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Mimtags: The use of phage display technology to produce novel protein-specific probes

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In recent times the use of protein-specific probes in the field of proteomics has undergone evolutionary changes leading to the discovery of new probing techniques. Protein-specific probes serve two main purposes: Epitope mapping and detection assays. One such technique is the use of phage display in the random selection of peptide mimotopes (mimtags) that can tag epitopes of proteins, replacing the use of monoclonal antibodies in detection systems. In this study, phage display technology was used to screen a random peptide library with a biologically active purified human interleukin-4 receptor (IL-4R) and interleukin-13 (IL-13) to identify mimtag candidates that interacted with these proteins. Once identified, the mimtags were commercially synthesized, biotinylated and used for *in vitro* immunoassays. We have used phage display to identify M13 phage clones that demonstrated specific binding to IL-4R and IL-13 cytokine. A consensus in binding sequences was observed and phage clones characterized had identical peptide sequence motifs. Only one was synthesized for use in further immunoassays, demonstrating significant binding to either IL-4R or IL-13. We have successfully shown the use of phage display to identify and characterize mimtags that specifically bind to their target epitope. Thus, this new method of probing proteins can be used in the future as a novel tool for immunoassay and detection technique, which is cheaper and more rapidly produced and therefore a better alternative to the use of monoclonal antibodies.

Biography

Cenk Suphioglu has completed his PhD from the University of Melbourne in 1994 and has over 20 years of research experience. He has more than 70 publications and several patents to his credit. He is currently an Associate Professor of Biomedical Science and Head of the Neuro Allergy Research Laboratory (NARL).

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