

2<sup>nd</sup> International E-Conference on

## **CANCER SCIENCE AND THERAPY**

August 23-24, 2021 | Webinar

### **Extracellular Vesicles are Harbingers of Good Health and Disease: Tumor-Derived Exosomes are Determinants for Organotropic Metastasis**

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**E**xosomes are nano-sized (30-150 nm) extracellular vesicles with lipid-bilayer membrane. They are secreted by all life forms varying from the simplest cells like prokaryotes to the complex cells like eukaryotes to facilitate intercellular communication. Multicellular organisms are made up of billions of cells that crosstalk and collectively work together to perform critical activities required for survival benefits. For instance, the ability of infected cells to signal nearby and distant cells about the danger of an invading pathogen is very important for survival. Furthermore, exosomes mediate inter-kingdom communication. For instance, a bacteria cell can communicate with its host (plant or animal cell) through exosomes secretion. The inter-kingdom communication is fundamental in evolution as well as facilitating a symbiotic relationship. On contrary, exosomes have been also demonstrated to escalate pathogenesis of various diseases including communicable and non-communicable diseases. For instance, exosomes secreted by bacteria carry biochemical cargo that downregulate it's host immune cells. Similarly, exosomes secreted by malignant cells promotes tumor invasion, progression, survival and metastasis. Thus, the biochemical molecules shuttled by exosomes from donor cells induces functional and structural changes of recipient cells both at physiological and pathological state. Cancer is a syndrome characterized with uncontrolled growth of abnormal cells capable to invade and spread to distant organs. The spread of cancer is not random, as different types of cancer have common sites of spread. For instance, breast cancer spread to the liver, lungs, brain and bones whereas prostate cancer preferentially disseminate to the bones. Tumor derived exosomes (TDEs), are abnormal exosomes secreted by cancer cells that mediate the exchange of oncogenic proteins and nucleic acids. TDEs expresses distinct integrins on their surface necessary for cargo targeting. Through unique integrins expression, TDEs facilitate specific-intercellular communication that program recipient cells and remodeling distant tumor microenvironment (TME) in favor of organotropic metastasis. In order to understand the mediation of exosomes in various pathophysiology process involved in healthy and ailment state, we have decided to conduct a preliminary study of exosomes secreted by healthy cells (normal), malignant cells (abnormal) and bacteria (pathological). Since about 90% of cancer related mortality are due to metastasis, therefore it is very important to understand the role played by TDEs in cancer progression and finding the novel strategy for their elimination. Therefore, in this study we harvested exosomes sourced from different cell types to better understand and assess the expected high degree of specificity with regard to their morphology and biochemical configuration. However, the focus is directed towards understanding role of TDEs in different steps of cancer pathogenesis and spread.

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## **Biography:**

Stephen Shadrack Meena is a Clinical Oncologist at Ocean Road Cancer Institute (ORCI), Tanzania. He graduated with both of his Doctor of Medicine Degree (MD) and Masters of Medicine Degree (MMed) at Muhimbili University of Health and Allied Sciences (MUHAS) in 2008 and 2015 respectively. Currently, he is doing his Ph.D. program in cancer research at Jiangxi University of Integrated Chinese & Western Medicine (China). His previous work experience includes a one-year internship program, general practitioner (GP) for 3 years, and Study Physician at MUHAS/Harvard research project for one year. He is an African cancer fellow awarded by Union for International Cancer Control (UICC), 2018.