

## Understanding the Role of TAMs and Microenvironment in Lung Cancer Development

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Lung cancer is one of the most common cancers globally which accounts for a major share of cancer deaths worldwide. Recent GLOBOCAN report documented that in India, which is the home of over 1.3 billion people, lung cancer is the second most common cause of cancer mortality in males and sixth in females. In India only, the average annual mortality due to lung cancer is more than 60 thousand. There are broadly two categories of human cancers as per the world health organization which include non-small cell lung cancer and small cell lung cancer [1,2].

The tumor microenvironment is composed of both malignant and non-malignant cell populations. The type of malignant cell populations usually depends on the type of cancer in place, be it cells of respiratory tract or epithelial cells of downward compartments. Similarly, there are several types of cell populations which are non-malignant which mainly involve macrophages. The non-malignant macrophages here are known as tumor associated macrophages (TAMs). These cells comprise more than 30% of the tumor mass. TAMs are regarded as 7th hallmark of cancer [3,4].

For a tumor to occur, the microenvironment should be permissive. Microenvironment is of prime importance in dictating occurrence of malignancy. It is modestly inhibitory during the initiation of tumor development, but it is overpowered soon by recruited macrophages. As is known, alveolar macrophages are the sentinel cells of lung, but there is only one alveolar macrophage per 3 alveoli, on average. The recruited macrophages form a major component of these pro-tumor TAMs later which overpowers all the defense system of microenvironment [3-5]. So, the tumor survives because microenvironment becomes permissive, which helps tumor cells exploit the microenvironment cells to meet their survival demands like growth, malignancy which will finally lead to metastasis. The TAMs have been demonstrated to promote tumor growth, proliferation vascularity, invasion and metastasis. As a matter of fact, TAMs contribute in poor cancer prognosis assessment henceforth increased cancer mortality. Several scientific laboratories worldwide are working towards the understanding the therapeutic aspects of modulating TAMs. Several research areas are in development which include: 1) Re-educating TAMs 2) Depletion of TAMs 3) Blocking monocyte recruitment 4) Phenotype reversal of TAMs. There has been a reasonable amount of success with above methods in pre-clinical studies and clinical studies as well [3-7].

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