



Screening Kits to Monitor Cell - Extracellular Matrix Interactions

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Cell adhesion plays a major role in cell communication and regulation, and is of fundamental importance in the development and maintenance of tissues. Cell-extracellular matrix (ECM) interactions have global implications in many disease states through processes such as angiogenesis, apoptosis, and inflammation, and are critical for normal and tumor cell signal transduction pathways. Knowledge of the molecular mechanisms involved in these interactions will facilitate the development of novel therapeutic molecules to benefit patients diagnosed with diseases such as arthritis and cancer.

The extracellular matrix is a complex structural and functional network of proteins and proteoglycans that can interact simultaneously with multiple cell surface receptors (Aplin, *et al.*, 1998). The majority of these proteins are glycosylated, including a wide variety of collagens, laminins, fibronectin, and elastins. ECM proteins can influence cellular function through a complex feedback mechanism. A class of cell surface proteins known as integrins mediates the adhesion of cells to ECM proteins and endothelial surfaces. These receptors anchor cells to the ECM leading to the transduction

of signaling events that regulate cell survival, proliferation, and migration. Functional integrins are heterodimeric molecules, containing one alpha and one beta transmembrane glycoprotein subunit that are non-covalently bound together. Different integrin combinations may recognize a single ECM ligand, while others bind several different ECM proteins (Aplin, *et al.*, 1998).

Identification of cellular integrin profiles and ECM binding properties is the first step in understanding the mechanism of action in these protein-protein interactions. Historically, antibodies have been used to determine the integrin profiles on a cell's surface by immunoprecipitation, immunofluorescence, immunoblotting, or flow cytometry; however, these methods are laborious or require the use of sophisticated equipment. As an alternative, Millipore offers Integrin-Mediated Cell Adhesion Array kits and ECM Cell Adhesion Array kits as cost effective and efficient tools to screen cell surface profiles on virtually any human cell. Using the array format reduces variability in experimental conditions; therefore interassay results are comparable in a consistent, controlled protocol. In less than 2 hours, adhesion expression profiles are generated for up to 8 samples in one user-defined experiment.

Millipore's Integrin-Mediated Cell Adhesion Array kit is based on a 96-well plate format, consisting of 12 x 8-well

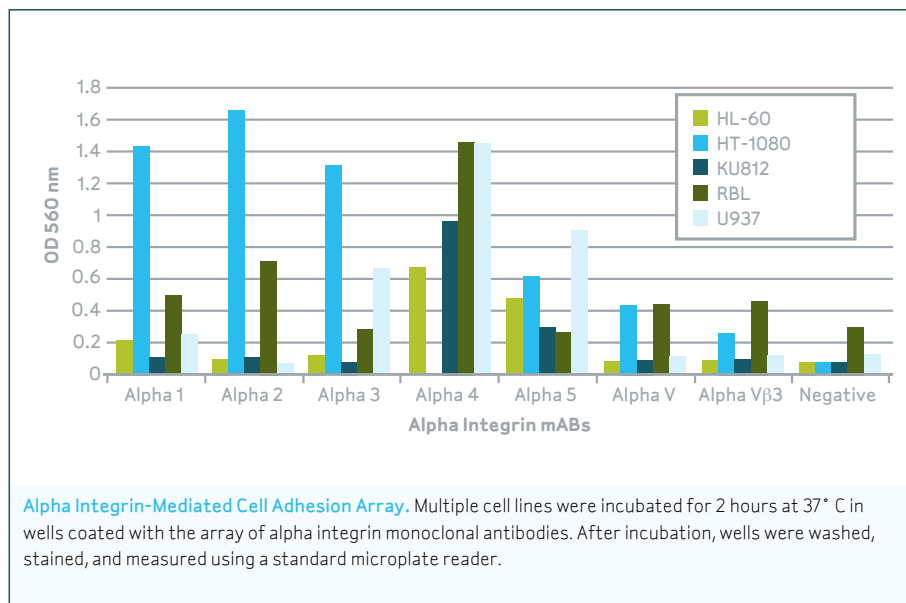
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removable strips, for convenience and flexibility in experimental design. Each 8-well strip is composed of seven individual integrin pre-coated wells and one negative control well coated with bovine serum albumin (BSA). After a short incubation period with the cells of interest, integrin protein binding is detected with a stain solution and analyzed using a standard microplate reader. Integrin-Mediated kits available from Millipore include an alpha integrin screening kit, a beta integrin screening kit, and a combination kit containing one plate of each. The array kits are available in either colorimetric or fluorimetric detection formats.

Similarly, the ECM Cell Adhesion Array kit format is a 96-well plate complete with stripwells. Each individual well of the strip is pre-coated with one of seven extracellular matrix proteins (collagens I, II, IV, fibronectin, laminin, tenascin, and vitronectin), and a BSA-coated negative control well. Again, both colorimetric and fluorimetric options are available and all necessary reagents are included.

Targeting cell-ECM involvement is critical in determining whether a cell proceeds through a normal course of development or transforms its adhesive associations. Defining the process by which integrins modulate the response of cells to the ECM is fundamental to the identification of specific structural and mechanical properties of the ECM environment that influence cell behavior.



References

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Millipore Products

Description	Cat. No. (Colorimetric)	Cat. No. (Fluorimetric)
α Integrin-Mediated Array	ECM530	ECM533
β Integrin-Mediated Array	ECM531	ECM534
α / β Integrin-Mediated Arrays	ECM532	ECM535
ECM Arrays	ECM540	ECM545



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