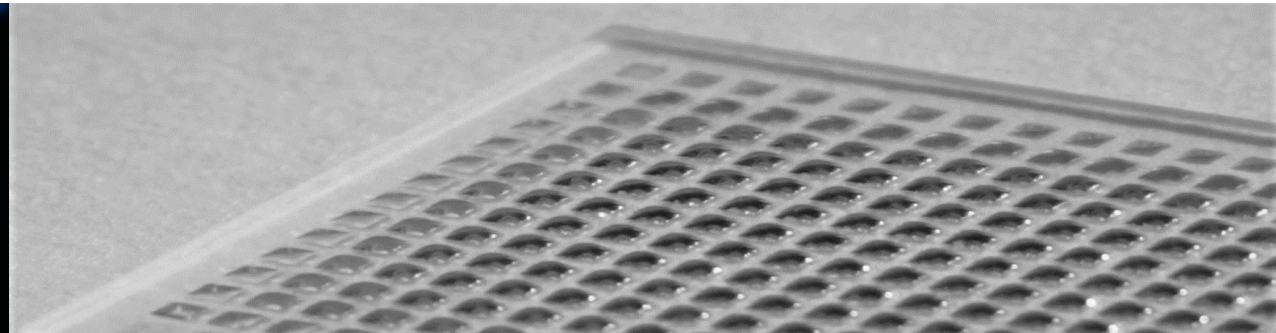
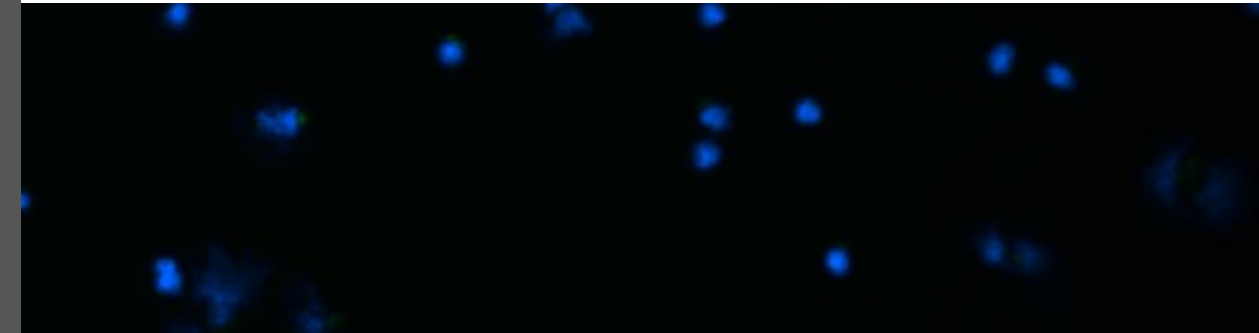


Droplet Microarray- a miniaturized array platform for drug screening

Alexandra Matzke-Ogi, Head of Biology Lab



„IC₅₀ determination in 150nL on 1mm spots.“

Comparative cell screening in 384 well plate and on Droplet Microarray



Preparation of drug library (Day 1)

Different concentrations of 12 drugs were dispensed on hydrophilic spots of a sterile DMA slide with 672 (14x48) hydrophilic spots using the sciFLEXARRAYER S11 liquid dispenser. For final concentrations 0.05 μM , 0.1 μM , 0.5 μM , 1 μM , 50 μM , 10 μM and 100 μM 1,5 nL of the 100x concentrated stocks (5 repetitions per condition) were dispensed onto the DMA at room temperature. 1,5 μL of DMSO was used as control. The DMA slide was dried for 24 h in a light protected chamber containing silica gel.

Dispensing of cells on DMA (Day 2)

150 cells/spot were seeded in 150 nL DMEM +10% FCS on Droplet Microarrays with 672 spots (Aquarray, cat nr. 102) using the non-contact dispenser I-DOT One. The DMA was incubated in a humidity chamber at 37°C, 5% CO₂ for 48 h.

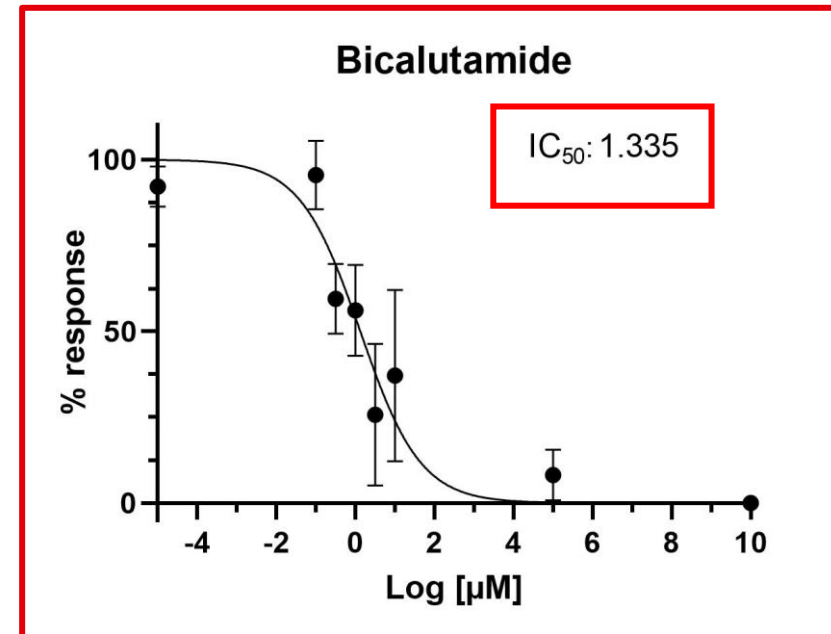
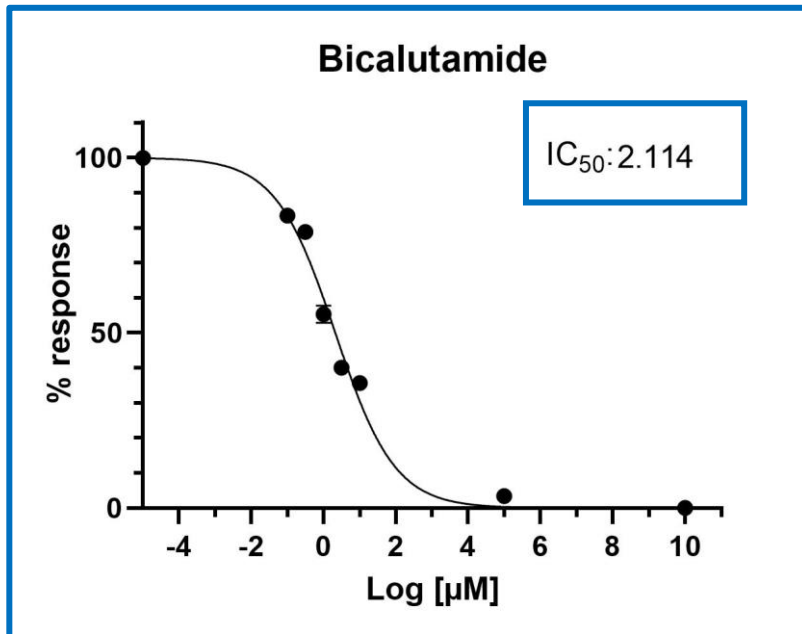
Nuclear staining (Day 4)

50 nL of Hoechst in a final dilution of 1:2500 were dispensed onto each droplet and incubated for 15 min at 37°C prior to imaging with the image reader Cytation 3. Hoechst positive cells were counted with the automated analytic tool for nuclear staining.

Comparison IC₅₀ curve on microplate vs Droplet Microarray - Bicalutamide

384 well plate

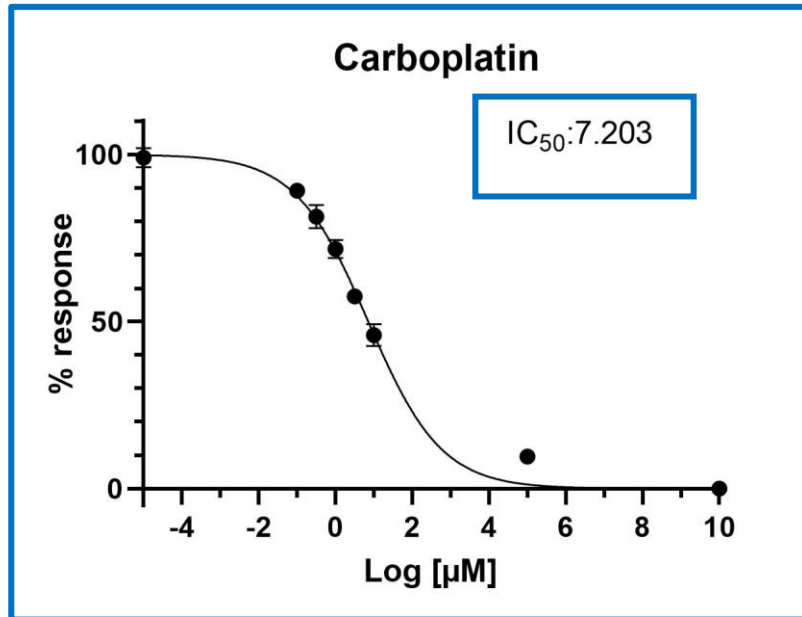
Droplet Microarray
672 spots



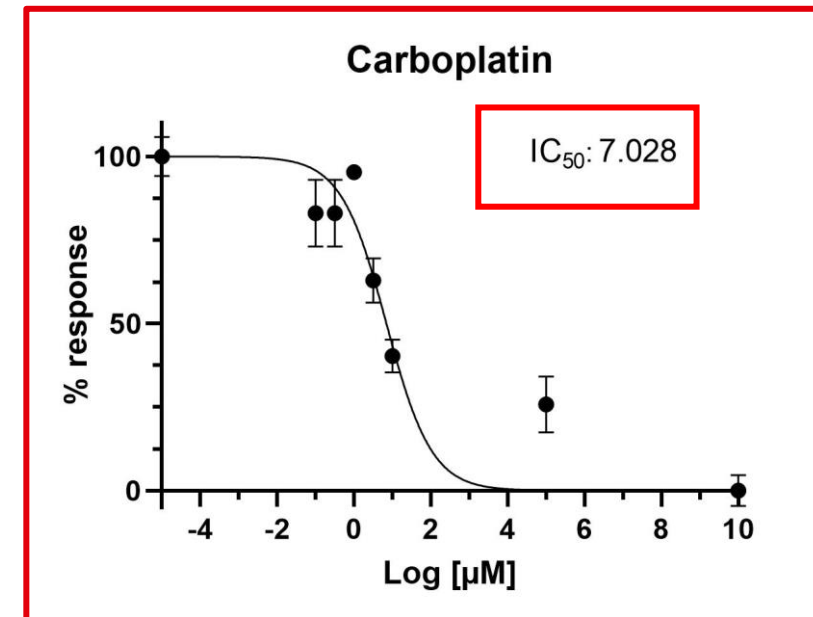
Difference: factor 1,6

Comparison IC₅₀ curve on microplate vs Droplet Microarray - Carboplatin

384 well plate

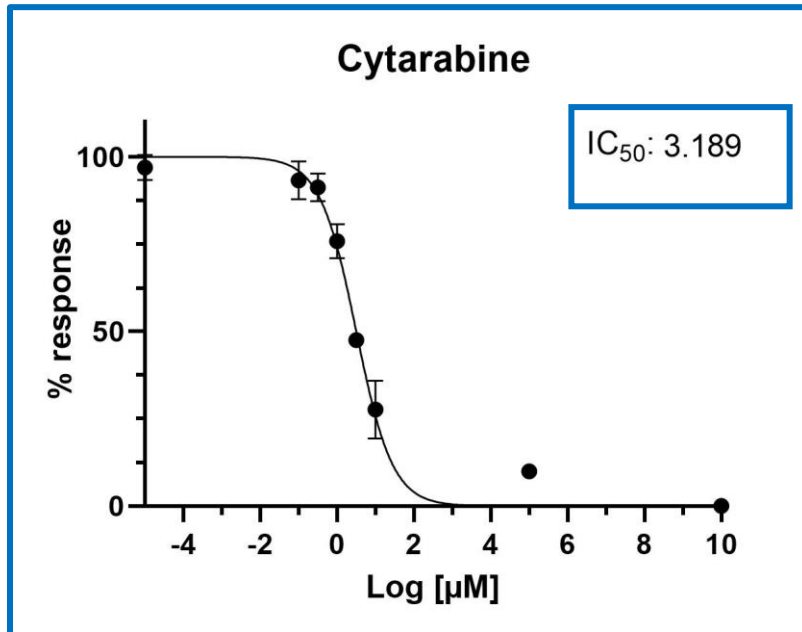


Droplet Microarray
672 spots

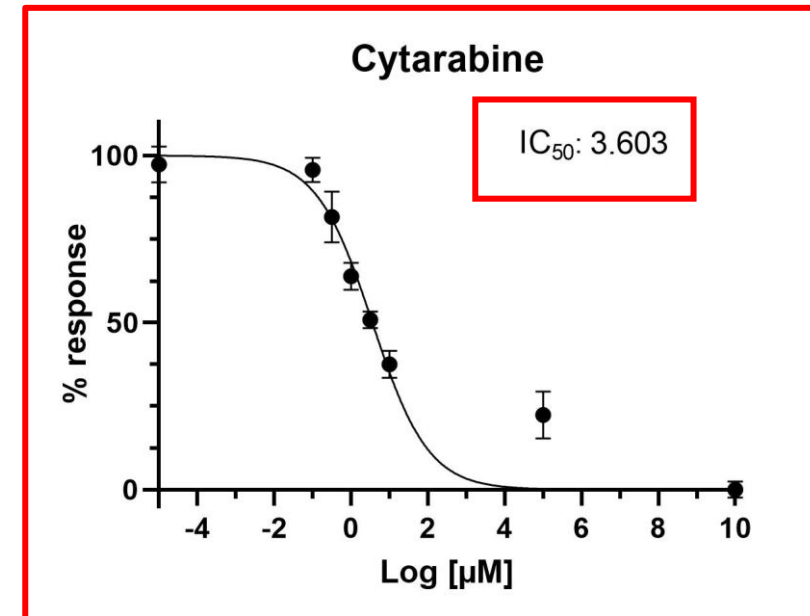


Comparison IC₅₀ curve on microplate vs Droplet Microarray - Cytarabine

384 well plate

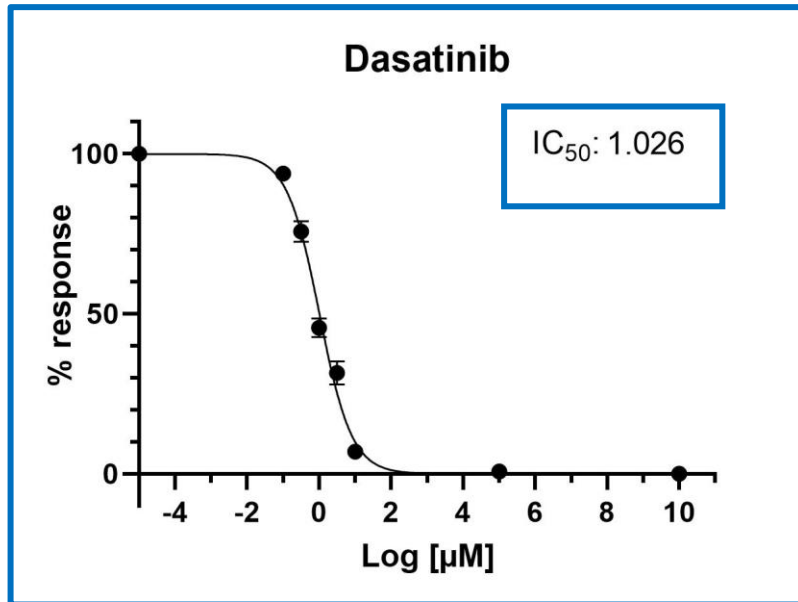


Droplet Microarray
672 spots

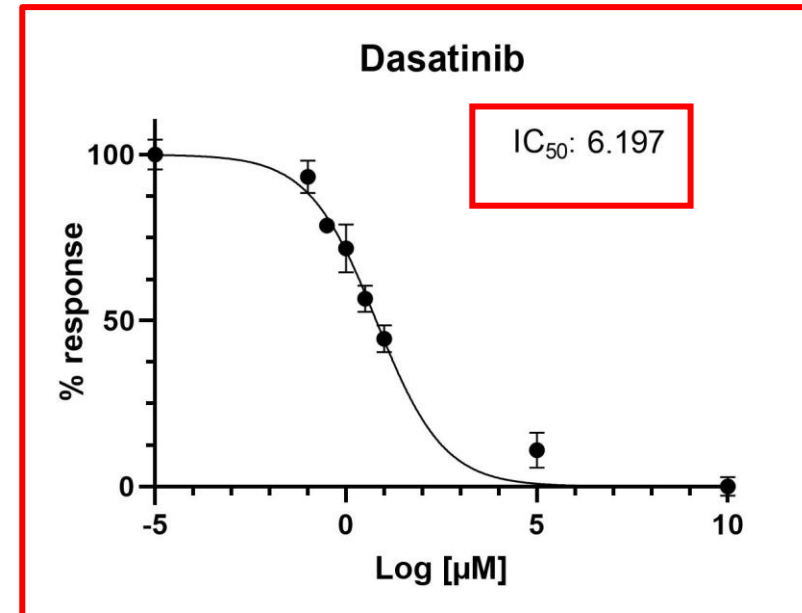


Comparison IC₅₀ curve on microplate vs Droplet Microarray - Dasatinib

384 well plate



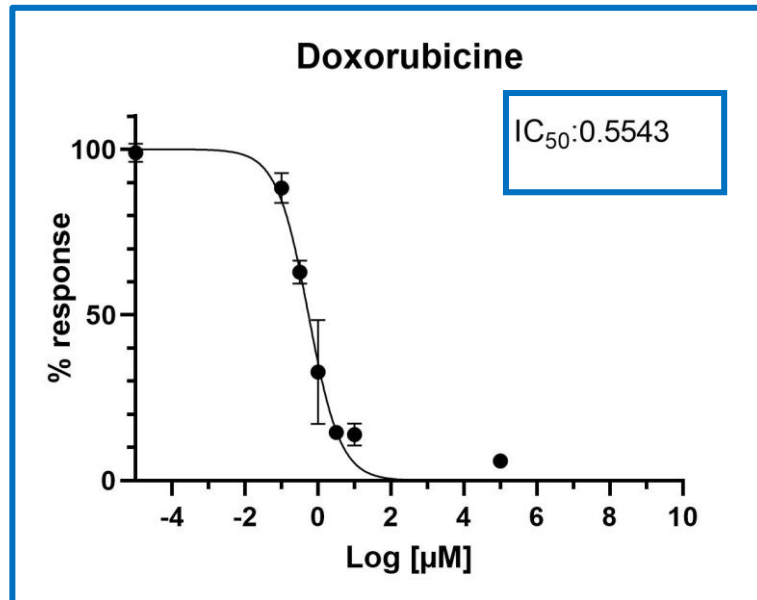
Droplet Microarray
672 spots



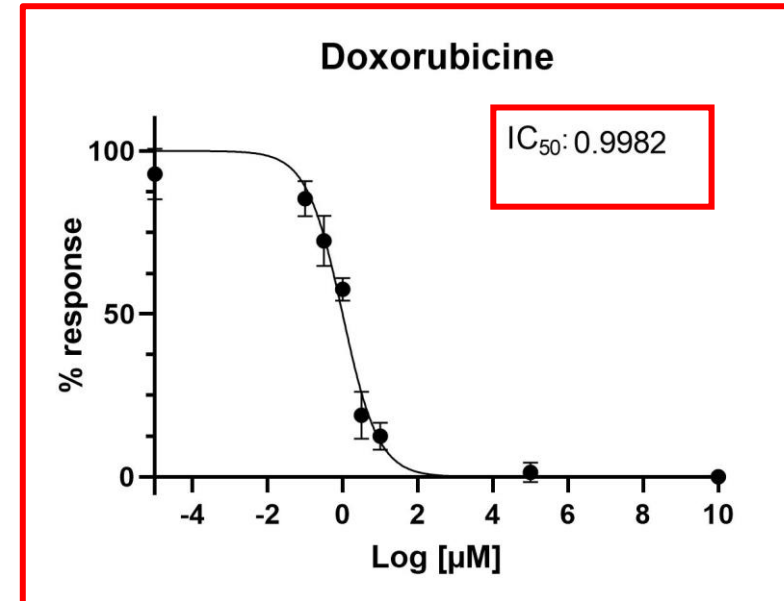
Difference: factor 6

Comparison IC₅₀ curve on microplate vs Droplet Microarray - Doxorubicine

384 well plate



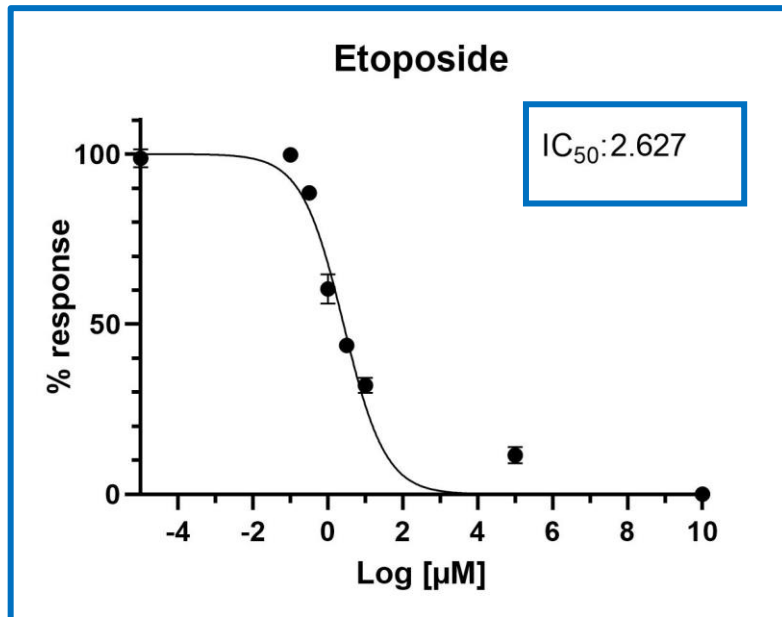
Droplet Microarray
672 spots



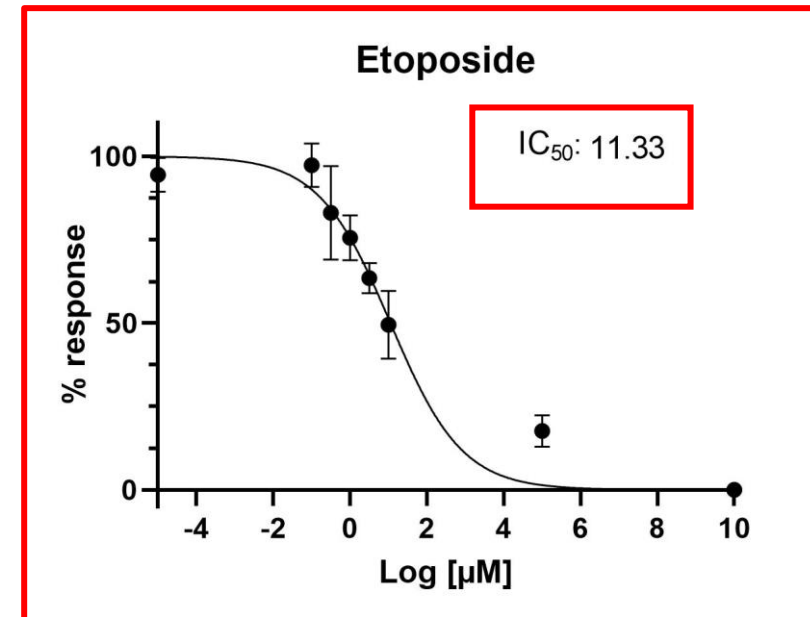
Difference: factor 1,8

Comparison IC₅₀ curve on microplate vs Droplet Microarray - Etoposide

384 well plate



Droplet Microarray
672 spots

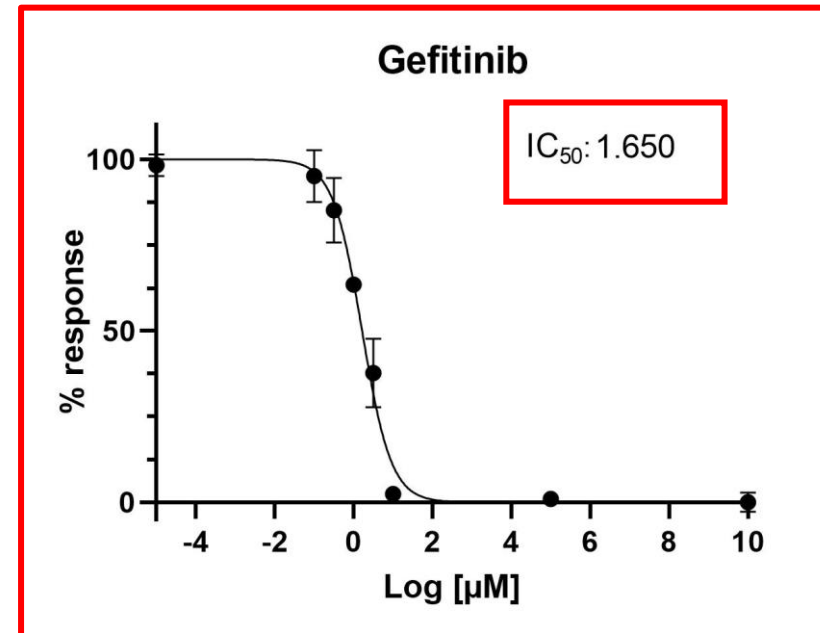
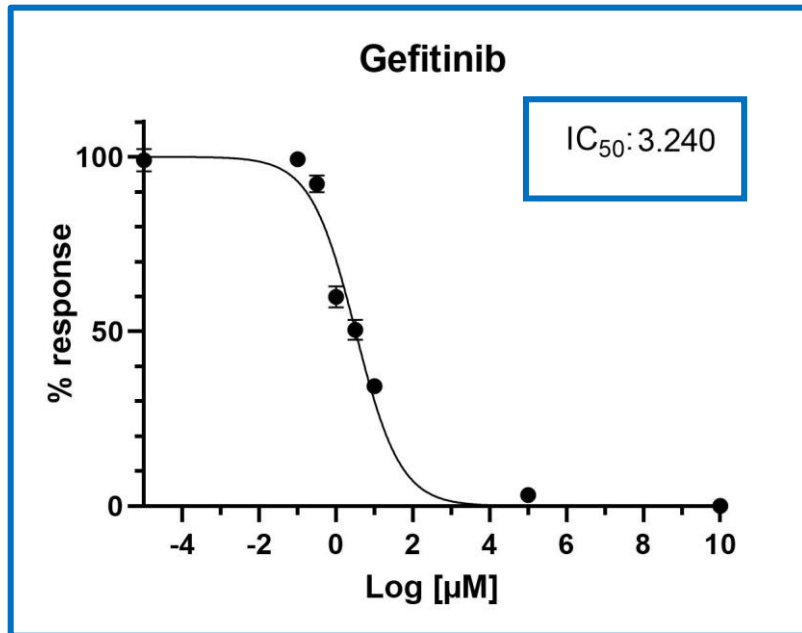


Difference: factor 4,3

Comparison IC₅₀ curve on microplate vs Droplet Microarray - Gefitinib

384 well plate

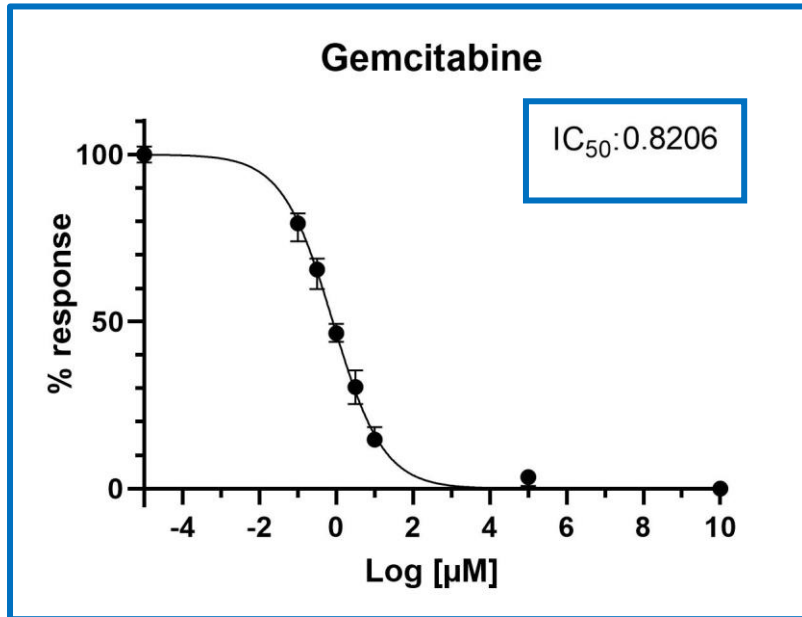
Droplet Microarray
672 spots



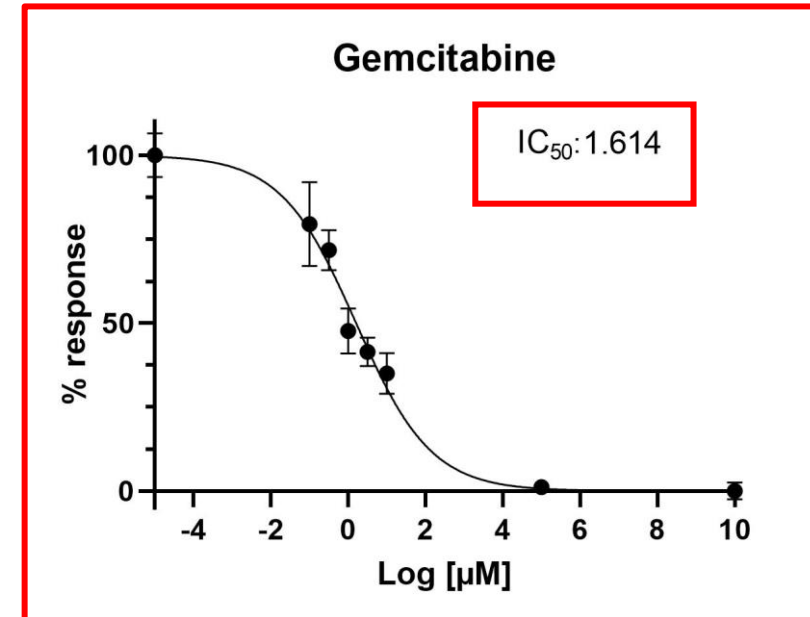
Difference: factor 2

Comparison IC₅₀ curve on microplate vs Droplet Microarray - Gemcitabine

384 well plate



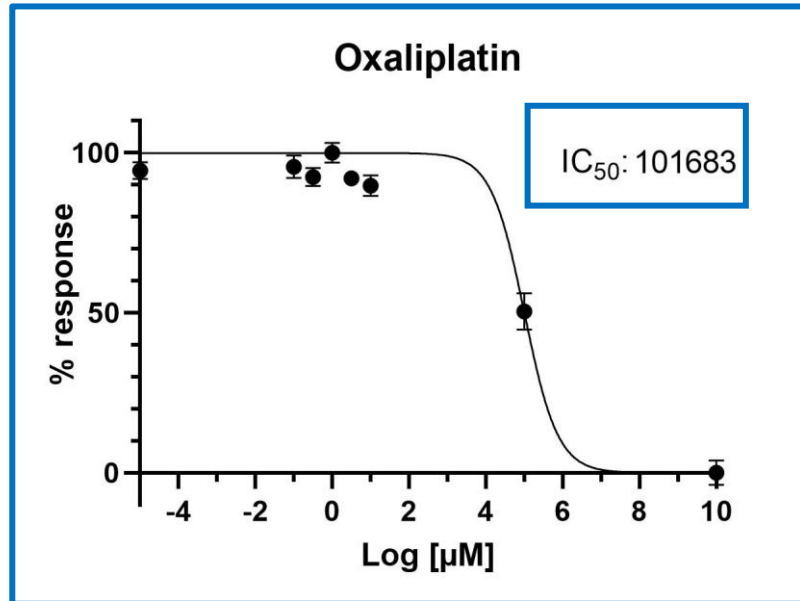
Droplet Microarray
672 spots



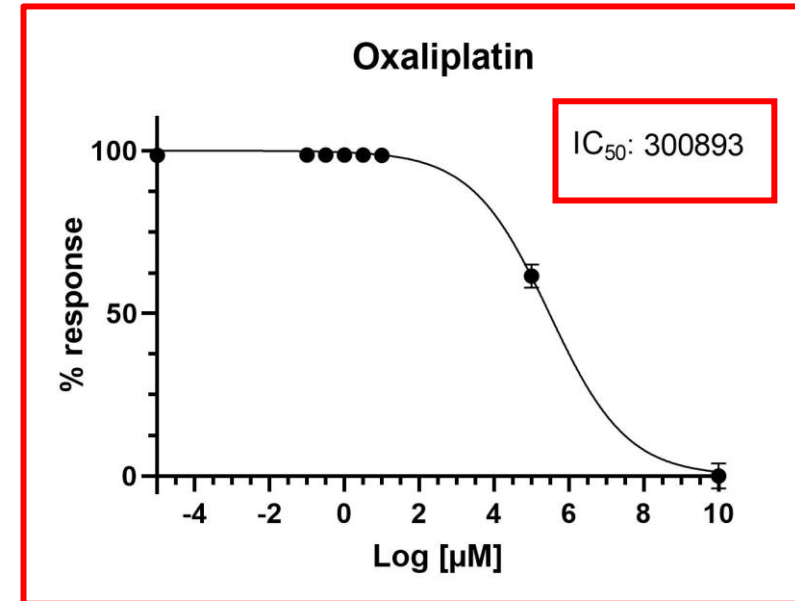
Difference: factor 2

Comparison IC₅₀ curve on microplate vs Droplet Microarray - Oxaliplatin

384 well plate

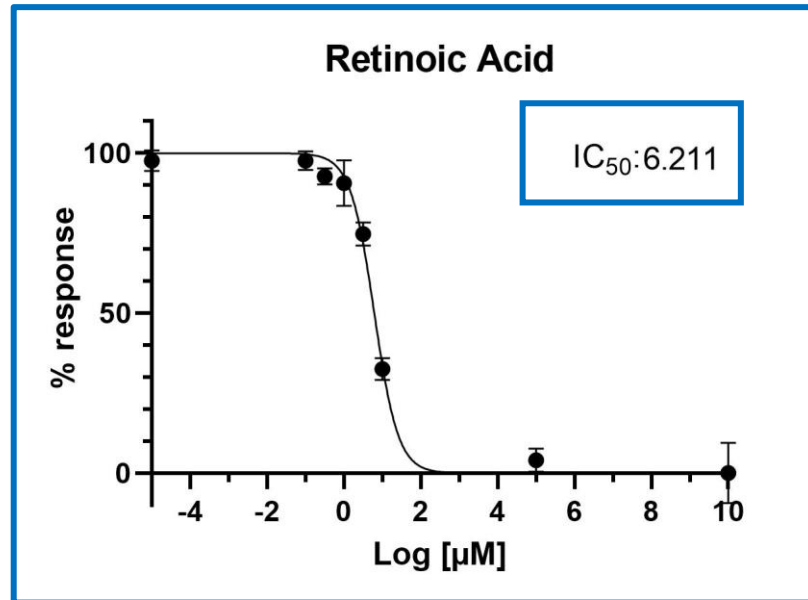


Droplet Microarray
672 spots

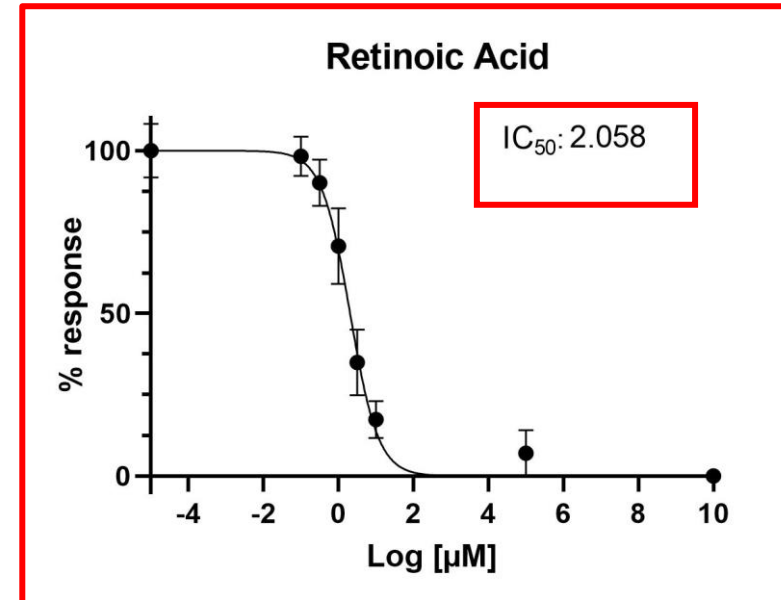


Comparison IC₅₀ curve on microplate vs Droplet Microarray - Retinoic Acid

384 well plate



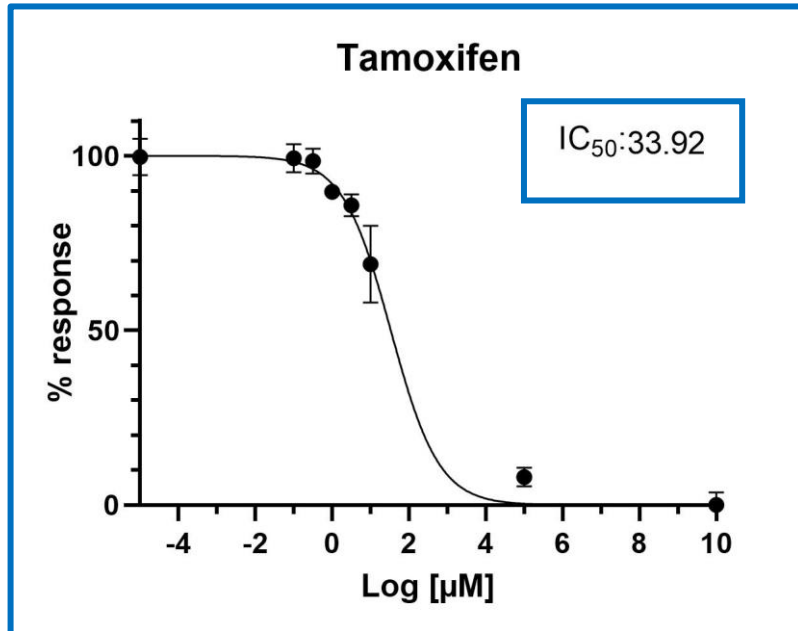
Droplet Microarray
672 spots



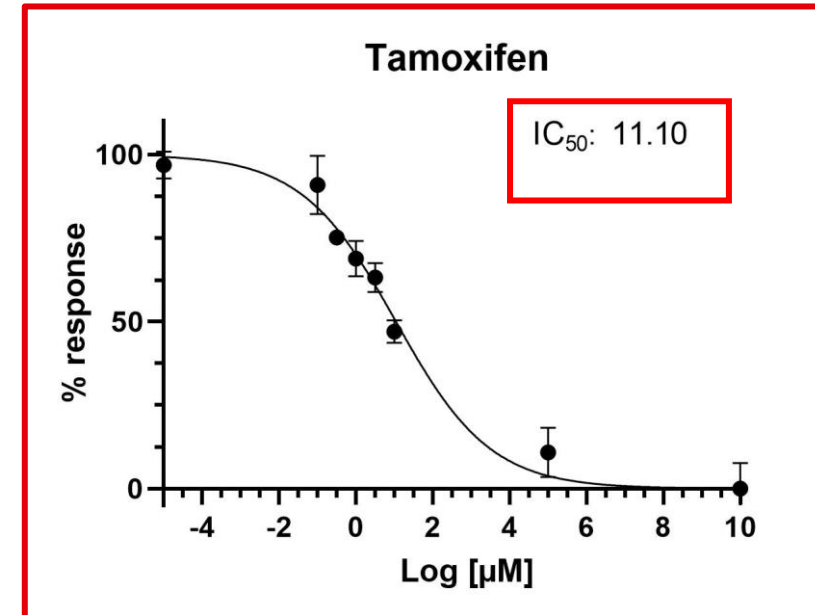
Difference: factor 3

Comparison IC₅₀ curve on microplate vs Droplet Microarray - Tamoxifen

384 well plate



Droplet Microarray
672 spots

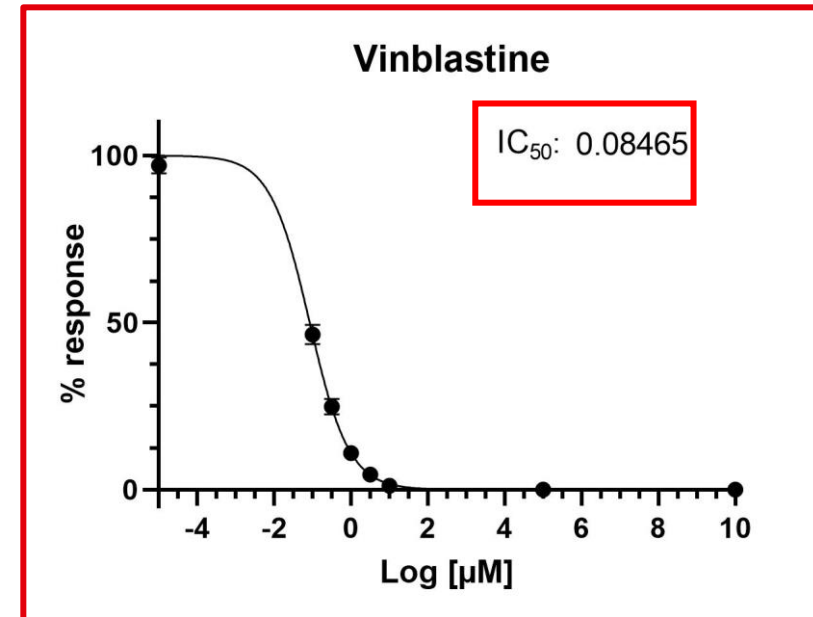
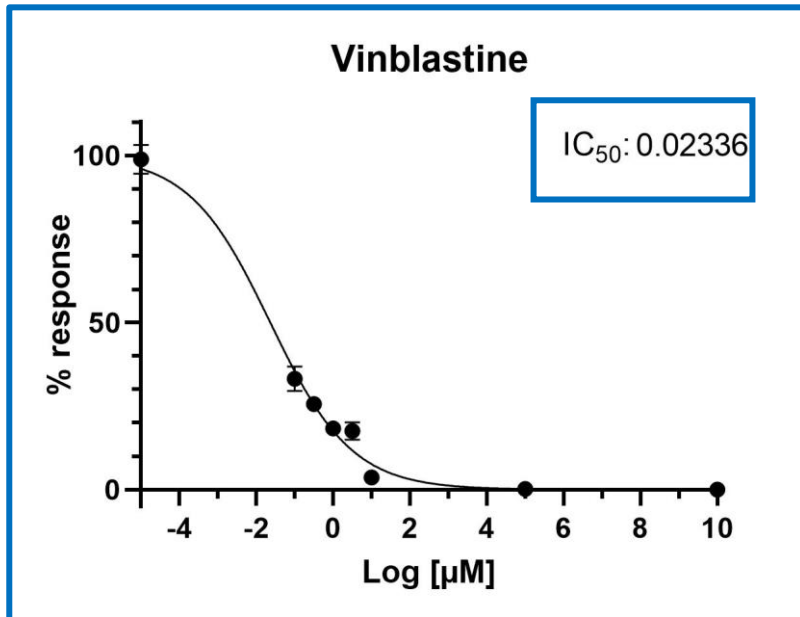


Difference: factor 3

Comparison IC₅₀ curve on microplate vs Droplet Microarray - Vinblastine

384 well plate

Droplet Microarray
672 spots



Difference: factor 3,6

Tabulated summary of IC₅₀ values for 12 compounds

	384 well plate	Droplet Microarray
Bicalutamide	2,144	1,335
Carboplatin	7,203	7,028
Cytarabine	3,189	3,608
Dasatinib	1,026	6,197
Doxorubicine	0,554	0,9982
Etoposide	2,672	11,33
Gefitinib	3,24	1,65
Gemcitabine	0,8206	1,614
Oxaliplatin	101683	300893
Retinoic Acid	6,211	2,058
Tamoxifen	33,92	11,10
Vinblastine	0,02336	0,0846



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