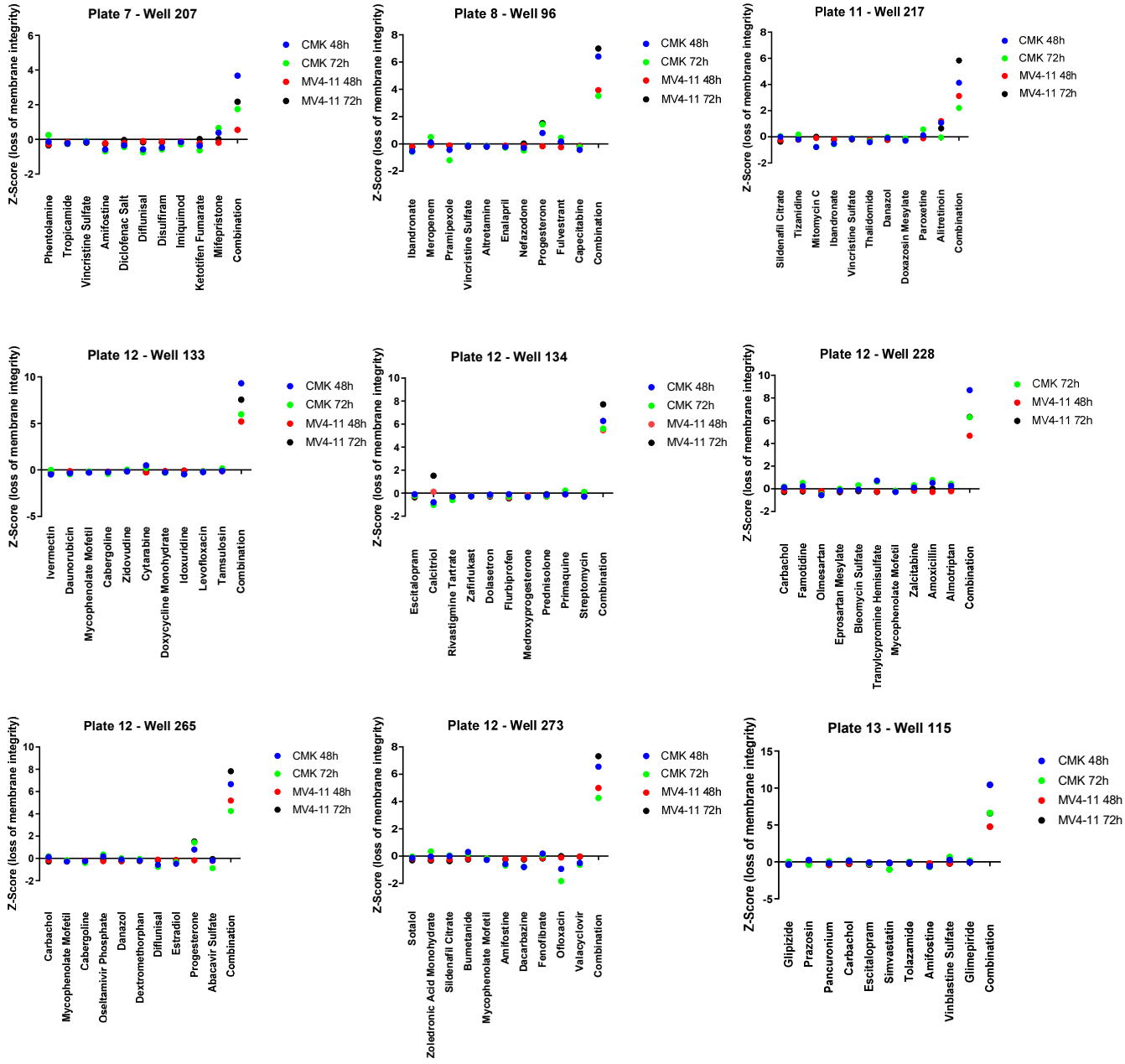
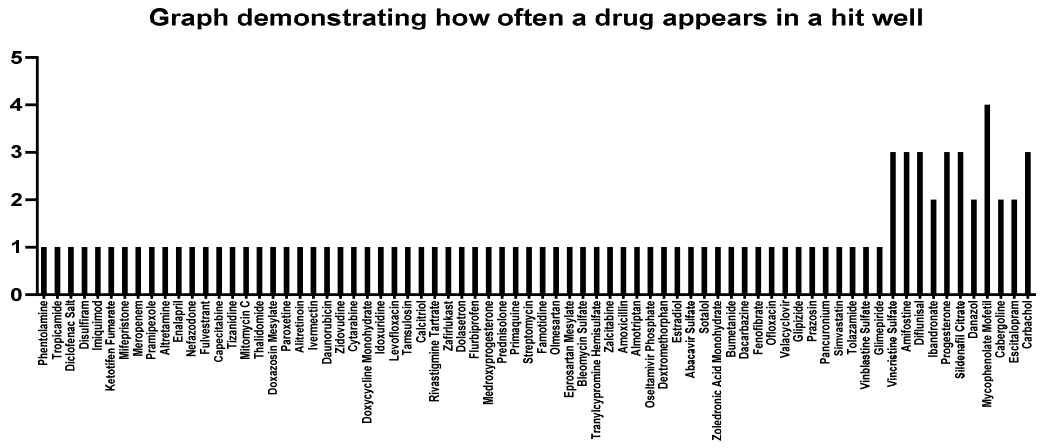
A

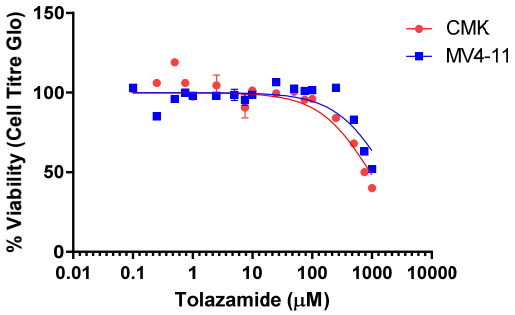


B

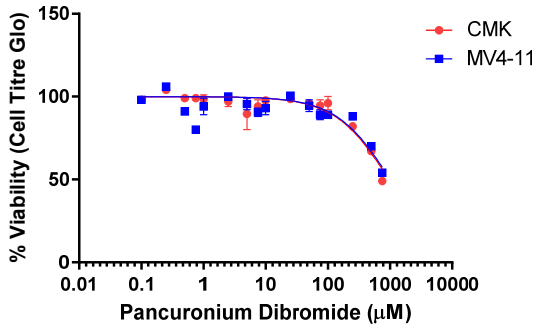


Supplementary Figure S1: *Successful combinations from the MuSICAL combination screen.* (A) 9 combinations overlapped both CMK and MV4-11 cell lines and demonstrated a Z-Score>2 while each of the single agents demonstrated a Z-Score <2. Plate 13 – well 115 was taken forward for deconvolution. (B) A graph demonstrating the number of times each drug appeared in a successful combination.

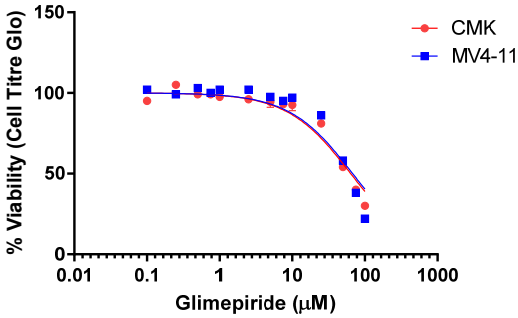
A (i)



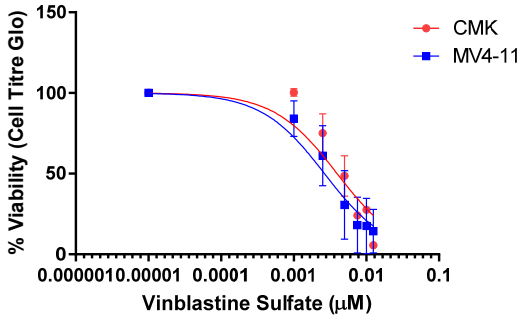
(ii)



(iii)



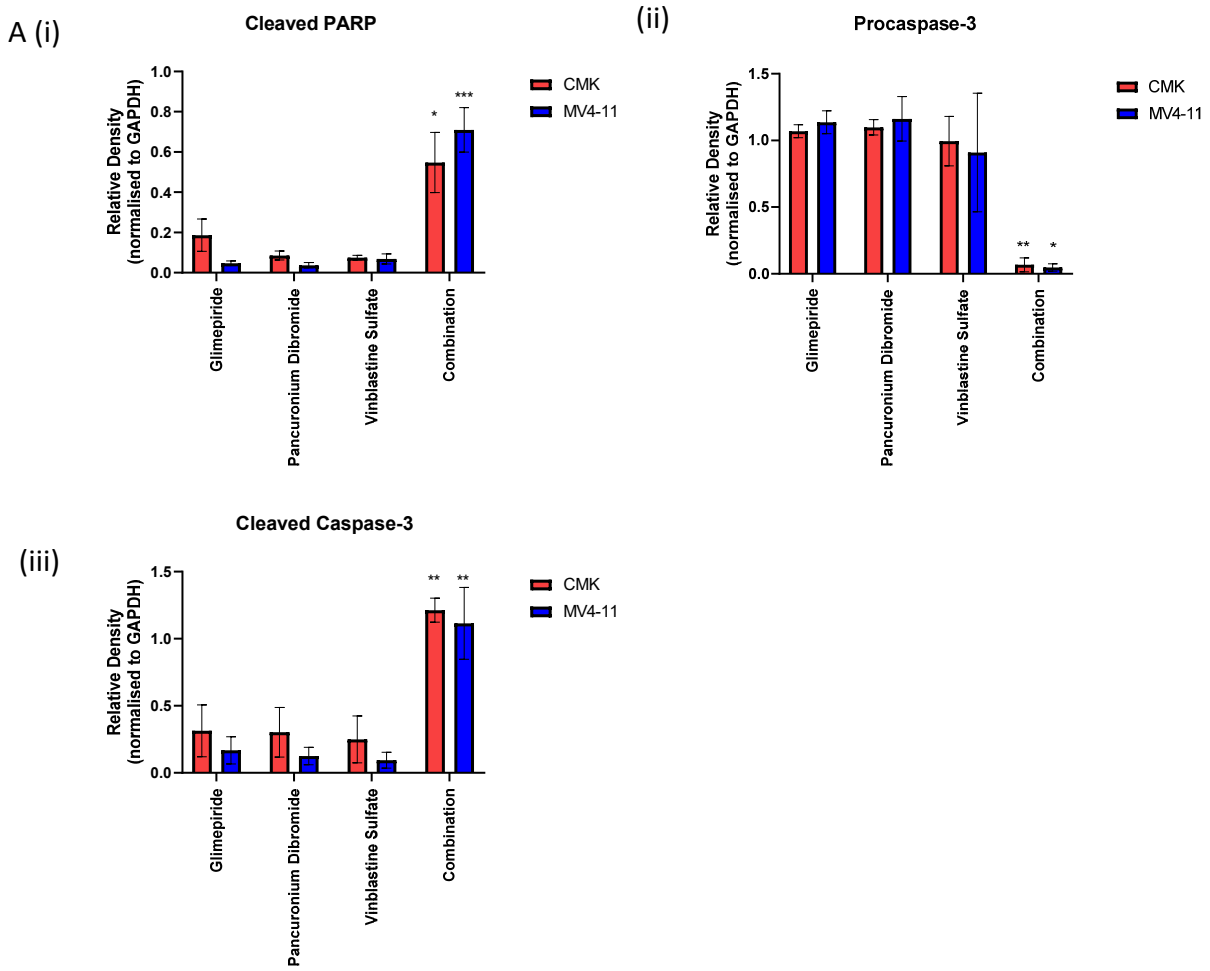
(iv)



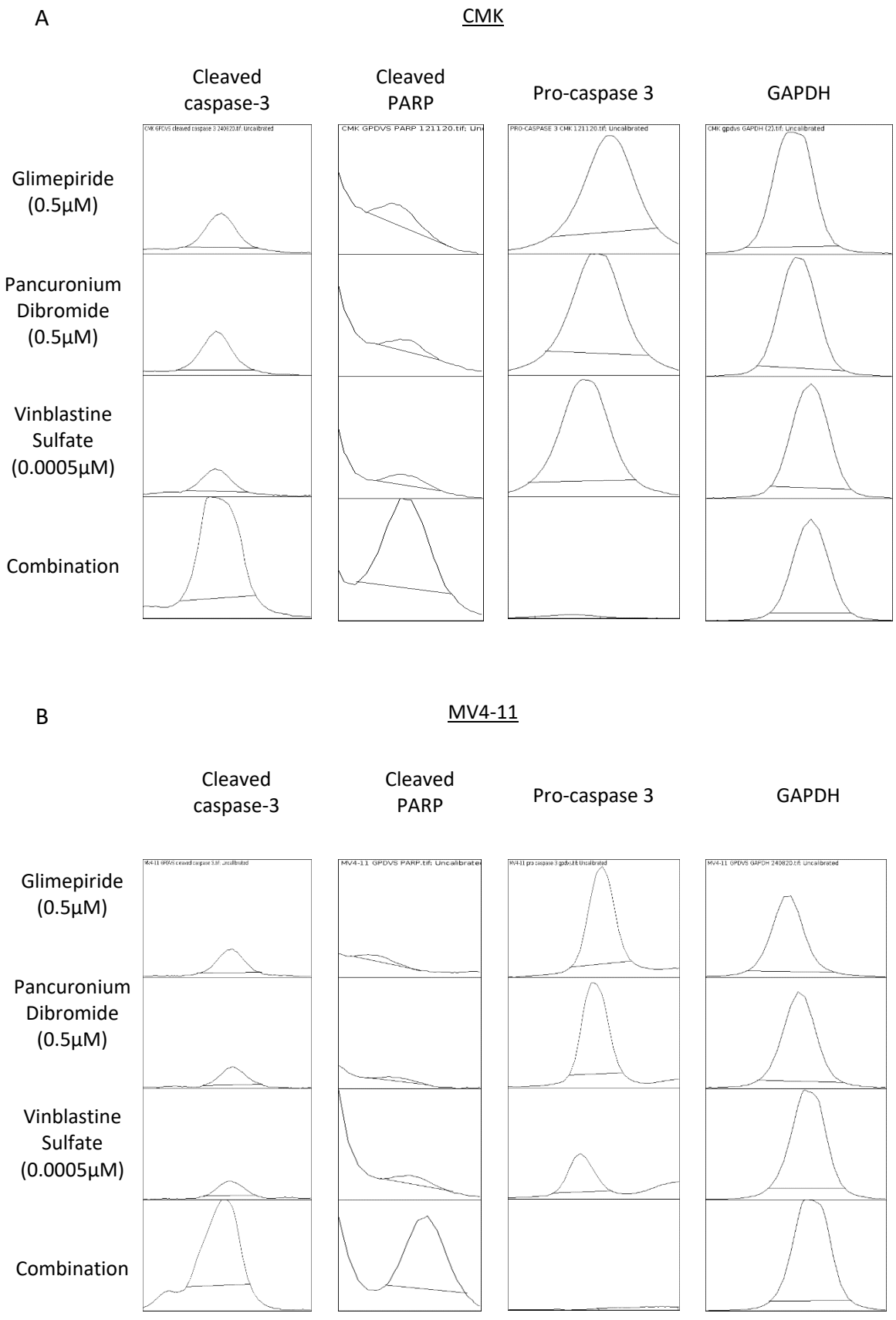
Supplementary Table S1 – *Approximate IC50(μM) concentrations for CMK and MV4-11 cell lines following treatment with increasing concentrations of Tolazamide, Pancuronium Dibromide, Glimepiride and Vinblastine Sulfate*

Drug Name	CMK (~IC50μM)	MV4-11 (~IC50μM)
Tolazamide	937.2	1748
Pancuronium Dibromide	961.2	1007
Glimepiride	63.84	67.87
Vinblastine Sulfate	0.003952	0.002648

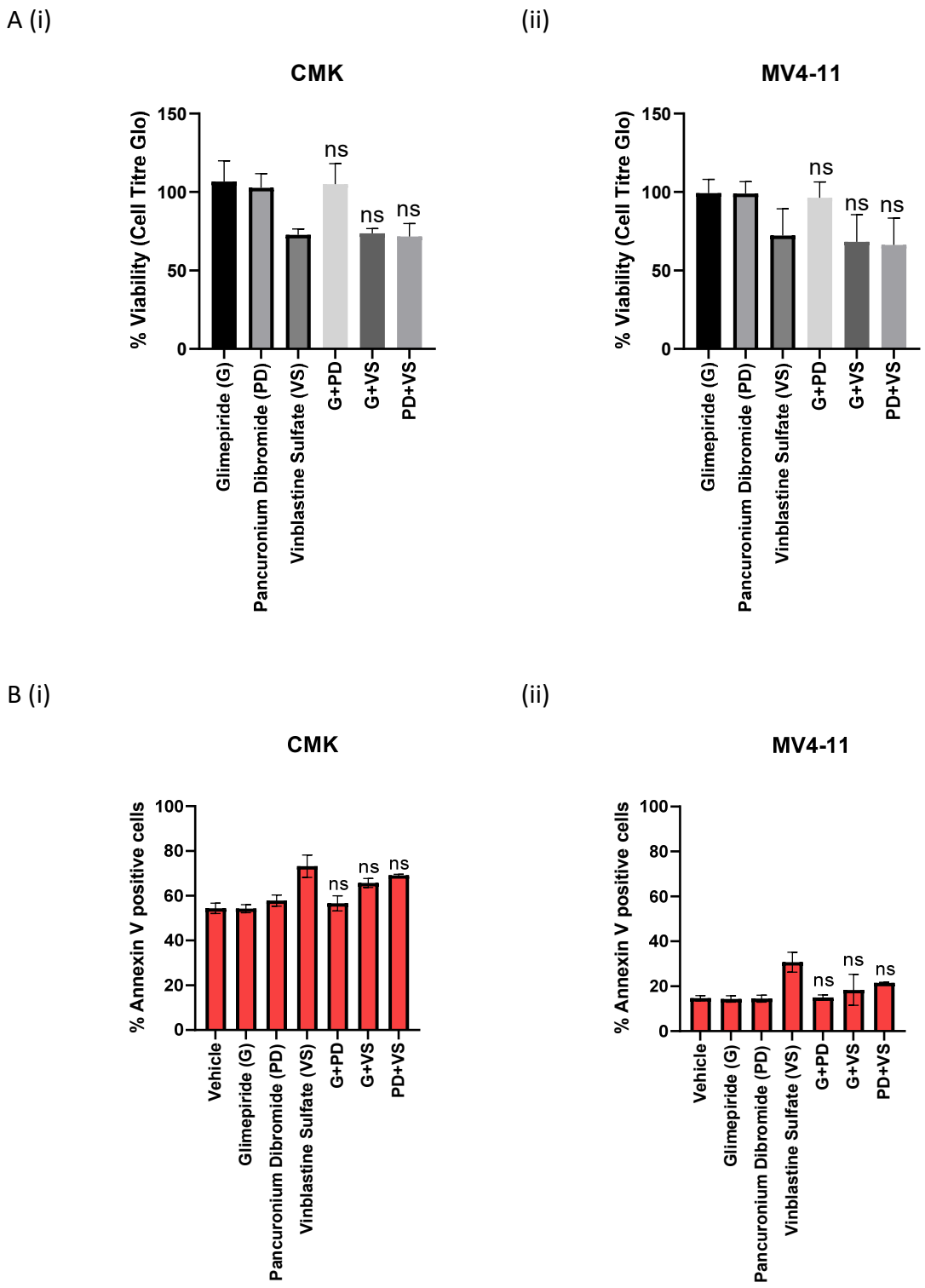
Supplementary Figure S2: Dose response curves for paediatric AML cell lines following treatment with increasing concentrations of Tolazamide, Pancuronium, Glimepiride and Vinblastine Sulfate.



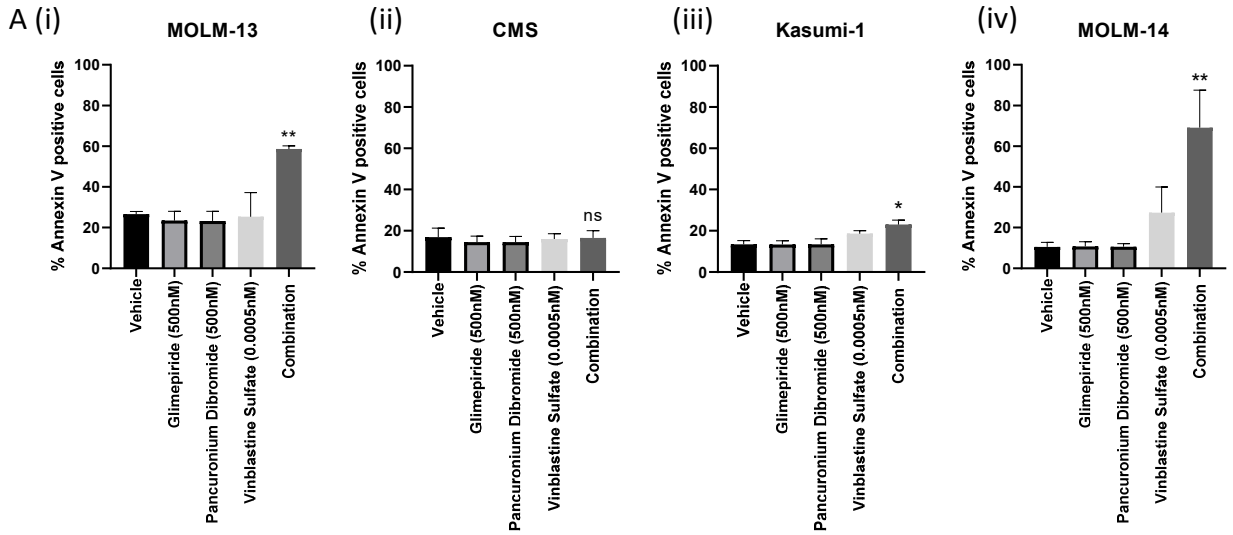
Supplementary Figure S3: Densitometry analysis of (i) cleaved PARP, (ii) pro-caspase-3 and (iii) cleaved caspase-3 for CMK and MV4-11 cell lines treated with Glimepiride, Pancuronium Dibromide and Vinblastine Sulfate as single agents and as a triple combination. Results are representative of three independent experiments. **= P <0.05, **=P <0.01, ***P= <0.001.*

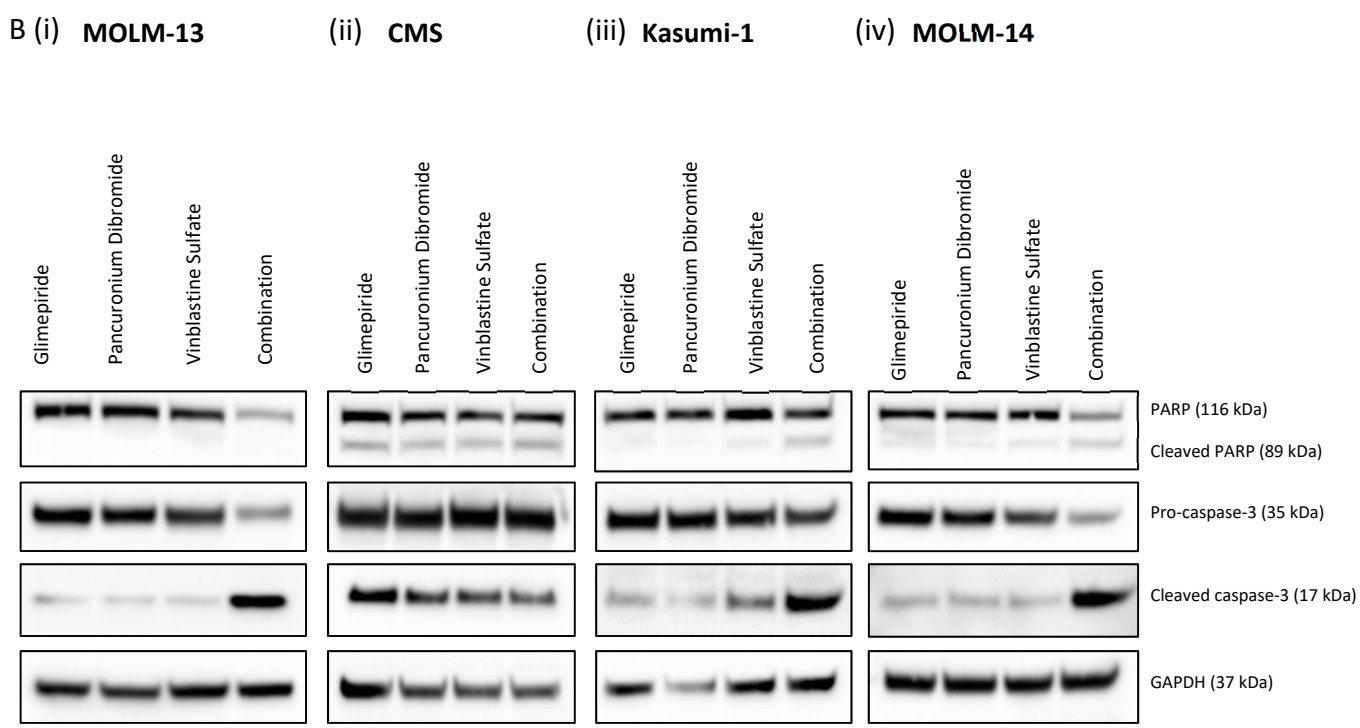


Supplementary Figure S4: Representative histograms from densitometry analysis. (A) CMK (B) MV4-11.



Supplementary Figure S5: *Investigating the effects of the pairwise combinations of Glimepiride, Pancuronium Dibromide and Vinblastine Sulfate.* (A) CellTiter-Glo® luminescence assay was used to investgate the cell viability of (i) CMK and (ii) MV4-11 cell lines following 72h treatment with Glimepiride (0.5μM), Pancuronium Dibromide (0.5μM) and Vinblastine Sulfate (0.0005μM) as single agents and as pairwise combinations. (B) Flow cytometry analysis of Annexin V/PI positive cell population of (i) CMK and (ii) MV4-11 cell lines following 72h treatment with Glimepiride (0.5μM), Pancuronium Dibromide (0.5μM) and Vinblastine Sulfate (0.0005μM) as single agents and as pairwise combinations. *ns = non-significant.*





Supplementary Figure S6: *Investigating the induction of apoptosis following treatment with glimepride, pancuronium dibromide and vinblastine sulfate as a triple combination across multiple pediatric AML cell lines.* (A) Flow cytometry analysis of Annexin V/PI positive cell population of (i) MOLM-13, (ii) CMS, (iii) Kasumi-1 and (iv) MOLM-14 cell lines following 72h treatment with Glimepiride (0.5μM), Pancuronium Dibromide (0.5μM) and Vinblastine Sulfate (0.0005μM) as single agents and as a triple combination. (B) Western blot analysis of PARP, Pro-Caspase-3, and cleaved Caspase-3 in the (i) MOLM-13, (ii) CMS, (iii) Kasumi-1 and (iv) MOLM-14 cell lines following 72h treatment with Glimepiride (0.5μM), Pancuronium Dibromide (0.5μM) and Vinblastine Sulfate (0.0005μM) as single agents and as a combination. GAPDH was used as a loading control. Results shown are representative of three independent experiments. *ns = non-significant*, *= *P <0.05*, **=*P <0.01*.