Androgen receptor activity and radiotherapeutic sensitivity in African-American men with prostate cancer: A large-scale gene expression analysis and meta-analysis of RTOG trials


¹Department of Radiation Oncology, University of Michigan, Ann Arbor, MI, ²Department of Biostatistics, University of Michigan, Ann Arbor, MI, ³Harvard Radiation Oncology Program, Harvard Medical School, Boston, MA, ⁴University of Michigan, Ann Arbor, MI, ⁵GenomeDx, Vancouver, BC, Canada, ⁶GenomeDx Biosciences, Vancouver, BC, Canada, ⁷Cedars-Sinai Medical Center, Los Angeles, CA, ⁸Department of Radiation Oncology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, ⁹Department of Radiation Oncology, Mayo Clinic, Rochester, MN, ¹⁰Helen Diller Family Comprehensive Cancer Center, University of California San Francisco, San Francisco, CA, ¹¹Veteran Affairs Hospital Ann Arbor, Ann Arbor, MI, ¹²Department of Radiation Oncology, Dana-Farber Cancer Institute and Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, ¹³Northwestern University, Evanston, IL, ¹⁴UCSF Department of Urology, San Francisco, CA
Disclosure

• Dr. Spratt works for the University of Michigan
• Dr. Spratt served as a one-time consultant for Blue Earth and Janssen
Background

Black men are more likely to die of prostate cancer than white men in the USA.

**Non-biological factors**
(proven drivers)

- Access
- Insurance
- Screening
- Primary Care

**Biological factors**
(potential drivers)

- Genetics
Methods

Sample size
- Total: 17,003
- African-American: 1,953

Prospective
- Yes

Gene Expression Data
- Yes

Trials: 9202, 9408, 9413, 9910

Prospective GRID

RTOG®

Radiation Therapy Oncology Group
Results: Black men have lower AR-activity and DNA repair expression.
Results: Black men have greater predicted radiosensitivity scores.
Results: Black men have lower rates of biochemical recurrence and metastatic disease compared to white men.

Biochemical Recurrence

HR 0.81 (0.73, 0.90)

P = 0.0002

Distant Metastasis

HR 0.71 (0.58, 0.87)

P = 0.0009
Conclusions

• Stage-for-stage disparities in prognosis between black and white men with prostate cancer are primarily driven by social/cultural factors.

• A subset of black men with prostate cancer have distinct biology that may favor treatment with radiation therapy.

• Clinically, black men have improved oncologic outcomes when treated with radiation therapy compared to white men.