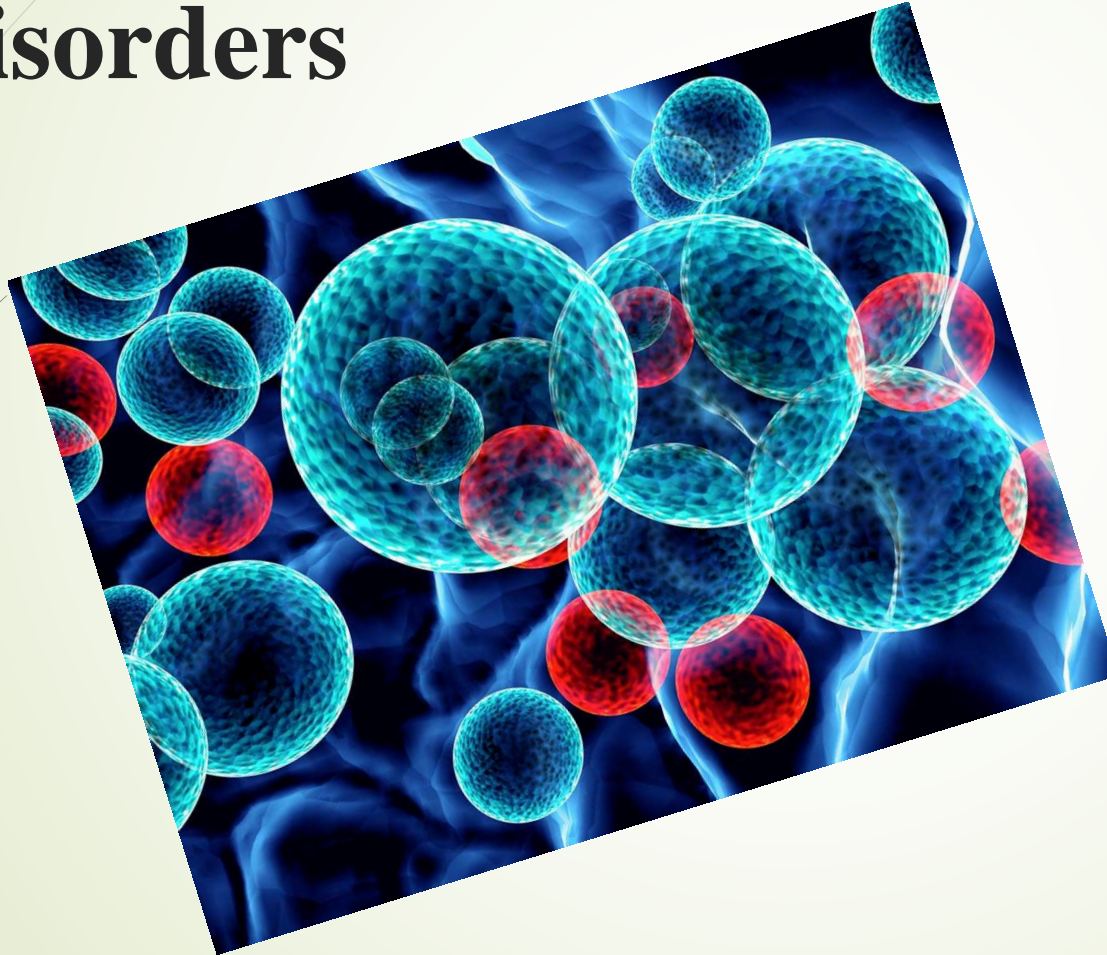


بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# Nanoparticles in Treatment of Respiratory Disorders



By: Dr. Nokhodian  
Ph.D. in Biomedicine

## REVIEW ARTICLE

## Applications of Nanoparticles in Treatment of Respiratory Disorders

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## ABSTRACT

Respiratory disorders are very prevalent and high-incidence group of diseases having severe impact on human health in the world. Some of the respiratory disorders are difficult to diagnose and treat, such as chronic obstructive pulmonary disease, asthma, lung cancer, and pulmonary tuberculosis. Lung cancer is the second most common cancer globally. Nano-delivery technologies have a great potential to improve the drug delivery in a specific area of infections in respiratory disease treatment. Not only nanoparticles concentrate at specific-disease sites but also reduce the drug degradation and drug loss simultaneously. Sedimentation, nebulizers, carbon nanodots, and stimulus-responsive nanoparticles are currently being explored to be a source for delivering nanodrugs to treat lung cancer. Various nanoparticles such as steroids, salt, liposome-mediated, and polystyrene are used in the treatment of asthma and preterm birth disease. This study focused on different kinds of nanoparticles like gold, solid lipid nanoparticles (NPs), steroids, and liposome-mediated nanoparticles which are used to treat different pulmonary or respiratory disorders and also examine the current therapeutic techniques for the diagnosis of lung diseases and therapy using nanoscale-based inhalers.



سامانه منبع یاب  
Resource Finder

وزارت بهداشت درمان و آموزش پزشکی  
معاونت تحقیقات و فناوری  
مرکز توسعه و هماهنگی اطلاعات و انتشارات علمی

تعداد نتایج: ۱۶

نوع: همه مجله کتاب راهنما دسترسی: همه مشترک رایگان غیرمشترک تصویر جلد: ✓

No.	Title	Subject Category	Publisher/Holder	IF	IF Quartile	CiteScore	CiteScore Quartile	H-Index	Indexed in	Details
1	Life Sciences ISSN/ISBN: 0024-3205, 1879-0631	General Medicine Pharmacology + 4 more ...	Elsevier	6.780	Q1	8.00	Q1	174	ISI, Scopus, PubMed, Embase	

# Nanoparticles

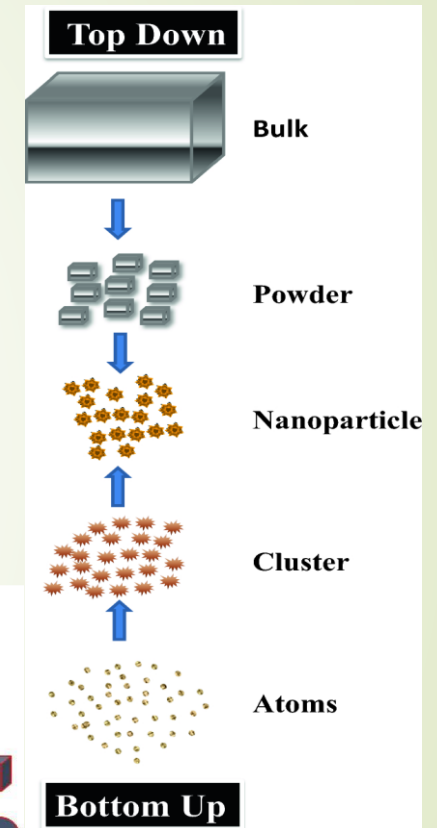
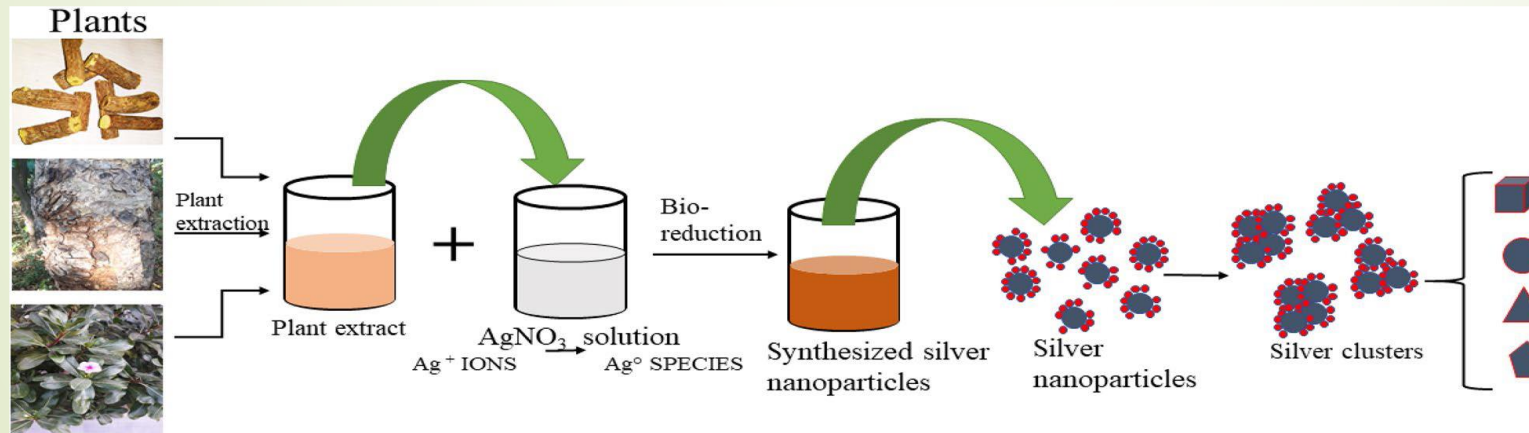
- ❑ very small particles ( diameter of 1 to 100 nm):  
Diagnose, Cure, Drug delivery (solubility, stability, Toxicity)
  
- ❑ Nanoparticles V.S Microparticles  
Size (biodistribution, clearance, Uptake)
  
- ❑ Type:  
Organic (liposomes, ferritin, hydrogels and micelles) .  
Inorganic ( metal: Au-NPs, Ag-NPs)
  
- ❑ Routes of entry into the body:  
Inhalation, Ingestion, Diffusion by the skin

# Nanoparticles

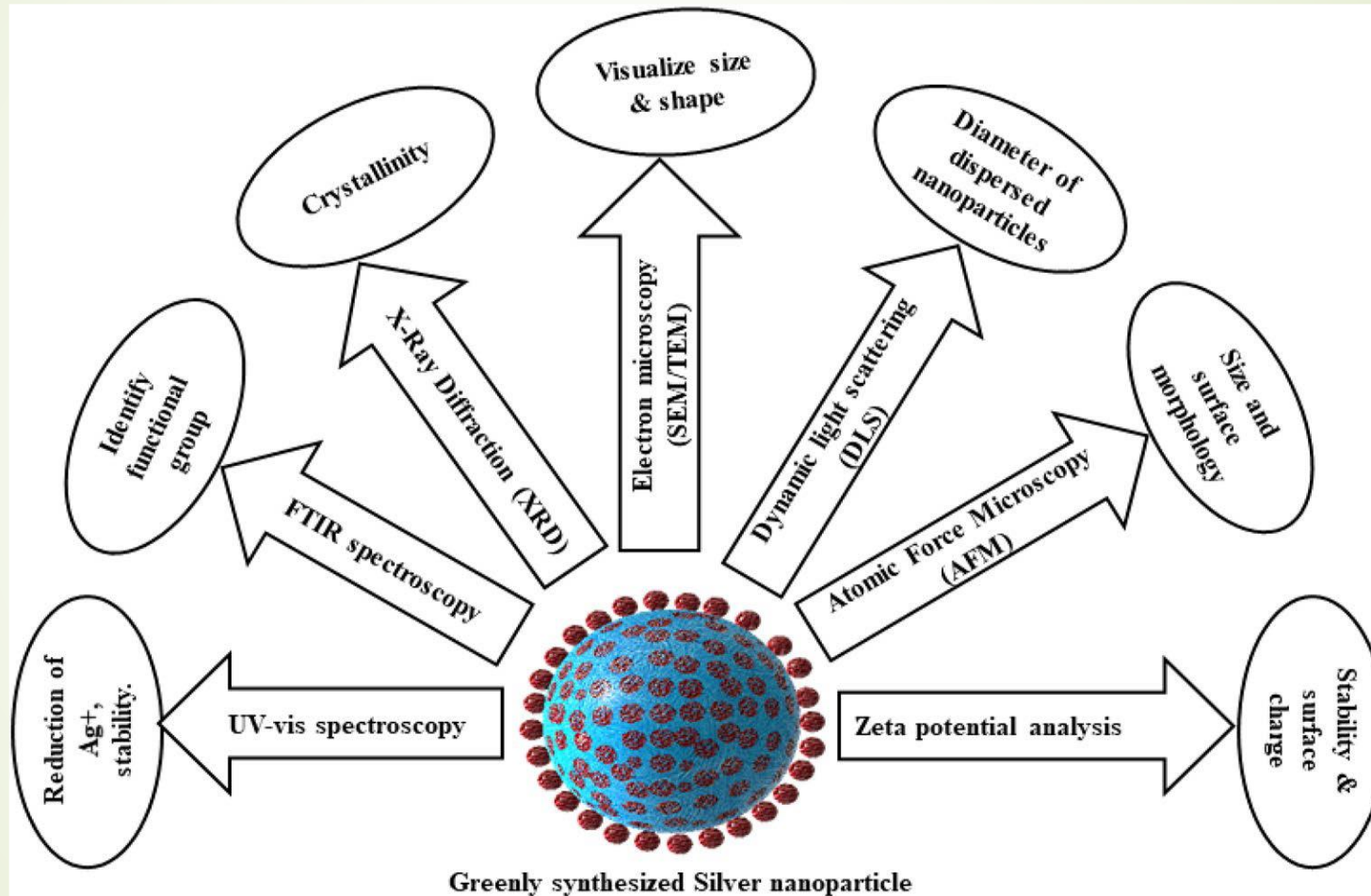
- Physical, chemical methods and green synthesis

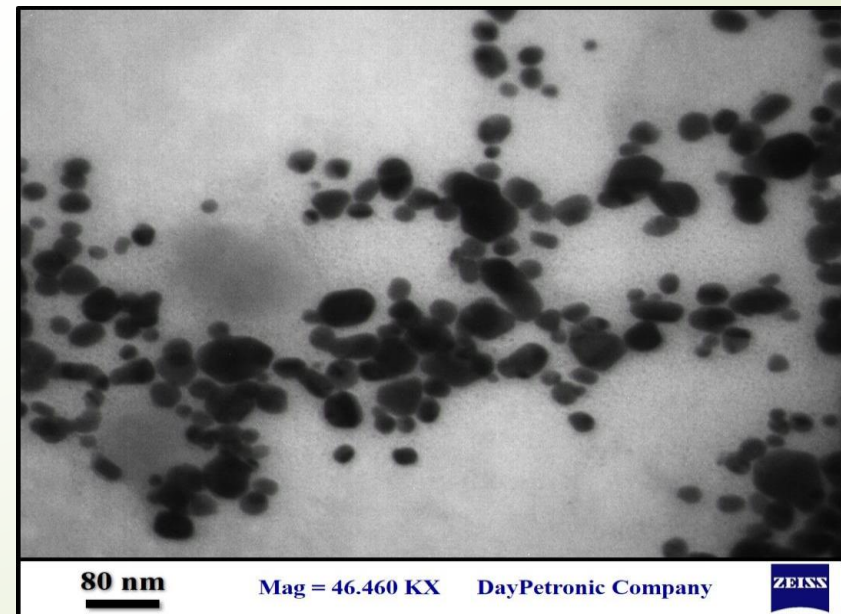
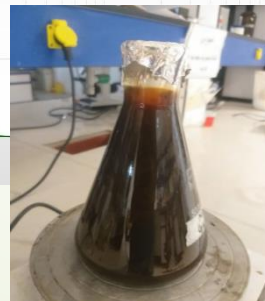
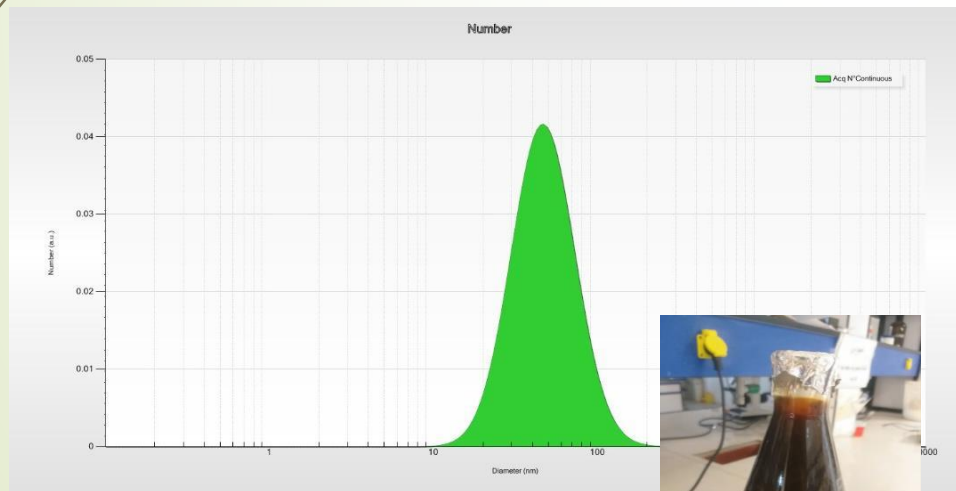
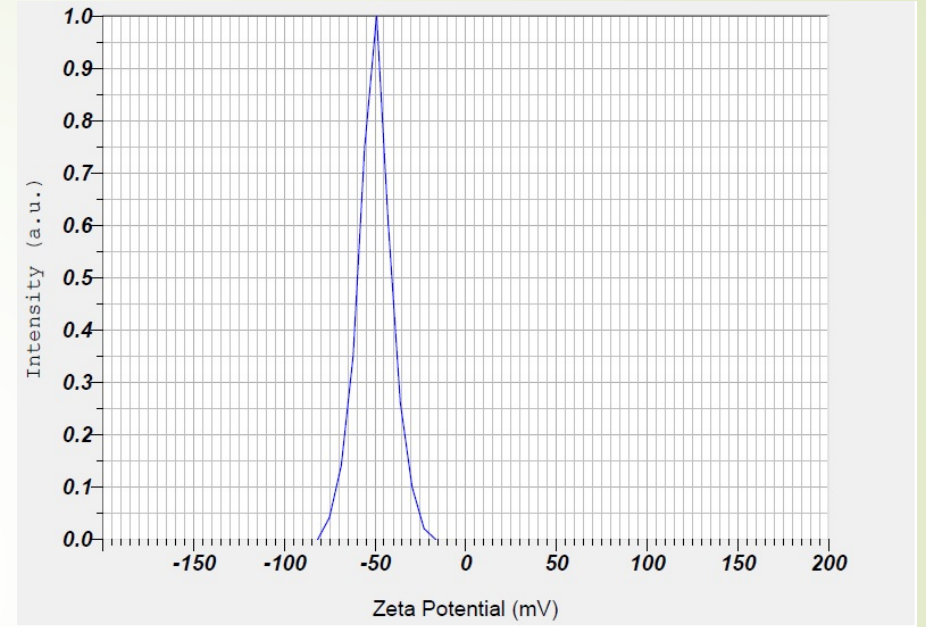
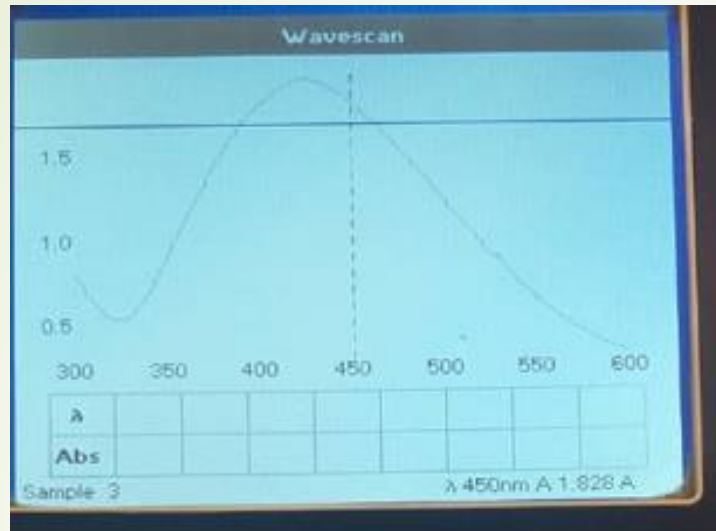
bacteria, fungi, marine algae, yeasts, plant extracts

eco-friendly  
easy  
no sophisticated instruments

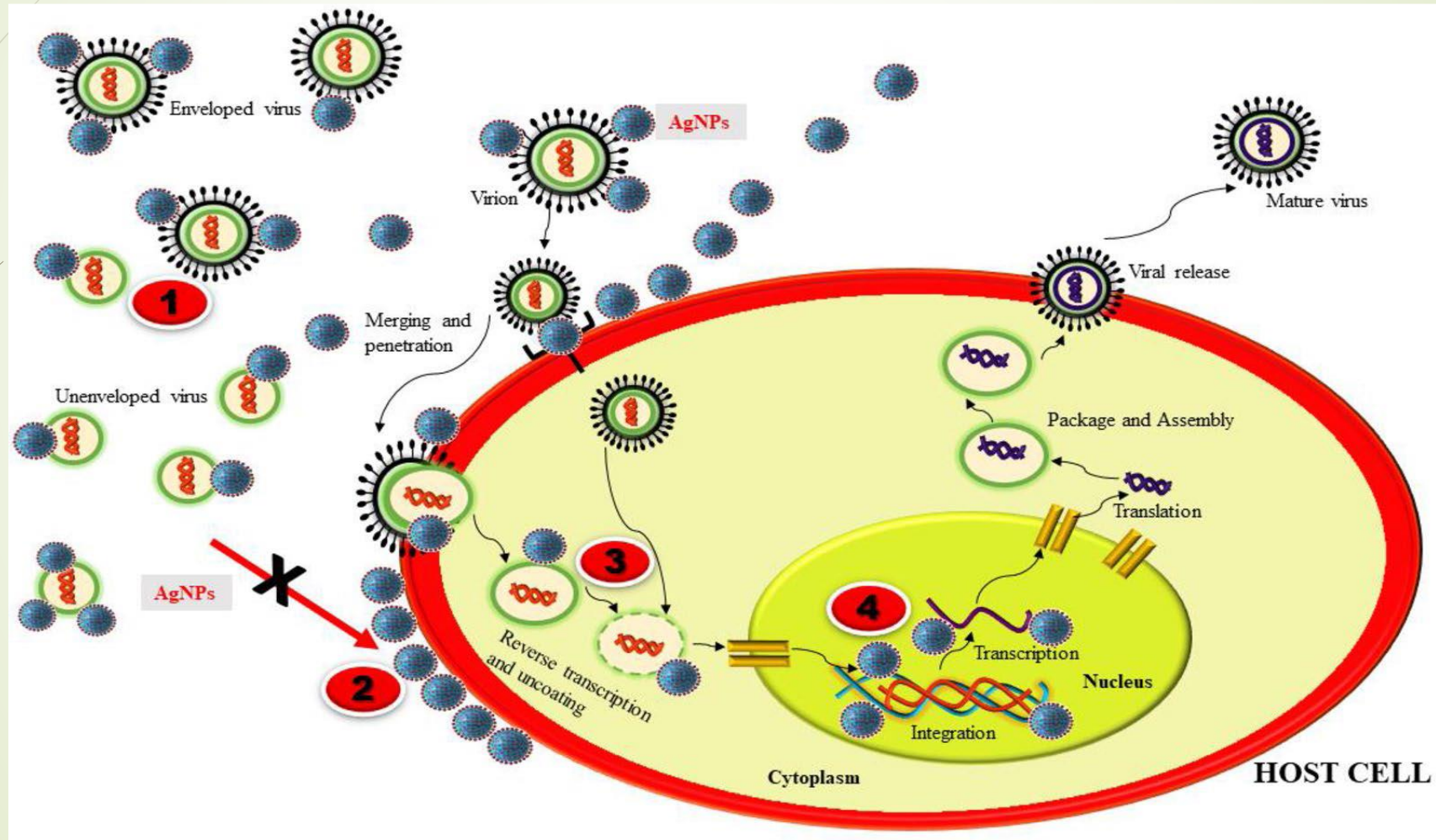


# Nanoparticles



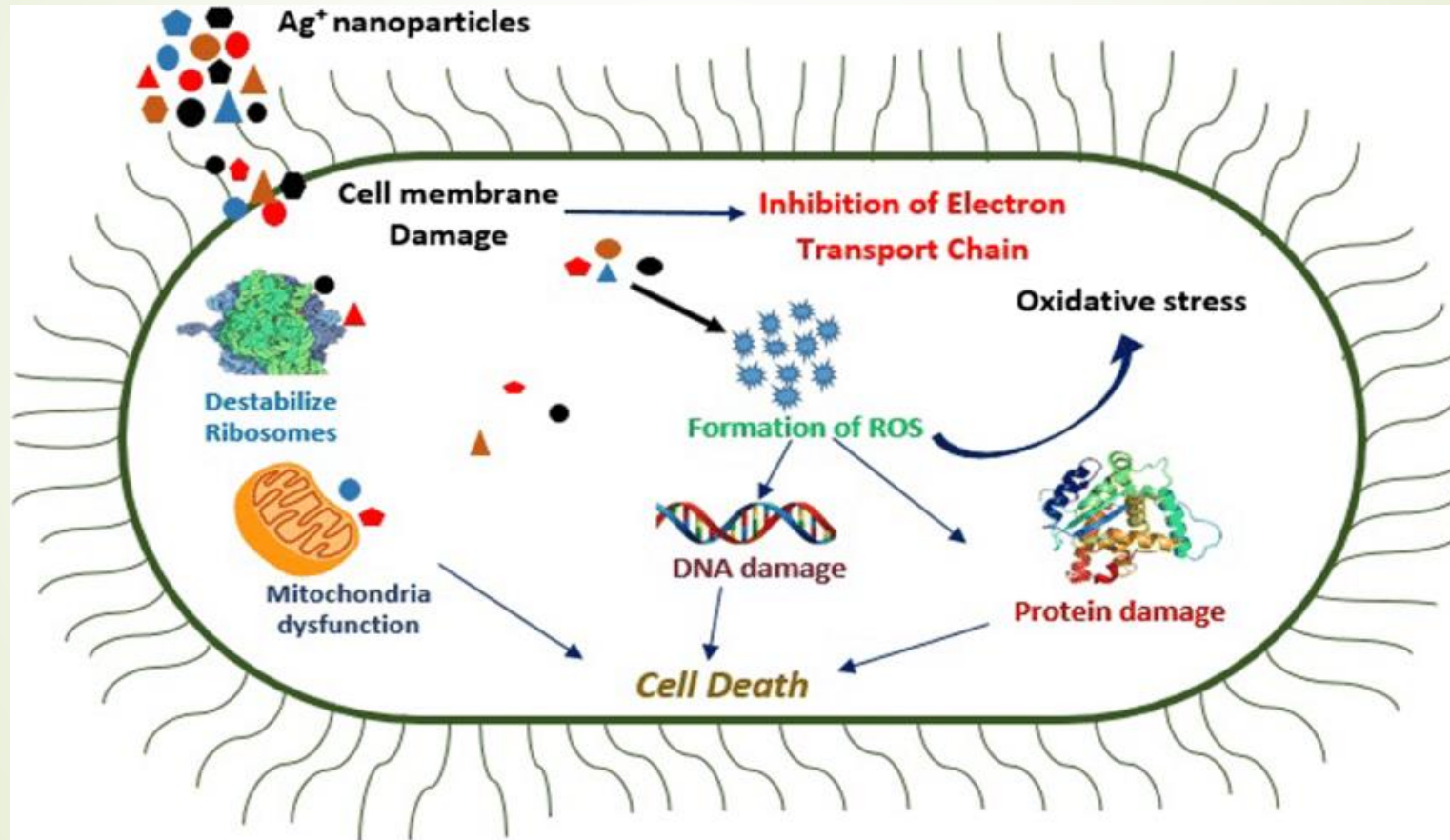


# Mechanism of action



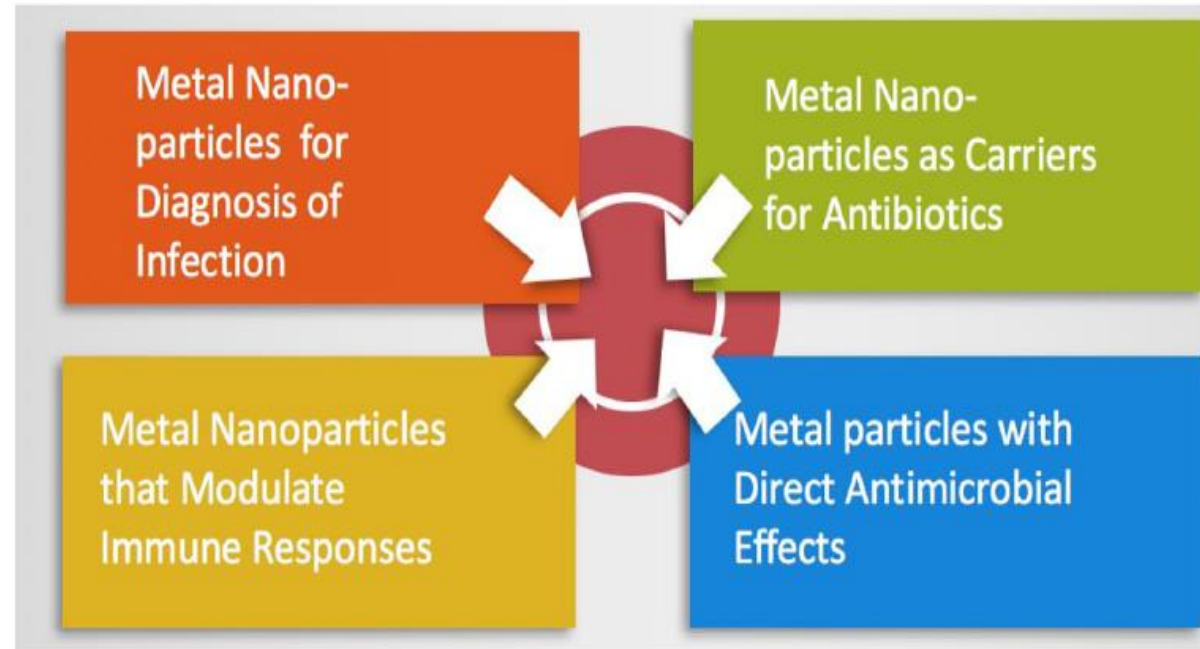


# Mechanism of action



# Metal Nanoparticles

Gold-chlorhexidine



Ag, Au, Cu, Fe, Zn,

Gallium, bismuth

Hg  
MRSA  
Zn

# Lung cancer

- Lung cancer is the world's second most prevalent cancer
- Radiotherapy is not advised ➔ severe side effects on normal tissues
- Anti-cancer medications ➔ harms the healthy cells and organs.
- Nanoparticles in the form of ant cancerous drugs proved highly effective (toxic effect, adverse effects on healthy organs and tissues , without being identified by the immune system )
- nebulizers ➔ appealing options

*Thanks for Your Attention*

