

METHODS IN MOLECULAR BIOLOGY

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Yeast Surface Display

Methods, Protocols, and Applications

Edited by

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Preface

Yeast surface display techniques have evolved into a versatile tool for research and industrial applications. In 1993, Maarten P. Schreuder and colleagues described yeast cell wall display of heterologous proteins. In 1997, K. Dane Wittrup and colleagues described yeast surface polypeptide display library construction and screening. Since then, the field has seen explosive growth. Yeast surface display is now widely used for antibody library screening, protein and antibody engineering, and discovery of novel protein-ligand interactions. Billion-member antibody fragment libraries have been created and displayed on the surface of yeast, and used for identification of novel antibodies with desired affinity and specificity. The technique is also widely used in protein engineering to improve catalytic activities of enzymes, affinity and specificity of macromolecules such as T cell receptors, and fine epitope mapping. Furthermore, large human cDNA fragment libraries have been created and displayed on the surface of yeast, allowing identification of cellular proteins binding to a wide variety of ligands including nonprotein ligands. In addition to basic research, yeast surface display technology has found applications in industrial processes such as biofuel production and biosensor development. It is our hope that the content of this volume will help accelerate the work of protein chemists, antibody engineers, molecular and cell biologists, and industrial bioengineers.

San Francisco, CA, USA

Bin Liu

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