New Therapeutics for Metastatic Breast Cancer

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Breast cancer metastasis

- 11% of women diagnosed will die from breast cancer

- Common sites of metastasis
  - Brain (~25%)
  - Lung (~60-70%) slow
  - Liver (~40-66%) slow
  - Bone (~80%)

- Metastases kill due to tumor burden and organ dysfunction
What is Oncostatin M (OSM)?

- Proinflammatory protein
- OSM plays an important role in tumor progression and metastasis

http://chemistry.tutorvista.com/inorganic-chemistry/ligands.html
The Metastatic Process—Role of OSM

- **Tumorigenesis**
  - Proliferation
  - Genomic Instability
  - Self renewal
  - Evasion of Cell Death
  - Evasion of Immunity

- **Metastasis Initiation**
  - Detachment
  - Motility
  - Angiogenesis
  - Invasion
  - Intravasation

- **Metastasis Progression**
  - Survival in Circulation
  - Extravasation
  - Adaptation to new Environment
  - Organ-specific Colonization

- **Metastasis Colonization**

Adapted from Nyugen et. al., 2007 Nature Reviews
Confirm the concept *in vivo*—
Setting up an animal model

- Use mouse model of metastatic breast cancer

- Confirm by decreasing OSM levels

Bolin and Sutherland et al, *Biol Proced* 2012
Decreased OSM levels results in increased survival

Bolin and Tawara et al, *Genes and Cancer* 2012
Development of a new therapy

Anti-OSM drug