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Estimating individual peptide effects from grouped Elispot data

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Abstract

When there is a need to analyse hundreds of peptides using the Elispot assay, several peptides may be grouped in the same well. This way of analysing peptides is routinely done by lab specialists, but with limitations to the efficiency of this approach. We propose here a method for using the Elispot assay with grouped peptides, involving both an efficient design of the grouping and a statistical method to obtain reliable estimates of the individual peptide effects. The method assigns a distribution to the individual peptide responses and then maximizes the likelihood for the individual peptide effects from the observed group responses using the EM algorithm, which handles the contributions of the individual peptides in a group as unobserved data.

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