



Mark A. Nelson, Ph.D.

Interests

- Inflammation/Metastasis
- Cancer/Neuropathic pain

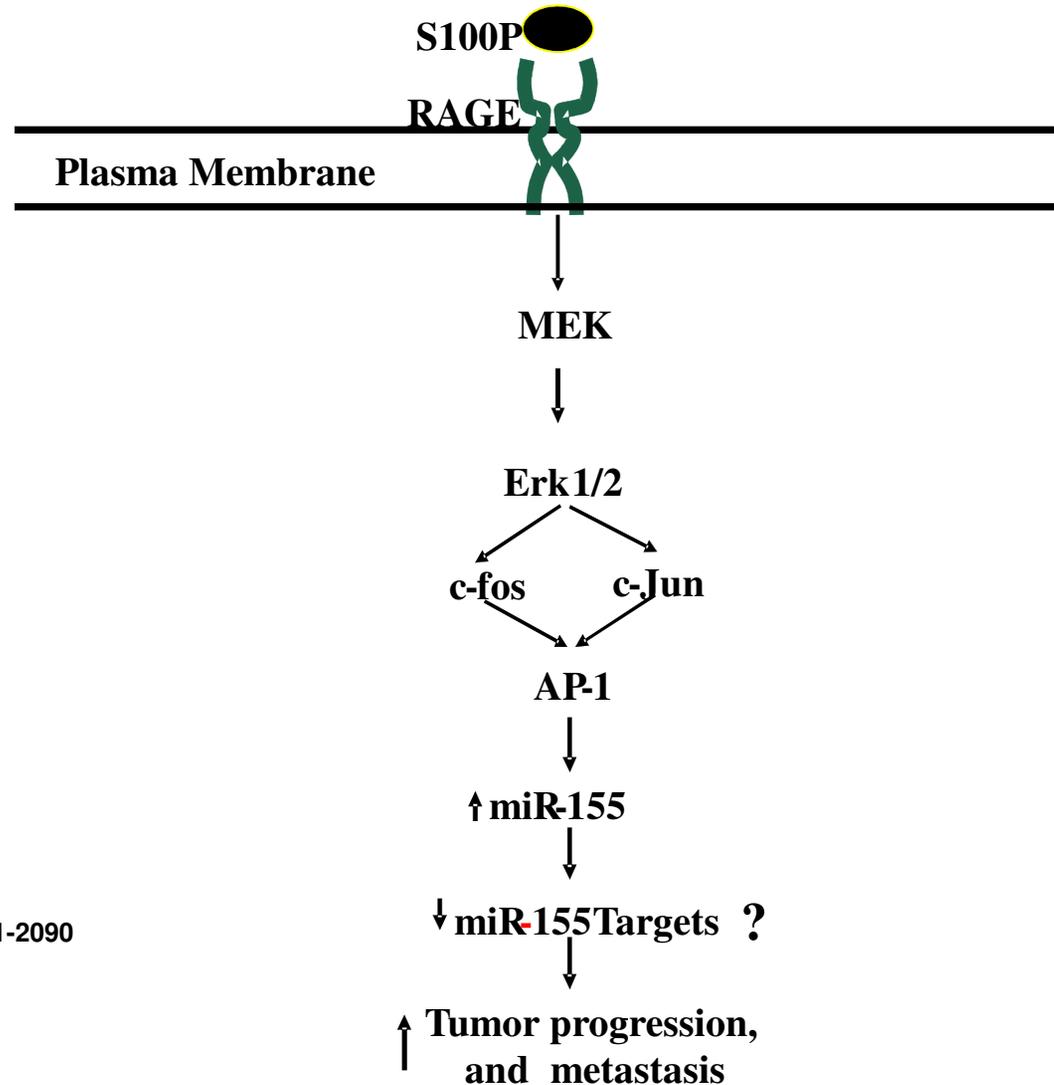


Inflammation/Metastasis

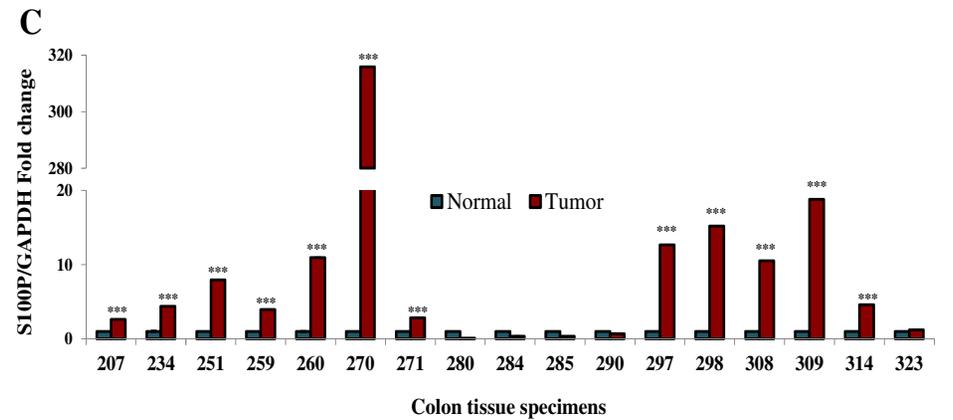
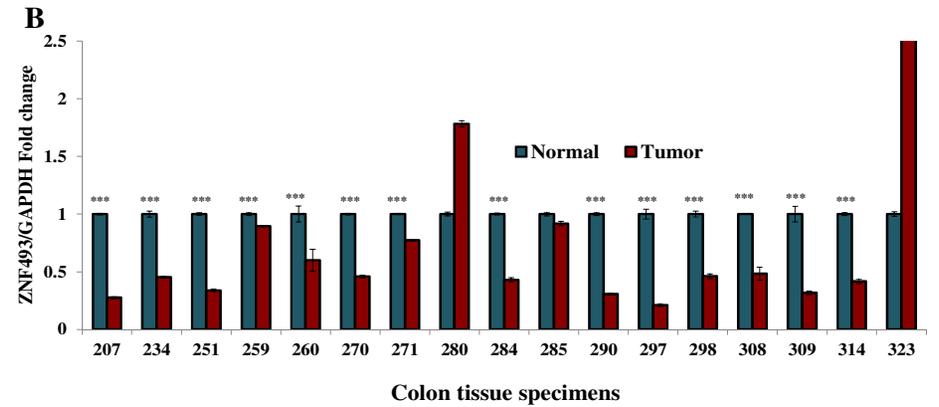
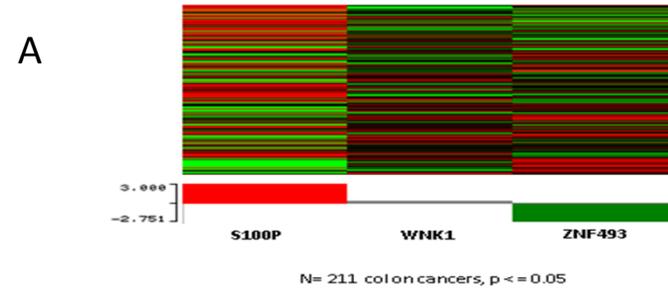
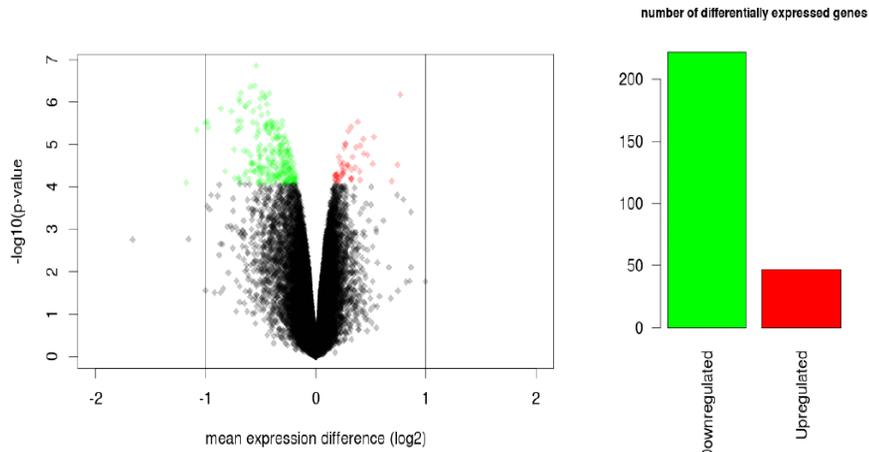
- G.I. SPORE
 - Co-PI : Project 4
 - Director: Career Development
 - Co-Director: Tissue Bank
- R01 under revision
- K23 (Mentor: Valentine Nfonsam, MD.)

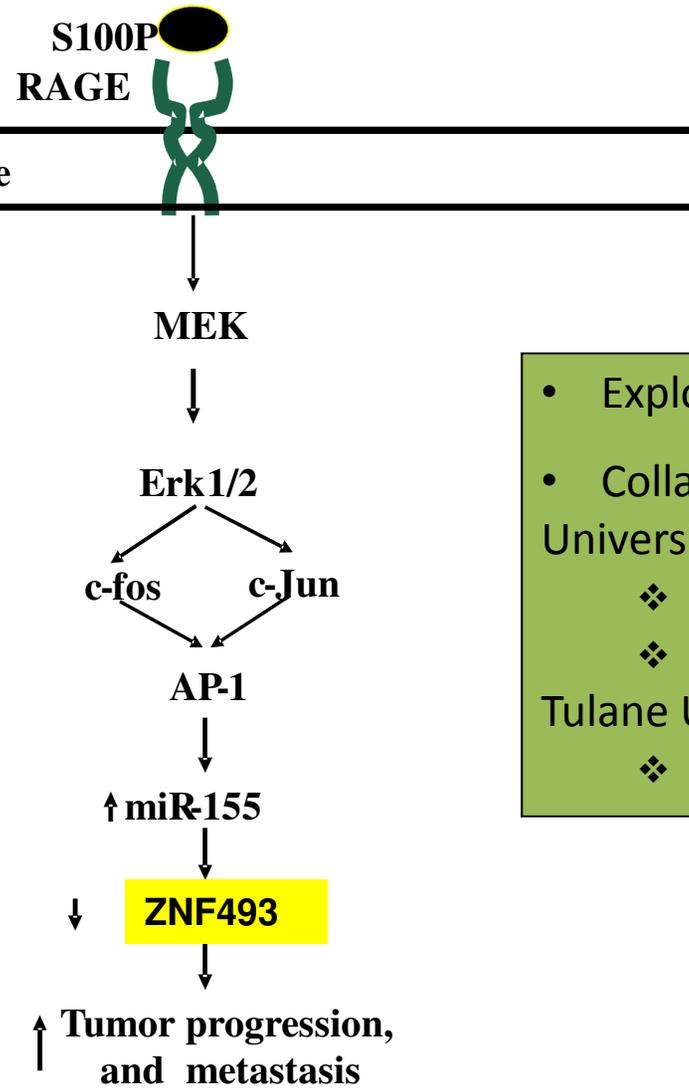


What mRNAs are downstream of miR-155?



Onyeagucha et al. Exp. Cell Res. 2012; 319: 2081-2090

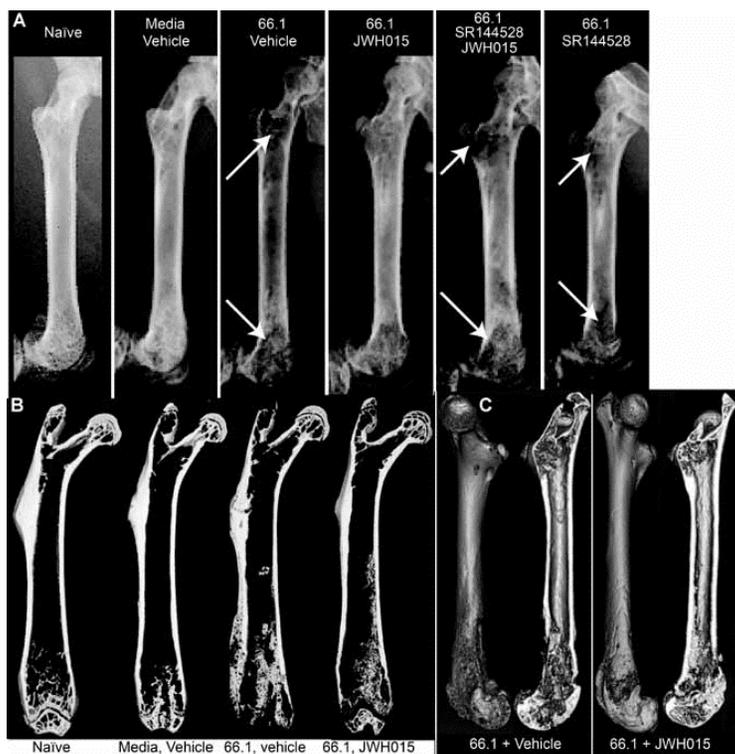




- Exploratory R21 submitted Feb 2014
- Collaborators
University of Arizona
 - ❖ Achyut Bhattacharyya, M.D.
 - ❖ Bernard W. Futscher, Ph.D.Tulane University
 - ❖ Erik Flemington, Ph.D.



Cancer/Neuropathic pain



Rationale

- Breast cancer is 2nd leading cause of death in U.S.
- Breast metastases causes bone loss, fractures, anemia, and pain
- Neither palliative care nor approved therapeutics for skeletal related events have improved survival
- Alternative therapies are needed

Effect of CB2 agonist

- Reduced cancer-induced bone pain
- Bone loss
- Tumor cell growth

Funded by RO1 CA142115 (TV), Better Than Ever grant (MN) and the Main Cancer Foundation (TV)

Collaborators:

Todd Vanderah, Ph.D.

Patrick Mantyh, M.D., Ph.D.

Frank Porreca, Ph.D.

Disease modification of breast cancer-induced bone remodelling by cannabinoid 2 receptor agonists
Lonzano-Ondoua et al. J. Bone Miner Res. 2013 Jan 28(1): 92-107



Cancer/Neuropathic pain Clinical Trial

Rationale

- Approximately 50,000 patients will die of colon or rectal cancer in U.S.
- 20% of patients present with Stage IV disease and 40% of patients diagnosed with localized disease will recur with metastatic disease
- Oxaliplatin based therapies are commonly used to treat patients with CRC
- The dose-limited side effect of oxaliplatin-based therapy is sensory neuropathy

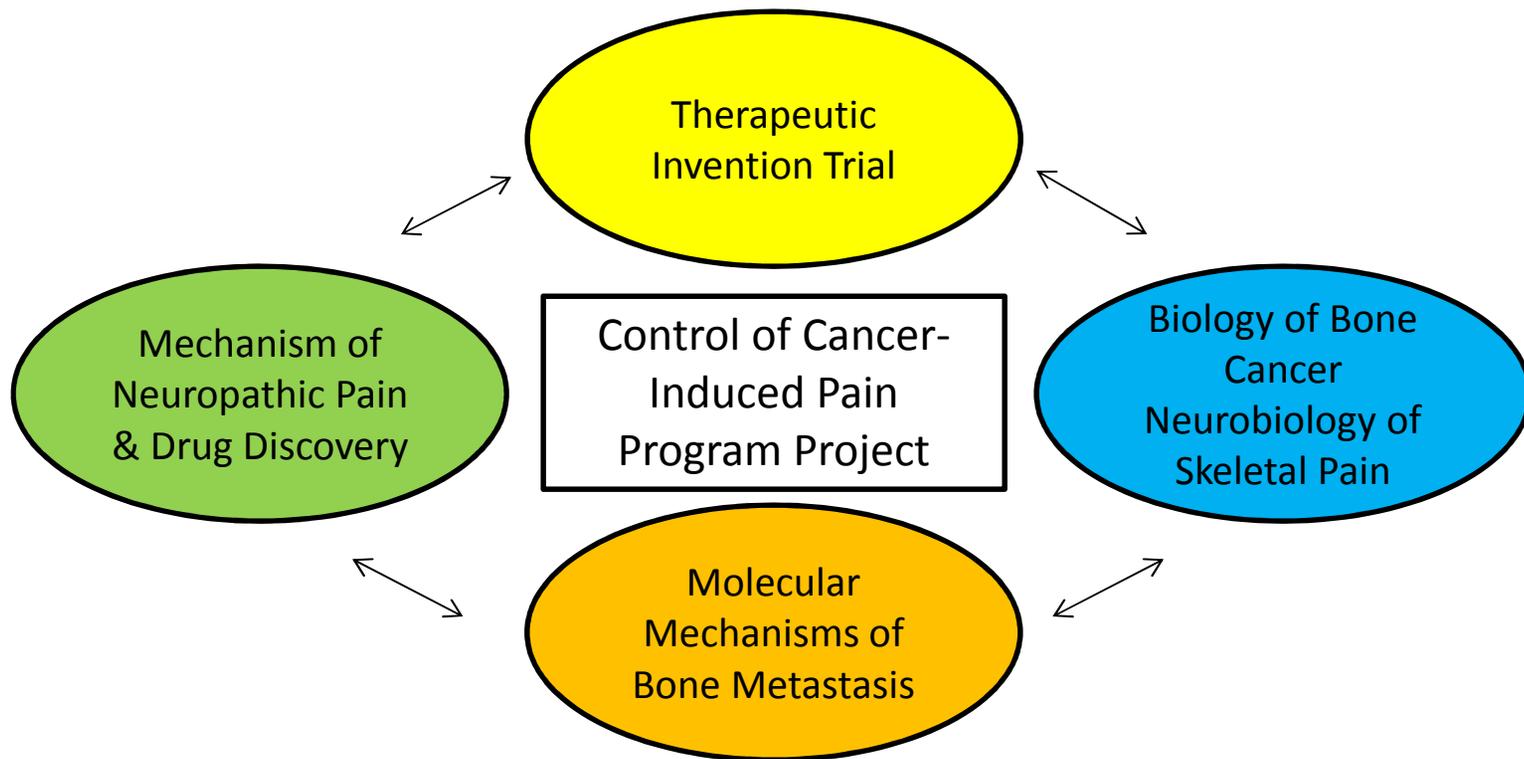
Collaborators

- Hani Babiker, M.D
- Hitendra Patel, M.D.
- Emad Elquza, M.D.
- Valentine Nfonsam, M.D.
- Achyut Bhattacharyya, M.D.
- Charmi Patel, M.D.
- Todd Vanderah, Ph.D.

Hypothesis: CB2 agonist can attenuate oxaliplatin-induced neuropathy



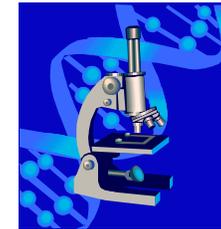
Cancer/Neuropathic Pain Future Directions





Departmental Initiatives

- **Molecular Diagnosis of Disease**
- **Biobanking**



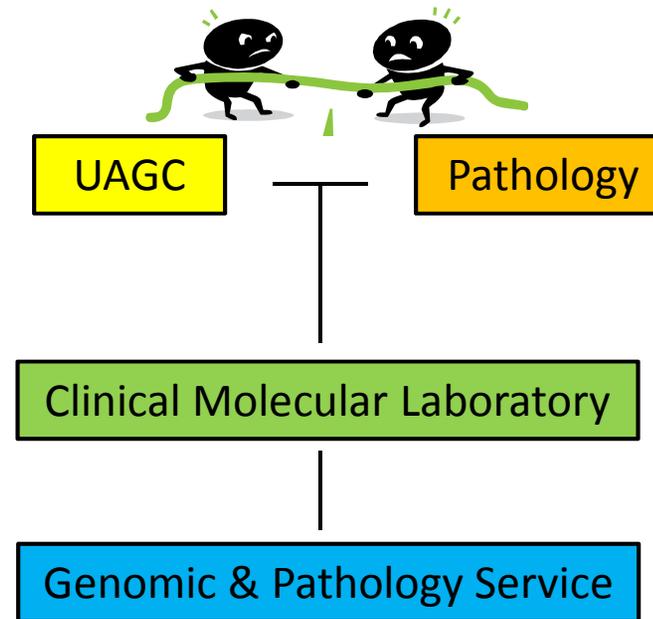
PATHOLOGY
COLLEGE OF MEDICINE



Molecular Diagnosis of Disease



- **Current Clinical Service**
 - Infectious Disease
 - Cytogenomics
- **Future Clinical Service**
 - Oncology
 - Genetics
 - Pharmacogenomics
 - Respiratory Diseases
 - Cardiovascular Diseases
 - Bone marrow Transplant
 - Neurological Diseases



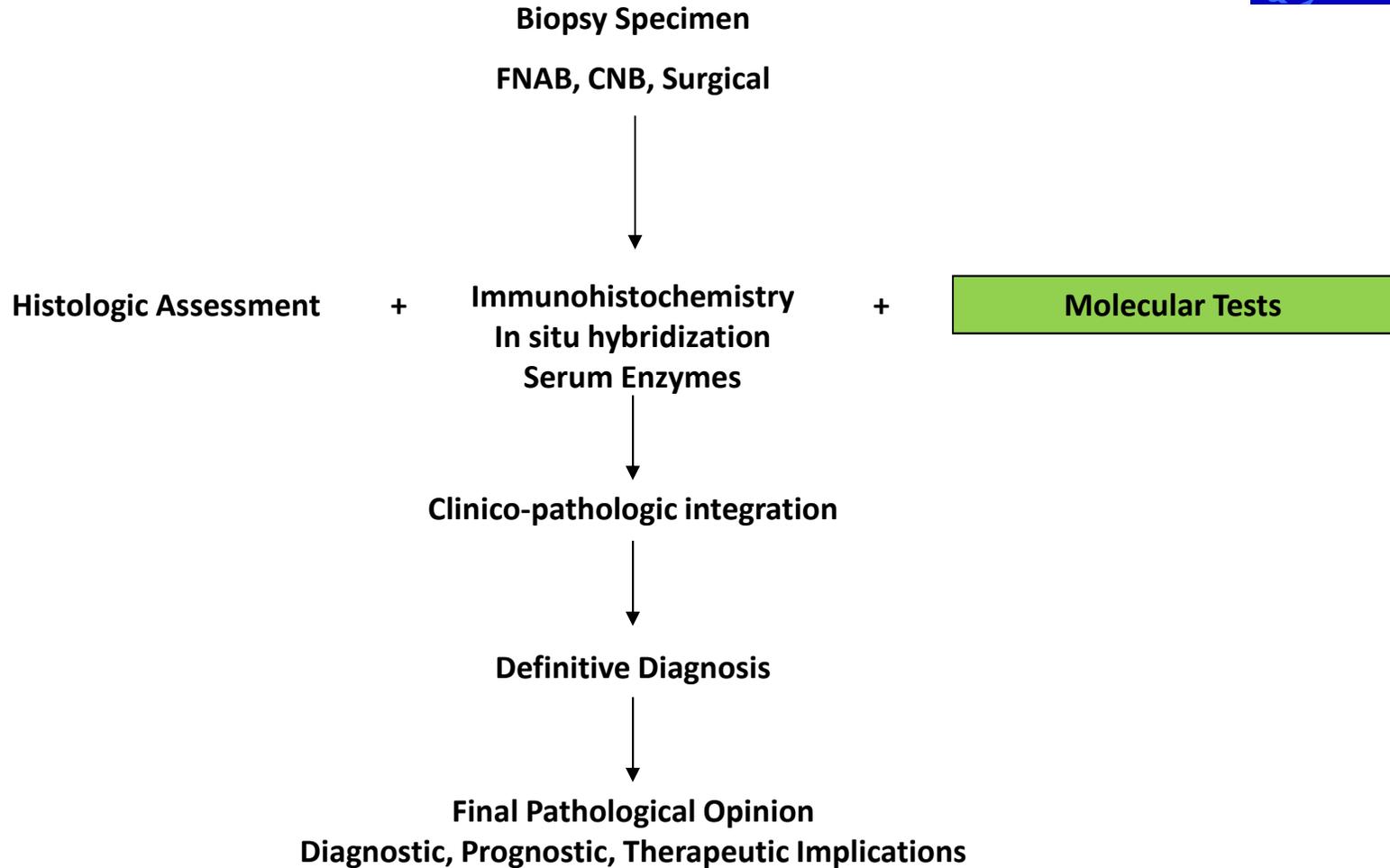
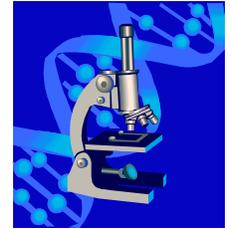
Technologies

- NGS
- Digital PCR
- Expression Profiling
- Microfluidic Devices

Towards Precision Health

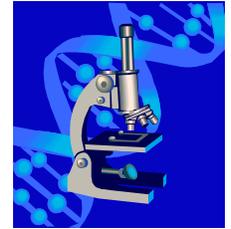


Future Workflow

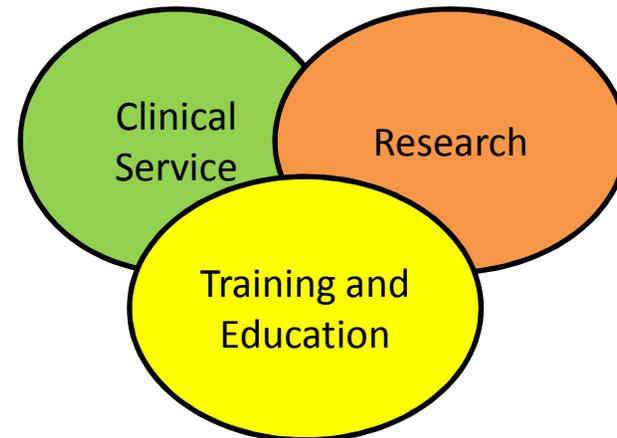




Clinical Molecular Laboratory

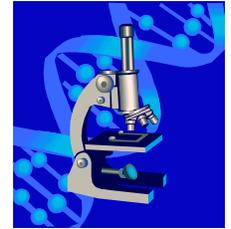


- Submitted CAP/CLIA accreditation license
- Established a formal relationship with Wash University and Emory University
- Faculty recruitment for clinical laboratory director
- Initiated test development
- Identified an informatics platform for reporting





Molecular Pathology Initiative



Pathology

Achyut Bhattacharyya, M.D.
Maria Proytcheva, M.D.
Jennifer Thorn, M.D.
Arthur Brothman, Ph.D. FACMG
Wenxin Zheng, M.D.
Fatima Z Aly, M.D.
Lisa Rimsza, M.D.

UAGC Core

Mike Hammer, Ph.D.
Ryan Sprissler, M.S.
Nirav Merchant, M.S.

UACC

Bernard Futscher, Ph.D.
George Watts, Ph.D.
Emad Elquza, M.D.
Hitendra Patel, M.D.

Washington University

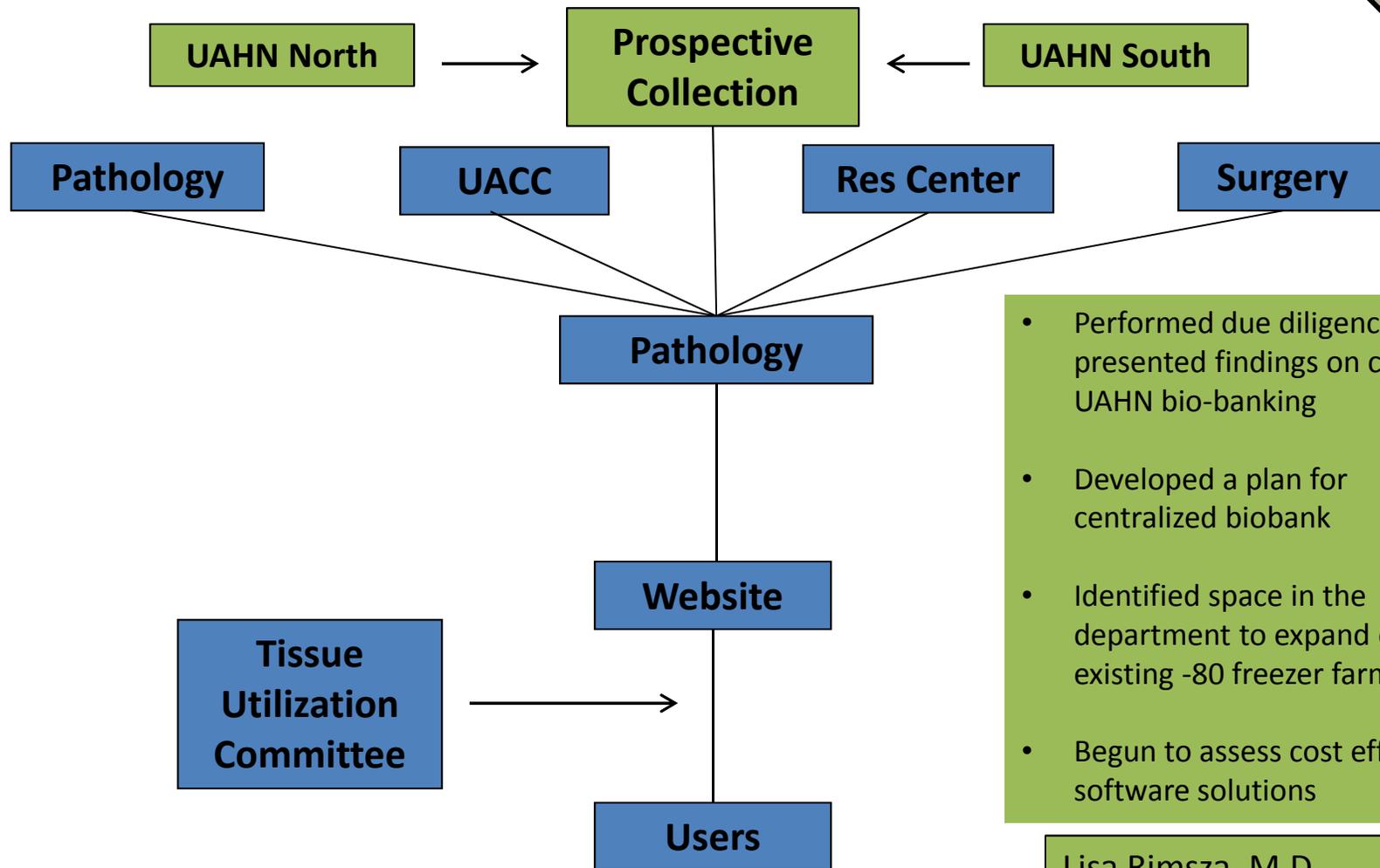
Sashi Kulkarni, Ph.D., FACMG
Rakesh Nagarajan, M.D., Ph.D.

Emory University

Madhuri Hegde, Ph.D., FACMG



Institutional Bio-Bank



- Performed due diligence and presented findings on current UAHN bio-banking
- Developed a plan for centralized biobank
- Identified space in the department to expand our existing -80 freezer farm
- Begun to assess cost effective software solutions

Lisa Rimsza, M.D.
Erika Bracamonte, M.D.
Maria Proytcheva, M.D.



Thank you



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