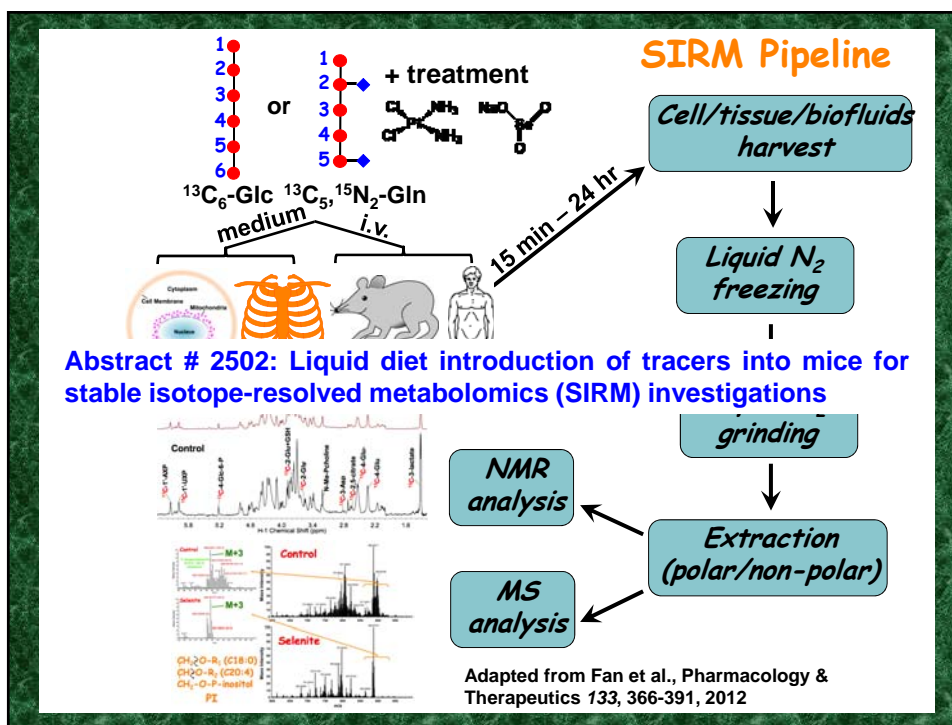


## Exploring Lung Cancer Metabolome: In vivo and Ex vivo for Individualized Medicine

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UAB CF Workshop, Webex  
 July 19, 2017



# SIRM Study of Human NSCLC patients *in vivo*

## Tumor from Patient #6

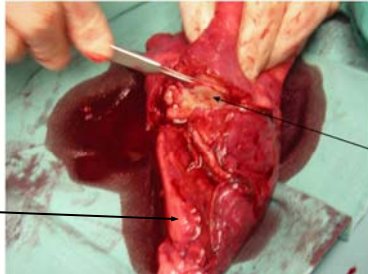
Patient #6 large tumor 5/1/06

$^{13}\text{C}_6$ -glucose infusion



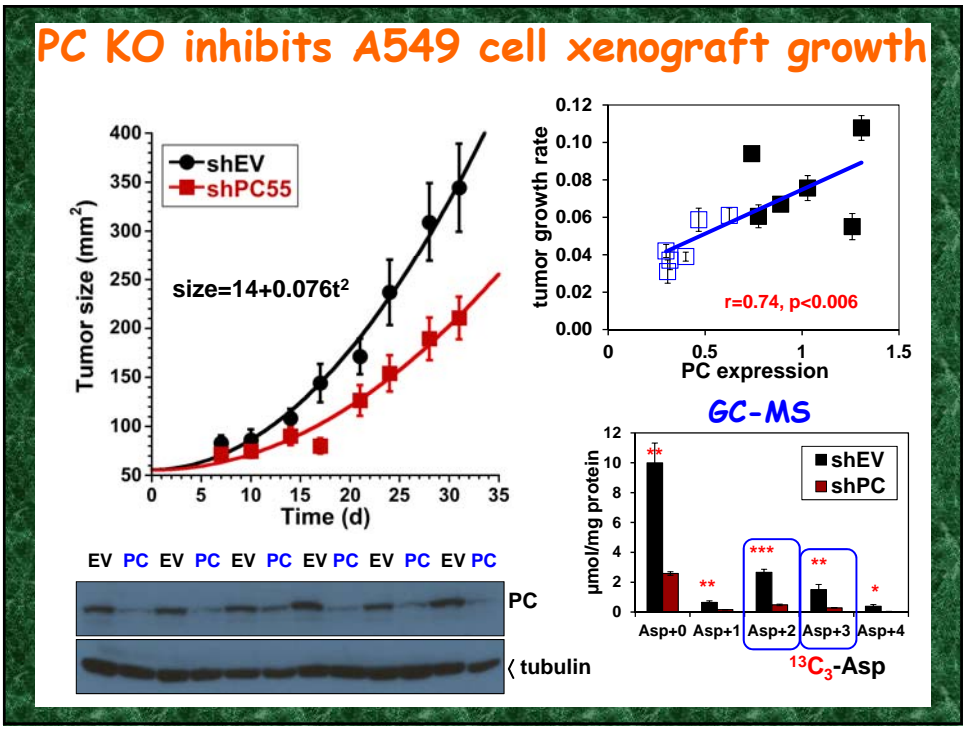
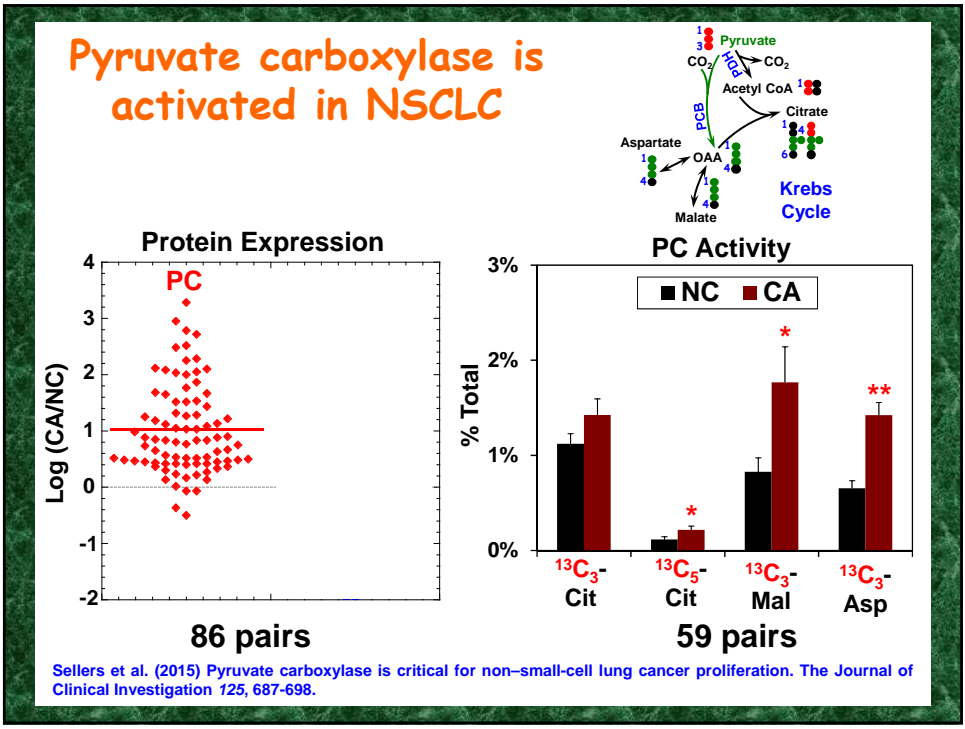
Patient #6 cut tumor 5/1/06

Fan et al. (2009) Altered Regulation of Metabolic Pathways in Human Lung Cancer Discerned by  $^{13}\text{C}$  Stable Isotope-Resolved Metabolomics (SIRM). *Molecular Cancer*. 8:41



benign

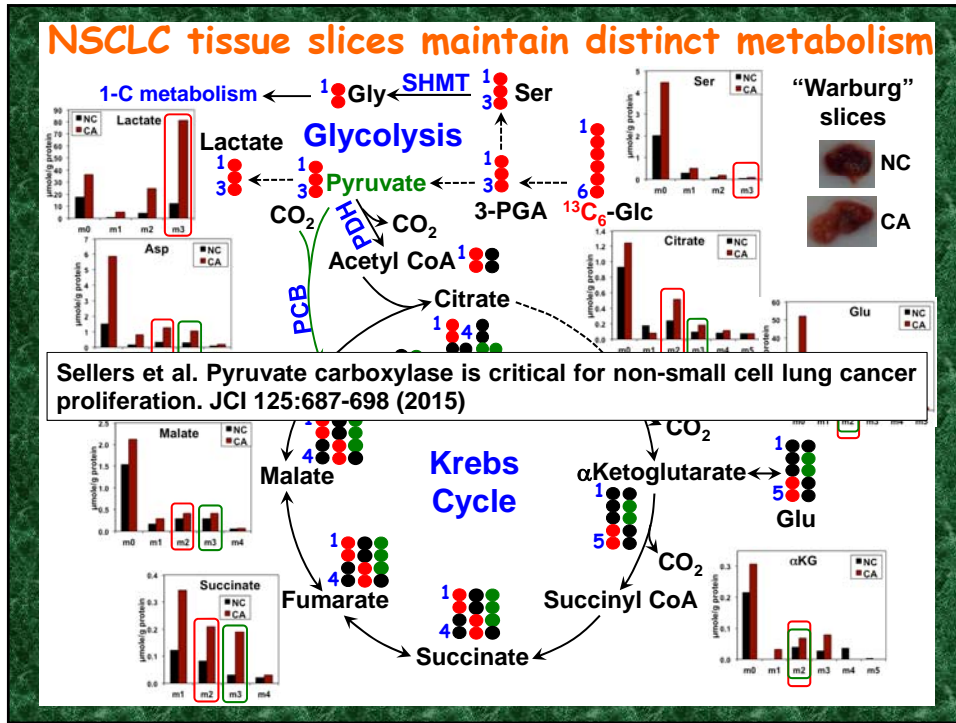
tumor



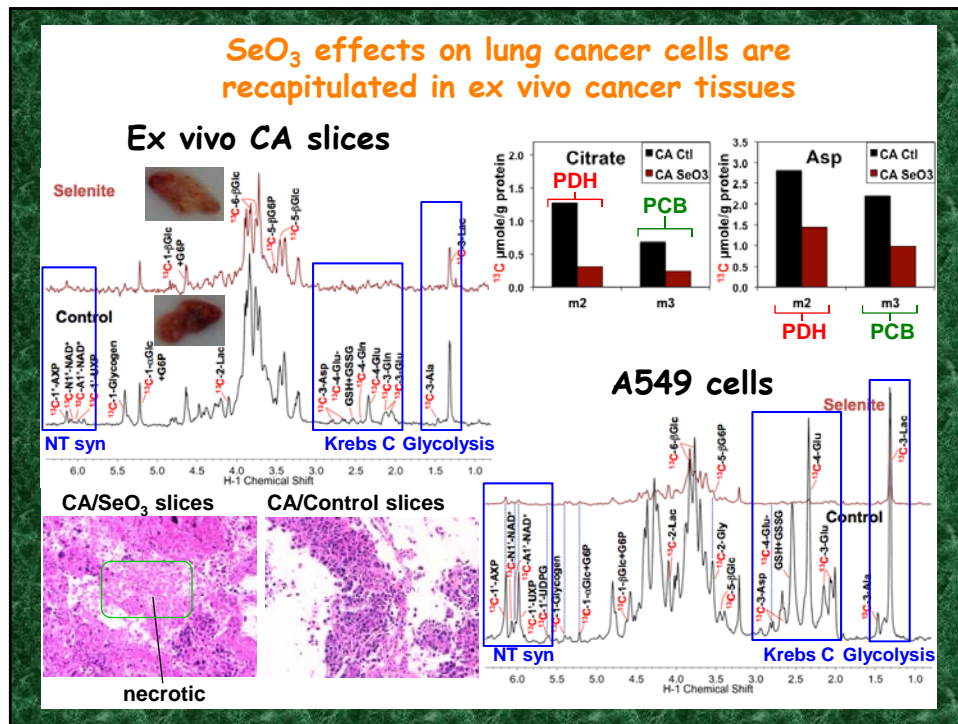
## SIRM Study of Human NSCLC patients *ex vivo*

### Advantages of *ex vivo* human tissue slice studies

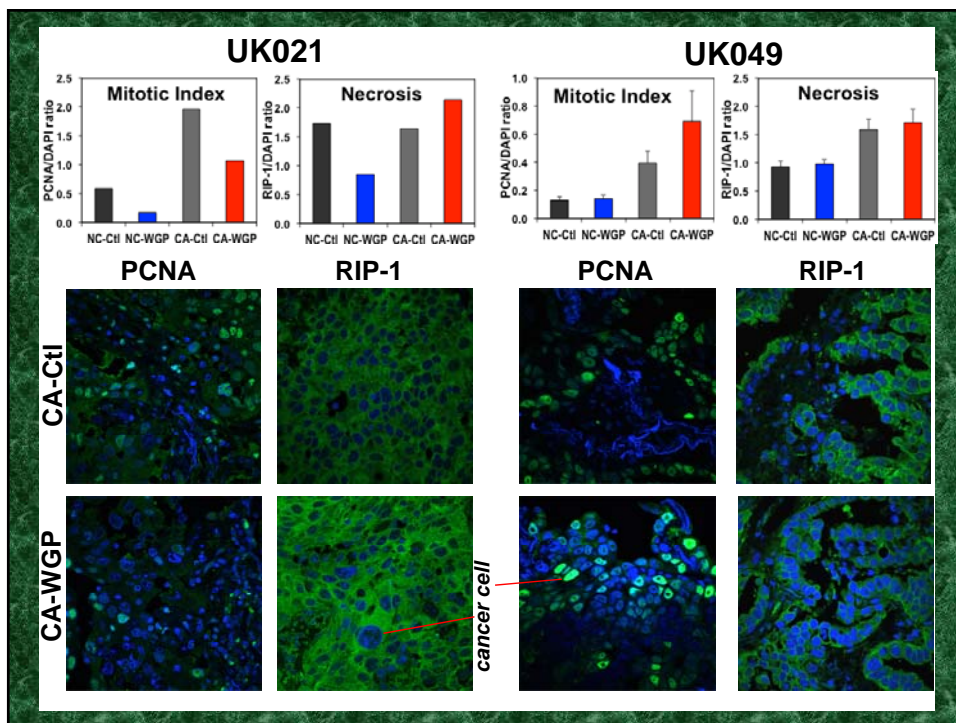
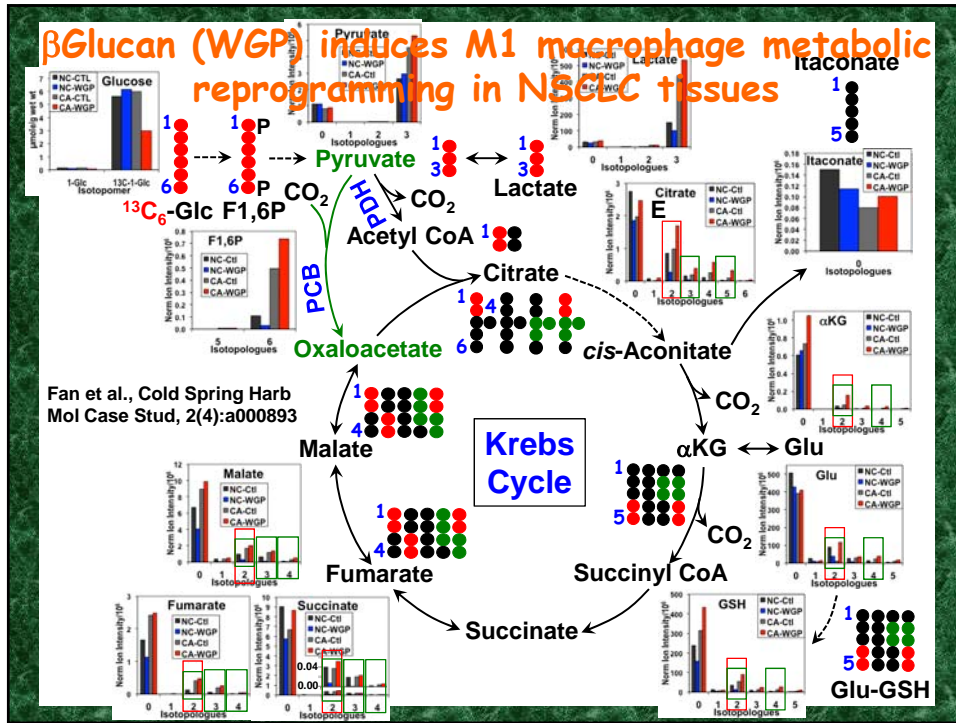
- ❖ Maintain 3D human tumor architecture and microenvironment.
- ❖ Acquire target tissue metabolism w/o systemic influence
- ❖ Paired cancerous and non-cancerous tissue design for the same patient eliminates genetic, physiological, and nutritional variables
- ❖ Flexibility in treatments and ability to observe individualized response

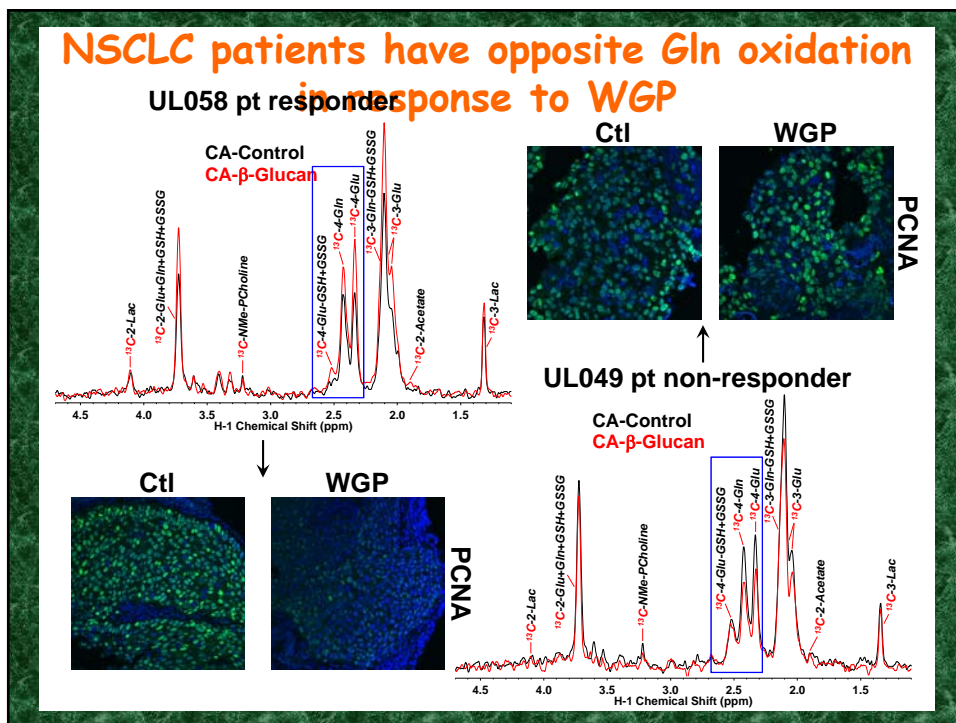
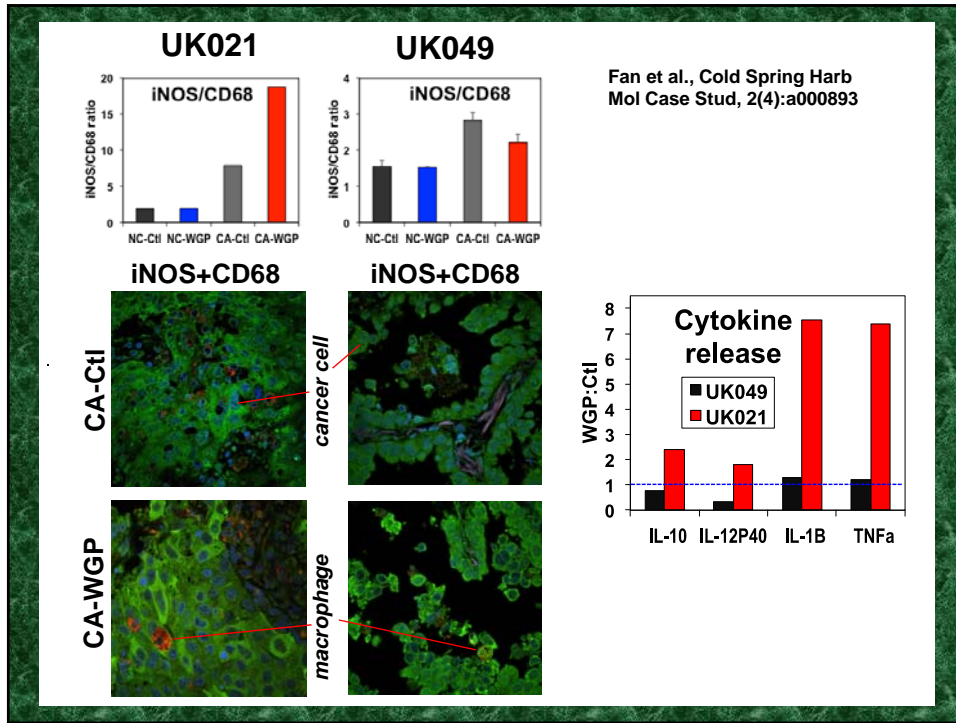


**Selenite effect *ex vivo***



**M1 macrophage modulator  
β-glucan (WGP) effect *ex vivo***









**UKHealthCare**  
Markey Cancer Center

**NCI-CC**  
A Cancer Center Designated by the  
National Cancer Institute



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- National Institute of Health (1R01CA118434-01A2, 3R01CA118434-02S1, 1R01ES022191-01 [1P01CA163223-01A1](#), 1U24DK097215-01A1 )