

Intermediate Cell States in Epithelial-Mesenchymal Transition

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Epithelial-mesenchymal transition (EMT) is a complex and dynamic process involved in various biological events, including embryogenesis, fibrosis, wound healing, tumor progression, and metastasis. However, during EMT and its reverse program, mesenchymal-epithelial transition (MET), cells do not always exist in a strictly epithelial or mesenchymal state; instead, they can exhibit characteristics of both cell types. These cells are referred to as hybrid or intermediate cellular states. The ability of cells to acquire and maintain a hybrid E/M phenotype is known as epithelial-mesenchymal plasticity (EMP).

According to recent studies, hybrid rather than fully mesenchymal cells play a dominant role in most physiological and pathological processes associated with EMT. Hybrid E/M cells exhibit stem-like properties, characterized by specific gene expression patterns, and contribute to key cancer-related processes, including metastasis, suppression of apoptosis, and resistance to cancer therapy.

The presented study describes the key characteristics of epithelial-mesenchymal plasticity (EMP) and hybrid E/M phenotype cells, as well as reviews the challenges associated with identifying intermediate cell states and potential solutions to overcome these issues.