



**RV  
UNIVERSITY**

*Go, change the world*

*an initiative of RV EDUCATIONAL INSTITUTIONS*

## **Course Name: Exploring science**

### **SUBMITTED BY**

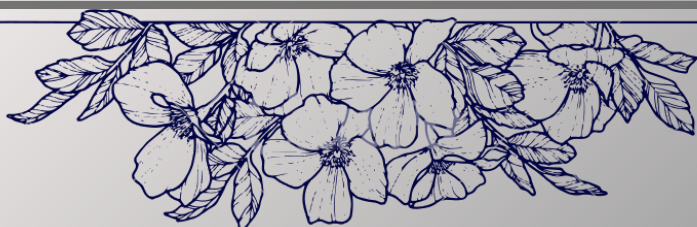
**DHANUSH B E,  
FARHAN S BIJAPUR,  
KAREEM UN NAWAZ,  
KAUTILYA D K.**

### **SUBMITTED TO**

**DR. BAISHALI  
AND  
PROF.AMRUTESH**

# **UNVEILING LEGACY**

## **THE LIFE AND TIMES OF DR.DRONAMRAJU KRISHNA RAO**



# **TEAM MEMBERS**



**Dhanush B E**  
**Farhan S Bijapur**  
**Kareem Un Nawaz**  
**Kautilya D K**



# **ABSTRACT**

## **INTRODUCTION**

### **The Remarkable Life of DRONAMRAJU**

#### **Life's Pivotal Moment:** **A Turning Point**

#### **"Scientific Milestones: A Summary of** **Contribution**

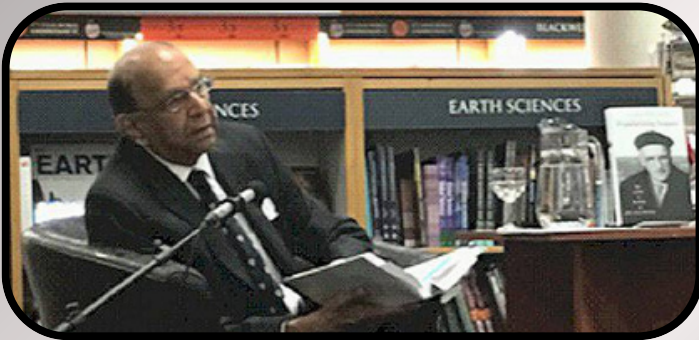
#### **Scientific Landscape in the Absence of** **Dr. Dronamraju**

## **REFERENCES**

# **ABSTRACT**

**Dhronamraju Krishna Rao boasts a diverse range of skills in scientific fields such as genetics, molecular biology, and biotechnology. His interdisciplinary proficiency enables a comprehensive approach to the report's subject matter. With a career spanning decades in scientific research and academia, Rao possesses an extensive reservoir of knowledge and insights, ensuring the report's depth and credibility. Rao has been at the forefront of groundbreaking research, particularly in genetics and genomics. His work has driven significant advancements and innovations, rendering him an invaluable choice for producing a cutting-edge report. Krishna Rao's contributions to science have garnered global recognition and prestigious awards. His international acclaim enhances the report's credibility and stature. As an experienced educator, Rao likely excels in communication and teaching, facilitating the effective conveyance of complex scientific information within the report, making it accessible to a wide audience. Rao's unique ability to bridge different scientific domains enhances the report's comprehensiveness, addressing various facets of the subject matter. His extensive research and academic background implies strong problem-solving capabilities, vital for conducting in-depth research and analysis for the report. Rao has undoubtedly collaborated with a diverse array of scientists and researchers during his career. His collaborative approach ensures a report that incorporates multiple perspectives and expertise. Should the report involve a team, Rao's mentorship abilities foster a productive and efficient work environment, guaranteeing successful project completion. Rao's established reputation for ethical research practices assures stakeholders of the report's integrity. In conclusion, Dhronamraju Krishna Rao's extensive experience, interdisciplinary expertise, global recognition, ethical research practices, and effective communication skills make him an outstanding choice to create a report on a scientific subject.**

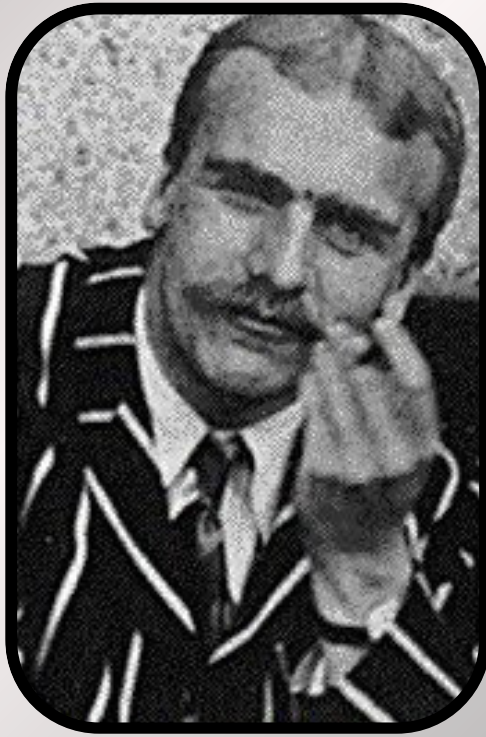
# INTRODUCTION



Dronamraju Krishna Rao is usually known as Krishna R. Dronamraju. This is a Telugu name, where the family name is Dronamraju. Dronamraju Krishna Rao was born on 14 January 1937, Puthapuram, Andhra Pradesh. Since childhood, Dronamraju has always been interested in observing nature, especially butterflies, birds and earthworms, which created an early interest in biology. Dronamraju went to M.R. College in Vizianagaram, Andhra University to study botany and earned a bachelor's degree in 1955. He received a master's degree from Agra University in 1957; he studied plant breeding and genetics.



When J.B.S.Haldane moved to India in 1957, Dronamraju wrote to Haldane for an opportunity to pursue a research career under his direction at the Indian Statistical Institute in Calcutta. Throughout his career, Dr. Krishna Rao has held various esteemed positions and has garnered recognition for his outstanding work.



**J.B.S.Haldane**

He earned his Ph.D. in Genetics from the University of California, Berkeley, and subsequently embarked on a journey of research and academic excellence. His work has encompassed a wide range of topics, including the study of genes, genetic disorders, and the principles of population genetics. Dr. Rao is perhaps best known for his pioneering research on human genetics and the study of the genetic basis of various diseases. His contributions to the understanding of inherited genetic conditions have had a profound impact on the field of medicine. He has also played a pivotal role in promoting awareness of the importance of genetics in healthcare and public policy. Over the years, Dr. Dronamraju Krishna Rao has received numerous awards and honours for his exceptional contributions to science and genetics. His legacy continues to inspire generations of scientists, and he remains a respected figure in the global scientific community, admired for his profound insights into the mysteries of genetics and heredity.



# THE REMARKABLE LIFE OF DRONAMRAJU

Dr. Dronamraju was born in Pithapuram in the state of Andhra Pradesh, India. He received a PhD from the Indian Statistical institute in Calcutta, India and received advanced training from University College, London and John Hopkins University followed by a postdoctoral fellowship in genetics at the University of Alberta.



**Dr, Dronamraju moved to the USA in the early 1960's and conducted research on inbreeding in human populations such as the Amish. He worked closely with Victor McKusick, "Father of Medical Genetics" at Johns Hopkins. He also studied the Seneca Indians in New York State and the indigenous peoples of Greenland. Other areas he covered included cleft palate birth defects and birth defects and fetal mortality in families in general.**

**It was Dr. Dronamraju's pioneering work early in his career that led to the first verifiable discovery of a gene on the Y chromosome. He published the first paper on this in 1960. It was his research that led to the creation of the Indian Society of Human Genetic related to genetic research.**

**Later in life, Dr Dronamraju founded and ran the Foundation For Genetic Research located in Houston, Texas where he had lived since 1980 after many years residing in Baltimore, Maryland.**

**Dr. Dronamraju was the author of 22 books. Besides several books about Haldane, his works also included a biography of Julian Huxley and several histories of genetics. His published scientific texts included a textbook on cleft lip and palate that was used in universities in the 1970's and 1980's. Dr Krishna Rao Dronamraju, a groundbreaking geneticist, and favorite student of scientist J.B. S.Haldane, died December 3, from cardiac arrest in Houston. He was 83 years old.**



# **LIFE'S PIVOTAL MOMENT: A TURNING POINT**

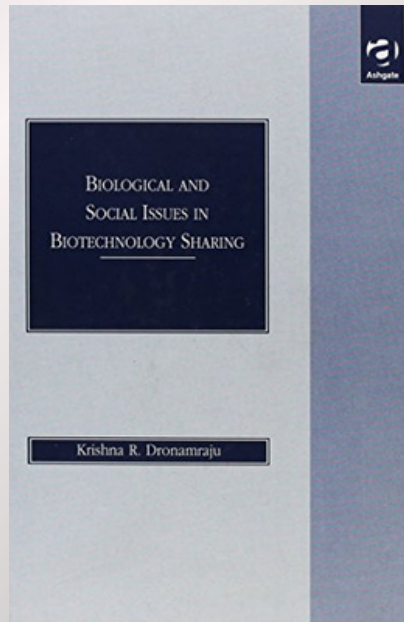
**The turning point in his life was when, while in graduate school, he wrote renowned geneticist JBS Haldane to ask if he could do research with him as Haldane had relocated to India. Haldane agreed and would play a significant role in his development as a scientist. As Haldane had no children and Dr Dronamraju's father had died when he was young, the two developed a father-son relationship that exceeded the mentor-student role. Through Haldane, he was a close friend of with many famous people including heads of State in USA & India, Arthur C Clarke, James Watson, and writers Aldous Huxley and Naomi Mitchison. Dr Dronamraju wrote biographies and critical appraisals of Haldane's work and others.**

# SCIENTIFIC MILESTONES: A SUMMARY OF CONTRIBUTION

*'Dr. Dronamraju Krishna Rao has made significant contributions to the field of genetics, and his absence from the scientific world would have some notable consequences'*

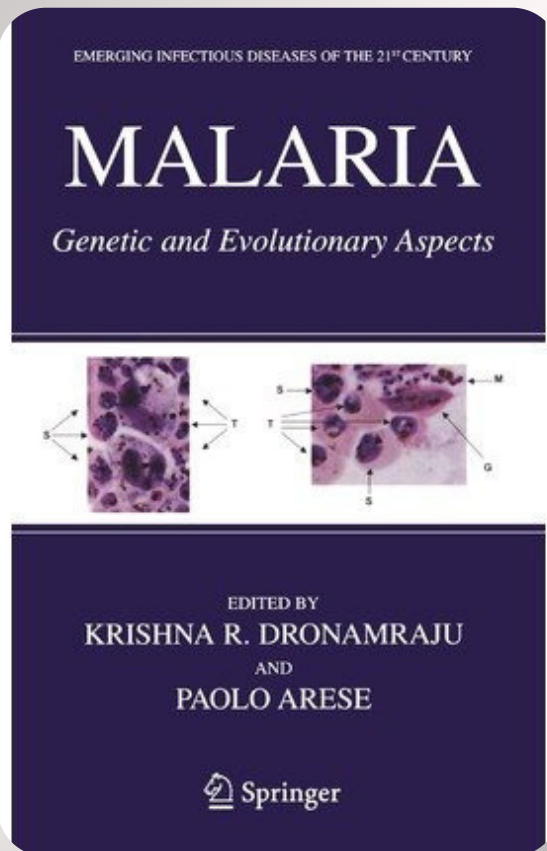
## 1. 'Loss of Research Advancements'

Dr. K. R. Rao's research has advanced our understanding of genetics, heredity, and genetic disorders. Without his contributions, certain breakthroughs and discoveries in the field may have been delayed or missed entirely.



## 2. \*Impact on Human Genetics:\*

Dr. Rao's work in human genetics, particularly in the study of genetic diseases, has been instrumental in identifying the genetic basis of various disorders. Without his research, our knowledge of these diseases and potential treatments would be less comprehensive.





### **3. 'Education and Mentorship'**

Dr. Krishna Rao has been an influential educator and mentor, shaping the careers of many scientists and geneticists. His absence would mean that aspiring scientists might miss out on his guidance and expertise, potentially impacting the development of future talent in the field.

### **4. 'Public Awareness'**

He has also been an advocate for public awareness of genetics and its implications for healthcare and policy. His absence could result in reduced efforts to educate the public on the importance of genetics, potentially affecting public health initiatives and policies.

### **5. 'International Collaborations'**

Dr. Rao's collaborations with scientists from around the world have facilitated international cooperation and knowledge exchange in the field of genetics. His absence might have implications for the global progress of genetic research.

## **6. 'Awards and Recognition'**

**Dr. K. R. Rao's numerous awards and honors have brought attention to the field of genetics and highlighted its significance. Without his presence, the field might receive less recognition and attention**

**Overall, while it's challenging to quantify the exact impact of the absence of any individual scientist, it's clear that Dr. Dronamraju Krishna Rao's contributions have been substantial and have had a positive influence on genetics research, education, and public awareness. His absence would leave a gap in the field that would be felt in various ways.**

# SCIENTIFIC LANDSCAPE IN THE ABSENCE OF DR. DRONAMRAJU

Dr. Krishna R. Dronamraju was a student and close associate of J.B.S. Haldane, receiving his Ph.D. in genetics in 1966 from the Indian Statistical Institute in Calcutta. His research publications cover several subjects. These are briefly described below.

Sympatric speciation: His first research (under Haldane's direction) revealed the species-specific pattern of colour preferences by pollinating lepidoptera, while visiting the two varieties of *Lantana camara* L, one with white-pink flowers and another with orange-yellow flowers. His observations provided evidence supporting at least partial reproductive isolation between the two plant varieties, raising the possibility of sympatric speciation by further isolation and differentiation in due course (Nature, 186: 178, 1960). The existence of such sympatric situations was considered unlikely by Ernst Mayr.

Y-linked inheritance in man: Another research finding of fundamental significance was the proof provided by Dronamraju's research (conducted under Haldane's direction) on human pedigrees that the trait of hairy ears (hypertrichosis pinnae auris) represents Y-chromosome linked pattern of inheritance (Journal of Genetics, 57:230, 1960). Until then, the prevailing view, which was supported by Curt Stern and other leading geneticists, was that the human Y chromosome was genetically inert. Dronamraju's research led the way in the 1960s to change that view. It was also the centerpiece of his Ph.D. dissertation that was submitted to the Indian Statistical Institute in 1964.

Human inbreeding: Dronamraju and his colleagues led the study of human inbreeding in Andhra Pradesh, reporting the highest inbreeding coefficient in human populations known at that time (Journal of Genetics, 58: 387, 1963). His publications on the high degree of inbreeding and its impact have had a worldwide influence on all later investigators both in India and other countries.

Cleft lip and Cleft palate in association with fetal mortality: In a series of papers published in Clinical Genetics (vols.23-27, 1983–85), Dronamraju showed that there is a positive correlation between the degree of liability to oral clefts and the extent of fetal mortality in their sibships, indicating that the fetal loss occurring in these families is most likely due to increased multifactorial liability resulting in complex malformations that are associated with clefting in the fetuses. These results, which are indicative of prenatal selection, are summarized in his book: Cleft Lip and Palate: Aspects of Reproductive Biology (1986).

Biotechnology and the impact of recombinant DNA research:

Dronamraju's books made a significant intellectual contribution to the subject, summarizing and evaluating the latest advances and the controversies they generated. These are: Biological and Social Issues in Biotechnology Sharing (1998), and Biological Wealth and Other Essays (2002).

(f) Genetics of infectious diseases: His two recent books on infectious diseases, (based on international

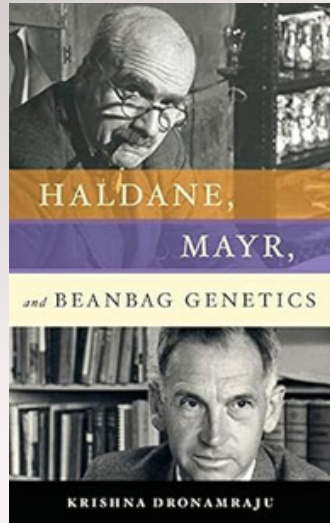
conferences organized by himself in the UK and Italy), are a valuable contribution to the study of infectious diseases, providing insights on the genetics and epidemiology of malaria. These books are: *Infectious Disease and Host-Pathogen Evolution* (2004), and *Malaria: Genetic and Evolutionary Aspects* (2006).

**History of Genetics:** In several papers and books, Dronamraju made a significant contribution to the history of genetics, especially the contributions and the impact of J.B.S. Haldane. Of particular interest are: (ed) *Selected Genetic Papers of JBS Haldane* (1990), *Foundations of Human Genetics* (1989), and *The History and Development of Human Genetics* (1992). Also, his paper on Haldane which was published in the *Notes & Records of the Royal Society of London*. (1987).

**Social consequences of Genetics:** Dronamraju's book (ed) *Haldane,s Daedalus Revisited* (1995) presents an excellent discussion of the ethical and social impact of the applications of genetics.



(i) **Scientific biography:** He is the author of two biographical books: *The Life and Work of JBS Haldane* with special reference to India (1985) and *The Life and Work of Julian Huxley* (1993). In addition, he is the author of several biographical articles on the scientific works of JBS Haldane, Erwin Schrödinger, Julian Huxley, George W. Beadle, Archibald Garrod, William Bateson, Herman J. Muller and others.



Dr. Dronamraju was a member of the U.S. Presidential delegation to India led by President Bill Clinton in 2000. Since 1990, he actively promoted the scientific cooperation between the U.S. and India. In particular, he has been a strong advocate of the intellectual property rights of the indigenous people and the biodiversity of the developing countries.

# REFERENCES

<https://india-herald.com/obituary-dr-krishna-dronamraju-p7692-65.htm>

[https://dbpedia.org/page/Dronamraju\\_Krishna\\_Rao](https://dbpedia.org/page/Dronamraju_Krishna_Rao)

<https://en-academic.com/dic.nsf/enwiki/11665886>

[https://prabook.com/web/krishna\\_rao.dronamraju/319180](https://prabook.com/web/krishna_rao.dronamraju/319180)