



# **Sidney Kimmel Comprehensive Cancer Center (SKCCC)- 2016 Update**

**William G. Nelson, M.D., Ph.D.**

**Marion I. Knott Director and Professor of Oncology**

# Presentation Overview

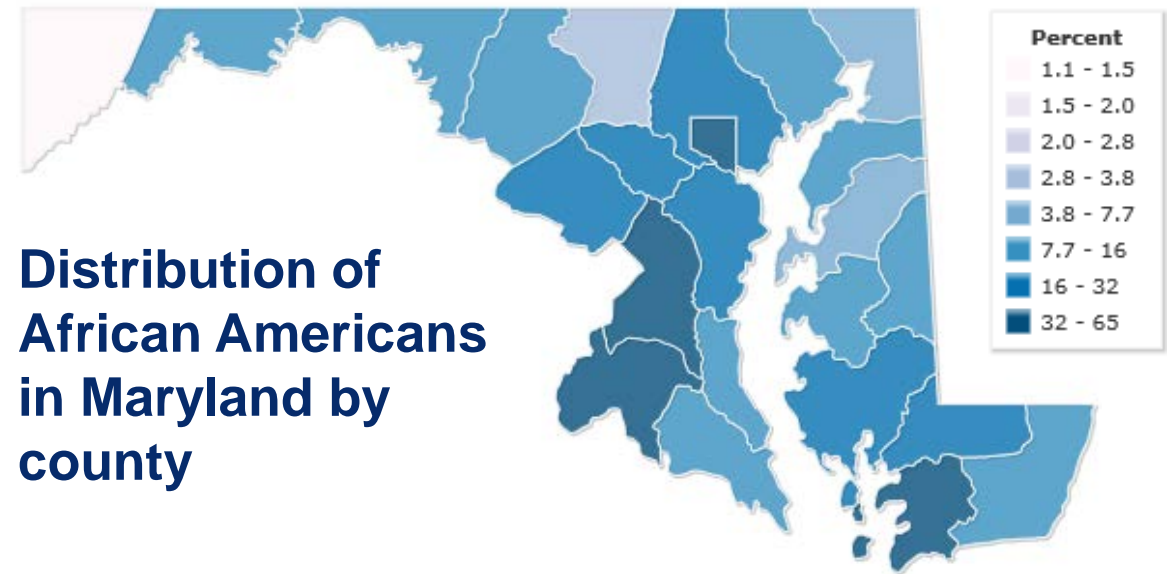
- State of Maryland residents and cancer clinical trials at the SKCCC
- New SKCCC research initiatives tackling the cancer problem in Maryland
  - Two Examples
- Transforming cancer care at SKCCC
- Aspirations for the next five years



# Catchment Area: State of Maryland

- Maryland accounts for **61% of SKCCC patients**
- Key cancer problems include: prostate, lung, colon/rectum, breast (particularly ‘triple-negative’), cervical, and multiple myeloma
- **African Americans** are the major minority group

| Population Demographics |               |                                 |                   |
|-------------------------|---------------|---------------------------------|-------------------|
| Race                    | United States | Maryland (SKCCC catchment area) |                   |
|                         |               | General Population              | Cancer Population |
| Caucasian               | 77.7%         | 60.4%                           | 69.8%             |
| African American        | 12.9%         | 30.2%                           | 25.5%             |
| Other                   | 9.4%          | 9.4%                            | 4.7%              |



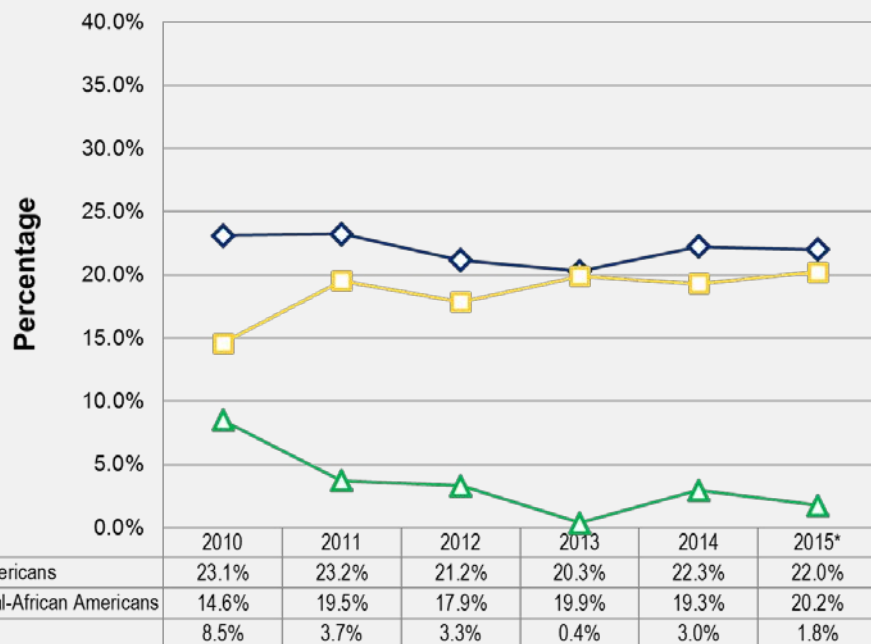


## Improvements in Inclusion of Minority Subjects in Clinical Trials

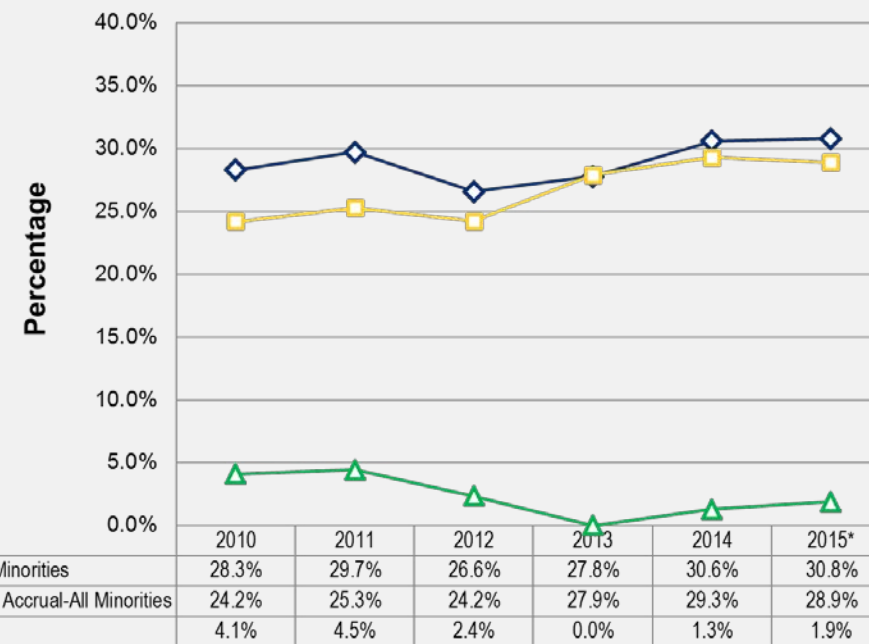
- An SKCCC [Office of Community Cancer Research](#) established under the direction of Drs. Groopman (AD for Population Sciences) and Carducci (AD for Clinical Research)
- [Dina Lansey, M.S.N., R.N.](#), recruited as [Assistant Director for Diversity and Inclusion in Clinical Research](#)
- Created and implemented a [multifaceted plan for sustainable improvement](#) in inclusion of minority subjects in clinical trials
  - Required formal [cultural competency training](#)
  - Identified [gaps in clinical research portfolio](#) for minority subjects (e.g. triple-negative breast cancer)
  - [Refined clinical \(and other\) data systems](#)
  - Undertook [deep analysis of barriers at SKCCC](#) to minority participation in trials (eligibility, transportation, financial, etc.)
  - [Interventions assessed via studies](#) (navigation, transportation, etc.)

# Accrual to SKCCC Intervention Studies 2010-2015

## All Minorities



## African-Americans



## 2016 Scorecard

- Minorities 31% of Registry and 33.0% of Intervention Accruals
- African-Americans 23% of Registry and 23% of Intervention Accruals

# New SKCCC Research Initiatives: Tackling Cancer in Maryland

1

Population science approaches to human papillomaviruses (HPVs) and cancer

(Cancer Prevention and Control Program)

2

Biologic differences between prostate cancers in Caucasian and African-American men and active surveillance

(Prostate Cancer Program)



# HPV-Associated Oropharyngeal Cancers

## Observation

HPV causes oropharyngeal cancers  
(D'Souza et al. New Engl J Med 2007)

## Population Science

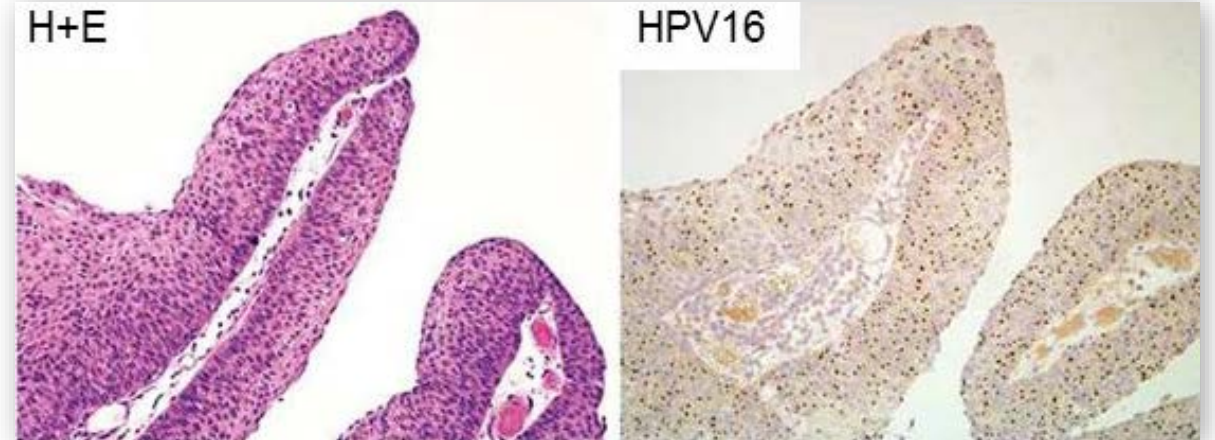
Who gets HPV+ oropharyngeal cancers?

~3-fold increased risk for oral oncogenic HPV infection among HIV+ subjects with low CD4+ T-cell counts

(Beachler et al. CEBP 2012)

## Population-Scale Intervention:

Development of next-gen HPV vaccines  
(Jaqu et al. J Virol 2013)



L2 11-88x8



L2 11-88x5



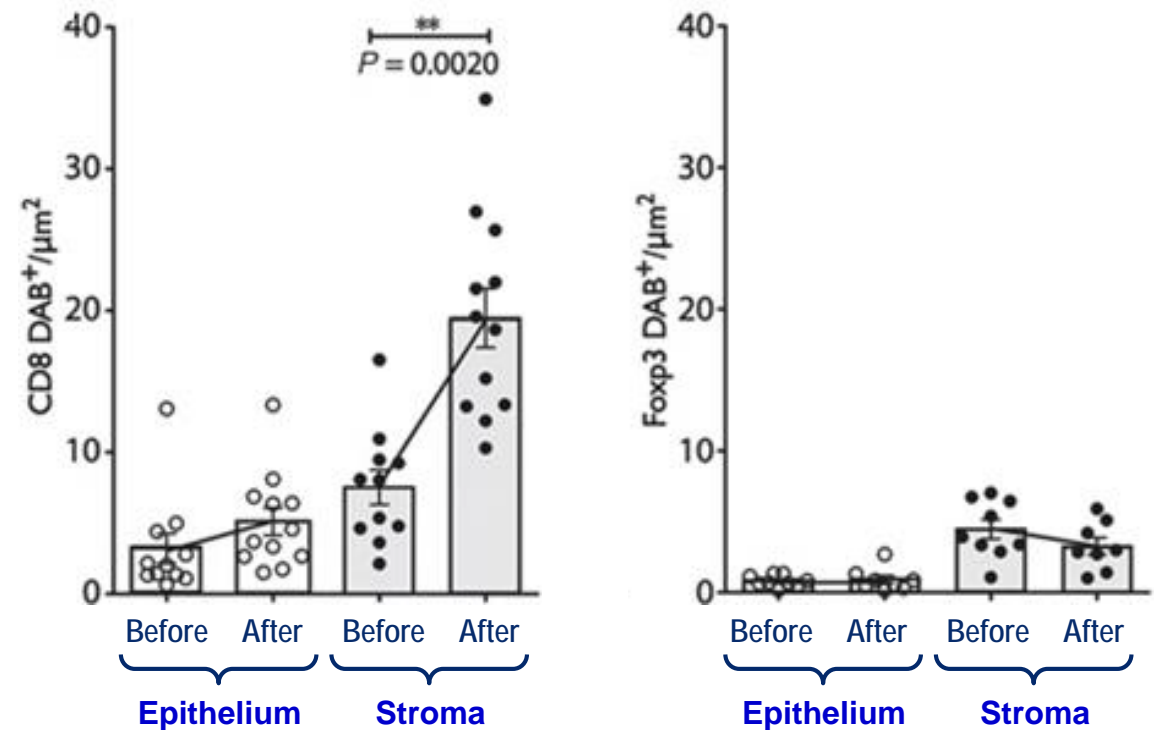
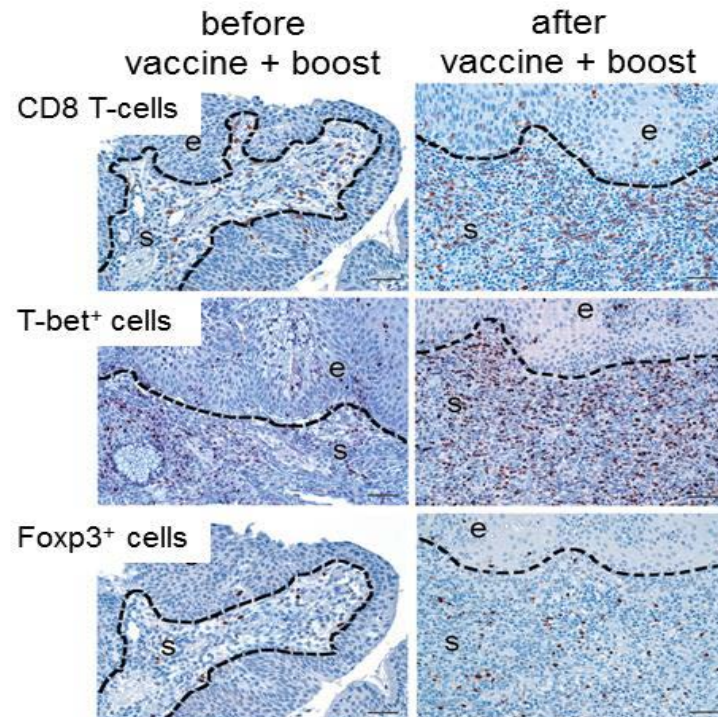
Key for papillomavirus species



# Vaccine Immunotherapy of HPV-Associated Premalignancy in the Uterine Cervix (CIN2/3)\*

**Treatment:** DNA-based HPV16 E7 vaccine/vaccinia-based HPV16 + HPV18 E6/E7 boost

**Outcome:** Complete responses in 5 of 12 subjects



\*Maldonado *et al.* Sci Transl Med 2014



# Active Surveillance for Favorable Risk Prostate Cancer

## **Favorable risk prostate cancer:**

- Criteria developed in Prostate Cancer Program (T1c stage, PSA density < 0.15 ng/mL, Gleason score ≤ 6, < 3 positive biopsy cores with ≤ 50% cancer in any core)

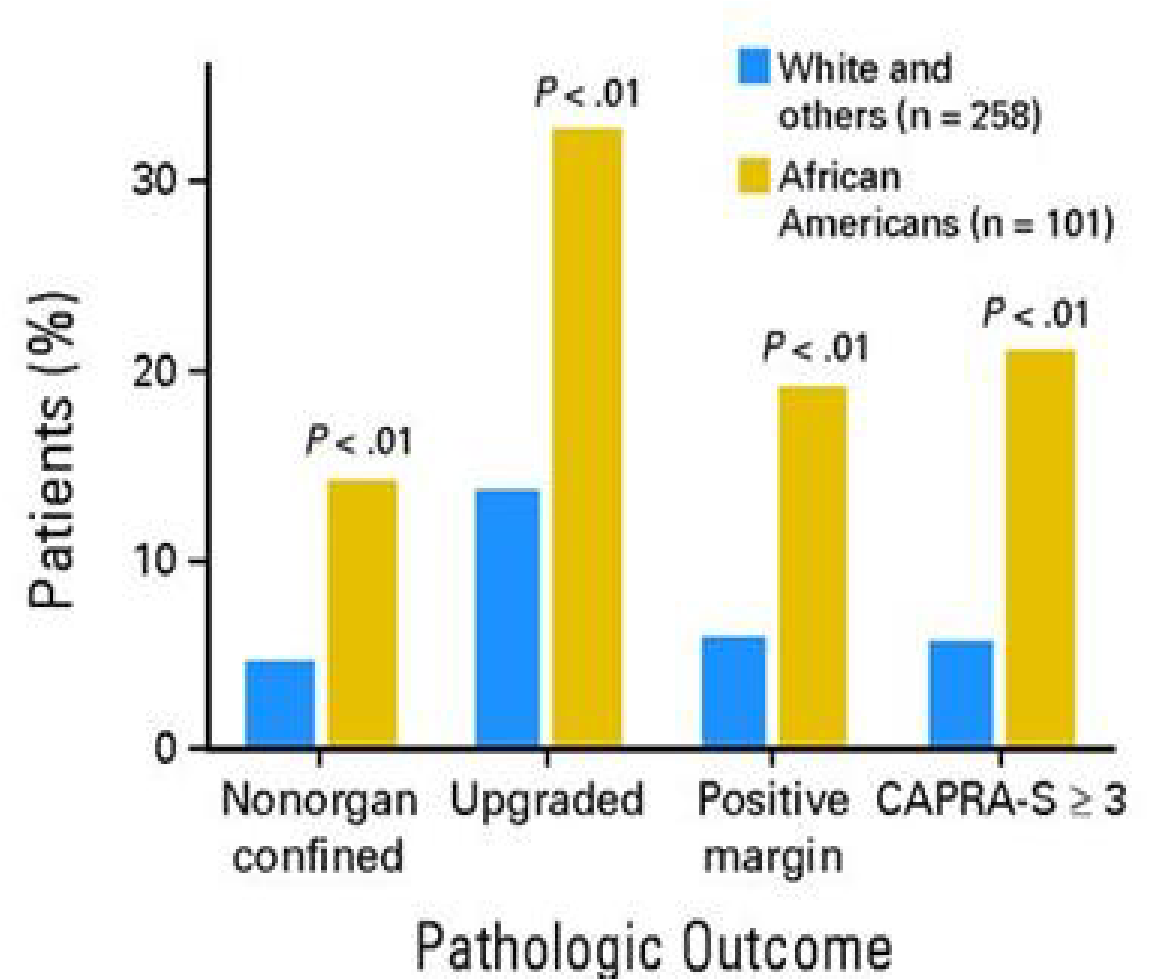
## **Active surveillance is generally safe and effective:**

- 1,298 men (median age 66 yrs) treated using active surveillance
- 15-Year cancer-specific survival rate of 99.9%
- Intervention (surgery/radiation therapy) needed in 57% by 15 years

Tosoian *et al.* J Clin Oncol 2015; Haffner *et al.* J Clin Oncol 2015

## **Active surveillance should be used with caution for African-American men:**

- Cohort of 1,801 men (1,473 Caucasian/256 African-American/72 Others) who underwent radical prostatectomy  
Sundi *et al.* J Clin Oncol 2013



# Prostate Cancer Disparities

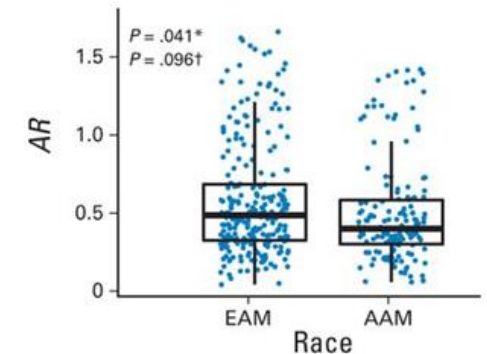
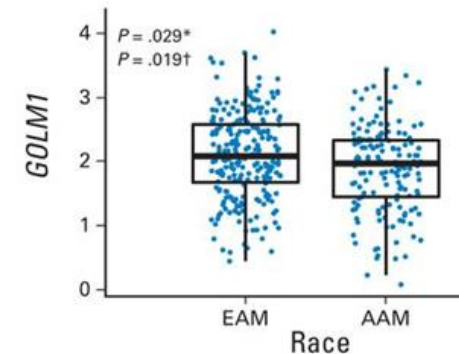
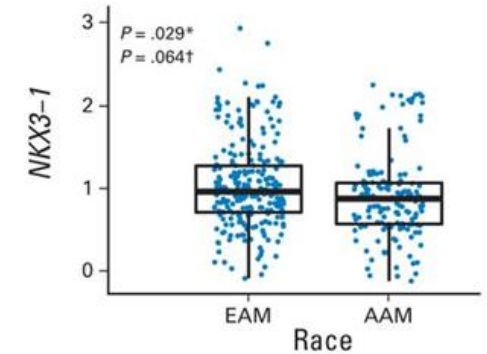
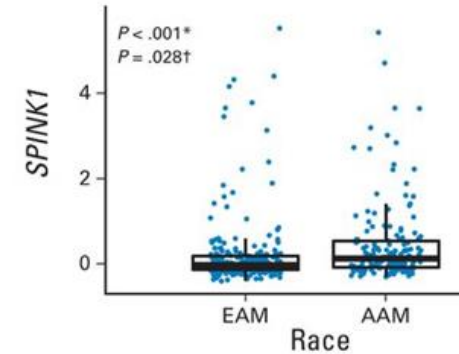
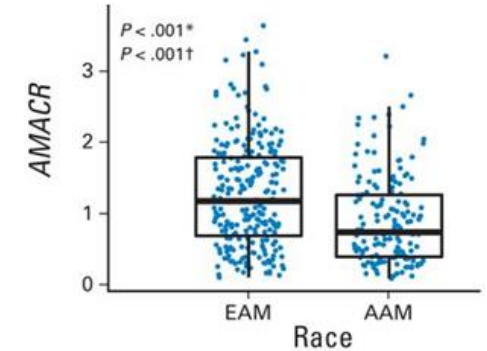
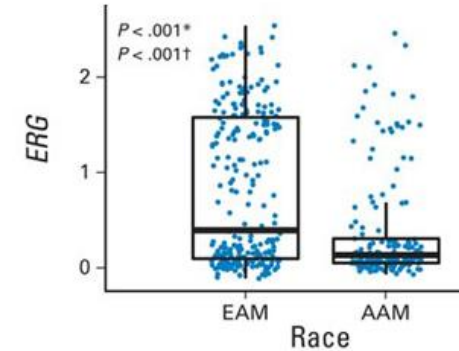
## *Biologic differences in prostate cancers between Caucasian and African-American men*

- Revealed by gene expression analysis

Yamoah *et al.* J Clin Oncol 2015

## *Consortium for Molecular Characterization of Screen-Detected Lesions U01*

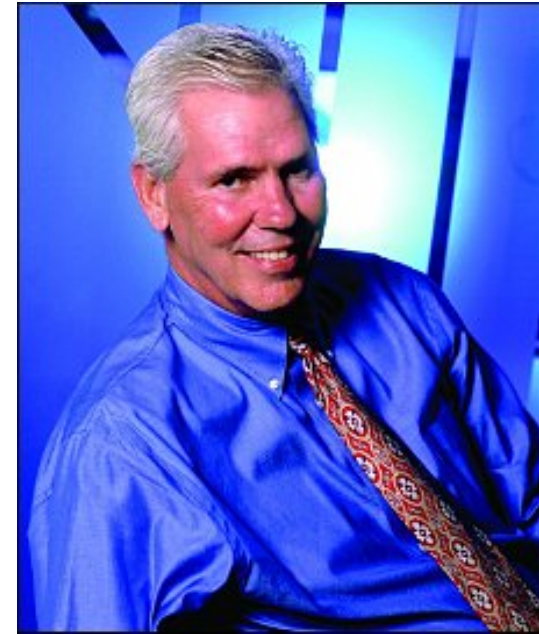
- Molecular basis for prostate cancer differences between Caucasian and African-American men
- **Very high-performance computing** (JHU/UMd Deepthought2 supercomputer-19K processors/12M gigabytes)
- Correlations between race/ethnicity and genome/epigenome/transcriptome **tested using pre-alignment genomic data**—the first such attempt anywhere



# Skip Viragh Outpatient Cancer Care Building

**Skip Viragh Outpatient Building**

**180,000 ft<sup>2</sup> – infusion – imaging – pharmacy**

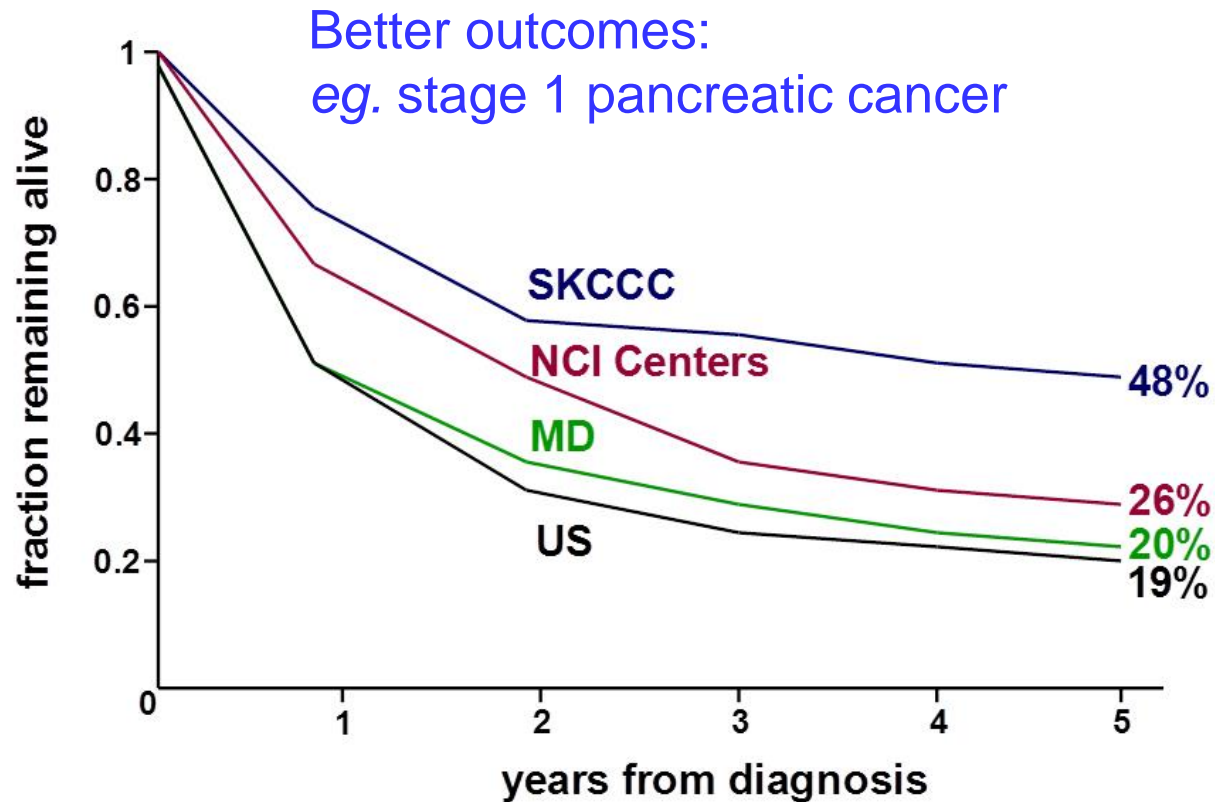


**Skip Viragh**  
Philanthropist

# Multidisciplinary Initial Evaluation Services Promote Trans-Disciplinary Research

- SKCCC Multidisciplinary Clinic offerings in:
  - Head and Neck Cancers
  - Lung Cancer (including a Pulmonary Nodule Clinic)
  - Breast cancer
  - Prostate Cancer
  - Liver Cancer
  - Colorectal Cancer
  - Pancreas Cancer
- ~10-20% of new patients with these diseases pass through these Clinics
- Diagnosis/tumor grade/tumor stage changes for as many as 25% or more of cases with treatment implications\*

# Dedicated Multidisciplinary Initial Evaluation Services Improve Quality of Cancer Care: **Pancreatic Cancer**



Change in **treatment recommendation** ~ 24%

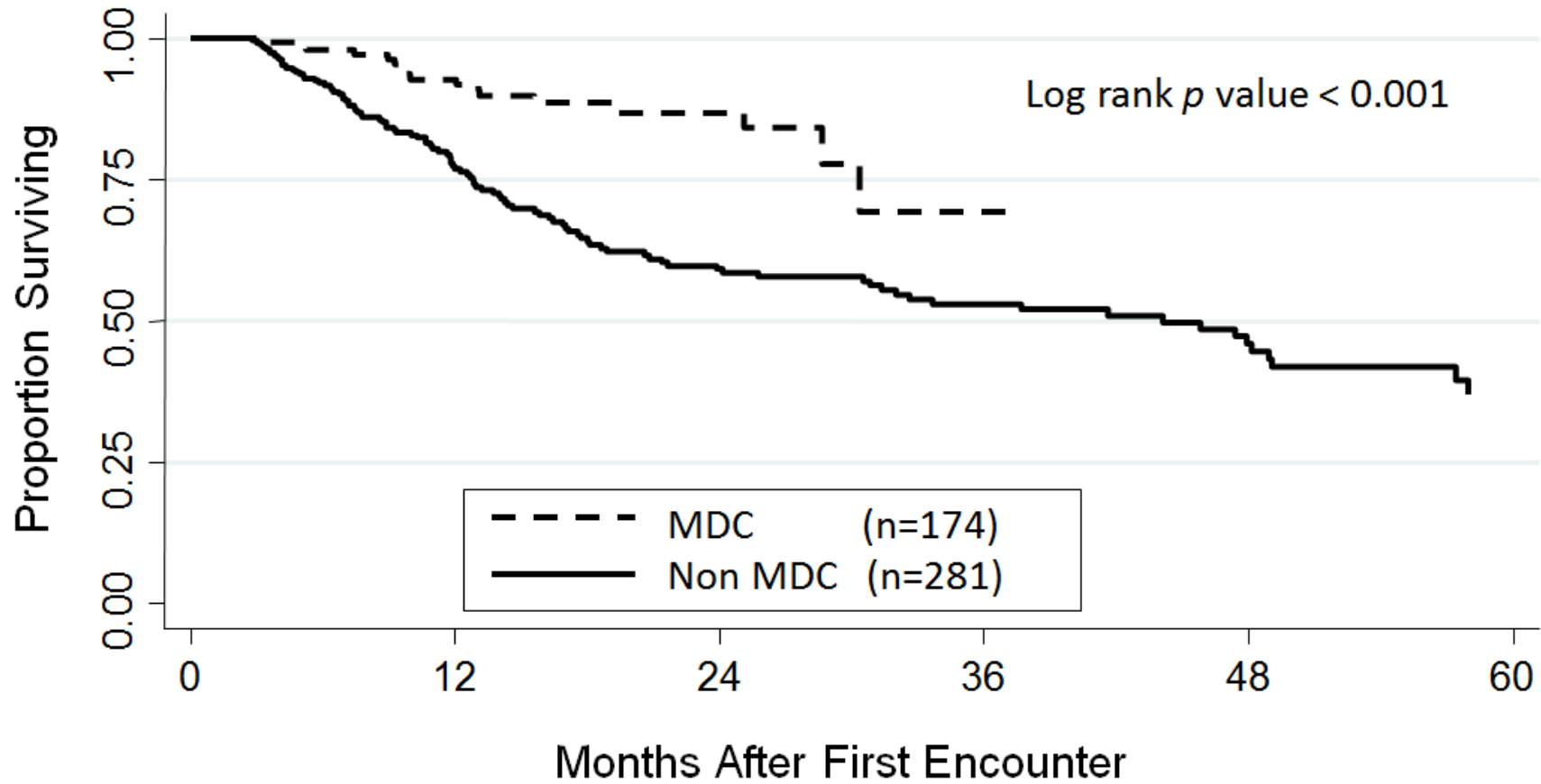


Change in **diagnosis** ~ 4%



Change in **cancer stage** ~ 14%

# Quality of Care: Overall Survival Lung Cancer Patients at a Multidisciplinary Clinic (MDC) vs. Non-MDC (n=455)



**Russel Hales, MD**  
Thoracic Radiation  
Oncology

# SKCCC Research Aspirations for the Next Five Years



Discovery, validation, and population-scale assessment of **genomic and epigenomic biomarkers for human cancers** (ComfirmMDx for prostate cancer; PapGene for endometrial and ovarian cancers; circulating tumor DNA tests for many different cancers; detection platforms like Safe-Seq and Gemini)



Development of **immune checkpoint inhibitor immunotherapies** (already effective for melanomas, non-small cell lung cancers, mismatch repair-deficient cancers, and virally-induced cancers)



Elimination of **histocompatibility barriers to hematopoietic stem cell transplantation** (revolutionizing the treatment of leukemia and many other conditions)



Advancement of **epigenetic approaches to cancer treatment** (epigenetic reprogramming as 'priming' for cancer chemotherapy and immunotherapy)

# SKCCC Research Aspirations for the Next Five Years



Use new insights into the molecular biology, epidemiology, and pathogenesis of tumor viruses to improve human health at a population scale



Better ascertain the causes/risk factors for cancer in healthy populations allowing the discovery/development of new approaches to cancer prevention (including the contribution of metabolism, the microbiome, and inflammation)





JOHNS HOPKINS  
MEDICINE

---

THE SIDNEY KIMMEL  
COMPREHENSIVE CANCER  
CENTER

Questions?

