

Identification of biomarkers associated to the frailty phenotype in elderly breast cancer patients using a metabolomics approach

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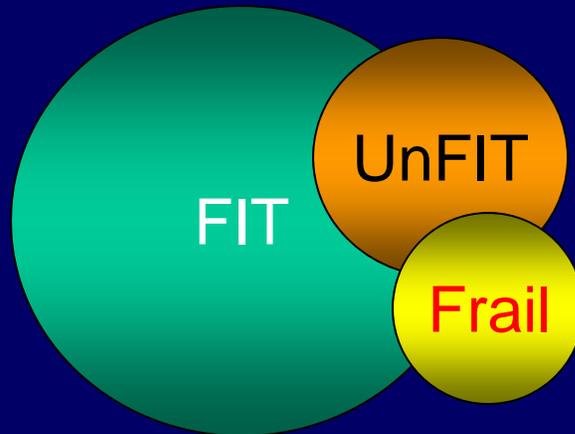
Paris 2011

Introduction

The health status of older patients is high heterogeneous: some elderly individuals experience few age-related limitations in their daily lives, while others are faced with multiple comorbidities, reduced resources, and social isolation.

Introduction

Comprehensive Geriatric Assessment (CGA)



Frailty phenotype still elusive !!!

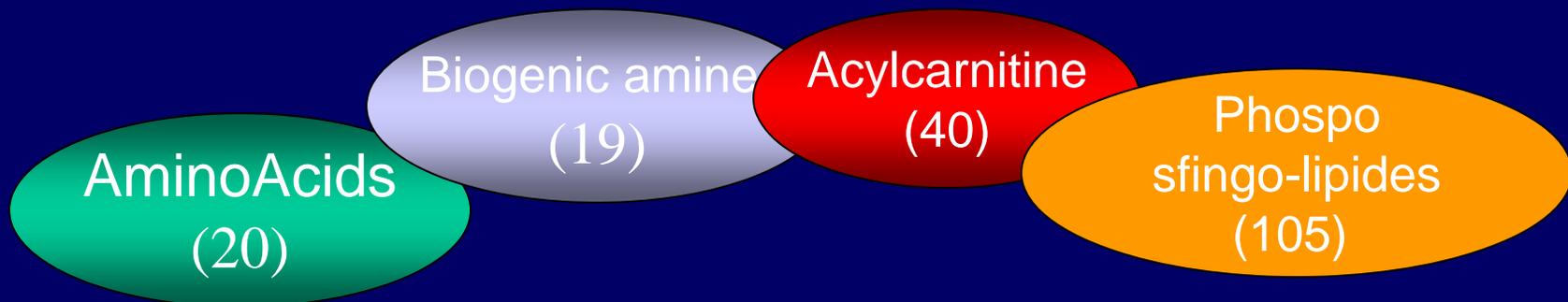
Aim of the study

“Identification of molecular biomarkers associated to FRAILTY phenotype using a metabolomic approach”

Metabolomics is an emerging omic tool which consists on systematic study of the unique chemical fingerprints that characterize a biological system. The study of the small molecule profile can give an instantaneous snapshot of the patho-physiology state of a cell or an individual useful to predict its biochemical trajectory

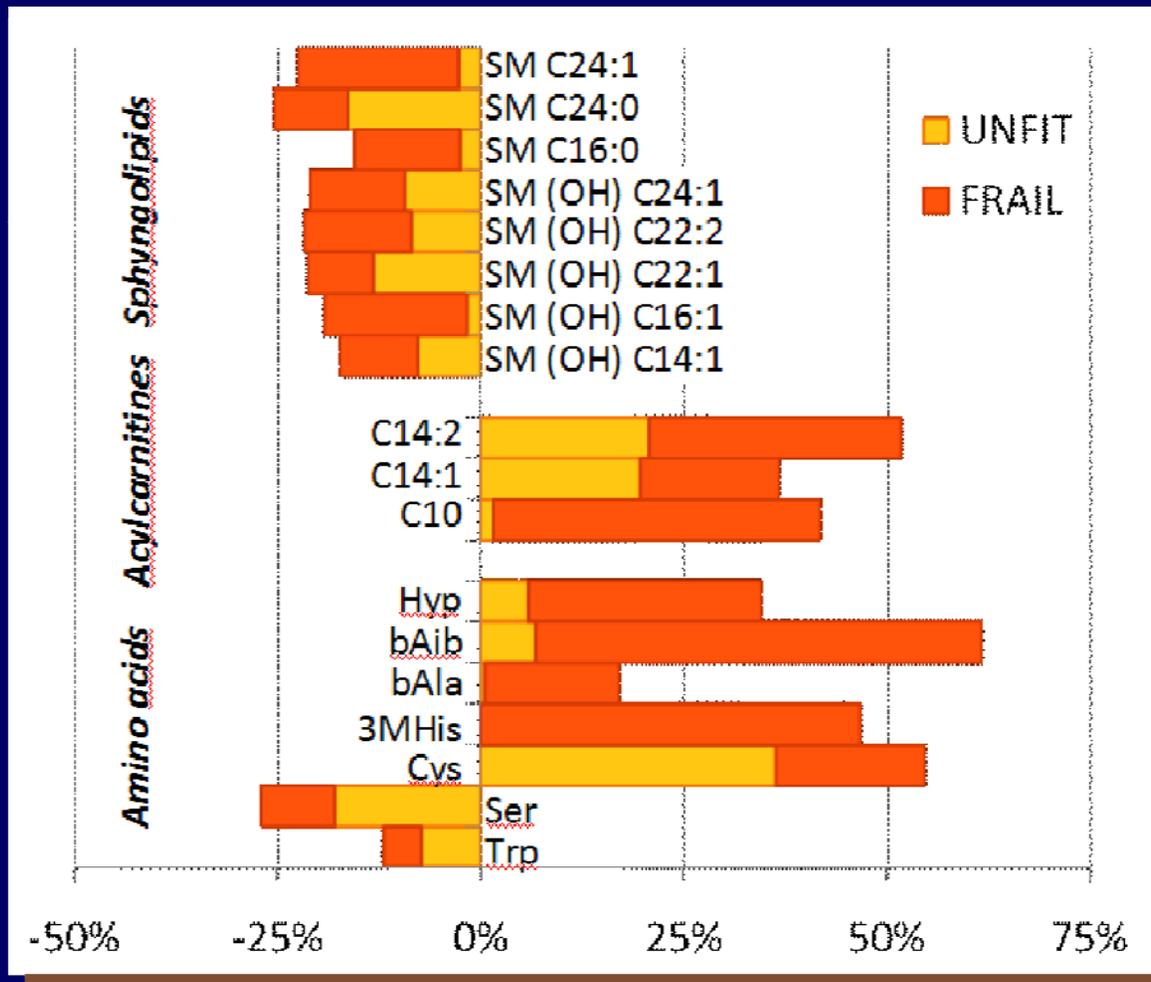
Material and Methods

- Patients population: 89 women with breast cancer aged 70-97 years
- Fit (n=49), Unfit (n=23), or Frail (n=17) according to the CGA
- Plasma metabolomic profile: FIA and LC-MS/MS Analysis was targeted to different class of metabolites including amino acids, bioamines, acylcarnitine and includes phospo-and sfingo-lipides that cover a wide set of physiological metabolic pathways.



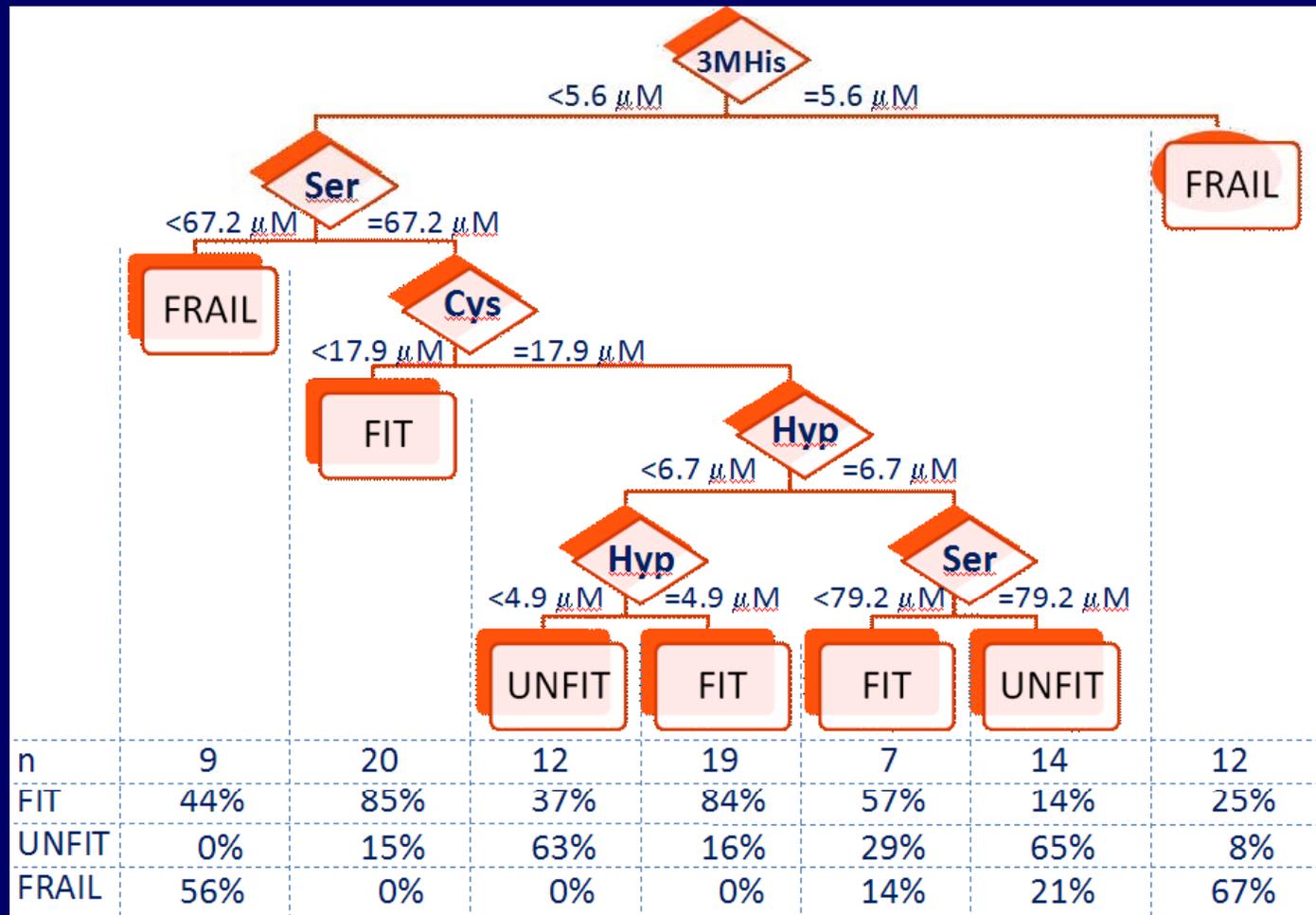
Results

Percentage variation of metabolites level compared to FIT patients



Results

Classification tree of patients based on amino acids



Conclusion

- **Metabolomics** resulted a valuable tool to improve biochemical and molecule understanding of frailty phenotype
- The up and down regulation of selective acylcarnitine and sphingomyelins metabolites as well as the specific aminoacid dysregulation can be propose as specific and new metabolic biomarkers that can be integrated to refine the CGA model and improve clinical classification of elderly cancer patients.
- The biochemical alterations observed in frailty patients provide new insight into aging process and the frailty clinical manifestations. Moreover they may provide new intervention strategy to manage or even reverse frailty status in the oncology setting.