE-  | 0,4698        |         |
| CONTROL CRE- vs. 1% DSS CRE+  | 0,7689        |         |
| CONTROL CRE+ vs. 1% DSS CRE-  | 0,3917        |         |
| CONTROL CRE+ vs. 1% DSS CRE+  | 0,6713        |         |
| 1% DSS CRE- vs. 1% DSS CRE+   | 0,6445        |         |
|                               |               |         |
| 5                             |               |         |
| CONTROL CRE- vs. CONTROL CRE+ | 0,7488        |         |
| CONTROL CRE- vs. 1% DSS CRE-  | 0,0069        |         |
| CONTROL CRE- vs. 1% DSS CRE+  | 0,1306        |         |
| CONTROL CRE+ vs. 1% DSS CRE-  | 0,0022        |         |
| CONTROL CRE+ vs. 1% DSS CRE+  | 0,0614        |         |
| 1% DSS CRE- vs. 1% DSS CRE+   | 0,1934        |         |
|                               |               |         |
| 6                             |               |         |
| CONTROL CRE- vs. CONTROL CRE+ | 0,9829        |         |
| CONTROL CRE- vs. 1% DSS CRE-  | <0,0001       |         |
| CONTROL CRE- vs. 1% DSS CRE+  | <0,0001       |         |
| CONTROL CRE+ vs. 1% DSS CRE-  | <0,0001       |         |
| CONTROL CRE+ vs. 1% DSS CRE+  | <0,0001       |         |
| 1% DSS CRE- vs. 1% DSS CRE+   | <0,0001       |         |
|                               |               |         |
| 7                             |               |         |
| CONTROL CRE- vs. CONTROL CRE+ | 0,972         |         |
| CONTROL CRE- vs. 1% DSS CRE-  | <0,0001       |         |
| CONTROL CRE- vs. 1% DSS CRE+  | <0,0001       |         |
| CONTROL CRE+ vs. 1% DSS CRE-  | <0,0001       |         |
| CONTROL CRE+ vs. 1% DSS CRE+  | <0,0001       |         |
| 1% DSS CRE- vs. 1% DSS CRE+   | <0,0001       |         |
| Comparison                    | p-value       |         |
| Figure 3C                     | CRE- vs. CRE+ | 0,1624  |
|                               | Comparison    | p-value |
| Figure 3D                     | CRE- vs. CRE+ | 0,00124 |

| Comparison | p-value                       |
|------------|-------------------------------|
| Figure 3F  | Cre- vs. Cre - ACH            |
|            | 0,0053                        |
|            | Cre- vs. Cre - ACH no         |
|            | 0,0026                        |
|            | Cre + vs. Cre + ACH           |
|            | 0,5619                        |
|            | Cre + vs. Cre + ACH no        |
|            | <0,0001                       |
|            | Cre - ACH vs. Cre + ACH       |
|            | 0,02                          |
|            | Cre - ACH no vs. Cre + ACH no |
|            | 0,1083                        |

|           |                                |          |
|-----------|--------------------------------|----------|
|           | Cre- vs. Cre +                 | 0,7287   |
|           | Cre - ACH vs. Cre - ACH no     | 0,5299   |
|           | Cre + ACH vs. Cre + ACH no     | 0,0001   |
|           | Comparison                     | p-value  |
| Figure 4A | control vs. siRNA 77           | < 0,0001 |
|           | Comparison                     | p-value  |
| Figure 4C | control vs. siRNA 77 (eNOS)    | 0,0001   |
|           | control vs. siRNA 79 (eNOS)    | 0,0001   |
|           | control vs. siRNA 77 (MT1-MMP) | 0,0001   |
|           | control vs. siRNA 79 (MT1-MMP) | 0,0001   |
|           | Comparison                     | p-value  |
| Figure 4D | c vs. 77 (eNOS)                | 0,00151  |
|           | c vs. 79 (eNOS)                | 0,0034   |
|           | c vs. 77 (MT1-MMP)             | 0,0003   |
|           | c vs. 79 (MT1-MMP)             | 0,0003   |
|           | Comparison                     | p-value  |
| Figure 5  | cre- vs. cre- dss              | 0,0001   |
|           | cre- vs. cre+                  | 0,622    |
|           | cre- vs. cre + dss             | 0,2252   |
|           | cre- vs. FL                    | <0,0001  |
|           | cre- vs. EA                    | 0,0246   |
|           | cre- vs. YF                    | 0,0002   |
|           | cre- dss vs. cre+              | 0,0018   |
|           | cre- dss vs. cre + dss         | 0,011    |
|           | cre- dss vs. FL                | 0,9979   |
|           | cre- dss vs. EA                | 0,0534   |
|           | cre- dss vs. YF                | 0,7293   |
|           | cre+ vs. cre + dss             | 0,5112   |
|           | cre+ vs. FL                    | 0,0013   |
|           | cre+ vs. EA                    | 0,1212   |
|           | cre+ vs. YF                    | 0,0032   |
|           | cre + dss vs. FL               | 0,0087   |
|           | cre + dss vs. EA               | 0,3904   |
|           | cre + dss vs. YF               | 0,0199   |
|           | FL vs. EA                      | 0,0445   |
|           | FL vs. YF                      | 0,7166   |
|           | EA vs. YF                      | 0,095    |
|           | Comparison                     | p-value  |
| Figure 6C | CRE- vs. CRE+                  | 0,0254   |
|           | Comparison                     | p-value  |
| Figure 7B | gel wt vs. av wt               | <0,0001  |
|           | gel wt vs. cd47 wt             | <0,0001  |
|           | gel wt vs. igg1 wt             | >0,9999  |
|           | gel wt vs. IGG1 10 wt          | >0,9999  |
|           | gel wt vs. gel sirna           | <0,0001  |
|           | gel wt vs. av sirna            | <0,0001  |
|           | gel wt vs. cd47 sirna          | <0,0001  |
|           | gel wt vs. igg1 sirna          | <0,0001  |
|           | gel wt vs. IGG1 10 sirna       | <0,0001  |
|           | av wt vs. cd47 wt              | 0,4821   |

|                              |         |
|------------------------------|---------|
| av wt vs. igg1 wt            | <0,0001 |
| av wt vs. IGG1 10 wt         | <0,0001 |
| av wt vs. gel sirna          | 0,0588  |
| av wt vs. av sirna           | >0,9999 |
| av wt vs. cd47 sirna         | 0,4926  |
| av wt vs. igg1 sirna         | >0,9999 |
| av wt vs. IGG1 10 sirna      | >0,9999 |
| cd47 wt vs. igg1 wt          | <0,0001 |
| cd47 wt vs. IGG1 10 wt       | <0,0001 |
| cd47 wt vs. gel sirna        | <0,0001 |
| cd47 wt vs. av sirna         | 0,7843  |
| cd47 wt vs. cd47 sirna       | <0,0001 |
| cd47 wt vs. igg1 sirna       | >0,9999 |
| cd47 wt vs. IGG1 10 sirna    | >0,9999 |
| igg1 wt vs. IGG1 10 wt       | >0,9999 |
| igg1 wt vs. gel sirna        | <0,0001 |
| igg1 wt vs. av sirna         | <0,0001 |
| igg1 wt vs. cd47 sirna       | <0,0001 |
| igg1 wt vs. igg1 sirna       | <0,0001 |
| igg1 wt vs. IGG1 10 sirna    | <0,0001 |
| IGG1 10 wt vs. gel sirna     | <0,0001 |
| IGG1 10 wt vs. av sirna      | <0,0001 |
| IGG1 10 wt vs. cd47 sirna    | <0,0001 |
| IGG1 10 wt vs. igg1 sirna    | <0,0001 |
| IGG1 10 wt vs. IGG1 10 sirna | <0,0001 |
| gel sirna vs. av sirna       | 0,1306  |
| gel sirna vs. cd47 sirna     | >0,9999 |
| gel sirna vs. igg1 sirna     | 0,1316  |
| gel sirna vs. IGG1 10 sirna  | 0,0886  |
| av sirna vs. cd47 sirna      | 0,7833  |
| av sirna vs. igg1 sirna      | >0,9999 |
| av sirna vs. IGG1 10 sirna   | >0,9999 |
| cd47 sirna vs. igg1 sirna    | 0,72    |
| cd47 sirna vs. IGG1 10 sirna | 0,5692  |
| igg1 sirna vs. IGG1 10 sirna | >0,9999 |
| Comparison                   | p-value |

|           |                                |         |
|-----------|--------------------------------|---------|
| Figure 7C | GELATINA WT vs. RGD 200 WT     | <0,0001 |
|           | GELATINA WT vs. RGD 20WT       | <0,0001 |
|           | GELATINA WT vs. RGD 2nM WT     | <0,0001 |
|           | GELATINA WT vs. RDAS 200 wt    | >0,9999 |
|           | GELATINA WT vs. RDAS20 wt      | >0,9999 |
|           | GELATINA WT vs. RDAS 2n wt     | >0,9999 |
|           | GELATINA WT vs. GELATINA sirna | <0,0001 |
|           | GELATINA WT vs. RGD 200 sirna  | <0,0001 |
|           | GELATINA WT vs. RGD 20 sirna   | <0,0001 |
|           | GELATINA WT vs. RGD 2nM sirna  | <0,0001 |
|           | GELATINA WT vs. RDAS 200 sirna | <0,0001 |
|           | GELATINA WT vs. RDAS20 sirna   | <0,0001 |
|           | GELATINA WT vs. RDAS 2 sirna   | <0,0001 |
|           | RGD 200 WT vs. RGD 20WT        | >0,9999 |

|                                |         |
|--------------------------------|---------|
| RGD 200 WT vs. RGD 2nM WT      | >0,9999 |
| RGD 200 WT vs. RDAS 200 wt     | 0,0001  |
| RGD 200 WT vs. RDAS20 wt       | <0,0001 |
| RGD 200 WT vs. RDAS 2n wt      | <0,0001 |
| RGD 200 WT vs. GELATINA sirna  | <0,0001 |
| RGD 200 WT vs. RGD 200 sirna   | 0,0417  |
| RGD 200 WT vs. RGD 20 sirna    | 0,0015  |
| RGD 200 WT vs. RGD 2nM sirna   | <0,0001 |
| RGD 200 WT vs. RDAS 200 sirna  | 0,0622  |
| RGD 200 WT vs. RDAS20 sirna    | <0,0001 |
| RGD 200 WT vs. RDAS 2 sirna    | 0,037   |
| RGD 20WT vs. RGD 2nM WT        | >0,9999 |
| RGD 20WT vs. RDAS 200 wt       | <0,0001 |
| RGD 20WT vs. RDAS20 wt         | <0,0001 |
| RGD 20WT vs. RDAS 2n wt        | <0,0001 |
| RGD 20WT vs. GELATINA sirna    | <0,0001 |
| RGD 20WT vs. RGD 200 sirna     | 0,5329  |
| RGD 20WT vs. RGD 20 sirna      | 0,0318  |
| RGD 20WT vs. RGD 2nM sirna     | 0,0001  |
| RGD 20WT vs. RDAS 200 sirna    | 0,7301  |
| RGD 20WT vs. RDAS20 sirna      | 0,0006  |
| RGD 20WT vs. RDAS 2 sirna      | 0,5109  |
| RGD 2nM WT vs. RDAS 200 wt     | <0,0001 |
| RGD 2nM WT vs. RDAS20 wt       | <0,0001 |
| RGD 2nM WT vs. RDAS 2n wt      | <0,0001 |
| RGD 2nM WT vs. GELATINA sirna  | <0,0001 |
| RGD 2nM WT vs. RGD 200 sirna   | 0,0944  |
| RGD 2nM WT vs. RGD 20 sirna    | 0,004   |
| RGD 2nM WT vs. RGD 2nM sirna   | <0,0001 |
| RGD 2nM WT vs. RDAS 200 sirna  | 0,1373  |
| RGD 2nM WT vs. RDAS20 sirna    | <0,0001 |
| RGD 2nM WT vs. RDAS 2 sirna    | 0,086   |
| RDAS 200 wt vs. RDAS20 wt      | >0,9999 |
| RDAS 200 wt vs. RDAS 2n wt     | 0,3394  |
| RDAS 200 wt vs. GELATINA sirna | <0,0001 |
| RDAS 200 wt vs. RGD 200 sirna  | <0,0001 |
| RDAS 200 wt vs. RGD 20 sirna   | <0,0001 |
| RDAS 200 wt vs. RGD 2nM sirna  | <0,0001 |
| RDAS 200 wt vs. RDAS 200 sirna | <0,0001 |
| RDAS 200 wt vs. RDAS20 sirna   | <0,0001 |
| RDAS 200 wt vs. RDAS 2 sirna   | <0,0001 |
| RDAS20 wt vs. RDAS 2n wt       | >0,9999 |
| RDAS20 wt vs. GELATINA sirna   | <0,0001 |
| RDAS20 wt vs. RGD 200 sirna    | <0,0001 |
| RDAS20 wt vs. RGD 20 sirna     | <0,0001 |
| RDAS20 wt vs. RGD 2nM sirna    | <0,0001 |
| RDAS20 wt vs. RDAS 200 sirna   | <0,0001 |
| RDAS20 wt vs. RDAS20 sirna     | <0,0001 |
| RDAS20 wt vs. RDAS 2 sirna     | <0,0001 |
| RDAS 2n wt vs. GELATINA sirna  | <0,0001 |

|           |                                   |         |
|-----------|-----------------------------------|---------|
|           | RDAS 2n wt vs. RGD 200 sirna      | <0,0001 |
|           | RDAS 2n wt vs. RGD 20 sirna       | <0,0001 |
|           | RDAS 2n wt vs. RGD 2nM sirna      | <0,0001 |
|           | RDAS 2n wt vs. RDAS 200 sirna     | <0,0001 |
|           | RDAS 2n wt vs. RDAS20 sirna       | <0,0001 |
|           | RDAS 2n wt vs. RDAS 2 sirna       | <0,0001 |
|           | GELATINA sirna vs. RGD 200 sirna  | 0,3107  |
|           | GELATINA sirna vs. RGD 20 sirna   | >0,9999 |
|           | GELATINA sirna vs. RGD 2nM sirna  | >0,9999 |
|           | GELATINA sirna vs. RDAS 200 sirna | 0,2163  |
|           | GELATINA sirna vs. RDAS20 sirna   | >0,9999 |
|           | GELATINA sirna vs. RDAS 2 sirna   | 0,233   |
|           | RGD 200 sirna vs. RGD 20 sirna    | >0,9999 |
|           | RGD 200 sirna vs. RGD 2nM sirna   | >0,9999 |
|           | RGD 200 sirna vs. RDAS 200 sirna  | >0,9999 |
|           | RGD 200 sirna vs. RDAS20 sirna    | >0,9999 |
|           | RGD 200 sirna vs. RDAS 2 sirna    | >0,9999 |
|           | RGD 20 sirna vs. RGD 2nM sirna    | >0,9999 |
|           | RGD 20 sirna vs. RDAS 200 sirna   | >0,9999 |
|           | RGD 20 sirna vs. RDAS20 sirna     | >0,9999 |
|           | RGD 20 sirna vs. RDAS 2 sirna     | >0,9999 |
|           | RGD 2nM sirna vs. RDAS 200 sirna  | >0,9999 |
|           | RGD 2nM sirna vs. RDAS20 sirna    | >0,9999 |
|           | RDAS 200 sirna vs. RDAS20 sirna   | >0,9999 |
|           | RDAS 200 sirna vs. RDAS 2 sirna   | >0,9999 |
|           | RDAS20 sirna vs. RDAS 2 sirna     | >0,9999 |
|           | Comparison                        | p-value |
| Figure 7D | gel wt vs. cilen 200 wt           | <0,0001 |
|           | gel wt vs. cilen 1 wt             | <0,0001 |
|           | gel wt vs. gel sirna              | <0,0001 |
|           | gel wt vs. cilen 200 sirna        | <0,0001 |
|           | gel wt vs. cilen 1 sirna          | <0,0001 |
|           | cilen 200 wt vs. cilen 1 wt       | >0,9999 |
|           | cilen 200 wt vs. gel sirna        | 0,0157  |
|           | cilen 200 wt vs. cilen 200 sirna  | <0,0001 |
|           | cilen 200 wt vs. cilen 1 sirna    | <0,0001 |
|           | cilen 1 wt vs. gel sirna          | <0,0001 |
|           | cilen 1 wt vs. cilen 200 sirna    | <0,0001 |
|           | cilen 1 wt vs. cilen 1 sirna      | <0,0001 |
|           | gel sirna vs. cilen 200 sirna     | >0,9999 |
|           | gel sirna vs. cilen 1 sirna       | 0,7646  |
|           | cilen 200 sirna vs. cilen 1 sirna | >0,9999 |
|           | Comparison                        | p-value |
| Figure 7E | gel wt vs. nonamero 200           | <0,0001 |
|           | gel wt vs. nonamero 2             | <0,0001 |
|           | gel wt vs. Control 200            | 0,2515  |
|           | gel wt vs. control2               | >0,9999 |
|           | gel wt vs. gel sirna              | <0,0001 |
|           | gel wt vs. nonamero 200 sirna     | <0,0001 |

|  |                                     |         |
|--|-------------------------------------|---------|
| gel wt vs. nonamero 2 sirna              | <0,0001                             |         |
| gel wt vs. Control 200 sirna             | <0,0001                             |         |
| gel wt vs. control2 sirna                | <0,0001                             |         |
| nonamero 200 vs. nonamero 2              | >0,9999                             |         |
| nonamero 200 vs. Control 200             | <0,0001                             |         |
| nonamero 200 vs. control2                | <0,0001                             |         |
| nonamero 200 vs. gel sirna               | >0,9999                             |         |
| nonamero 200 vs. nonamero 200 sirna      | >0,9999                             |         |
| nonamero 200 vs. nonamero 2 sirna        | >0,9999                             |         |
| nonamero 200 vs. Control 200 sirna       | >0,9999                             |         |
| nonamero 200 vs. control2 sirna          | >0,9999                             |         |
| nonamero 2 vs. Control 200               | <0,0001                             |         |
| nonamero 2 vs. control2                  | <0,0001                             |         |
| nonamero 2 vs. gel sirna                 | >0,9999                             |         |
| nonamero 2 vs. nonamero 200 sirna        | >0,9999                             |         |
| nonamero 2 vs. nonamero 2 sirna          | >0,9999                             |         |
| nonamero 2 vs. Control 200 sirna         | >0,9999                             |         |
| nonamero 2 vs. control2 sirna            | >0,9999                             |         |
| Control 200 vs. control2                 | >0,9999                             |         |
| Control 200 vs. gel sirna                | <0,0001                             |         |
| Control 200 vs. nonamero 200 sirna       | <0,0001                             |         |
| Control 200 vs. nonamero 2 sirna         | <0,0001                             |         |
| Control 200 vs. Control 200 sirna        | <0,0001                             |         |
| Control 200 vs. control2 sirna           | <0,0001                             |         |
| control2 vs. gel sirna                   | <0,0001                             |         |
| control2 vs. nonamero 200 sirna          | <0,0001                             |         |
| control2 vs. nonamero 2 sirna            | <0,0001                             |         |
| control2 vs. Control 200 sirna           | <0,0001                             |         |
| control2 vs. control2 sirna              | <0,0001                             |         |
| gel sirna vs. nonamero 200 sirna         | >0,9999                             |         |
| gel sirna vs. nonamero 2 sirna           | 0,1851                              |         |
| gel sirna vs. Control 200 sirna          | >0,9999                             |         |
| gel sirna vs. control2 sirna             | 0,0642                              |         |
| nonamero 200 sirna vs. nonamero 2 sirna  | >0,9999                             |         |
| nonamero 200 sirna vs. Control 200 sirna | >0,9999                             |         |
| nonamero 200 sirna vs. control2 sirna    | >0,9999                             |         |
| nonamero 2 sirna vs. Control 200 sirna   | >0,9999                             |         |
| nonamero 2 sirna vs. control2 sirna      | >0,9999                             |         |
| Control 200 sirna vs. control2 sirna     | >0,9999                             |         |
| Comparison                               | p-value                             |         |
| Figure 8B                                | CONTROL vs UC low activity          | 0,0003  |
|  | CONTROL vs UC high activity         | 0,9854  |
|  | UC low activity vs UC high activity | 0,0003  |
|  | CONTROL vs CD low activity          | 0,0546  |
|  | CONTROL vs CD high activity         | 0,9472  |
|  | CD low activity vs CD high activity | 0,0646  |
|  | Comparison                          | p-value |
| Figure 8D                                | IgG vs. LEM-2/15                    | 0,0071  |
|  | Comparison                          | p-value |
| Figure 8G                                | GDGRADACK vs. GDGRGDACK             | 0,0438  |

|            | Comparison                                       | p-value |
|------------|--|---------|
| EV3B       | MT1f/f - MT1f/fVeCdhCreERT2                      |         |
| 1          |  | >0,9999 |
| 2          |  | 0,9057  |
| 3          |  | >0,9999 |
| 4          |  | 0,8801  |
| 5          |  | 0,7547  |
| 6          |  | 0,2915  |
| 7          |  | 0,9657  |
| 8          |  | 0,1929  |
| 9          |  | 0,3272  |
| 10         |  | 0,0745  |
| 11         |  | 0,219   |
| 12         |  | <0,0001 |
| 13         |  | 0,0041  |
| 14         |  | 0,0008  |
| 15         |  | 0,0022  |
| Comparison |  | p-value |
| EV 3C      | MT1f/f - MT1f/fVeCdhCreERT2                      |         |
| 1          |  | >0,9999 |
| 2          |  | 0,7699  |
| 3          |  | 0,478   |
| 4          |  | 0,7678  |
| 5          |  | 0,7044  |
| 6          |  | 0,9618  |
| 7          |  | 0,8615  |
| 8          |  | 0,6491  |
| 9          |  | 0,5795  |
| 10         |  | 0,1348  |
| 11         |  | 0,0559  |
| 12         |  | 0,0021  |
| 13         |  | 0,0014  |
| 14         |  | 0,0017  |
| 15         |  | 0,004   |
| Comparison |  | p-value |
| EV 4D      | MT1f/f - MT1f/fVeCdhCreERT2                      | 0,0231  |
| Comparison |  | p-value |
| EV 5E      | MT1 siRNA_Control vs MT1 siRNA_TSP1 full 200     | 0,3981  |
|            | MT1 siRNA_Control vs MT1 siRNA_E123CaG 200       | 0,021   |
|            | MT1 siRNA_TSP1 full 200 vs MT1 siRNA_E123CaG 200 | 0,0003  |
| Comparison |  | p-value |
| EV 5G      | TSP1 full vs E123CaG 200                         | 0,0444  |

**Table S3.** List of exact p-values for graphs in Main Figures and Expanded View Figures.