May 8th, 1:30 PM - 3:00 PM

A Case of Mistaken Identity: Biomarkers for High Risk Premalignant Breast Lesions

D. Joseph Jerry
University of Massachusetts - Amherst

Let us know how access to this document benefits you.
Follow this and additional works at: https://escholarship.umassmed.edu/cts_retreat


Creative Commons License

This work is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 License. This material is brought to you by eScholarship@UMMS. It has been accepted for inclusion in UMass Center for Clinical and Translational Science Research Retreat by an authorized administrator of eScholarship@UMMS. For more information, please contact Lisa.Palmer@umassmed.edu.
A case of mistaken identity ---
Biomarkers for high risk premalignant breast lesions

D. Joseph Jerry, UMass Amherst and PVLSI
Karl Simin, UMass Medical
May 8th, 2013
Estimated costs: $20,000 to $100,000/patient.

Campbell JD, Ramsey SD. Pharmacoeconomics. 2009;27(3):199-209. PMID: 19354340
Atypical hyperplasias

Progression to invasive cancer

50,000 new cases annually

Expect 10,000 new cases annually

Up to $1B to treat
Developing biomarkers of high risk premalignant breast lesions

Subtypes of Atypical Hyperplasias

Subtypes of lesions with malignant potential

ADH

LN
Bioanalyzer electropherograms

Intact RNA

FFPE RNA
Log2 expression values

Normal  Ductal AH  Lobular AH

Gene expression heatmap with annotations for Normal, Ductal AH, and Lobular AH samples. The figure shows expression levels of various genes, with red indicating higher expression and green indicating lower expression.
Patient Population: Diagnosis of Breast Cancer or Benign Breast Disease

IRB-approved Registry
Patient consent
Assign study ID

Patient Registry
Survey data
Clinical data
Archived tissues

Data Manager
• Collate data
• Provides summary data
• Extract data from clinical records
• Coded data for IRB-approved projects

IRB-approved projects

Project 1
Project 2
Project 3
Project 4

Data/Tissue With Study ID
Atypical hyperplasia (UMMS 1999-2003)

2833 breast core biopsies
120 with primary diagnosis of ADH

Upstaging upon re-excision
Summary

• Value of diagnostic test
  – Large interobserver variability in diagnosing premalignant lesions (Jain et al., 2011. PMID 21532546)
  – Identify subgroups to benefit from preventive therapies.
  – Identify molecular pathways to provide appropriate preventive treatments

• Technical challenges
  – Minute amounts of tissue
  – Fragmentation of RNA in FFPE tissues
  – Amplification and labeling for robust detection
University of Massachusetts - Amherst
D. Joseph Jerry, Ph.D.
Ellen Dickinson
Amy Roberts
Jeff Kane
Mary Hagen

Karen Dunphy
Haoheng Yan
Erick Roman
Nick Griner

UMass Medical Center
Karl Simin, Ph.D.
Ashraf Khan, M.D.

Funding from
NIH, NIEHS, Avon Foundation
Rays of Hope Foundation,
Life Science Moment Fund