

**Table S1. Criteria for flagging series for potential liabilities**

Liability	Reference Assay Activity	PubChem Assay ID <sup>1</sup>
Fluorescence/absorbance	Concentration dependent changes in total fluorescence in FP assay	1479
Promiscuous aggregation	Selectively active in the detergent free Cruzain assay	2383
Promiscuous redox activity	Active in the caspase-1 or caspase-7 assay	2389, 889
Low potency	FP assay: >20 $\mu$ M	1469
Low efficacy	FP assay: <50%	1469
Low percentage of active compounds	FP assay: significantly lower actives compared to mean actives in all series (Fisher's exact test: $P < 0.05$ )	1469
Promiscuous activity	>100 in house assays: <sup>2</sup> promiscuity score >0.5	

<sup>1</sup><http://www.ncbi.nlm.nih.gov/pcassay>

<sup>2</sup>Promiscuity score was calculated using the formula:  $(2N_{\text{active}} + N_{\text{inconclusive}}) / N_{\text{tested}}$ , where  $N_{\text{active}}$  denotes the number of assays where a compound was active,  $N_{\text{inconclusive}}$  denotes the number of assays where a compound showed inconclusive activity and  $N_{\text{tested}}$  denotes the total number of assays a compound was tested.