ADVANCEMENT IN CARDIAC TECHNOLOGY

PRESENTED BY

Ms.Shobana M.Sc.(N)

Asst.professor

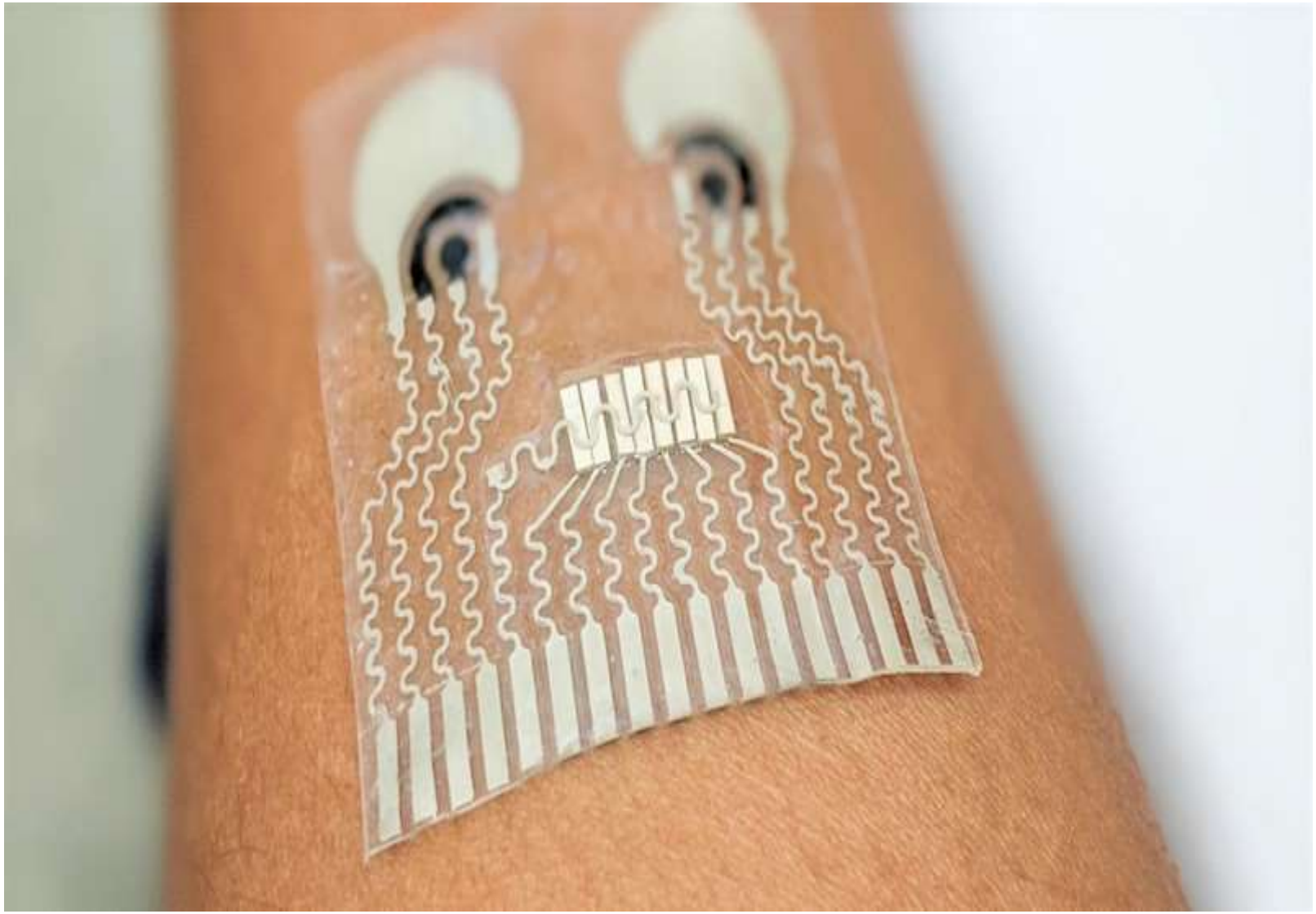
SSCON

INTRODUCTION

Cardiac care has witnessed a significant transformation over the last decade. With Artificial intelligence (AI) and machine learning (ML) playing an important role, cardiologists and cardiac surgeons are bringing unprecedented revolutions in cardiac treatment mechanisms. These technological advancements are facilitating early detection and treatment of critically ill patients thus, improving outcomes.

Personalized heart models

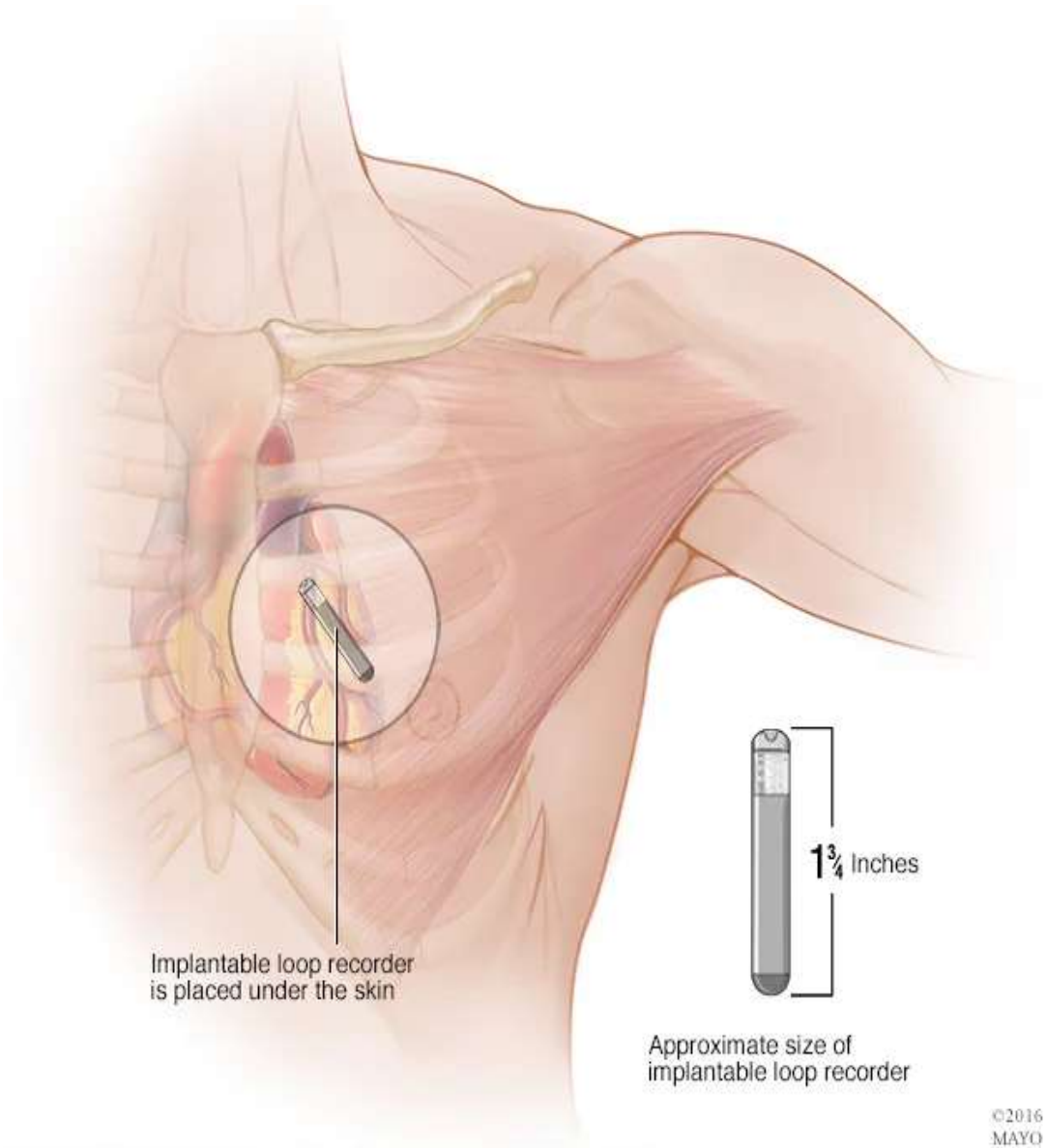
Have you ever heard of patient-specific 3D models of heart that can aid a doctor in understanding the nature of heart disease. Scientists at University College London have developed such 3D-printed models from MRI scans of children born with heart defects (congenital heart diseases). These models can also boost patients' and their families' understanding of the heart condition. The same team is also working to produce computer simulations, to help a surgeon planning surgery for such children. This personalized approach in cardiac care will help surgeons and patients decide on the best treatment modalities.



Skin patch to counterstroke

A simple skin patch may help in improving the survival chances of stroke victims.

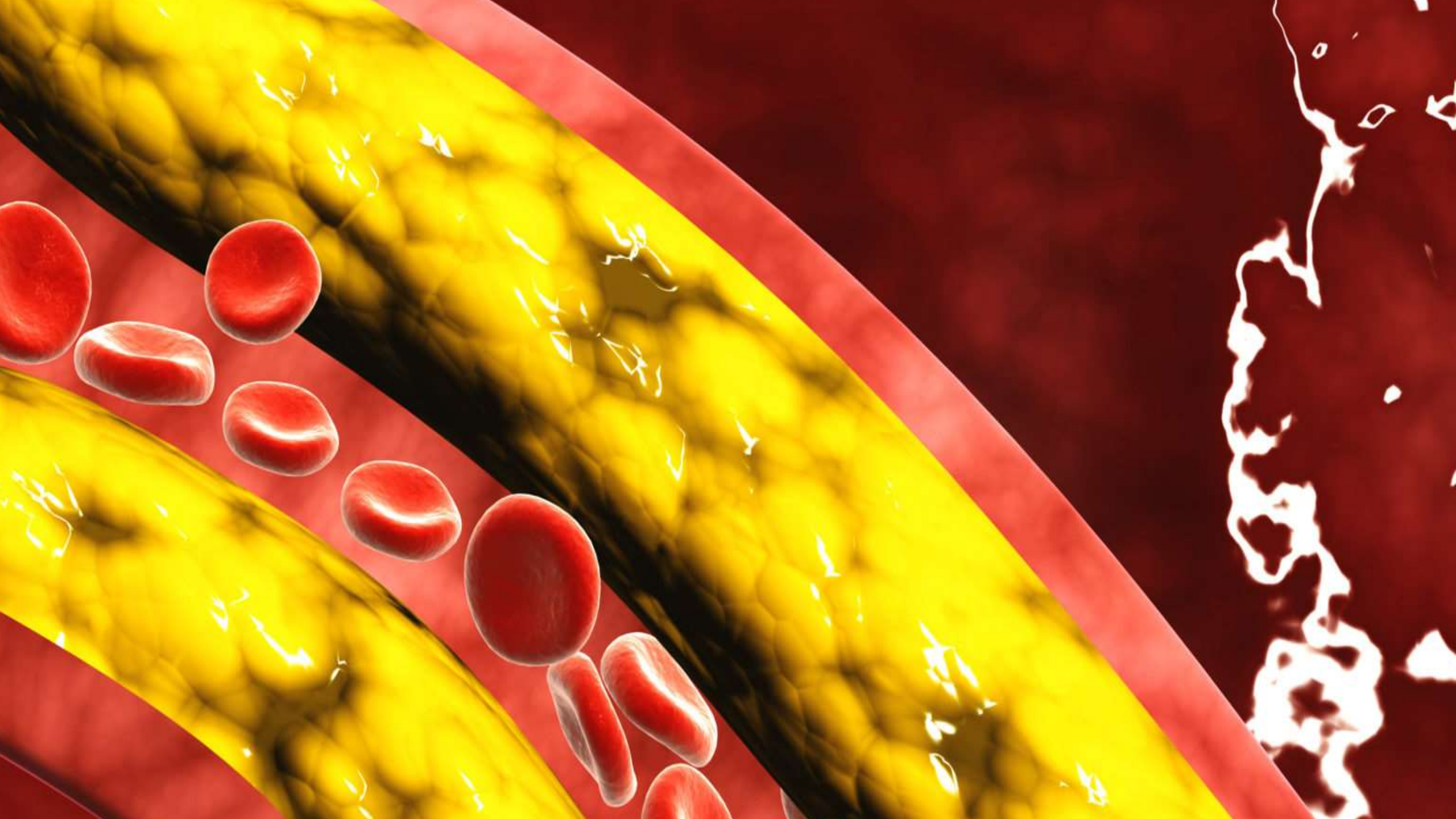
Researchers at the University of Nottingham are working on a skin patch that can be applied in an ambulance immediately after a patient suffers a suspected stroke attack. This patch, which delivers the drug **glyceryl trinitrate**, can widen blood vessels and lower blood pressure, thereby reducing the potential damage caused by stroke. Treating patients inside the ambulances on the way to the hospital will save vital time and aid recovery. Scientists are hoping, if this patch is safe to use, it can be used by paramedics in the ambulance also or in places where conventional treatment facilities are not available.

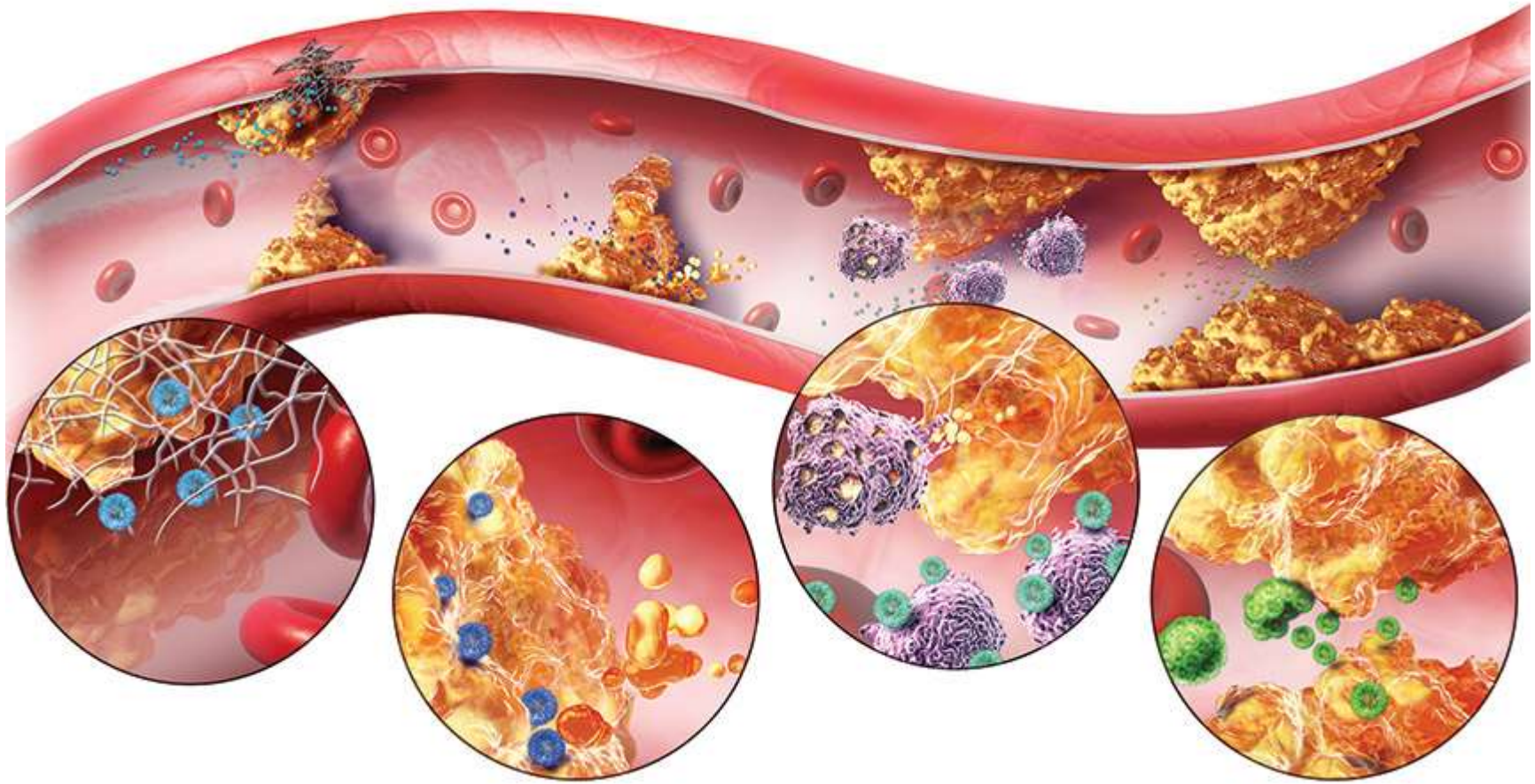


© MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH. ALL RIGHTS RESERVED.

Implantable heart-rhythm monitors

Most heart failure patients may experience an irregularity in heart rhythm. It can be too slow, too fast, or irregular. Presently we are using ECG recording to trace an irregularity in heart rhythm. ECG can give you a picture of that moment only. Researchers are working on implantable cardiac monitors. These are tiny devices that can be implanted under the skin for recording heart rhythm.

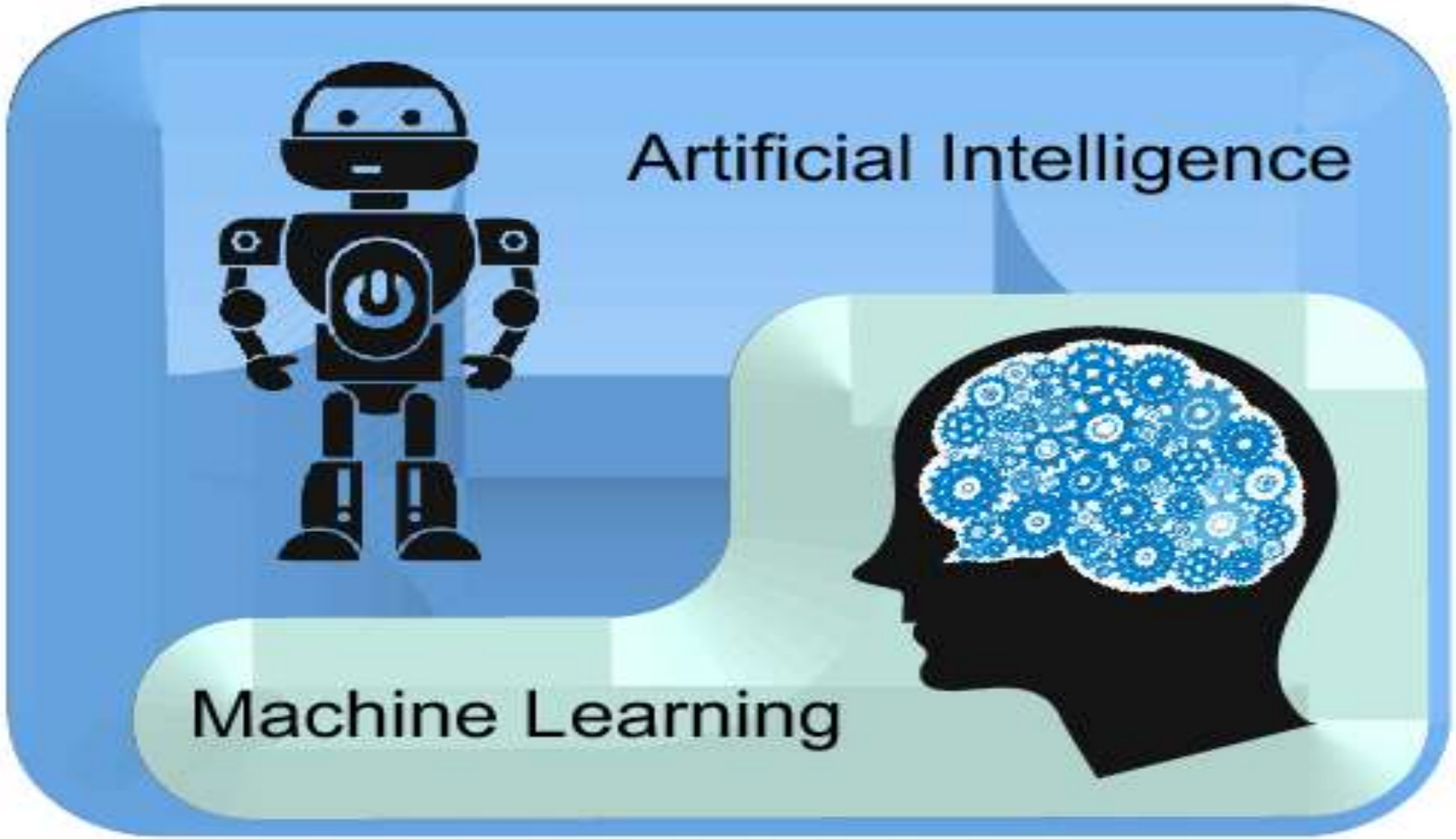




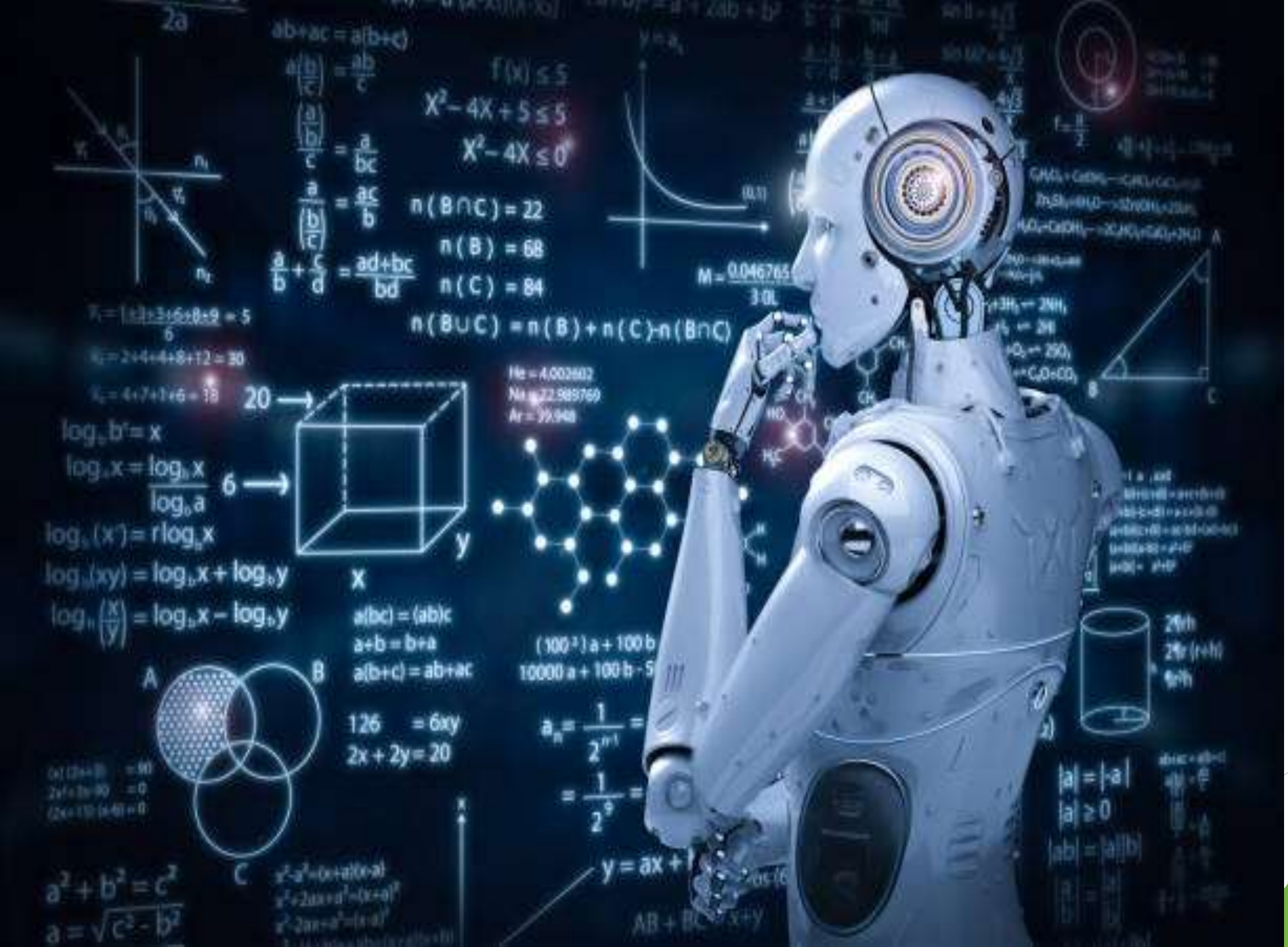
Nanomaterials for fighting cholesterol

We all know fatty deposits in blood vessels are one of the most common causes of various cardiovascular diseases. Though statins can help to lower the levels of low-density lipoprotein (LDL) in the blood, they can affect other tissues like muscles making some people intolerant to statins.

Scientists are working on nanomaterials. These nanomaterials can deliver cholesterol-lowering drugs exactly to the sites where they are needed most. Nanomaterials are incredibly small but have very high stability. They biodegrade on their own once the drugs have been delivered to specific sites.


Artificial Intelligence
Machine Learning

Artificial intelligence is the ability of a machine to solve those complex problems that would otherwise require human intervention. Advances in technology have made it possible for machines to accurately and quickly analyze large amounts of data. This learning improves decision-making, accurate diagnosis, and treatment planning by detecting specific patterns in patient data.


$X^2 - 4X + 5 \leq 5$
$X^2 - 4X \leq 0$
$n(B \cap C) = 22$
$n(B) = 68$
$n(C) = 84$
$n(B \cup C) = n(B) + n(C) - n(B \cap C)$
$\log_b b^r = x$
$\log_a x = \frac{\log_b x}{\log_b a}$
$\log_b(x^r) = r \log_b x$
$\log_b(xy) = \log_b x + \log_b y$
$\log_b\left(\frac{x}{y}\right) = \log_b x - \log_b y$
20
6
x
y
$a(bc) = (ab)c$
$a+b = b+a$
$a(b+c) = ab+ac$
$126 = 6xy$
$2x + 2y = 20$
A
B
C
$a^2 + b^2 = c^2$
$a = \sqrt{c^2 - b^2}$
$y = ax +$
$|a| = |-a|$
$|a| \geq 0$

Machine learning is a branch of artificial intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy.

Thank
you