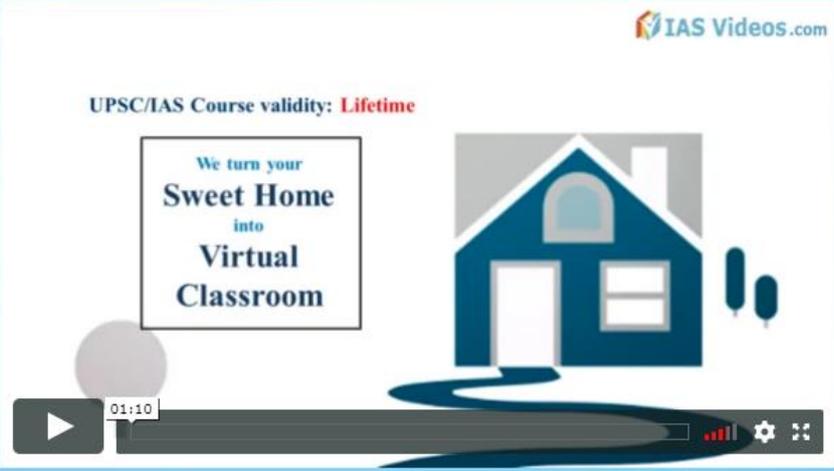


## April 4<sup>th</sup>, 2019 Sample Current Affairs

IAS Videos Online Coaching For UPSC CSE 2019...

No cost EMI starts from ₹4,333 at Amazon

 PAY ON AMAZON



UPSC/IAS Course validity: **Lifetime**

We turn your **Sweet Home** into **Virtual Classroom**

**NOTE: Only 10% of the Daily Current Affairs is provided here as a part of Promotion.**

Get 100% access to all encrypted videos buying our complete package

Our Complete package includes:  
Note: Course remains same either for Amazon or Website buyers.



**COMPLETE IAS PACKAGE**  
Includes 64GB 64GB Pendrive, Daily Current Affairs Videos, PDFs and more.

 BUY ON OUR WEBSITE @ RS.12998

 PAY ON AMAZON

Howdy, IAS Videos.co

IAS Videos 64GB Pendrive course includes

- ✓ Prelims Videos
- ✓ NCERT Videos
- ✓ Integrated Mains Course
- ✓ Daily Current Affairs Videos + PDFs
- ✓ Prelims test series 2019
- ✓ Economic Survey Summary
- ✓ India Year Book summary
- ✓ 2nd ARC report summary

## 1. Enzyme to arrest bacteria cell growth discovered

- How the did it?
- What is the significance of this discovery?
- Why antibiotic resistance has been the biggest threat?
- How antibiotic resistance is different from antimicrobial resistance?
- How do bacteria become resistance?

GS paper 2 ( Issues related to health, education and human resources )

**In this video, you can find detailed answers for all the above questions.**

**The above article has been retrieved from:**

V Geethanath. ( 2019, April , 3). Enzyme to arrest bacteria cell growth discovered. The Hindu. Retrieved from <https://www.thehindu.com/sci-tech/science/enzyme-to-arrest-bacteria-cell-growth-discovered/article26715075.ece>

### **What is the context about?**

In a major discovery, a new enzyme has been found which helps in breaking cell walls of bacteria and hence, offers a potential for a new drug delivery route to arrest the anti-bacterial resistance through existing antibiotic drugs.

### **How the did it?**

- The new enzyme ‘Murein EndopeptidaseK’ is found by the scientists at the Centre for Cellular & Molecular Biology (CCMB)
- These findings of the research have been published in the prestigious ‘Proceedings of National Academy of Sciences’ (PNAS), a US-based journal.
- The researchers did this by exploring a different dimension of cell-wall synthesis.
- They focused on how the cell governs the synthesis machinery to build the cell wall, then identified the principal players behind this process, and discovered a

new enzyme by which the cell regulates the growth of its cell wall.

### **What is the significance of this discovery?**

- ❑ Researchers have discovered a new enzyme “Murein EndopeptidaseK” which would cut the bacteria cell wall.
- ❑ The newly founded enzyme act on the protein of cell wall in Escherichia coli (E. coli) that can be a potential drug target.
- ❑ The researchers isolated an enzyme ‘Endo Peptizyde’ that helps in the synthesis of the bacterial cell wall, thus helping the bacteria proliferate and make antibodies in the human immune system ineffective.
- ❑ Other bacteria, too, have the same enzyme working on cell division. Therefore, by blocking this ‘scissors enzyme’ from functioning, new ways to target microbes could be found, leading to a new wave of antibiotic drugs.
- ❑ The cell-wall formation can be inhibited in the beginning stage itself, and this can help combat harmful bacteria effectively.
- ❑ In simple terms, if the enzymes can be inhibited by using antibiotics, the cell wall synthesis will stop and the bacteria will not grow.

### **Why antibiotic resistance has been the biggest threat?**

- ❑ Antibiotic resistance occurs when a bacteria become antibiotic-resistant or they develop the ability to defeat the drugs designed to kill them.
- ❑ Though, antibiotic resistance occurs naturally, misuse of antibiotics in humans and animals is accelerating the process.
- ❑ Antibiotic resistance is one of the biggest threats to global health, food security, and development today.
- ❑ These bacteria may infect humans and animals, and the infections they cause are harder to treat than those caused by non-resistant bacteria.

- ❑ A growing number of infections such as tuberculosis, pneumonia, salmonellosis, and gonorrhoea are becoming harder to treat as the antibiotics used to treat them become less effective.

### **How antibiotic resistance is different from antimicrobial resistance?**

- ❑ Antibiotic resistance occurs when bacteria change in response to the use of antibiotics used to treat bacterial infections (pneumonia, bloodstream infections, urinary tract infections) making them ineffective.
- ❑ While, antimicrobial resistance is a broader term, encompassing resistance to drugs that treat infections caused by other microbes as well, such as parasites (malaria or helminths), viruses (HIV) and fungi (Candida).
- ❑ In short, antibiotic resistance refers to bacteria resisting antibiotics, while antimicrobial resistance (AMR) describes the opposition of any microbe to the drugs that scientists created to kill them.

### **How do bacteria become resistance?**

The bacteria can easily become resistant to antibiotics in several ways.

- ❑ **Neutralize:** Some bacteria can neutralize an antibiotic by changing it in a way that makes it harmless.
- ❑ **Pumping out:** Some bacteria can pump an antibiotic back outside of the bacteria before it can do any harm.
- ❑ **Changing structure:** Some bacteria can change their outer structure so the antibiotic has no way to attach to the bacteria it is designed to kill.
- ❑ **Resisting:** After being exposed to antibiotics, sometimes a bacterium can survive because it found a way to resist the antibiotic.

- ❑ **Multiplication:** If even one bacterium becomes resistant to antibiotics, it can then multiply and replace all the other bacteria that were killed off.
- ❑ **Mutation:** Also, bacteria can become resistant through mutation of their genetic material.