Oakwood University
OUScholars

Student Posters | Student Creative Works

4-2024

Analysis AR The androgen (Prostate Cancer)

Elaine Vanterpool
Oakwood University, evanterpool@oakwood.edu

Luis Calderon-Ruiz
Oakwood University

Follow this and additional works at: https://ouscholars.oakwood.edu/student-posters

Recommended Citation

Vanterpool, Elaine and Calderon-Ruiz, Luis, "Analysis AR The androgen (Prostate Cancer)" (2024). *Student Posters*. 19.
https://ouscholars.oakwood.edu/student-posters/19

This Poster is brought to you for free and open access by the Student Creative Works at OUScholars. It has been accepted for inclusion in Student Posters by an authorized administrator of OUScholars.

Analysis AR The androgen (Prostate Cancer)

Luis Kendy Calderon and Elaine Vanterpool, PhD

Oakwood University

Department of Biological Sciences

Huntsville AL, 35896

ABSTRACT

Prostate cancer is one of the most common cancers in American men. This slow-growing, fatal disease is commonly diagnosed in men over 50 years of age. Age is the most common risk factor for prostate cancer. Other contributing factors are family history, race, and environment. Prostate cancer is known to affect the prostate gland and cause it to enlarge. Enlargement of the gland often affects urinary and sexual function. This study aimed to identify genes associated with prostate cancer and analyze missense mutations associated with prostate cancer. Simple ClinVar was the method used to identify genetic variants associated with prostate cancer, through which According to sift and poly-Phen2, mutations found to be pathogenic or benign were identified as Harmful androgen receptors (Damaging) (AR). Inherited variants in particular genes, such as BRCA1, BRCA2, and HOXB13, explain some cases of hereditary prostate cancer, In the other hand if inherited variants genes of BRCA1, BRCA2, and HOXB13 are present these can lead to hereditary prostate cancer. Men with variants in these genes are at high risk of developing prostate cancer and, in some cases, other cancers during their lifetime. Additionally, men with BRCA2 or HOXB13 gene variants may be at increased risk of developing life-threatening forms of prostate cancer., understanding the impact of prostate cancer has a multifaceted role in the medical community, driving research, innovation, and advances in diagnosis, treatment, and supportive care. A comprehensive understanding of this condition is essential to improve patient outcomes and quality of life.

INTRODUCTION

Prostate cancer stands as one of the most prevalent malignancies affecting men globally, with a significant impact on public health, particularly in Western countries such as the United States. Its characterized by the abnormal growth of cells in the prostate gland, a vital organ involved in male reproductive function. While prostate cancer typically progresses slowly, it can be fatal if left untreated, making early detection and intervention crucial for optimal outcomes.

Age serves as the primary risk factor for prostate cancer, with the disease commonly diagnosed in men over the age of 50. However, other factors such as family history, race, and environmental influences also contribute to disease susceptibility. Despite advances in screening and treatment modalities, the exact etiology of prostate cancer remains incompletely understood, necessitating ongoing research efforts to unravel its complexities.

By gaining a deeper understanding of the multifaceted nature of prostate cancer, healthcare professionals can better tailor interventions to individual patient needs, ultimately improving clinical outcomes and enhancing the overall quality of life for those affected by this disease.

METHODS

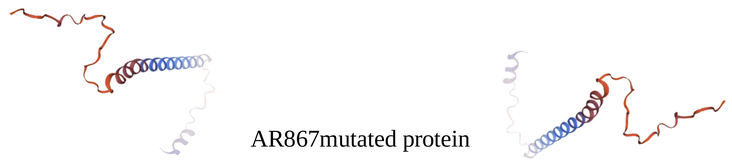
Simple ClinVar was the method used to identify genetic variants associated with prostate cancer.

Polyphen-2 was used to predict the functional impact of genetic mutations

SIFT predicts the functional impact of genetic mutations in proteins.

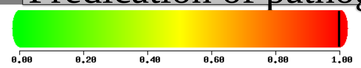
RESULTS

Protein homology



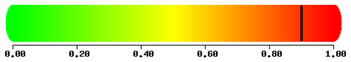
AR867mutated protein

Predication of pathogenicity:Poly-phen2 and SIFT



This mutation is predicted to be **PROBABLY DAMAGING** with a score of **0.997** (sensitivity: **0.41**; specificity: **0.98**)

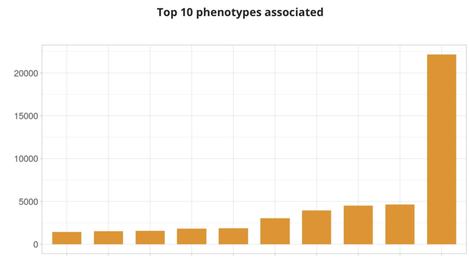
•Poly-Phen2 predicts the mutation to be probably damaging with a score of 0.98.



This mutation is predicted to be **POSSIBLY DAMAGING** with a score of **0.900** (sensitivity: **0.70**; specificity: **0.90**

•Poly-Phen2 predicts the mutation to be possibly damaging with a score of 0.90

More about AR 867



The figure above shows us the known phenotypes that are associated with AR 867 gene

DISCUSSION AND CONCLUSION

Prostate cancer remains a significant health concern for American men, characterized by its prevalence, slow progression, and potential fatality. Age, family history, race, and environmental factors are key contributors to its development, with urinary and sexual dysfunction often accompanying prostate gland enlargement.

Understanding the multifaceted impact of prostate cancer is crucial within the medical community, driving ongoing research, innovation, and advancements in diagnosis, treatment, and supportive care. A comprehensive understanding of this condition is essential for improving patient outcomes and enhancing quality of life. Moving forward, continued efforts to unravel the complexities of prostate cancer genetics and biology will be vital in developing personalized approaches to prevention, diagnosis, and treatment, ultimately striving towards better outcomes and improved quality of life for affected individuals.

REFERENCES

Prostate Cancer https://www.mayoclinic.org/diseases-conditions/prostate-cancer/symptoms-causes/syc-20353087 Foundation for Medical Education and Research, 14 Dec.2022

Prostate Cancer https://www.ncbi.nlm.nih.gov/books/NBK470550/

Prostate Cancer https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid

Prostate cancer https://www.health.harvard.edu/a_to_z/prostate-cancer-a-to-z Harvard University 13 Dec.2022

Prostate Cancer https://lluh.org/conditions/prostate-cancer Loma Linda University Health

Antonarakis ES, Armstrong AJ, Dehm SM, Luo J. Androgen receptor variant-driven prostate cancer: clinical implications and therapeutic targeting. *Prostate Cancer Prostatic Dis.* 2016;19:231–241. [PMC free article] [PubMed]

ACKNOWLEDGEMENTS

HudsonAlpha Institute for Biotechnology

CODE

Characterizing Our DNA Exceptions