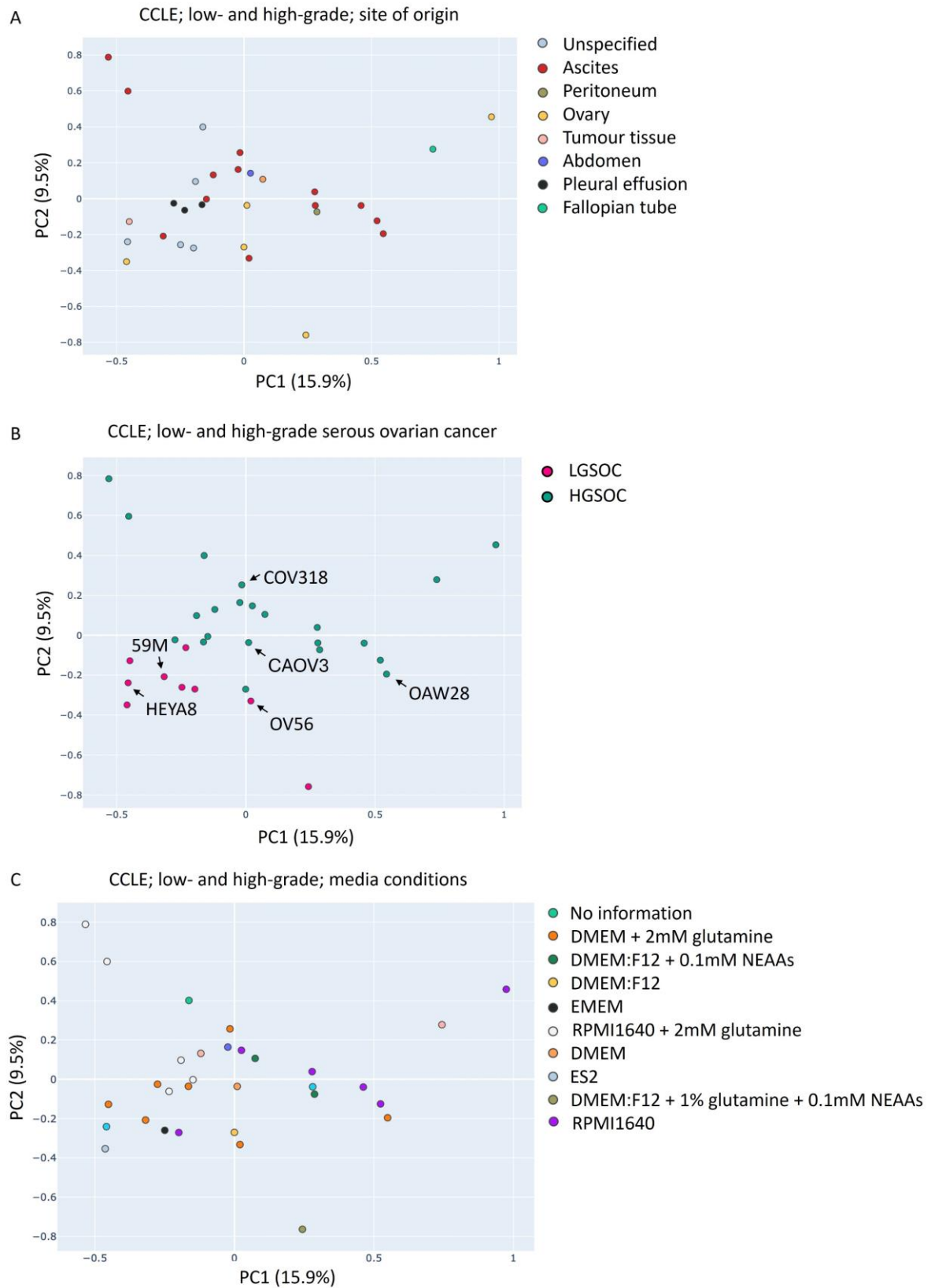


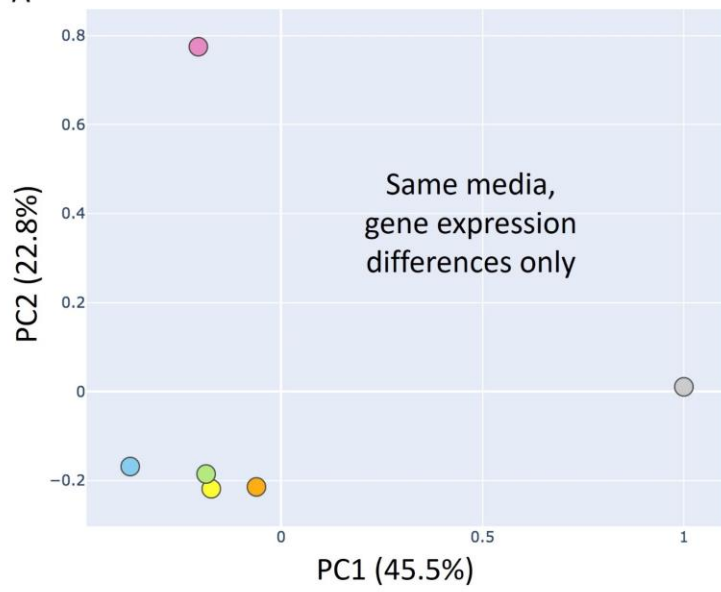
Supplementary data



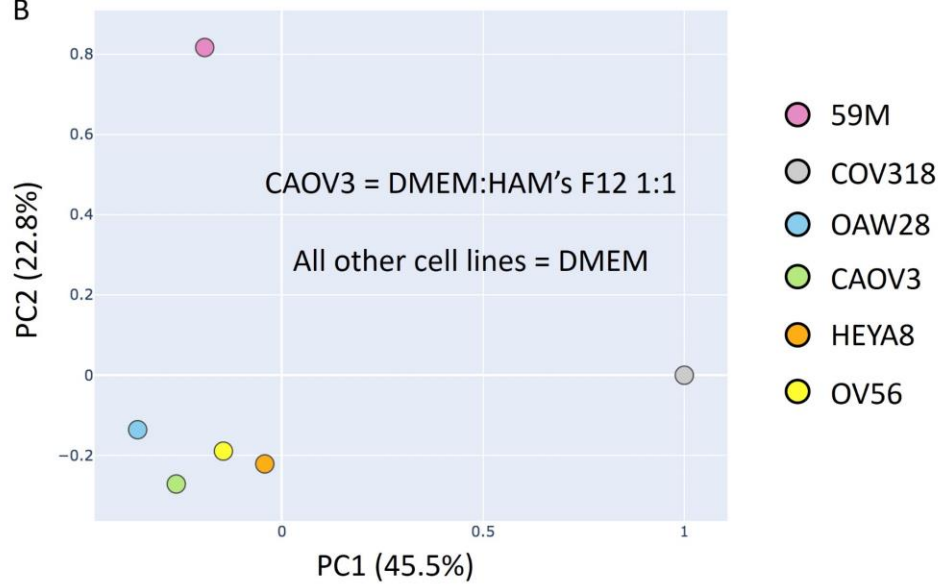
Supplementary Figure 1. Visualising how media and site of origin control spread of transcriptomics. Cancer cell line encyclopedia dataset, $n=31$ ovarian cell lines, low-grade and high-grade serous only. A. Cell line are coloured according to

site of origin. **B.** Cell line are coloured according to subtype (either low-grade or high-grade serous). Cell lines for which metabolic models have been constrained in this study have been indicated (COV318, CAOV3, OAW28, 59M, OV56, HEYA8). **C.** Cell line are coloured according to media on which the sample was grown. Where this was not available from the CCLE database, this has been labelled as 'no information'.

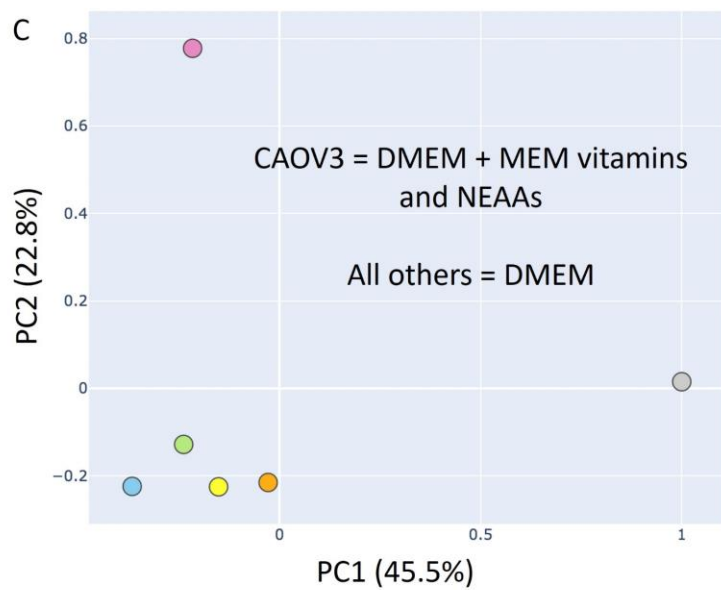
A



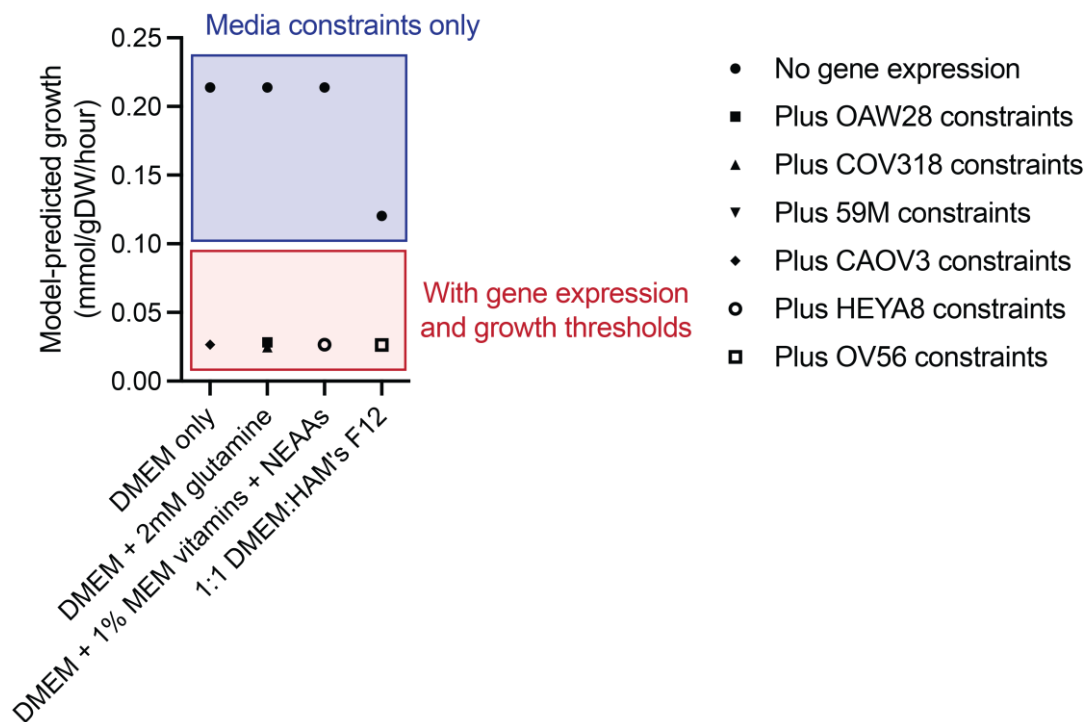
B



C



Supplementary Figure 2. Standardisation of media conditions. Cell line model indicated on key. Models constrained using Cancer Cell Line Encyclopedia gene expression data **A.** *In silico* media definition set to DMEM for all cell lines. **B.** *In silico* media definition set to DMEM for all cell lines, except CAOV3, where media definition was DMEM:HAM's F12 1:1 (as indicated on figure). **C.** *In silico* media definition set to DMEM for all cell lines, except CAOV3, where media definition was DMEM + MEM vitamins and non-essential amino acids (as indicated on figure).



Supplementary Figure 3. Visualisation of the impact of 'omics constraints on FBA-predicted growth. Originally, models have been constrained only using media constraints, then their respective gene expression data (Cancer Cell Line Encyclopedia) was integrated into reaction bounds, and the new FBA-predicted growth rates have been plotted.

Supplementary Table 1. Media conditions for chosen CCLE cell lines

Cell line	Media composition	Reference for media composition
59M	DMEM + 2mM Glutamine + 1mM Sodium Pyruvate (NaP) + 20 IU/l Bovine Insulin + 10% Foetal Bovine Serum (FBS)	https://www.cellbankaustralia.com/59m.html
HEYA8	DMEM + 1% MEM vitamins + 1% MEM NEAAs + 10% FBS	PMID: 27147568
OV56	DMEM:HAMS F12 (1:1) + 2mM Glutamine + 5% Foetal Bovine Serum (FBS) + 0.5 ug/ml hydrocortisone + 10ug/ml insulin	https://www.culturecollections.org.uk/
CAOV3	DMEM + 10% FBS	https://www.atcc.org/products/htb-75
COV318	DMEM + 2mM Glutamine + 10% Foetal Bovine	https://www.culturecollections.org.uk/

	Serum (FBS)	
OAW28	DMEM + 2mM Glutamine + 1mM Sodium Pyruvate (NaP) + 20 IU/l Bovine Insulin + 10% Foetal Bovine Serum (FBS)	https://www.culturecollections.org.uk/

Supplementary Table 2. Experimental and model-predicted growth rates.

Cell line	Experimentally-predicted doubling time (hours)/growth rate (g/gDW/hour)	Source of experimental growth rate	Model-predicted doubling time (hours)/growth rate (g/gDW/hour)
59M	48/0.02083	Cellosaurus.org	37.66 (with growth threshold) 37.66 (with no growth threshold)
HEYA8	16/0.0625	Cellosaurus.org	15.79 (with growth threshold) 37.70 (with no growth threshold)
OV56	24.46/0.0409	PMID: 29774110	24.10 (with growth threshold) 38.02 (with no growth thresholds)
CAOV3	63.95/0.01564	Cellosaurus.org	38.70 (with growth threshold) 38.70 (with no growth threshold)
COV318	50/0.02	Cellosaurus.org	40.58 (with growth threshold) 40.58 (with no growth thresholds)
OAW28	37/0.02703	Cellosaurus.org	35.47 (with growth threshold) 35.47 (with no growth threshold)

Supplementary files

Supplementary Data 2: Supplementary modeling worksheet

Supplementary Data 3: Knockout simulations

Supplementary Data 4: Media and subtypes

GitHub repository: https://github.com/katemeeson/repository_to_accompany_paper_2023

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