S.G.A. GOVERNMENT DEGREE COLLEGE (A)

(Re-Accredited with NAAC "A" Grade with CGPA 3.13)

Affiliated to Andhra University

YELLAMANCHILI, ANAKAPALLI DIST., ANDHRA PRADESH

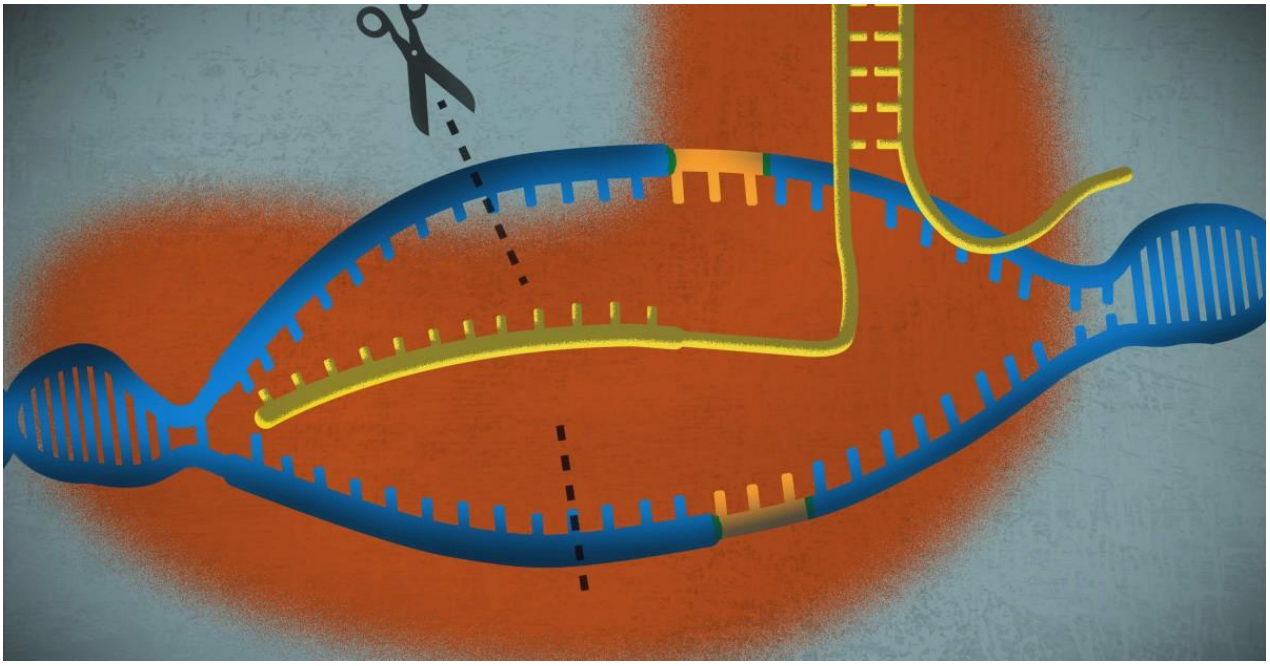
Report on

One Day National webinar

Title: CRISPR – Cas9 – 101

Understanding How Gene Editing Work

26.07.2025



Organized by

Department of zoology

SGA Govt. Degree College (A)
Yellamanchili
Department of Zoology
ONE DAY NATIONAL WEBINAR
Topic: CRISPR-Cas9 101
Understanding How Gene Editing Works

Take Aways

- Exploring the biological origins
- Essential components
- Design of Guide RNA
- Delivery methods for CRISPR in both ex vivo and cell-free systems
- Applications in Practice: Medicine, Agriculture, and Research
- Live visuals or animated diagrams showing how gRNA guides Cas9 to its DNA target and initiates a double-strand break

Resource Person

Sri. M. Satyababu
Research Scientist
Syngene International Ltd.,
Hyderabad

Dr. P.Chandra Sekhar
Principal

Convenor
Dr. K. Sujatha

Co- Ordinator
Dr. A. Arjuna Apparao

Date : 26.07.2025
Time : 11.00 AM - 1.00 PM

Meeting link:
https://meet.google.com/uja-uofs-zie

The Department of Zoology, SGA Government Degree College (A), Yellamanchili, organized a One Day National Webinar on CRISPR-Cas9 Based Gene Editing Technology led by Sri. M. Satya babu Research Scientist on July 26, 2025 from 11.00 AM – 1.00 PM IST. It was an open session that highlighted the importance of CRISPR technology in modern biotechnology and its applications in developing therapeutic models and it was a great success among the students

Objectives:

A One Day National Webinar on CRISPR Cas9 Technology was organized on July 26, 2025 with an objective of communicating the advances in science and technology to young students.
To update attendees on foundational science, applications in research (e.g. mouse model generation), bioinformatics, and ethical considerations.

Introduction:

CRISPR-Cas9 is a revolutionary gene-editing technology that allows scientists to precisely modify DNA sequences within living organisms. It's based on a naturally occurring bacterial defense system and utilizes two main components: the Cas9 protein, which acts as molecular scissors, and a guide RNA (gRNA) that directs Cas9 to a specific DNA target. This technology has become a powerful tool for various applications, including basic research, disease modeling, and potential therapeutic interventions.

About the Resource Person:

Sri M. Satya babu is working as Research Scientist in Syngene International Ltd., Hyderabad.

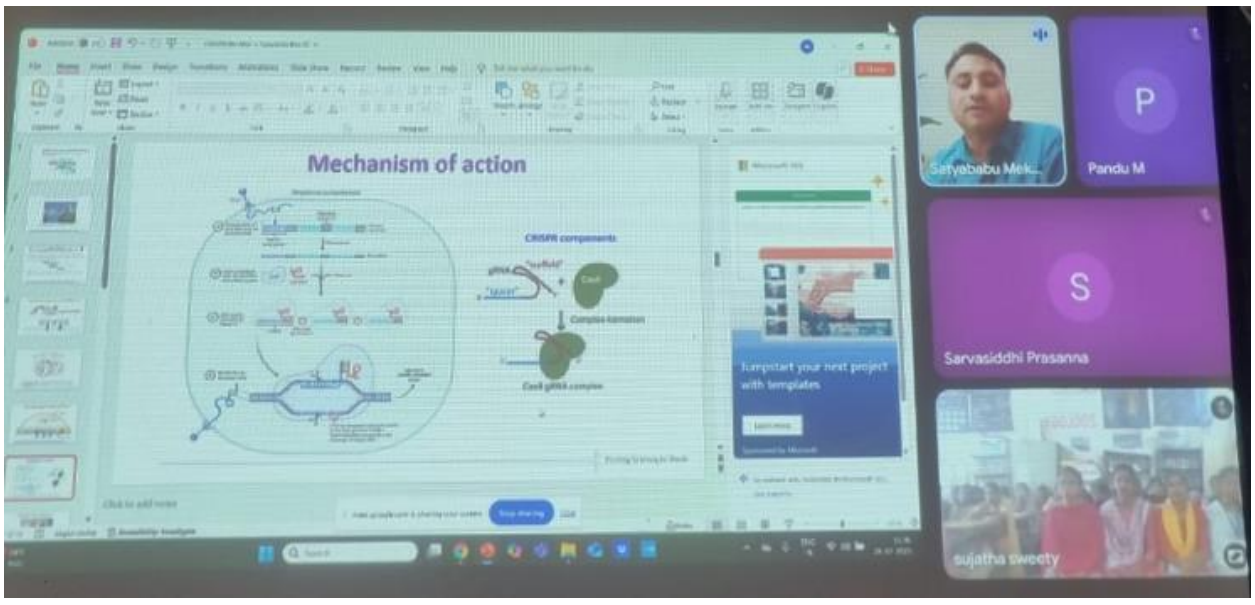
Summary of the Webinar

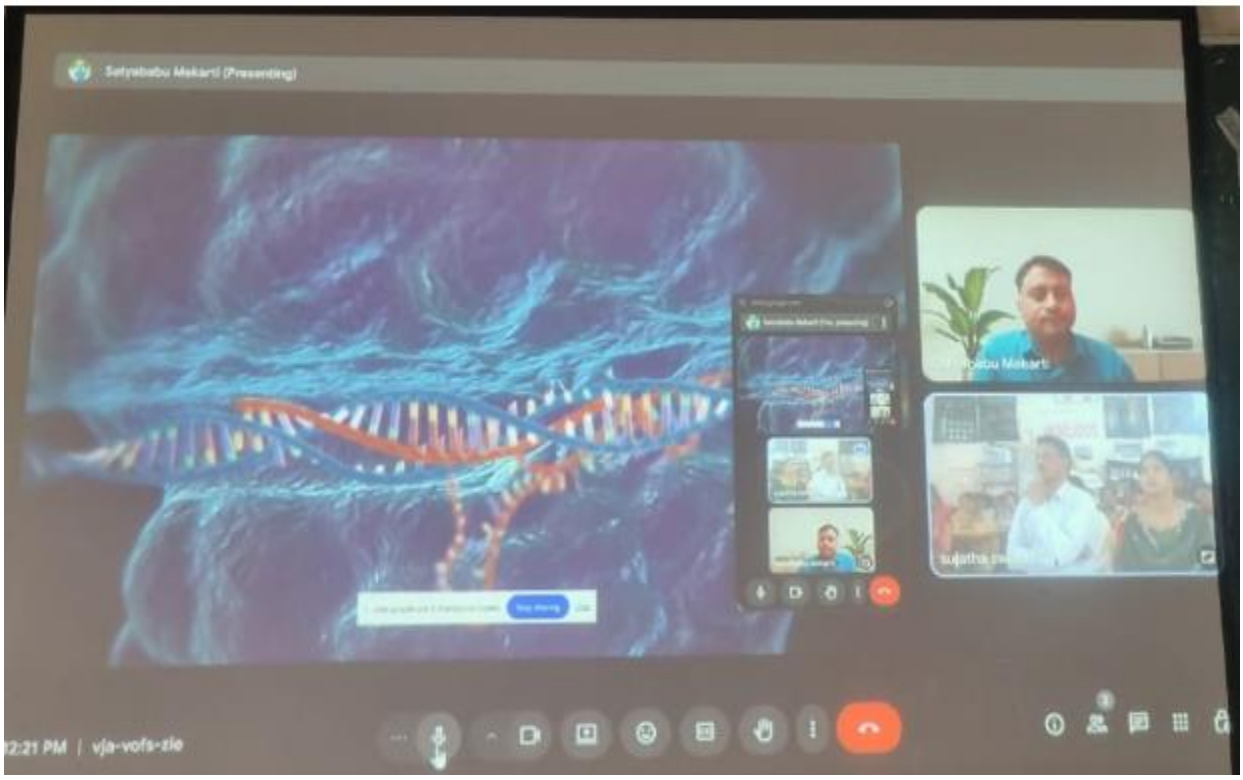
Sri M. Satyababu highlighted the importance of Genome Editing and mentioned that " the discovery of the CRISPR-Cas9 - Genome Editing Technology has made a revolution in world's research platform because of its various applications for genetic improvement and modification of various organisms." He also mentioned that Gene Editing technology enables the manipulation of targeted genes in a precise and efficient manner in many organisms. He also conveyed about the future developments and directions of the emerging genome editing tools and technologies.

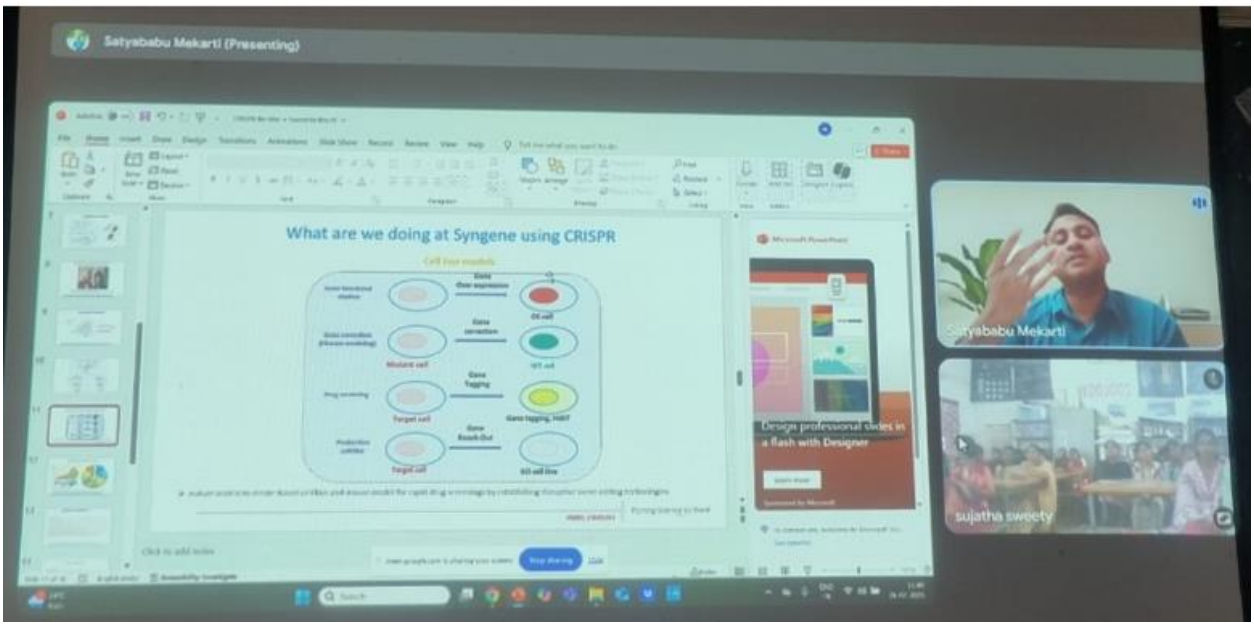
Key Points :

- CRISPR - 'clustered regularly inter-spaced short palindromic repeats' or The term was coined by a team of Dutch scientists led by Rudd Jansen at Utrecht University, in 2002
- The technology is based on a natural bacterial defense mechanism against viruses.
- Bacteria use CRISPR to store snippets of viral DNA. When the bacterium encounters the same virus again, it uses this stored information to guide an enzyme (Cas9) to cut the viral DNA, disabling it.
- The CRISPR/Cas 9 system was first exploited by Danisco in 2008. The company used it to improve the immunity of bacterial cultures against viruses and many food manufacturers now use the technology to produce cheese and yoghurt.
- CRISPR/Cas9 is a technique allows highly specific and rapid modification of DNA in a genome
- The CRISPR/Cas 9 technique is one of a number of gene-editing tools.
- The technique has a wide number of applications in fields ranging from agriculture through to human health.
- In agriculture it could help in the design of new grains, roots and fruits.
- It helps the development of new treatments for rare metabolic disorders and genetic diseases Ex: Haemophilia , Huntington's disease etc.,
- It is also applied in the creation of transgenic animals to produce organs for transplants into human patients.
- The technology is also being investigated for gene therapy to treat people who suffer from genetic disorders such as cystic fibrosis, haemophilia or Tay Sachs.
- Several start-up companies have been founded to exploit the technology commercially and large pharmaceutical companies are also exploring its use for drug discovery and development purposes.

Glimpses of the Webinar




Satyababu Mekarti (Presenting)
vja-vofs-zio



The webinar inspired the students and are actively engaged in the webinar, asking questions, and participating in discussions, which added to the depth of the learning experience. It also provided the Future developments and directions of the emerging genome editing tools and technologies.