



**Figure S2** ROC curves for plate 2-5 simulations comparing dosage-response encoded matrix linear models to categorically encoded  $S$  scores. Dosage-response encoded matrix linear models outperform all other methods shown. These include  $S$  scores for data encoded with categorical condition-dosage combinations, for any of the three representations (Cond.-Conc, 1/3 Hits, and 2/3 Hits), as well as  $S$  scores for data encoded with just the conditions.