

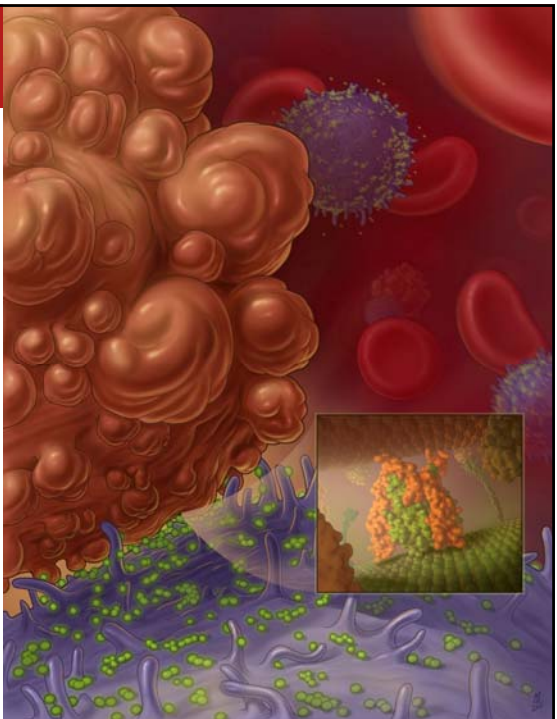
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**Unnatural Killer Cells:  
TRAIL-coated  
Leukocytes that Kill  
Cancer Cells in the  
Circulation**

Michael Mitchell,  
Kuldeepsinh Rana,  
Elizabeth Wayne, Chris  
Schaffer, and Michael King

Engineering College  
Council Meeting

Cornell University



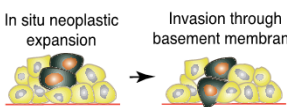


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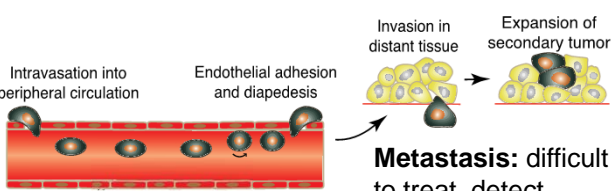
## Cancer Metastasis

**Metastasis: Cause of >90% cancer-related deaths**


**Primary tumor:**  
treatable via surgery




**Metastasis:** difficult  
to treat, detect



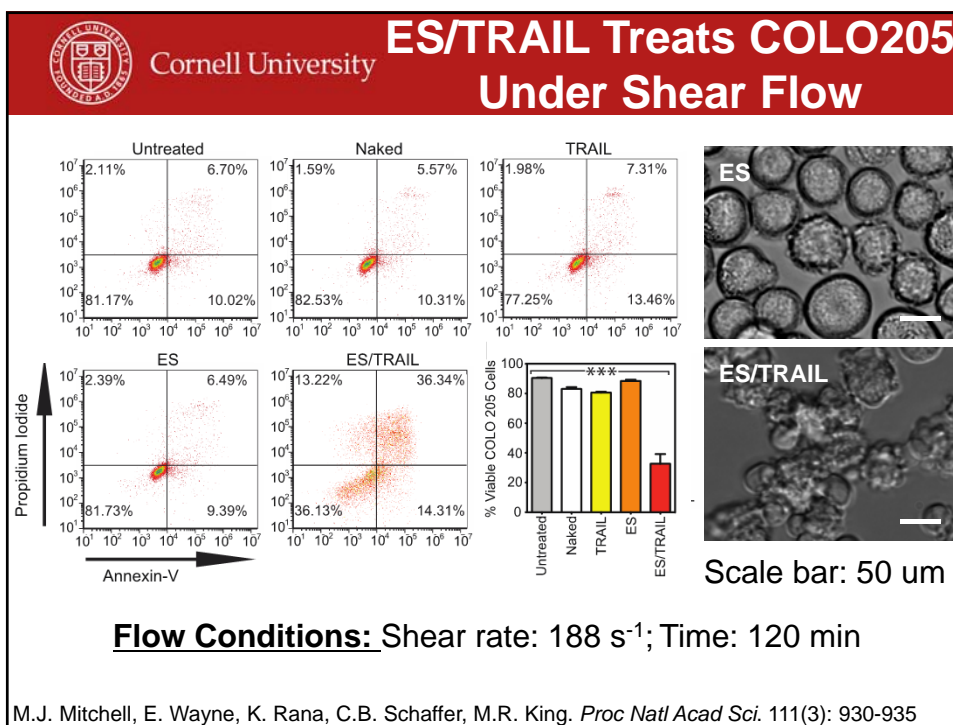
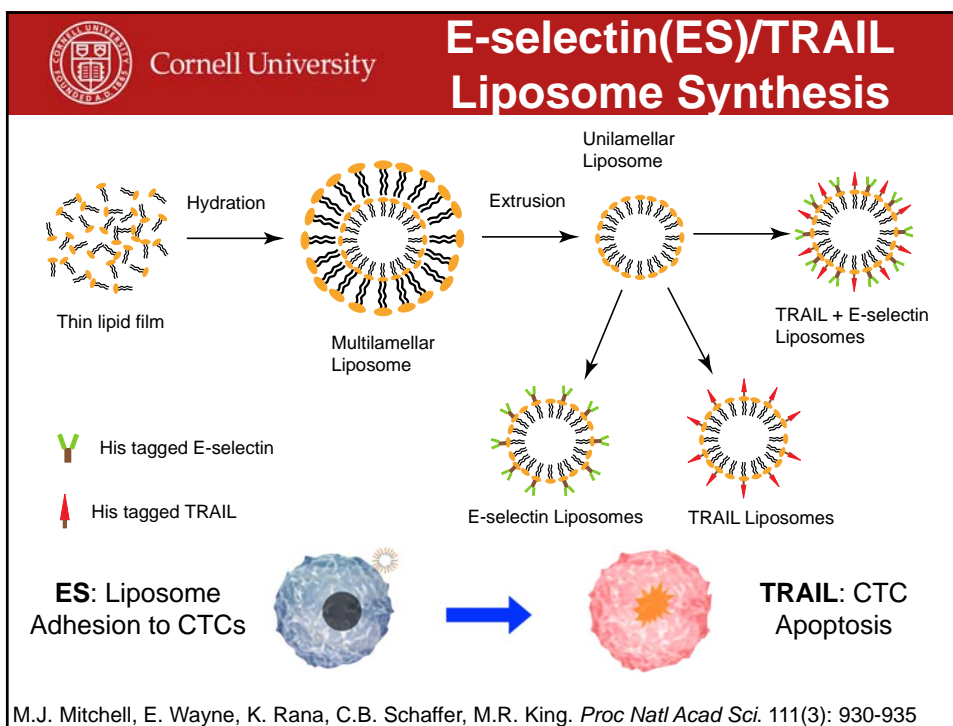
**Goal:** Capture and kill cancer cells in circulation, before onset of metastasis

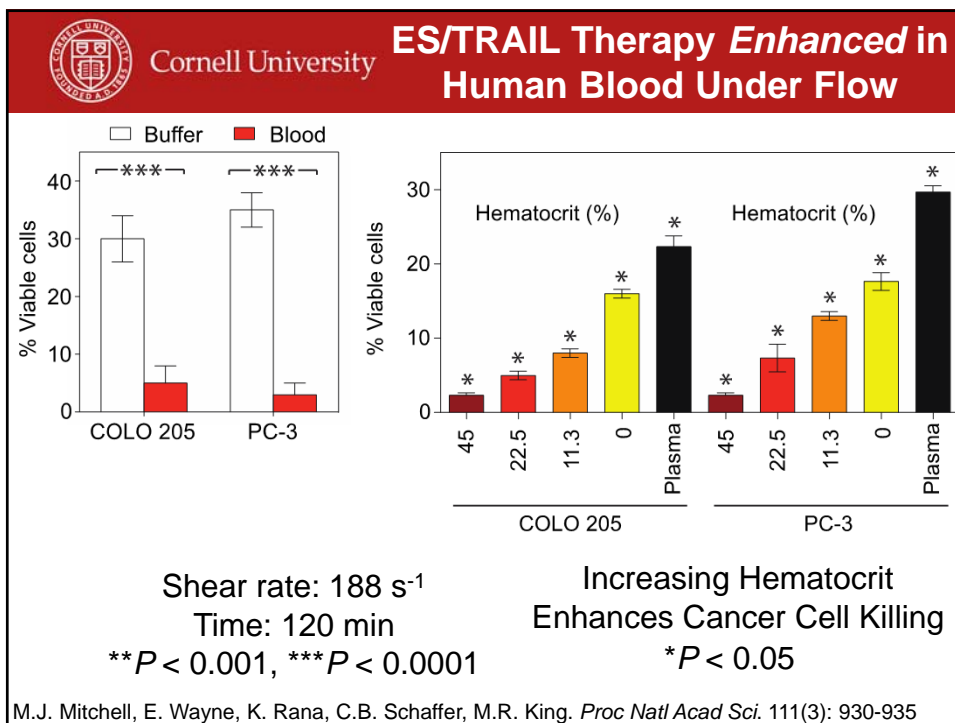
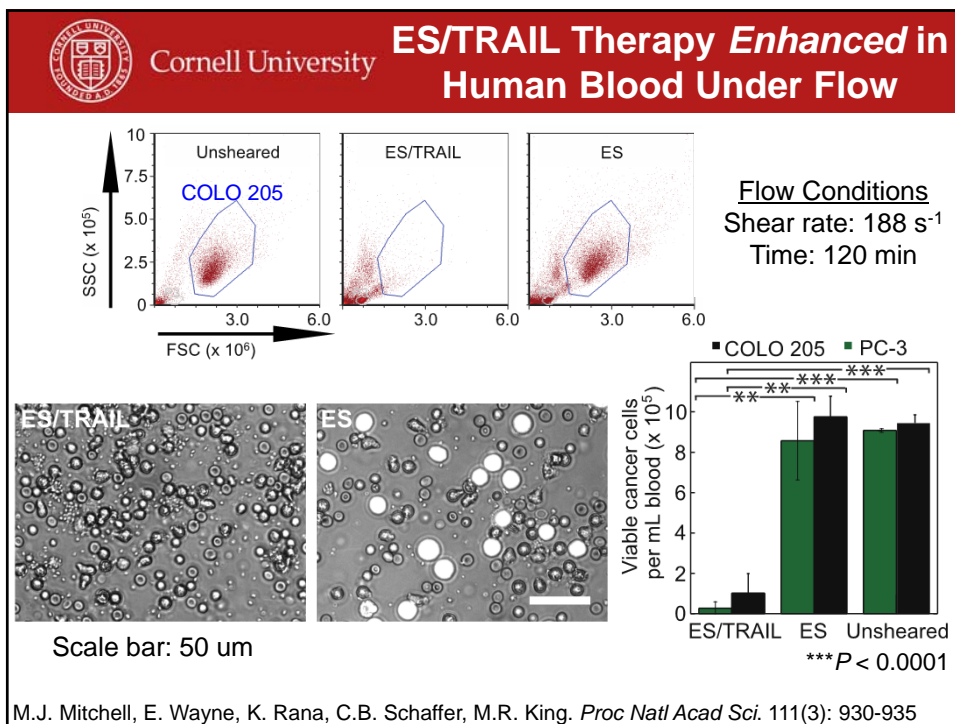


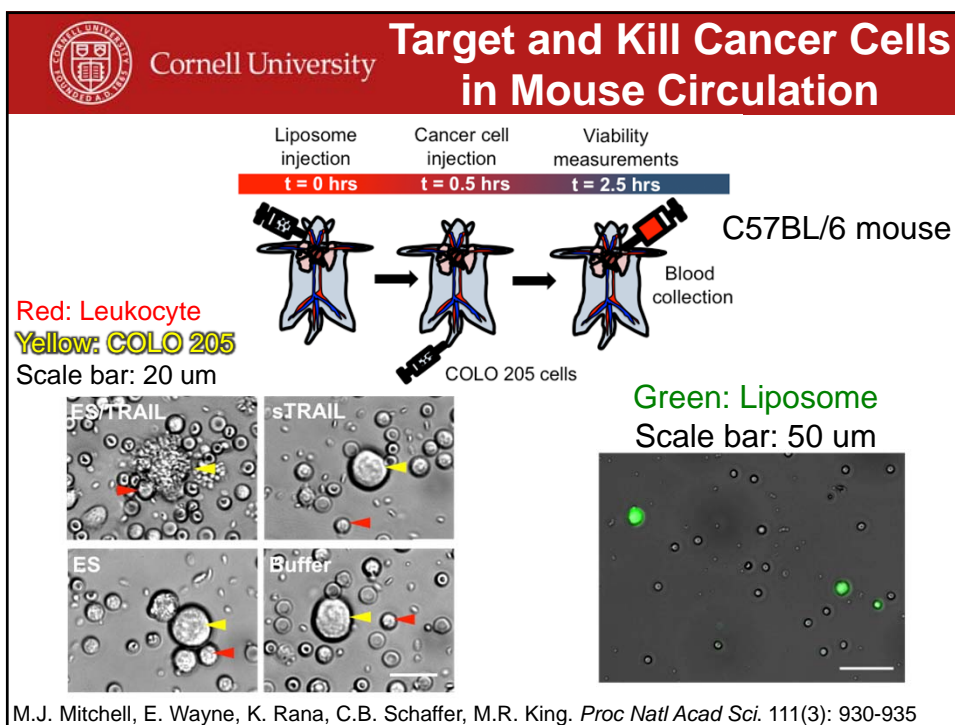
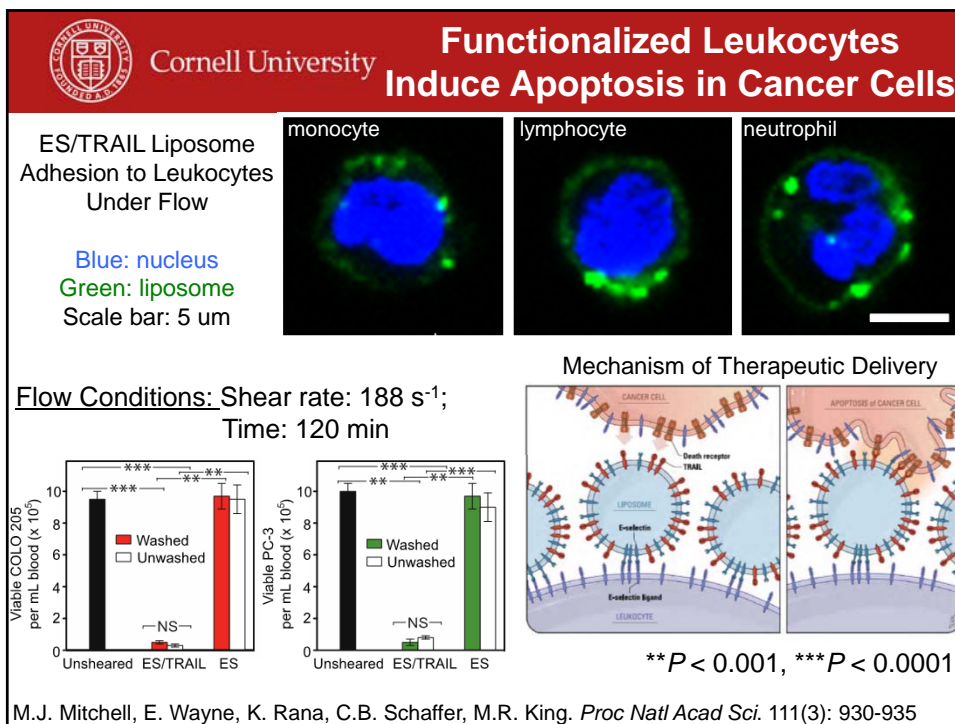


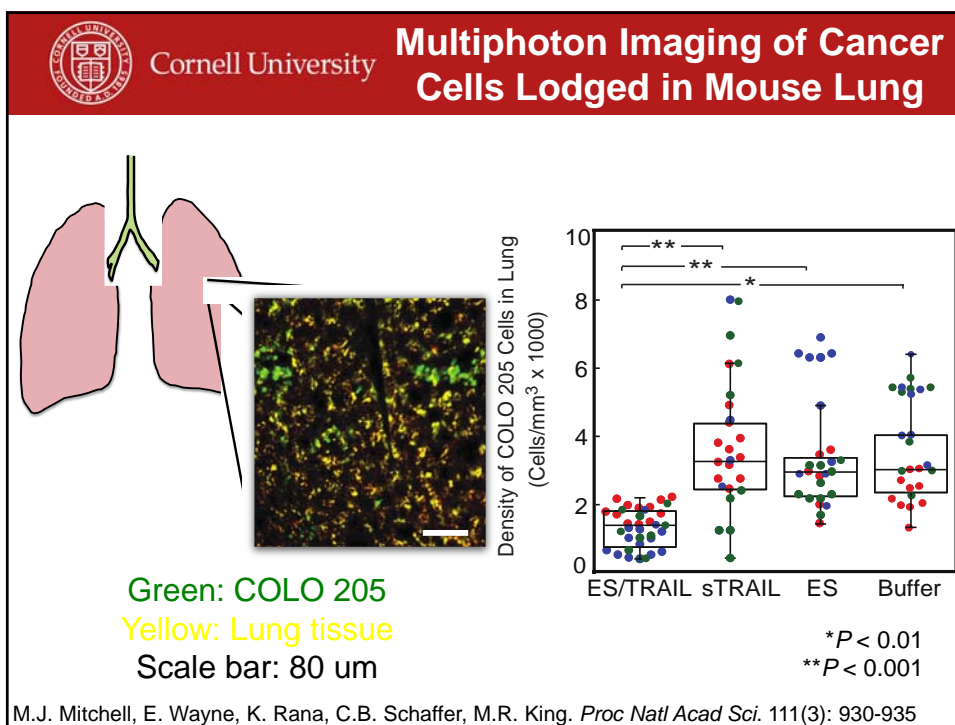
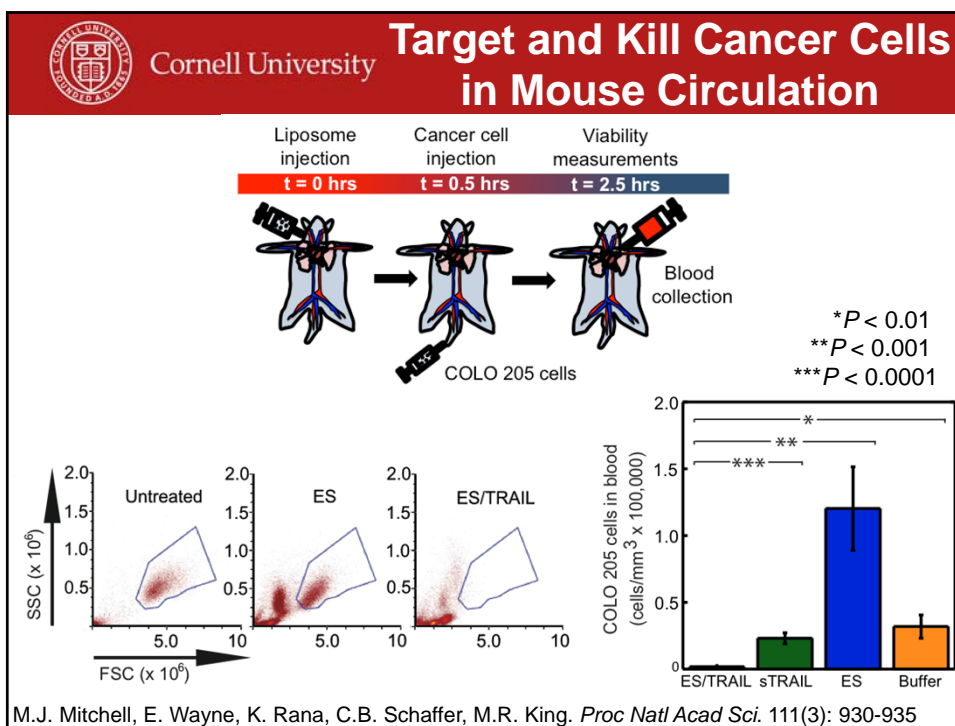
~~Metastasis~~

A.D. Hughes, M.R. King (2012). *Rev Nanomed Nanobiotechnol.* 2012 May-Jun;4(3):291-30.

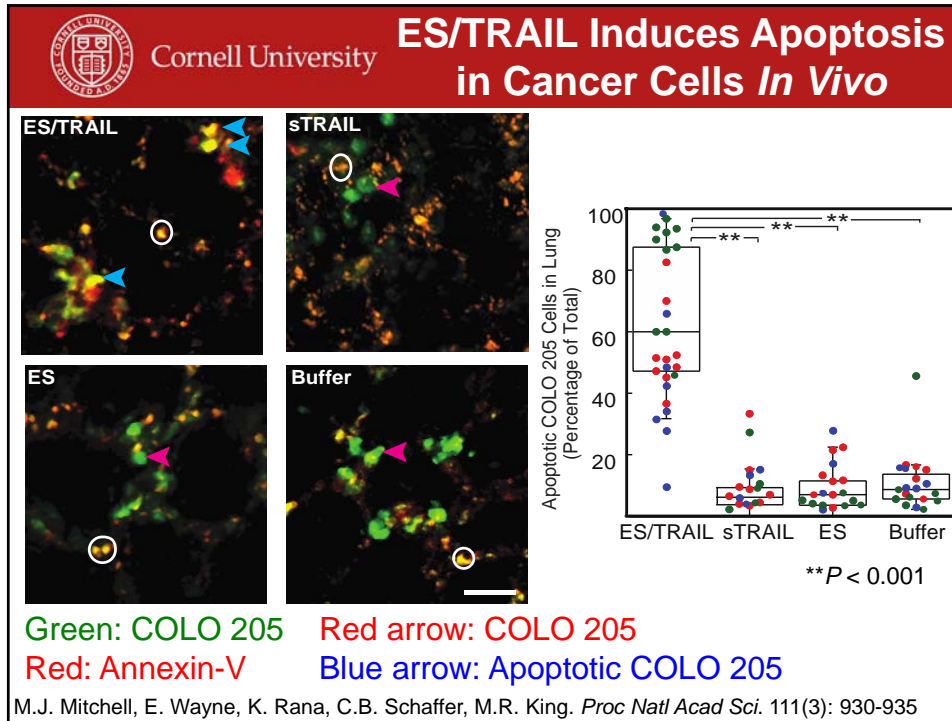










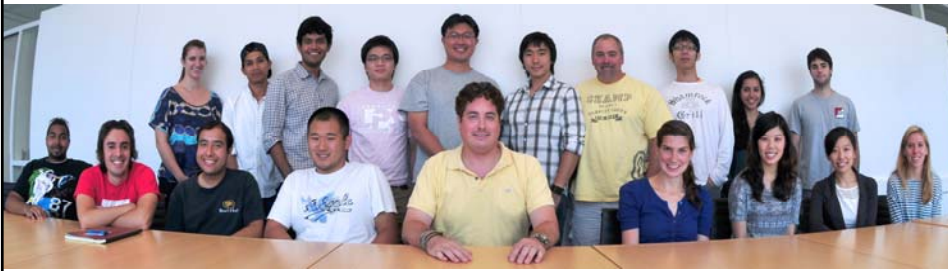





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 Conclusions

- ES/TRAIL liposomes target and kill cancer cells under flow, and is enhanced in human blood under flow.
- Leukocytes functionalized with ES/TRAIL under shear in human blood, which target and induce apoptosis in cancer cells.
- ES/TRAIL functionalized leukocytes target and kill cancer cells in mouse circulation.
- Current work is focused on demonstrating therapeutic effects in a spontaneous metastasis model in mice.

 Cornell University **King Lab**



Schaffer Lab (Chris Schaffer, Liz Wayne)

**Publication:**  
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