Epithelial to Mesenchymal Transition (EMT) is a biological process by which differentiated epithelial cells lose epithelial characteristics and acquire a migratory, mesenchymal phenotype. Although the intermediate stages of EMT have been challenging to capture and describe, the initiation and completion of EMT are better understood. Typically, epithelial cells display apical-basal polarity and adhere tightly to each other via tight and adherens junctions. The morphological changes that occur during EMT are induced by signal transduction pathways that reduce E-Cadherin expression, drive the disassembly of intercellular adhesion complexes, and promote Actin stress fibers and focal adhesion formation. These processes lead to a phenotypic transition to an elongated, mesenchymal cell that expresses αvβ3, αvβ1, αvβ6, αvβ5, and αvβ5 integrins, which can then migrate through extracellular matrices.

EMT is a transient and reversible process that can be classified into three subtypes, depending on the biological and functional setting in which it occurs:

**Type 1: Development**

EMT initiates the generation of secondary epithelial during embryonic development and is essential for gastrulation, neural crest cell migration, and organ development.

**Type 2: Wound Healing/Fibrosis**

EMT promotes fibroblasts in response to tissue injury and inflammation and is important during wound healing and tissue regeneration. Organ fibrosis is thought to occur, in part, due to continual EMT processes following the attenuation of inflammation.

**Type 3: Metastasis**

EMT allows malignant cells to become more motile and invasive outside the primary epithelial tissue. A sustained EMT promotes secondary tumor formation and cancer progression in other organs.

Epithelial to mesenchymal transition online at: www.RnDSystems.com/EMT