

“Identifying Metabolic Vulnerabilities and Dependencies in Cancer”

Hoppe Lecture

171 Durham, September 17th, 2015 at 11:00 a.m.



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Deepak’s lab is focused on answering three provocative and perplexing questions which reflect important gaps in current knowledge. (1) What are the critical metabolic regulators of cancer metastasis? and (2) Does tumor microenvironment play a role in modulating cancer cell metabolism? Our overarching goal is to identify the critical metabolic regulators and metabolic reprogramming in tumor specific acquired resistance. Recently, using ¹³C based isotopomer analysis we showed that invasive ovarian cancer cells are glutamine dependent and glutamine selectively supports high-invasive versus low-invasive ovarian cancer cell growth through glutaminolysis and STAT3 signaling. This manuscript was published in *Molecular Systems Biology*. Here, we linked glutamine driven mitochondrial metabolism with cancer invasion and metastasis. We revealed that glutamine is a key mitochondrial substrate for driving cancer metastasis. Dissecting the interaction between tumor microenvironment and cancer cells is critical to improving outcomes in ovarian cancers. In a recent work published in *Cancer Research* we demonstrated that omental adipose stromal cells secrete arginine which is used by ovarian and endometrial cancer cells to synthesize nitric oxide endogenously through nitric oxide synthase (NOS). We showed that the omental derived adipose stromal cells can promote proliferation and growth of ovarian cancers as well as increase resistance to chemotherapy. Current studies pursued in our lab to further understand the mechanistic underpinnings of arginine and glutamine metabolism driven cancer metastasis in cancers will be presented.

**Refreshments
will be provided
in 2061 Sweeney
Hall at 10:30 a.m.**

*If you plan to attend,
email a question to
bellinda@iastate.edu
and the speaker will
answer your question!*

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