The perivascular niche governs an autoregulatory network to support breast cancer metastasis

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Breast cancer metastasis accounts for the highest rate of cancer-related mortalities among women. Tumor metastasis strongly depends on a minority population of the cancer stem cells (CSCs) that resembles normal stem cells in homeostasis and integrity of adult organs, and epithelial-mesenchymal transition (EMT). EMT, in turn plays important roles in the induction and maintenance of CSCs and metastasis. Understanding the mechanisms that induce and control CSC state/EMT, and therefore invasion/metastasis cascade, seems to be necessary for effective therapeutic strategies including cancer cell therapy. Unraveling the autoregulatory network that induces and maintains cancer stem cells state may provide novel effective therapies against breast cancer metastasis via cell therapy and other therapeutic strategies. The perivascular niche develops initial elements that spark the autoregulatory machine to induce and maintain cancer stem cells, but not EMT, among newly arrived tumor cells. Inhibition of one or more primary key elements that trigger this circuit may result in preventing/cure breast cancer metastasis. We have focused on major transcription factors and immediate downstream proteins that play a crucial role in this molecular metastasis pathway in hope to detect them as valuable targets and then suppress them via an effective cell therapy.

Biography
Babak Behnam received a MD degree followed by a PhD in Medical/Human Genetics at the University College London (UCL, UK) with extensive genetic research in cancer biology and spermatogenesis. He has also fulfilled 5 years Postdoctoral research fellowships, including a prestigious NIH-based Ruth L. Kirschstein NRS fellowship Award at the University of Michigan. As an Assistant Professor, he has joined IUMS and directed the clinical genetics laboratory of the university hospital since 2009 in parallel to his translational research focused on molecular metastatic pathway and breast cancer stem cell. He has published more than 20 peer-reviewed papers and is also serving as an Editorial Board Member of scientific journals.

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