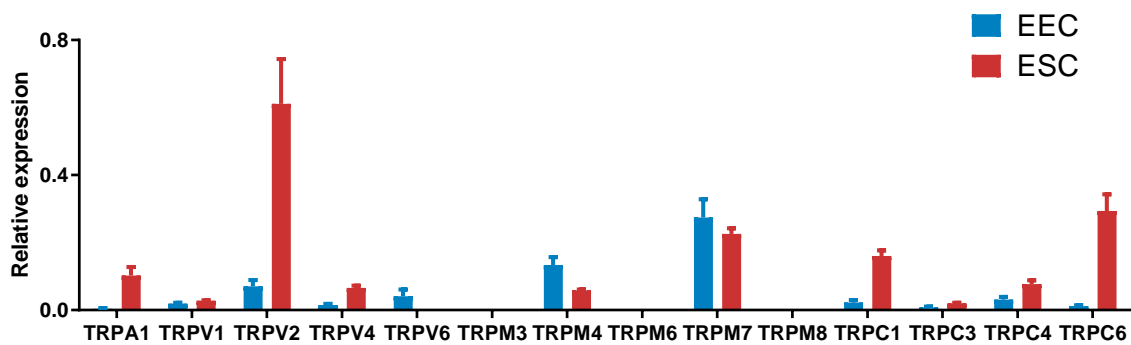
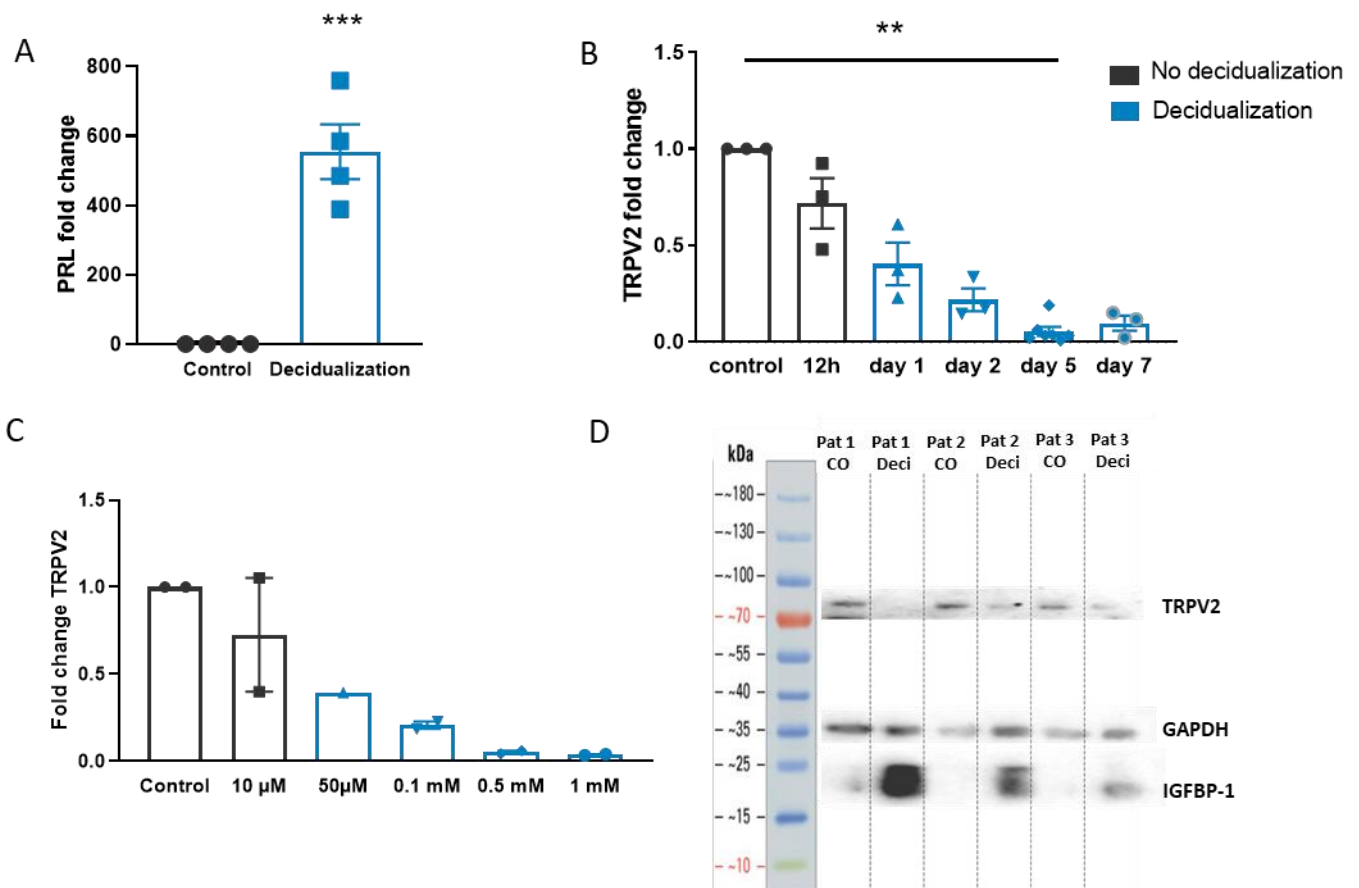


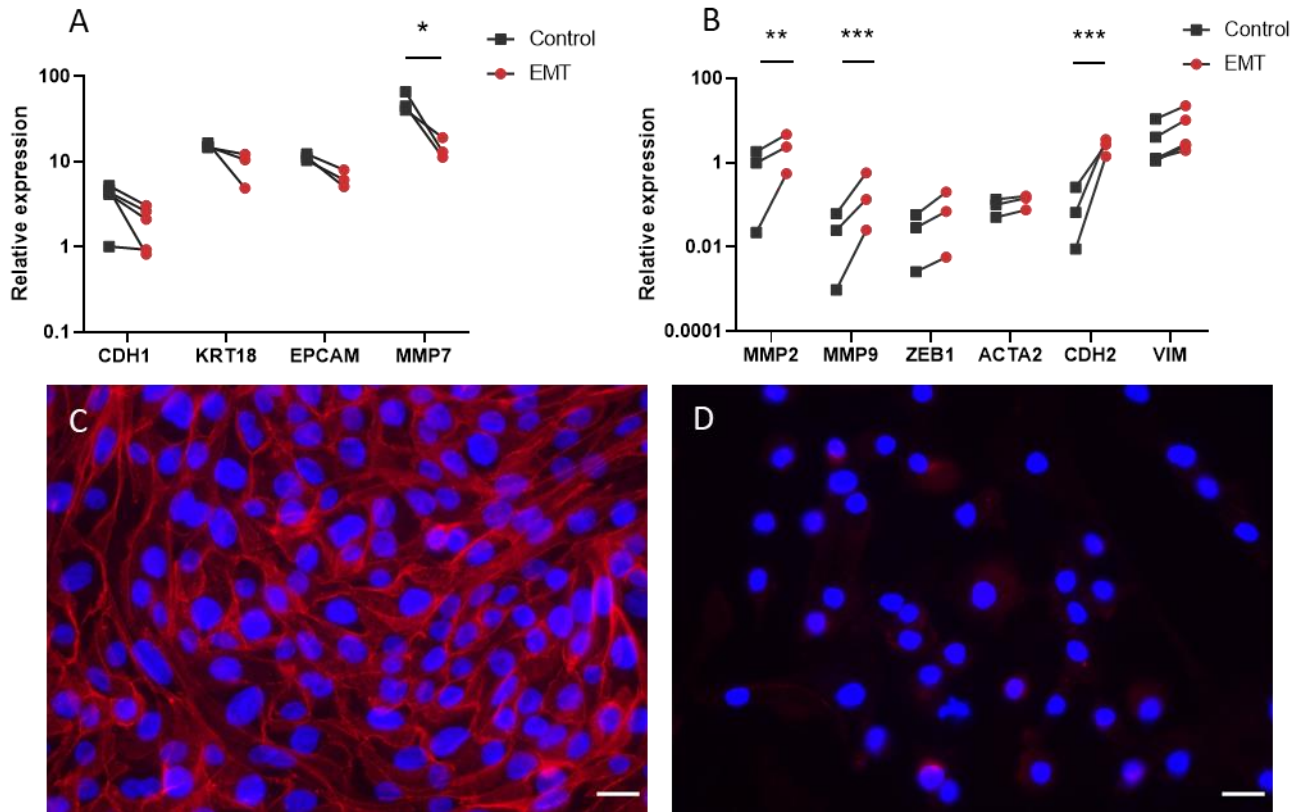
Supplementary tables and figures



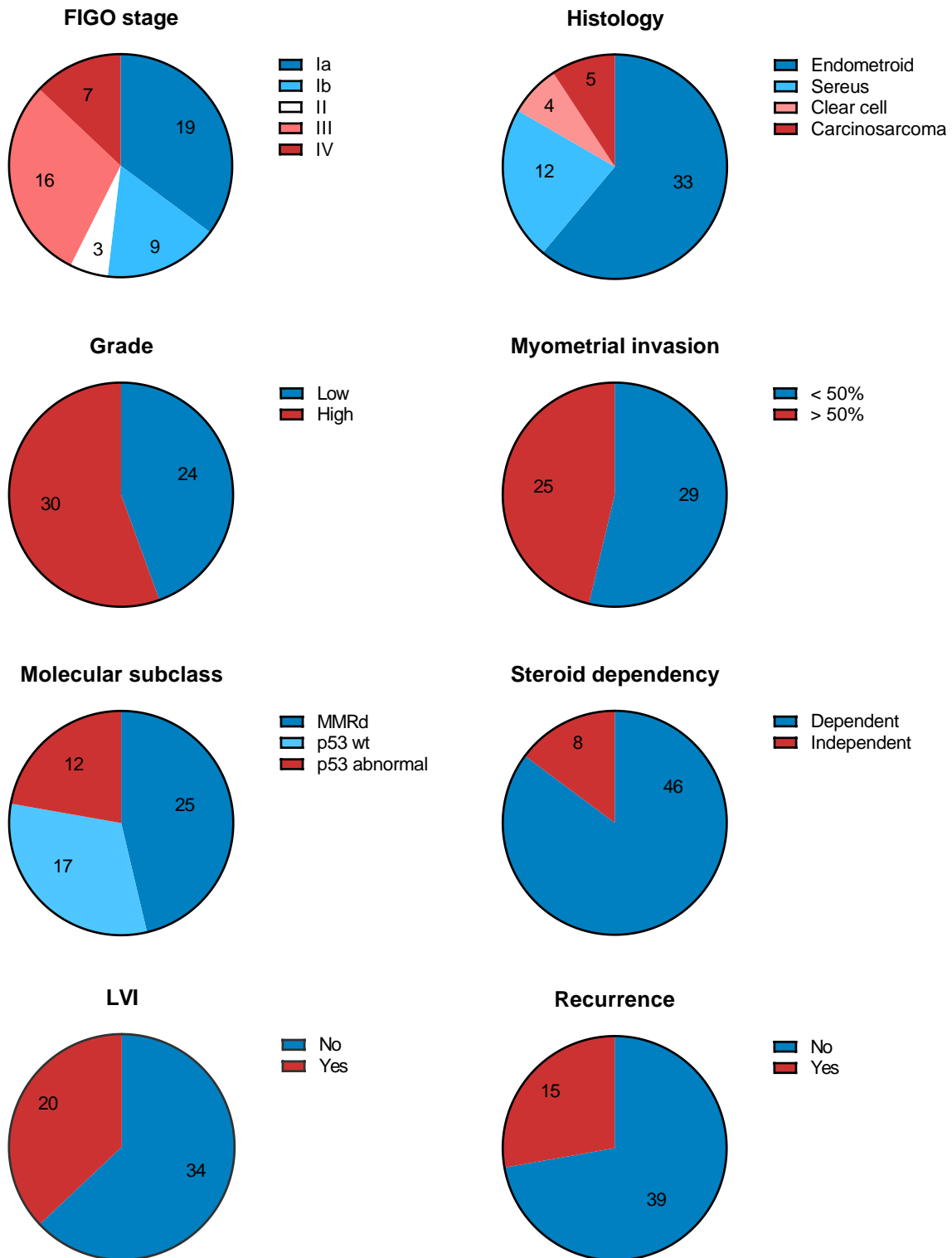
Supplementary figure 1: Quantitative RT-PCR showing TRP channel mRNA expression (TRPA1, TRPV1, TRPV2, TRPV4, TRPV6, TRPM3, TRPM4, TRPM6, TRPM7, TRPM8, TRPC1, TRPC3, TRPC4 and TRPC6, in EEC and ESC. Results are shown as mean \pm SEM relative expression to the geometric mean of housekeeping genes HPRT and PGK (published). N=5 p.s. Data used from own earlier publications[1, 2].



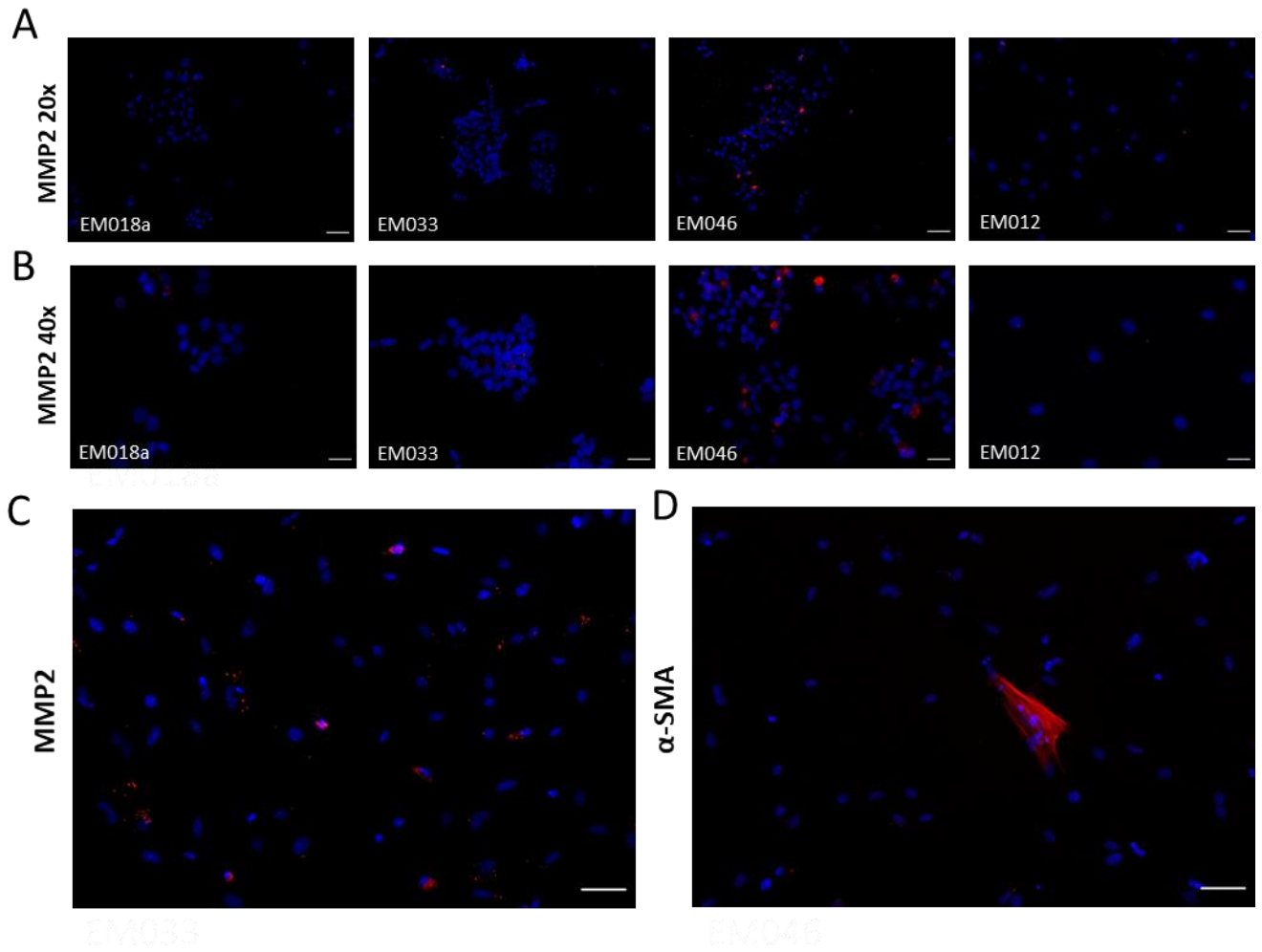
Supplementary figure 2: TRP channels in decidualization. **A)** Validation of *in vitro* decidualization of HESC. Fold change of PRL mRNA expression after decidualization. **** p < 0,0001 using Wilcoxon signed-rank-test on Δ CT values. **B)** Fold change of TRPV2 in response to 12h, 1 day, 2 days, 5 days and 7 days of *in vitro* decidualization. ** p < 0,01 using Kruskal-wallis test + Dunn's multiple comparison test on Δ Ct values. N=3-7 p.s **C)** Fold change of TRPV2 in response to 10 μ M, 50 μ M, 0,1 mM, 0,5 mM and 1 mM 8-Br-cAMP. N=1-2 p.s. All data is shown as mean \pm SEM. **D)** Western blot displaying downregulation of TRPV2 protein expression after decidualization in ESC. GAPDH was used as loading control and IGFBP-1 upregulation demonstrates successful decidualization.



Supplementary figure 3: Validation of *in vitro* EMT induction in EEC. A+B) Quantitative RT-PCR showing mRNA expression of epithelial (CDH1, KRT18, EPCAM, MMP7) and mesenchymal (MMP2, MMP9, ZEB1, ACTA, CDH2, VIM) markers shown as relative expression to housekeeping genes HPRT and PGK. * $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$ using 2-way ANOVA and Sidak's multiple comparison test on Δ CT values. N=3-5 **C+D)** Immunofluorescence staining (magnification: 40x) of the epithelial marker E-cadherin in untreated (**C**) and treated EEC (**D**). Scalebar = 20 μ M



Supplementary figure 4: Patient statistics. A-H) Pie charts displaying number of patients per pathophysiological category: FIGO stage (A), histology (B), grade (C), myometrial invasion (D), molecular subclass (E), steroid dependency (F), LVI (G) and recurrence (H).



Supplementary figure 5: Characterization of EC cell cultures. **A)** Immunofluorescence stainings (magnification: 20x) of the mesenchymal marker MMP2 in EM018a, EM012, EM033 and EM046 cells. Scale bar = 50 μm . **B)** Immunofluorescence stainings (magnification: 40x) of the mesenchymal marker MMP2 in EM018a, EM012, EM033 and EM046 cells. Scale bar = 25 μm . **C)** Immunofluorescence staining (magnification: 20x) of the mesenchymal marker MMP2 in ESC cells. Scale bar = 50 μm . **D)** Immunofluorescence staining (magnification: 20x) of the mesenchymal marker α -smooth muscle actin in ESC cells. Scale bar = 50 μm

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
TRPV2	.839	.703	.634	.77015	.000 ***
TRPV4	.443	.196	.010	.96833	.419
TRPV6	.561	.314	.155	2.27337	.061
TRPC1	.844	.713	.646	1.27964	.000 ***
TRPC4	.804	.646	.564	1.34367	.000 ***
TRPC6	.634	.402	.263	1.49358	.008 **
TRPM4	.535	.287	.121	1.11157	.105
TRPM7	.632	.399	.259	.66106	.008 **

Supplementary Table 1: SPSS output of multiple linear regression analysis of TRP channel expression (dependent variable) and marker genes (independent variables) in primary biopsies displaying R, R square, adjusted R square, SE and p-values for each TRP channel. . * p < 0,05, ** p < 0,01, *** p < 0,001

		B	SE	t	Sig.
TRPV2	CDH1	-.223	.128	-1.748	.080
	EPCAM	.025	.149	.169	.866
	KRT18	.160	.159	1.007	.314
	MMP7	-.006	.047	-.138	.890
	CDH2	-.093	.066	-1.406	.160
	CTSB	.227	.129	1.765	.078
	ACTA2	.043	.093	.463	.643
	MMP2	.233	.105	2.221	.026 *
	MMP9	.231	.049	4.736	.000 ***
	ZEB1	.147	.172	.853	.394
TRPC1	CDH1	.069	.212	.326	.744
	EPCAM	.121	.248	.489	.625
	KRT18	-.179	.265	-.677	.498
	MMP7	-.372	.078	-4.771	.000 ***
	CDH2	.094	.109	.855	.393
	CTSB	.659	.214	3.083	.002 **
	ACTA2	-.038	.154	-.248	.804
	MMP2	.032	.175	.186	.853
	MMP9	-.188	.081	-2.324	.020 *
	ZEB1	1.102	.285	3.861	.000 ***

Supplementary Table 2: SPSS output of multiple linear regression analysis of TRP channel expression (dependent variable) and marker genes (independent variables) in primary biopsies displaying B coefficient, SE, t- and p-values for all marker genes in the model. * p < 0,05, ** p < 0,01, *** p < 0,001

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
TRPV2	.931	.867	.810	.72893	.002 **
TRPV4	.797	.636	.595	.53922	.003 **
TRPC1	.853	.728	.659	1.07810	.006 **
TRPC4	.666	.443	.381	1.35545	.025 *
TRPC6	.772	.596	.495	.87412	.027 *
TRPM4	.623	.388	.320	1.00119	.041 *

Supplementary Table 3: SPSS output of multiple linear regression analysis of TRP channel expression (dependent variable) and significantly correlated marker genes (independent variables) in metastatic biopsies displaying R, R square, adjusted R square, SE and p-values for each TRP channel. * p < 0,05, ** p < 0,01

		B	SE	t	Sig.
TRPV2	MMP9	.188	.094	2.001	.085
	ZEB1	.990	.318	3.113	.017 *
	ACTA	-.076	.212	-.355	.733
TRPV4	CTSB	.512	.129	3.961	.003 **
TRPC1	ZEB1	.902	.367	2.459	.039 *
	MMP2	.253	.183	1.384	.204
TRPC4	MMP2	.468	.175	2.676	.025 *
TRPC6	MMP2	.246	.140	1.756	.117
	CTSB	.348	.260	1.335	.219
TRPM4	EPCAM	.234	.098	2.387	.041 *

Supplementary Table 4: SPSS output of (multiple) linear regression analysis of TRP channel expression (dependent variable) and significantly correlated marker genes (independent variables) in metastatic biopsies displaying B coefficient, SE, t- and p-values for all marker genes in the model. * p < 0,05, ** p < 0,01

	B	SE	Sig.	Exp(B) (OR)
TRPV2 expression	-.721	.360	.046 *	.486
Grade	2.126	.895	.018 *	8.382

Supplementary Table 5: Logistic regression analysis of TRPV2 expression and tumor grade (predictor variables) and disease recurrence (independent variable) displaying B coefficient, SE, p-values and odds ratio for all predictor variables in the model. * p < 0,05

	B	SE	Sig.	Exp(B) (OR)
TRPV2 expression	-.662	.303	.030 *	.516
CTSB expression	-.678	.324	.037 *	.508
MMP9 expression	-.277	.134	.038 *	.758
Grade (Low vs High)	2.047	.831	.014 *	7.747

Supplementary Table 6: Logistic regression analysis of TRPV2, CTSB, MMP9 expression and tumor grade (predictor variables) and disease recurrence (independent variable) displaying B coefficient, SE, p-values and odds ratio for all predictor variables in the model. * $p < 0,05$

	M/E ratio
EM018a	0,5714286
EM033	1,1428571
EM046	1,7142857
EM012	1,047619

Supplementary Table 7: M/E ratio for EC cancer cell cultures

1. Hennes, A., et al., *Functional expression of the mechanosensitive PIEZO1 channel in primary endometrial epithelial cells and endometrial organoids*. Scientific Reports, 2019. **9**.
2. De Clercq, K., et al., *Functional expression of transient receptor potential channels in human endometrial stromal cells during the luteal phase of the menstrual cycle*. Hum Reprod, 2015. **30**(6): p. 1421-36.