University of Minnesota Cancer Center

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Director

University of Minnesota Cancer Center

- Mission
  - Reduce cancer incidence and mortality by translating findings from population and basic studies.
  - Conduct innovative trials in cancer prevention, therapy, and survival.

University of Minnesota Cancer Center

- National Cancer Institute (NCI) designates Cancer Centers based on:
  - Level of NCI funding
  - Breadth and depth of cancer research
  - Interdisciplinary, transdisciplinary, multidisciplinary programs
- University of Minnesota designated a NCI Comprehensive Cancer Center in 1999
  - 1 of 39 NCI Comprehensive Designated Cancer Centers
  - 400 members (110 research members)
  - Core grant (~$2,2m) supports shared resources

University of Minnesota Cancer Center Research Programs

- Prevention and Etiology
  - Tobacco carcinogenesis
    - Intervention trials to reduce cigarette use (nicotine vaccine)
    - Public health cigarette reduction
  - Outcomes and survivorship
    - Pediatric cancer focus
    - Health disparities
  - Physical activity and cancer risk reduction
- Chemoprevention and Carcinogenesis
  - Micronutrient prevention trials
    - Isothiocyanates for lung cancer
    - Green tea catechins for breast cancer
  - Cancer risk genotypes

University of Minnesota Cancer Center Research Programs

- Immunology
  - Novel immunotherapies for melanoma, renal cell, and breast cancer
- Genetic Mechanisms of Cancer
  - Mouse models of cancer
  - Targeted therapies for key regulatory molecules
- Cancer Progression
  - Mechanisms of metastasis
  - Focus on prostate, lung cancer basic science

University of Minnesota Cancer Center Research Programs

- Women's Cancer
  - Functional imaging by magnetic resonance imaging
  - Growth factor receptor directed therapy
  - Tumor vaccine
- Transplant Biology and Therapy
  - Adoptive immunotherapy with allogeneic sources
  - Natural killer cell transfer
  - Novel adjuvants (toll like receptor agonists)

Partnership Between Cancer Center and Center for Magnetic Resonance Research

- Functional magnetic resonance imaging can differentiate between benign and malignant lesions
- fMRI can assist in predicting response to chemotherapy in breast cancer
  - Basis for clinical trial design
- fMRI development in endometrial cancer and metastatic lesions

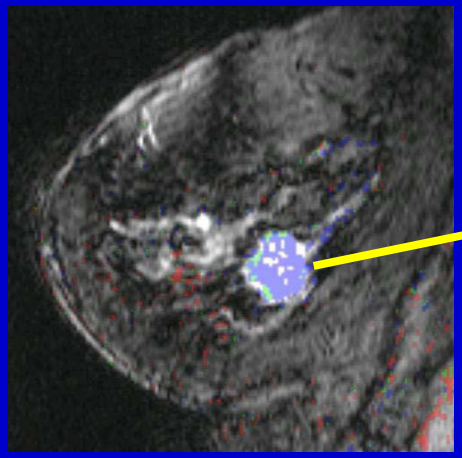
Center for Magnetic Resonance Research
University of Minnesota

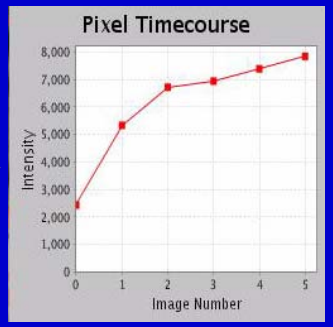
4T, 90cm Oxford Magnet

7T, 90cm Magnex Magnet

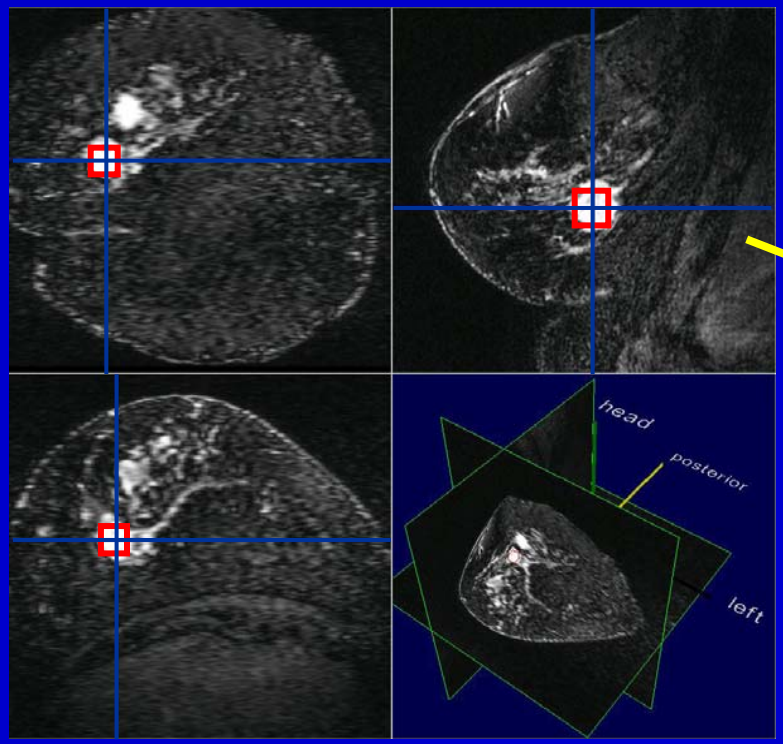
MRS Example @ 4T

Diagnostic patient, 65 yrs
MMG: two masses BiRADS 5
1.7 cm IDC + DCIS



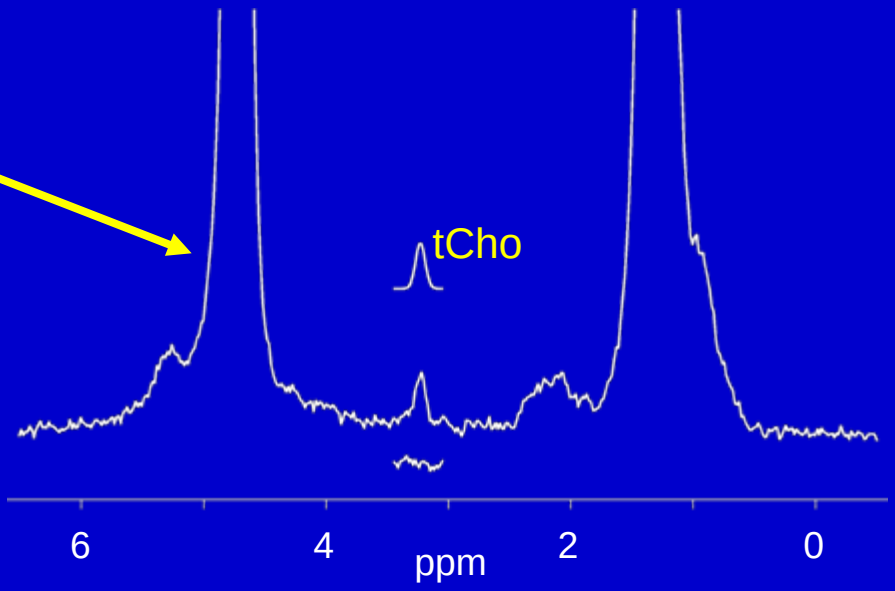


DCE-MRI: continuous enh.

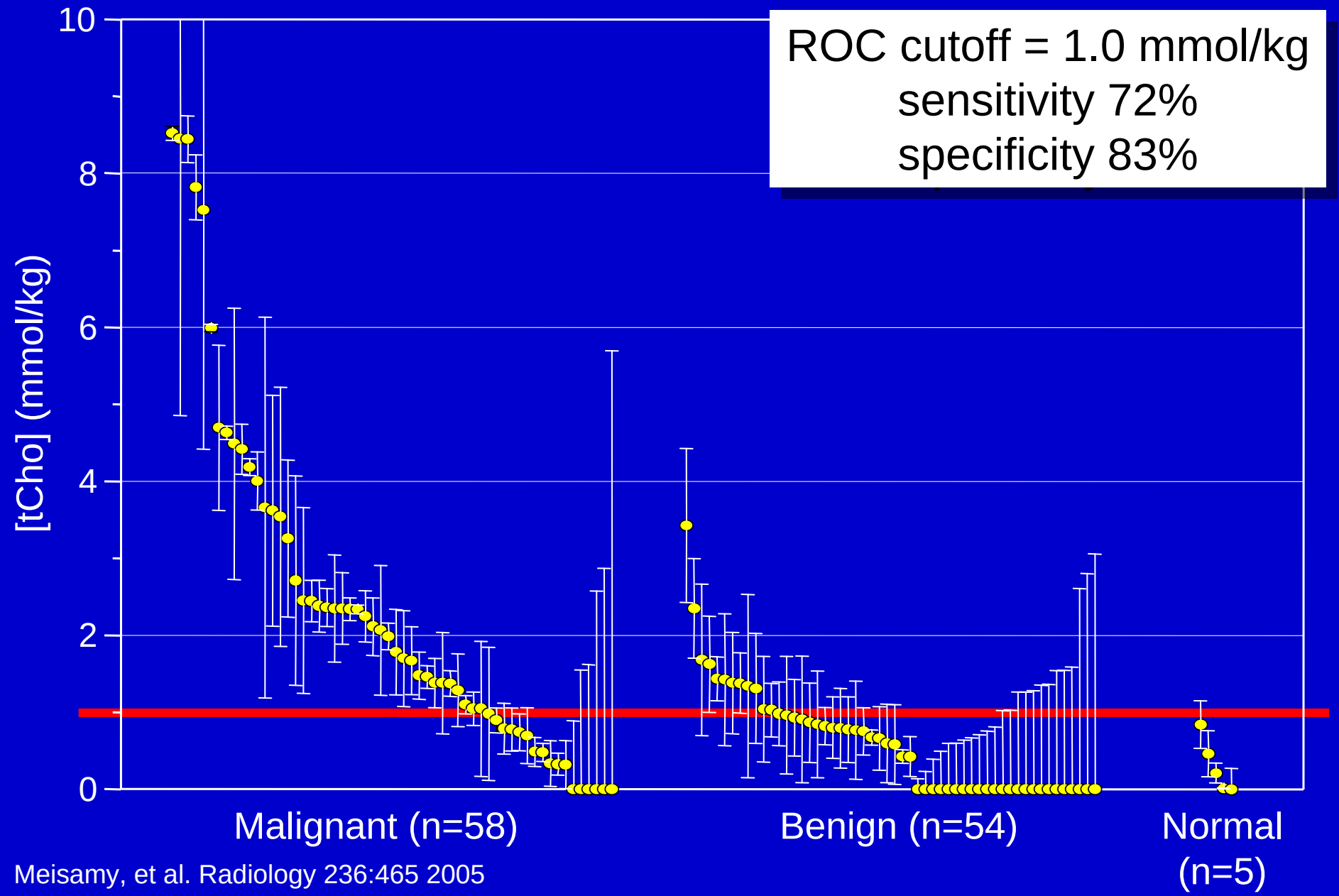


1.4 mL voxel

[tCho] = 2.9 +/- 0.9 mmol/kg



Diagnosing Suspicious Lesions at 4T



Meisamy, et al. Radiology 236:465 2005

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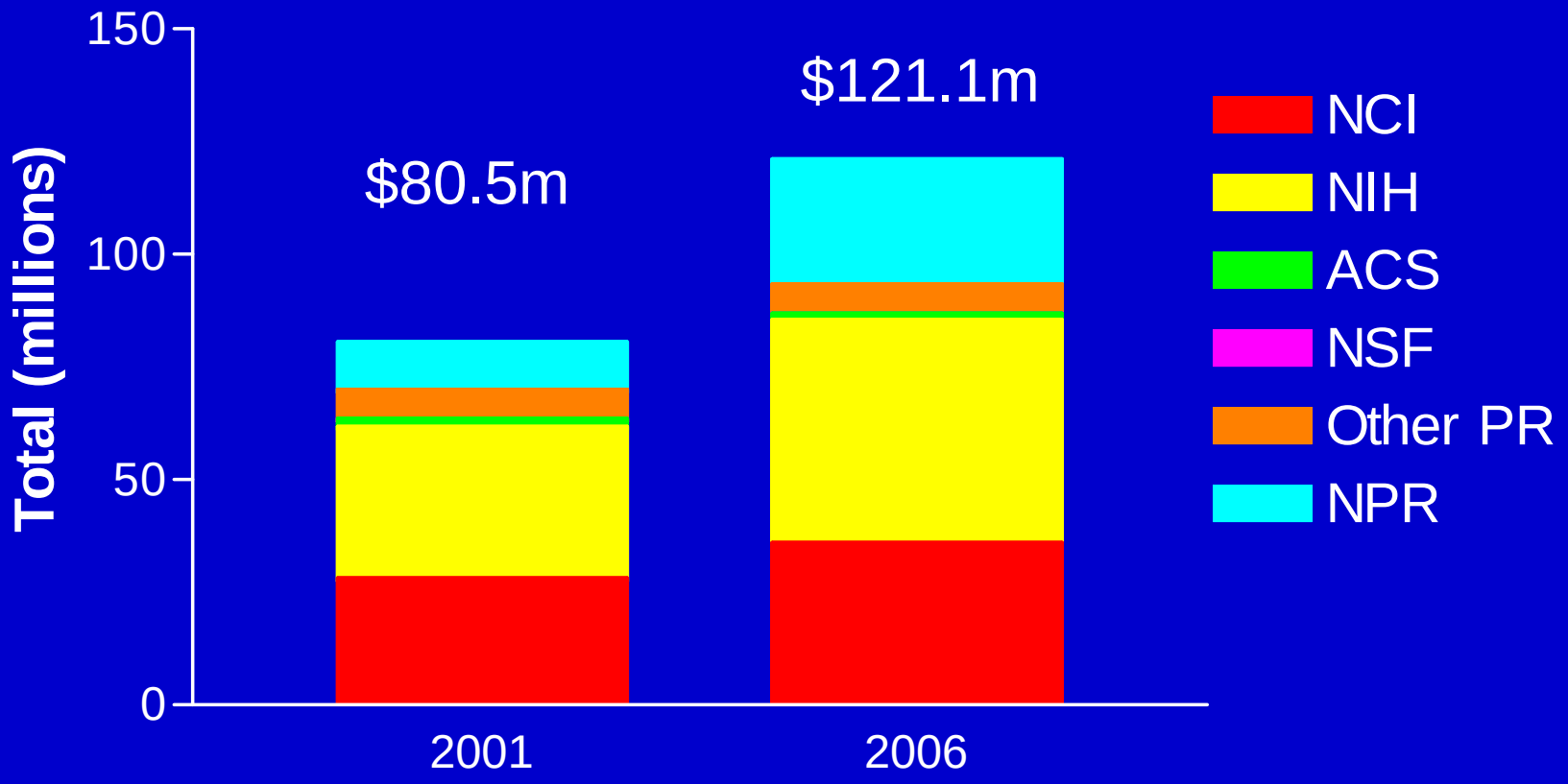
Funding



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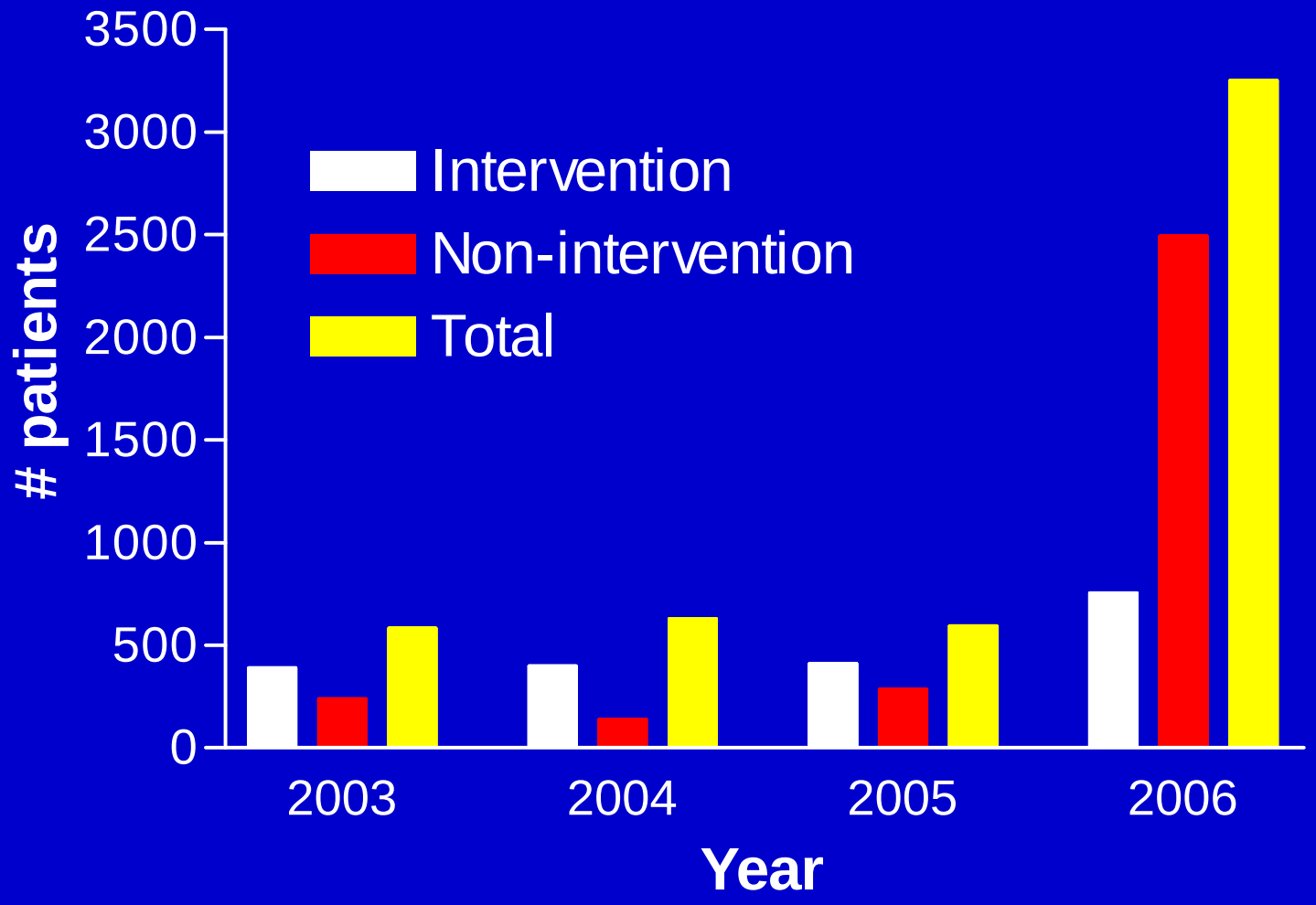
Subjects On Clinical Trials



University of Minnesota Cancer Center

- Coordinated, multi-disciplinary efforts in cancer risk reduction, therapy, and survivorship
- Infrastructure support for faculty's research missions
  - Clinical Trials Office
  - Flow Cytometry, Analytical Biochemistry, etc
- Partnership with clinical health systems