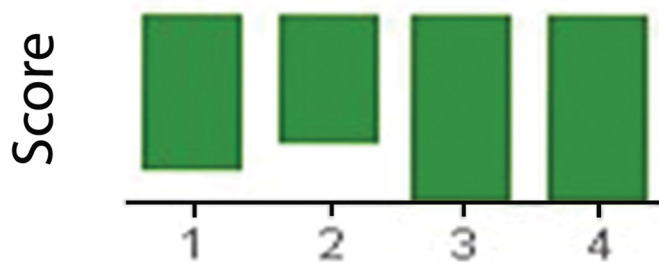


Supplementary Figure 3: Correlation of *AGR2* and *AGR3* RNA expression in TCGA cohort of uterine cancer samples. TCGA uterine cancer samples had RNA expression data for *AGR2* and *AGR3* in 516 endometrial cancer samples (green dots) and 35 control (black dots). The analysis demonstrated a significant positive correlation between the two genes ($r = 0.58$, $p = 3.31E-48$).

Gene-Bioset Correlations for *AGR2*



Supplementary Figure 4: External validation with 3 published EC microarray datasets. *AGR2* gene expression in 3 independent sample sets, using Illumina's BaseSpace Correlation Engine application (software; <https://www.illumina.com/informatics/research/biological-data-interpretation/nextbio.html>; Illumina, San Diego, CA, USA) to include 126 grade 1 endometrioid cancers, and 131 grade 3 endometrioid and serous EC from the following publically available microarray datasets; (1) GSE17025, 26 grade 3 versus 30 grade 1 endometrioid, (2); GSE24537, 11 serous versus 11 grade 1 (3); GSE2109, 31 grade 3 versus 22 grade 1 endometrioid, (4); GSE2109, 63 endometrioid grade 3 versus 22 endometrioid grade 1. The height of each vertical bar in the score matrix graph represents the score of the correlation between the analysed biosets and the *AGR2* gene. The correlation's score is based on the significance of the measurement made for the *AGR2* gene in the biosets analysed. The bar is green and appears below the midline depicting the *AGR2* gene was significantly down-regulated or deleted in in grade 3 and serous ECs compared with grade 1 ECs.

Supplementary Table 1: Primary antibodies and their immunohistochemistry conditions

Primary	Type	Clone	Supplier	HIAR*	Dilution	Incubation conditions	
Ab				(min)		Time (hour)	Temp (°C)
AGR2	Monoclonal	EPR3278	Abcam ²	2	1:1500	20	4
AR	Monoclonal	441	DAKO ¹	2	1:50	20	4
PR	Monoclonal	PgR 636	DAKO	2	1:1000	1	18
ER α	Polyclonal		Abcam ²	2	1:50	2	18
ER β	Monoclonal	PPG5/10	Serotec ³	2	1:50	20	4
Ki67	Monoclonal	MM1	Leica ⁴	4	1:200	20	4

*Heat induced antigen retrieval by pressure cooking in citrate buffer pH 6 (Hapangama *et al*, 2012). ¹Ely, Cambridgeshire, UK; ²Cambridge, UK; ³Oxford, UK; ⁴Newcastle upon Tyne, UK; Dorset, UK.

Supplementary Table 2: Genes that perturb *AGR2* when mutated or knocked down. The genes that influence *AGR2* expression when either mutated or knocked down were examined with Illumina's BaseSpace Knockout atlas application (software;<https://www.illumina.com/informatics/research/biological-data-interpretation/nextbio.html>; Illumina, San Diego, CA, USA). See Supplementary_Table_2