Metastasis Experimental Strategies available at NCI:

Trepel:
- Motility Assays
- Invasion Assays
- Microscopy - Phase contrast
  - Fluorescence time-lapse
- Induction of metastasis suppressors with Luciferase reporters

Kleinman:
- Metastasis:
  - Mouse Tail vein injection
  - Mouse Intracardiac injection (for metastasis and bone metastasis)
  - Mouse Mammary fat pad model (for lung metastasis)
  - Chick embryo vein injection (no protocol required!)
  - Tongue injections of SCC

Tumor growth:
- Intratibial (bone) injections
- chick CAM metastasis assays (again no protocol required)

Khanna:

*In Vitro*
- Time lapse fluorescent motility assay
- Transwell motility assay
- Transwell invasion assay
- Heterotypic adhesion assay
- 3-D projection - invasion assay

*Ex Vivo*
- Vital Imaging of fluorescent clones - Lung

In Vivo - Single Cell imaging
- Intravital imaging of single cell metastatic cells - Lung
- Intravital imaging of single cell metastatic cells - Liver
**In Vivo - Tumor Colony**  
-Xenogen luciferase imaging  
-MRI

**In Vivo - Metastatic Assays**  
-Orthotopic limb to spontaneous lung metastases  
-Tail vein experimental lung metastases  
-Intrasplenic experimental hepatic metastasis  
-Intracardiac experimental bone metastasis

**Naturally Occurring Metastases Models**  
-Canine osteosarcoma  
-Canine prostate carcinoma  
-Canine NH-Lymphoma

**Hunter:**

**In vivo:**  
-Highly metastatic spontaneous mammary tumor model  
\[FVB/N-TgN(MMTV-PyVT)^{634Mul}\] mouse model  
-Modulation of metastasis efficiency by genetic background effects  
-Quantitative genetic analysis of metastasis efficiency loci  
-Tail vein injections  
-Mammary orthotopic implantation assays

**In vitro:**  
-Affymetrix microarray analysis  
-2D protein gel electrophoresis  
-Ciphergen SELDI-TOF

**Kohn:**

**In vivo:**  
Ovarian cancer intraperitoneal tumor model with local invasion and mets  
Mammary orthotopic implantation assays  
Tail vein injections

**In vitro:**
Motility assays, Boyden chamber and wound healing
Attachment and adhesion assays
Angiogenesis tubulogenesis assays on Matrigel
Laser capture microdissection of endothelial tubes
Microwesterns
2D PAGE

Liotta/Stracke:

**In vitro:**
- Microscopy
  - Standard, phase contrast, and fluorescence
- Boyden chamber motility assays
  - Mixed cell populations utilizing fluorescent stains
    and/or immunofluorescence
- Transwell Invasion Assays
- RNAi studies

**In vivo:**
- Drosophila metastasis model
- Murine systems using SC and IP injections
  - Ovarian tumor growth model
  - Matrigel plug angiogenesis model

Merlino:

**In vivo:**
- UV induced metastatic HGF/SF transgenic tumor model

**In vitro:**
- Modified B16 mouse melanoma cell lines to examine autocrine and
  paracrine c-Met signaling
- Multiple rhabdomyosarcoma cell lines with different metastatic
  potential