

# 3<sup>rd</sup> International Conference on Tissue Science & Regenerative Medicine

September 24-26, 2014 Valencia Convention Centre, Spain

## Regulation of metastasis by endogenous metabolite

Sudhakar Yakkanti

Cell Signalling & Metabolism Centre, USA

Metastasis is frequently deadlier than the original tumor-ultimately, reducing the risk or occurrence of metastasis could effectively cure or at least manage human cancer. My laboratory has carried out research that could significantly contribute to the control of malignant progression, involving the use of endogenous metabolite that is released from the extracellular matrix, which is both an endogenous angiogenesis inhibitor and anti-metastatic molecule. The signaling mechanism(s) underlying the influence of these metabolites on regulation of tumor angiogenesis is known, where as regulation of tumor metastasis are not yet known. We identified that one of the endogenous metabolite binds to different cell surface integrins, inhibits different cellular signaling in a manner distinct from that of other metabolites studied to date. Treatment of endothelial cells with this metabolite specifically inhibiting  $\kappa$ -elastin mediated phosphorylation of FAK, Akt, mTOR and PI-3K signaling. In addition different *in-vitro* and *in-vivo* studies, we found that this metabolite possibly binding to Laminin D-III and D-IV domains and inhibits Laminin degradation by the matrix metalloprotease-14 (MMP-14), and thereby reduces the generation of different sized Laminin peptides that can bind to the EGF receptor and promote cancer metastasis, in addition to its integrin(s) mediated signaling. Our findings suggest that this metabolite interacting with different cell surface integrins and cross talking with other molecules and inhibiting tumor angiogenesis and tumor metastasis both *in-vitro* and *in-vivo*.

### Biography

Sudhakar Yakkanti, Former Associate Director at Center for Cancer & Metabolism, Bioscience Division, California, San Francisco. He did his postdoctoral training at Harvard Medical, Boston USA. He received Indian President's fellowships, YCS, Michael A. O'Connor Young Investigator Awards from FAMRI and Mayo Clinic. He has more than 40 research articles including Science, JCI, Blood, PNAS etc. His research focuses on cell signaling and tumor metastasis, which is supported by NIH and foundation grants. He was served as grant reviewer for DT study section. He is serving as an Editor-in-Chief and also honored as keynote speaker and session chair for many conferences.

[yakkantisuds@gmail.com](mailto:yakkantisuds@gmail.com)