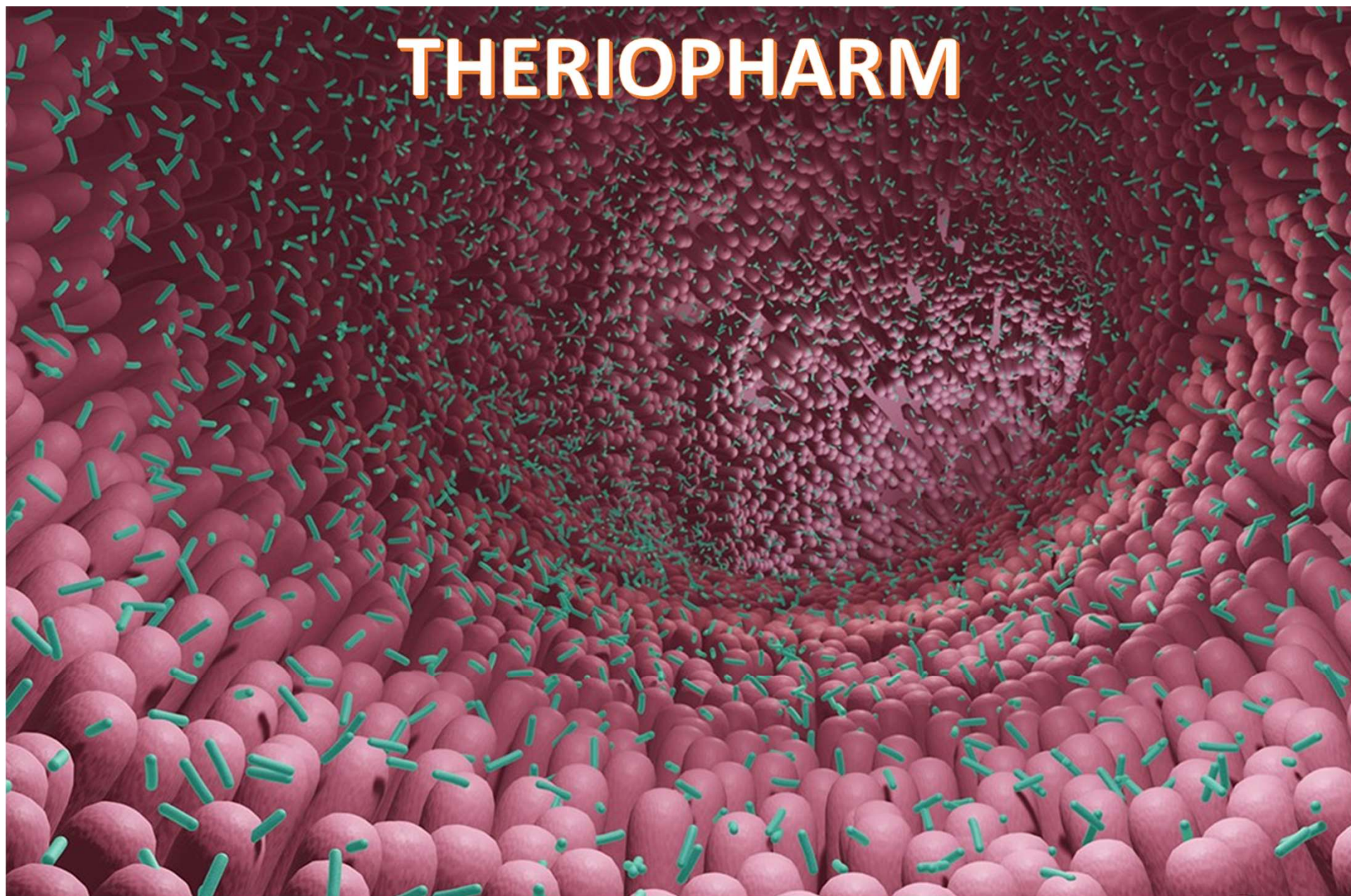


THERIOPHARM



Drug Delivery systems (DDSs): niosome technology

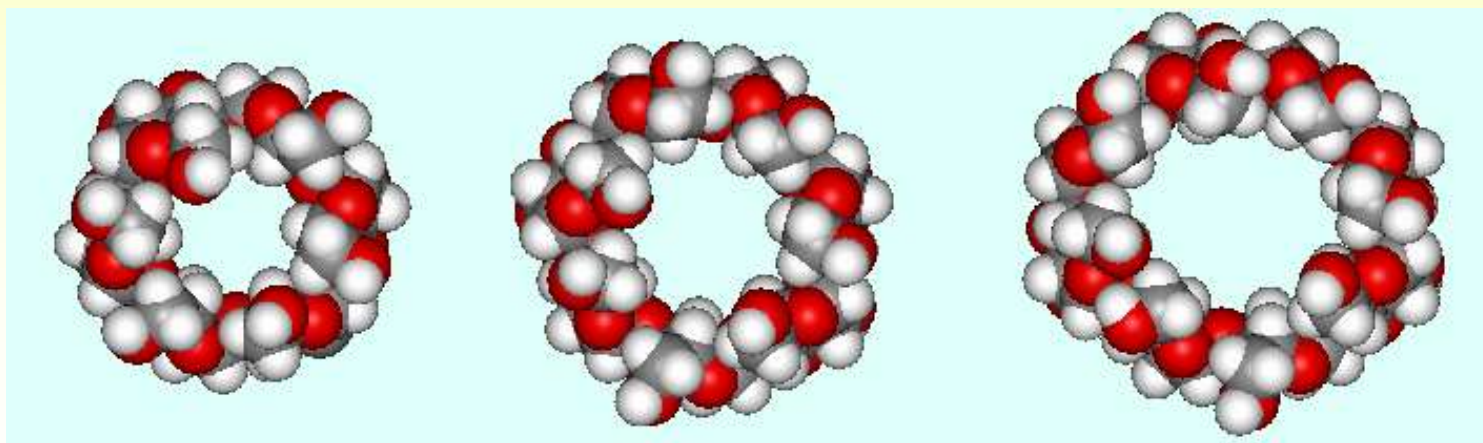
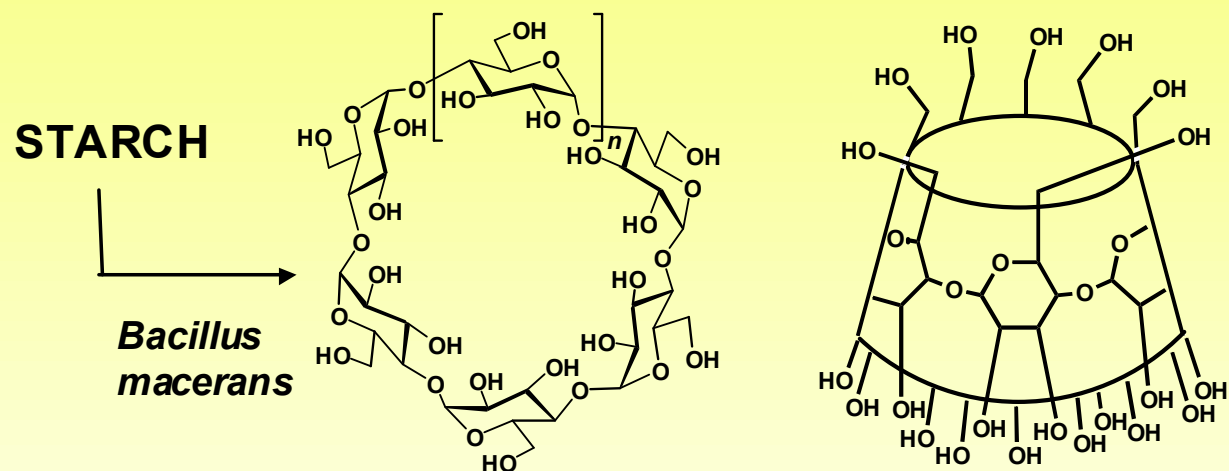
Molecular encapsulation:
cyclodextrins, crown-ethers, calixarenes

Micro-needles

Gels

Prebiotics

CYCLOMALTOOLIGOSACCHARIDES (CYCLODEXTRINS, CDs)



$n = 1$ (α -CD)

$n = 2$ (β -CD)

$n = 3$ (γ -CD)

THERIOGELS:

Aquagels

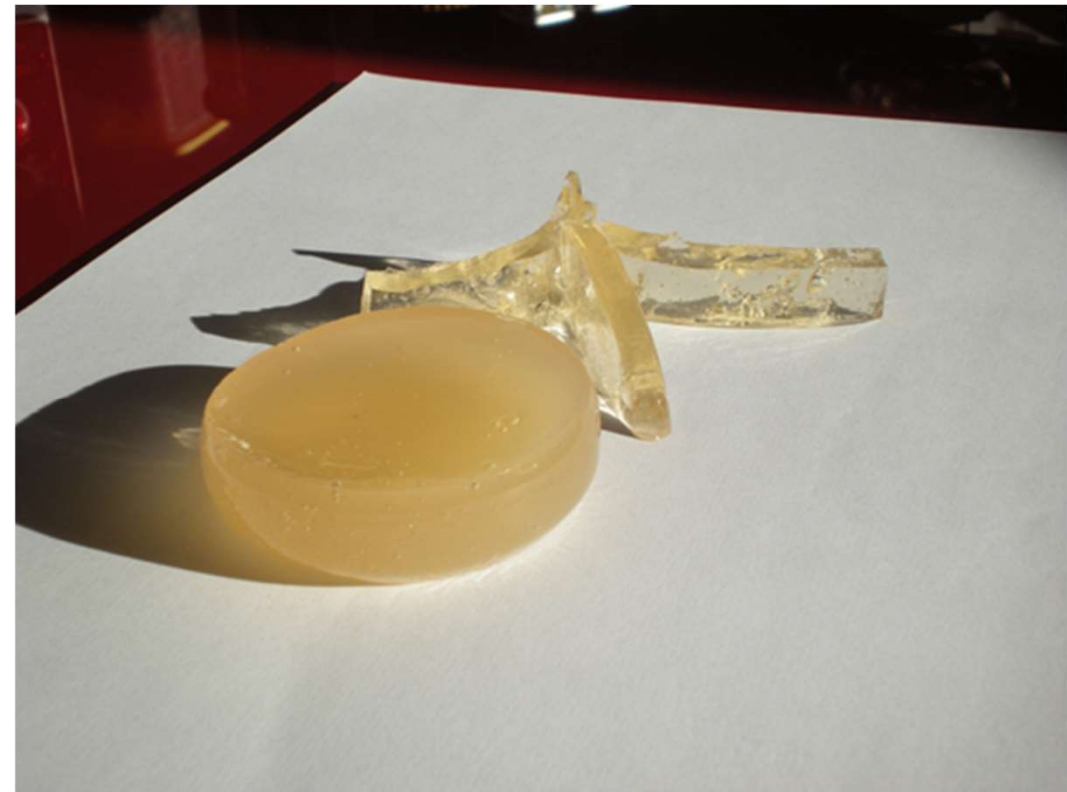
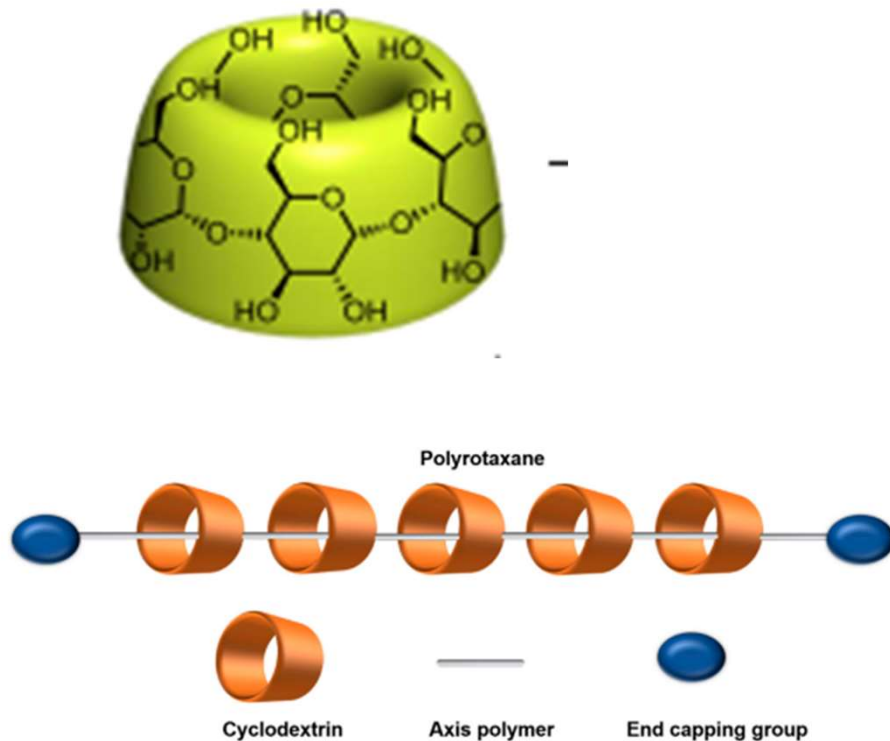
Glycerogels

Supramolecular gels (CDs polyrotaxanes)

Nano-sponges (crosslinked CDs polymers)

CAN CONTAIN ANY TYPE OF PHARMACEUTICAL ACTIVE
or food ingredient:

Antimicrobials, Antioxidants, vitamins, minerals, hormones, ...



NANOMEDicine Platform

Proprietary niosome technology

THERIOSOME

ANY THERAPEUTIC application

ANY ADMINISTRATION ROUTE

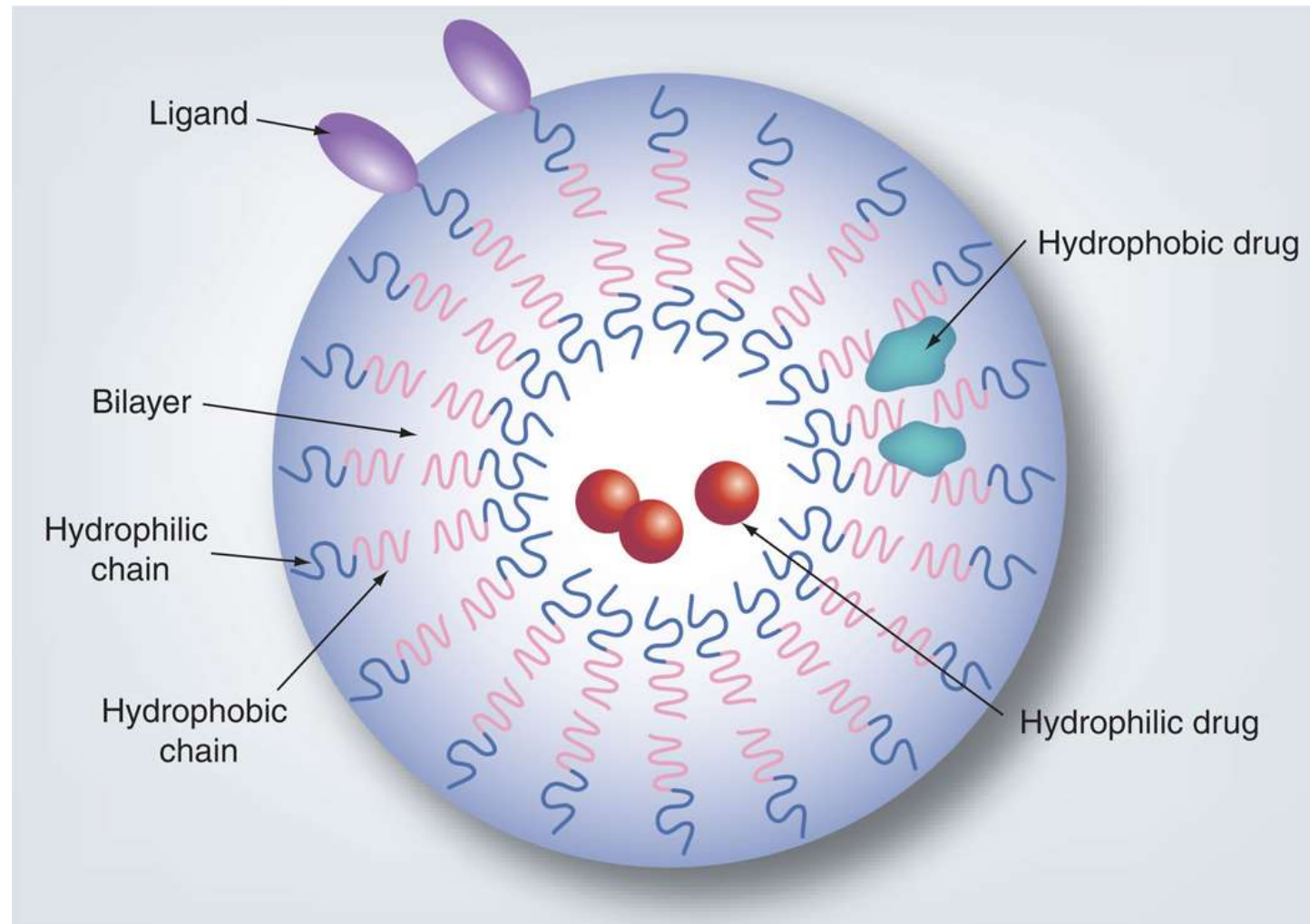
- IT: intra-tumoral
IV: intra-venous
IP: intra-peritoneal
- Oral/enteral
- Other routes: nasal, sublingual, transdermal, rectal, vaginal, pulmonary...

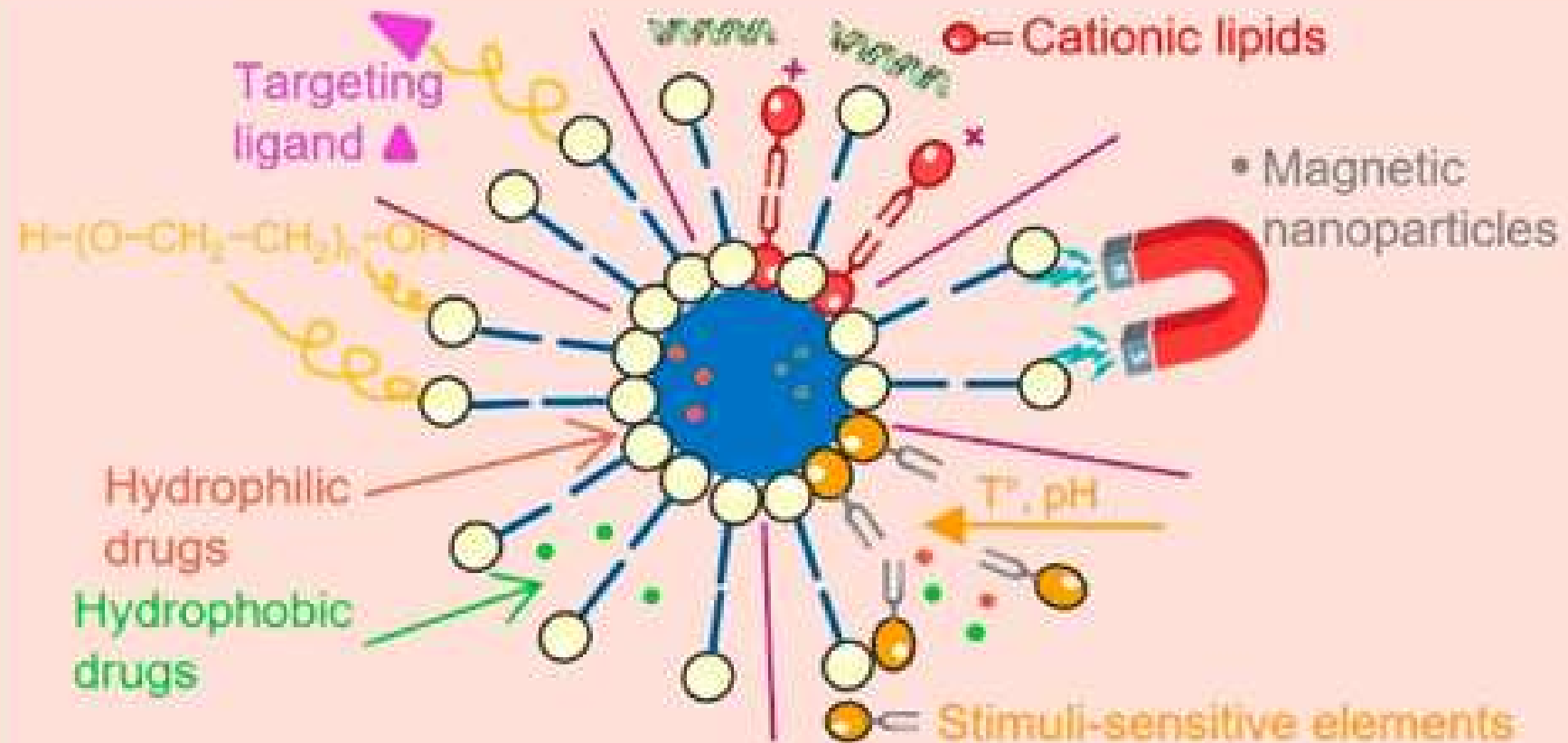
THERIOSOME PLATFORM

Size 50 to 60 nm

**Pharmaceutical grade
excipients**

+ GRAS components





Multifunctional niosomes

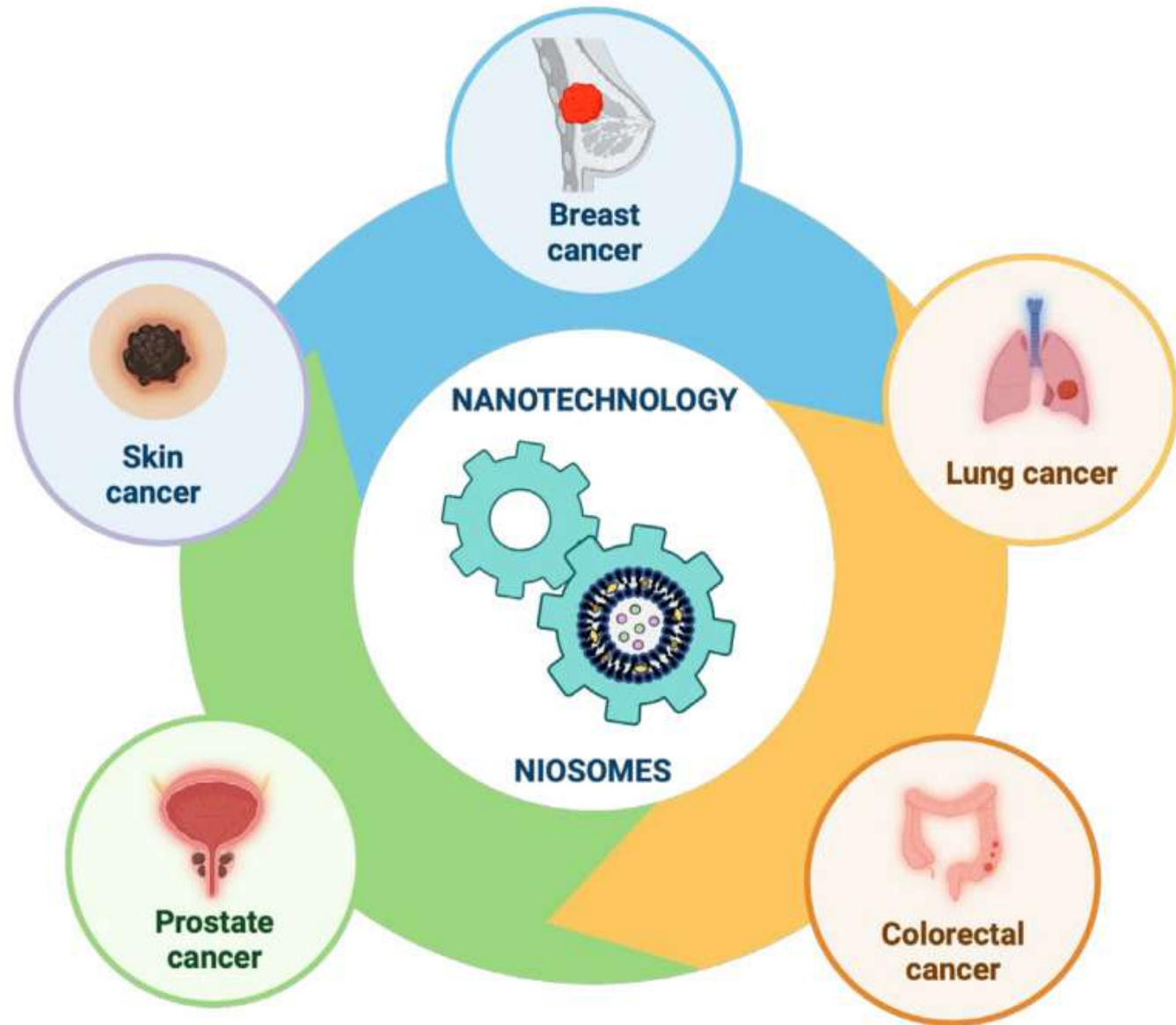
ADVANTAGES OF NIOSOME

- Enhanced efficacy and therapeutic index.
- Decreased toxicity.
- Improved pharmacokinetic effects.
- Flexibility to couple with site specific ligands to achieve active targeting.
- Increases the stability of any volatile agents & can be easily and cheaply fabricated in large quantities
- Delivers a higher concentration of pharmaceutical agent.

THERIOSOME

ANY THERAPEUTIC application

ANY ADMINISTRATION ROUTE



ANTIMICROBIAL platform THERIOCIDe for
tackling antibiotic resistance



Nosocomial multi-/pan- resistant pathogens:

Acinetobacter Baumannii

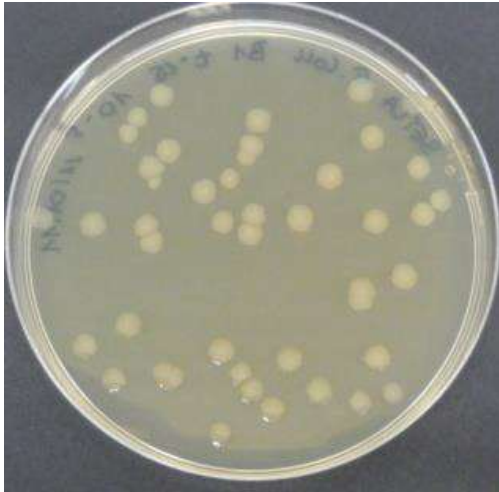
Staphylococcus aureus

Pseudomonas aeruginosa

IV and IP routes validated under murine sepsis models during preclinical tests

THERIOCIDe for killing viruses, fungi & bacteria

Broad antimicrobial activity on > 250 pathogen species

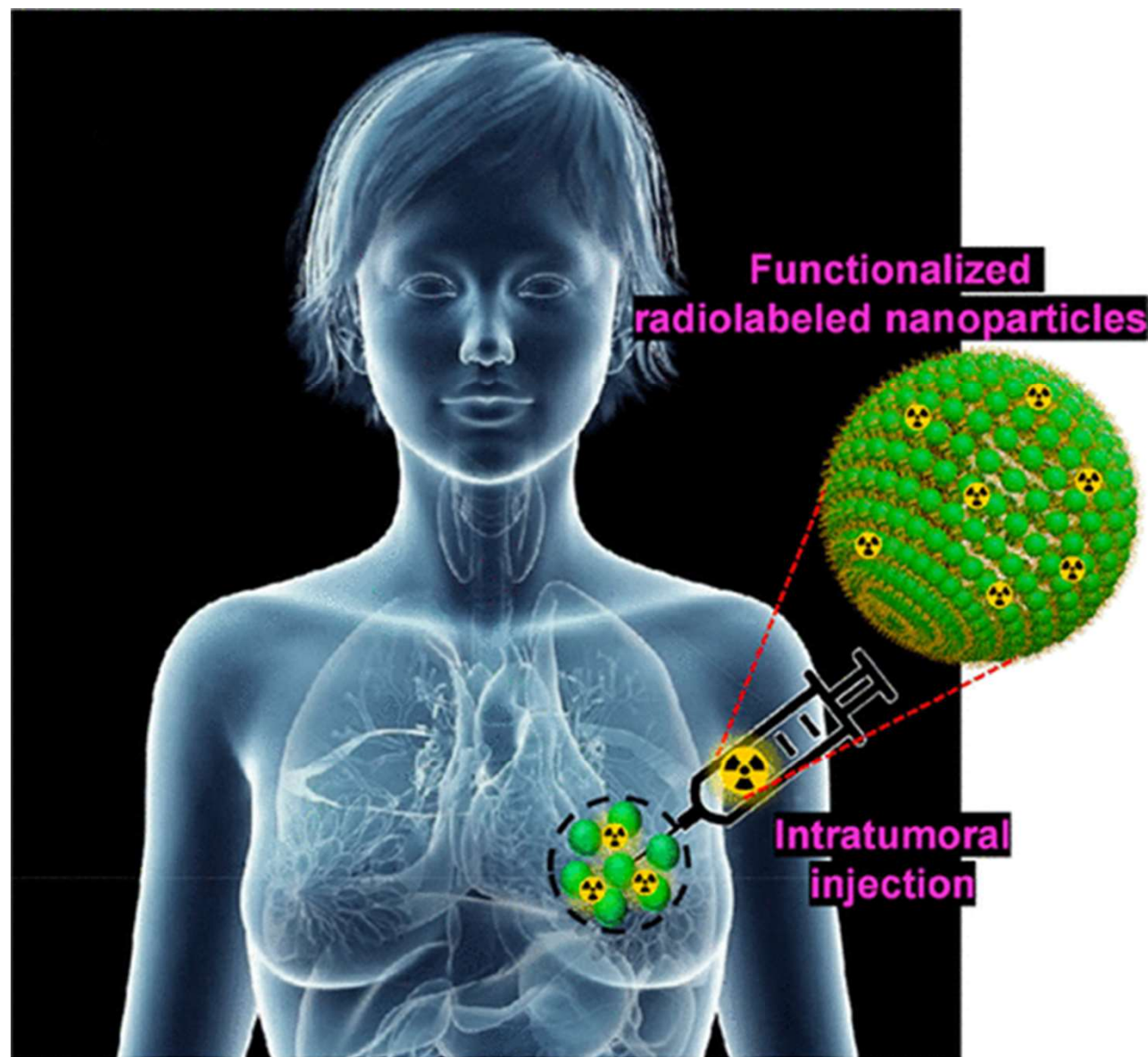


THERIOCHELATOR platform

Calixarenes

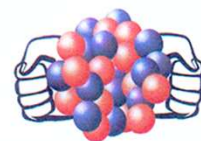
Crown-ethers

other chelators

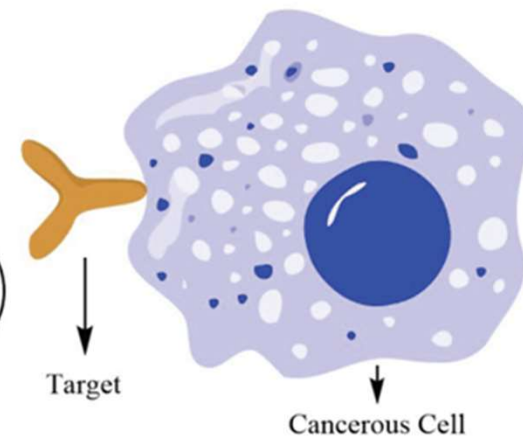
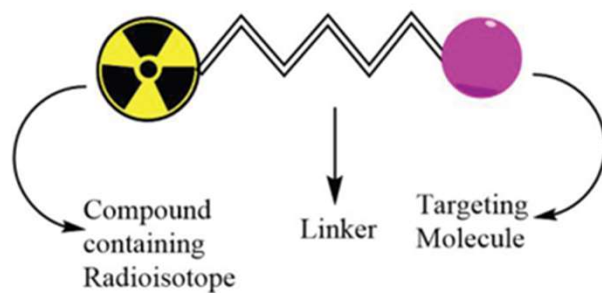
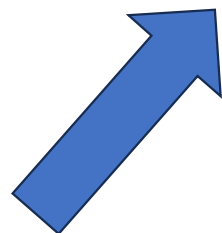
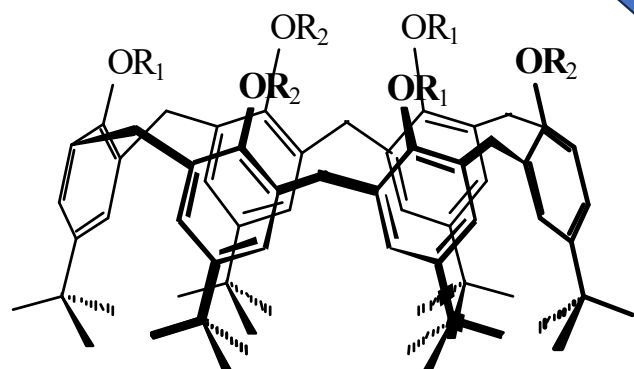


Nanoscale brachytherapy

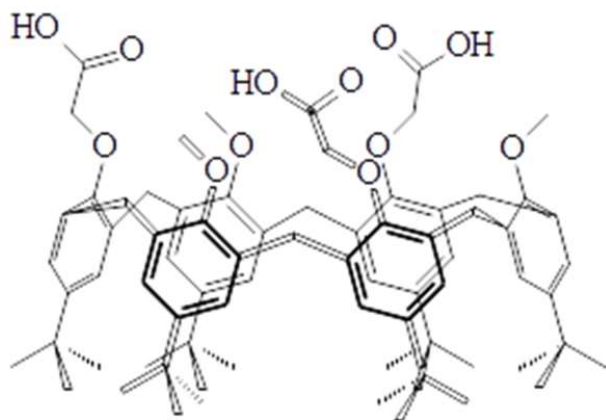
THERIO



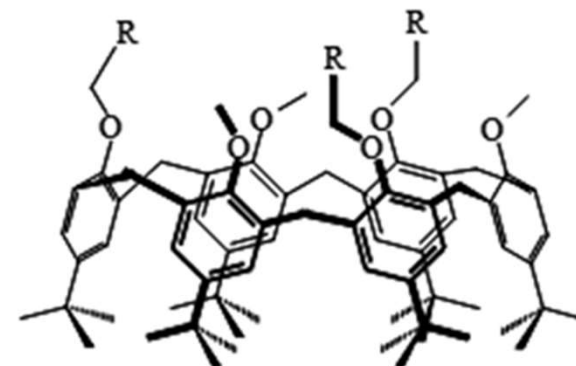
Chelator



Unique calixarene platform for isotope complexation & separation and as ligands for radiopharmaceuticals



Calix[6]arene



1,3,5-OCH₃-2,4,6-OCH₂R-*p*-*tert*-butylcalix[6]arene
R = CONHOH (LH₃) or R = COOH (L'H₃)

Properties of LH₃

- Hydroxamic chelating functions (CONHOH) of LH₃ are supposed to present a very high affinity towards Pu(IV) [1]
- LH₃ has a very good affinity towards uranyl ion thanks to the geometry of the cavity and the chelating groups nature [2]

⇒ LH₃ is supposed to be a promising molecule to extract Pu and U



Targeted Polymeric Nanoparticle



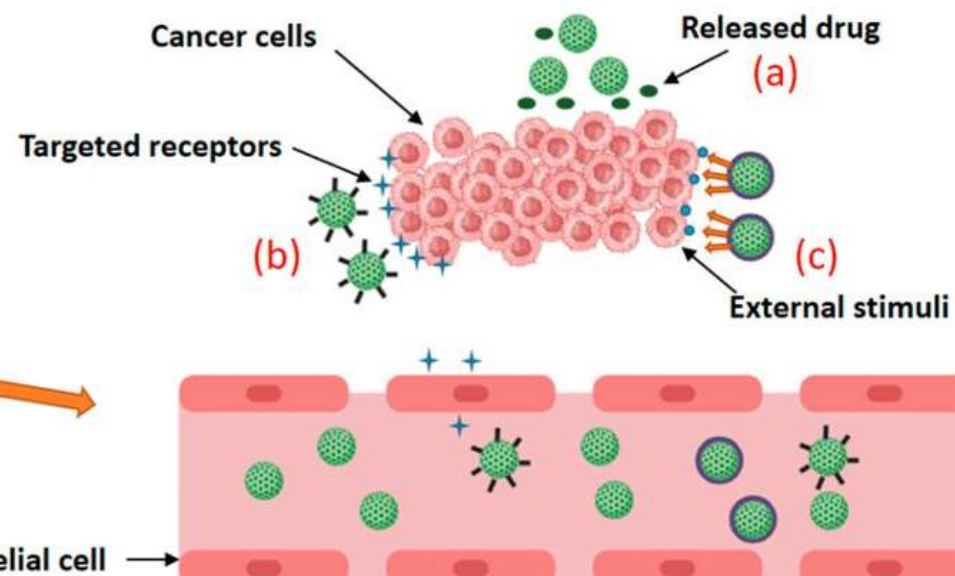
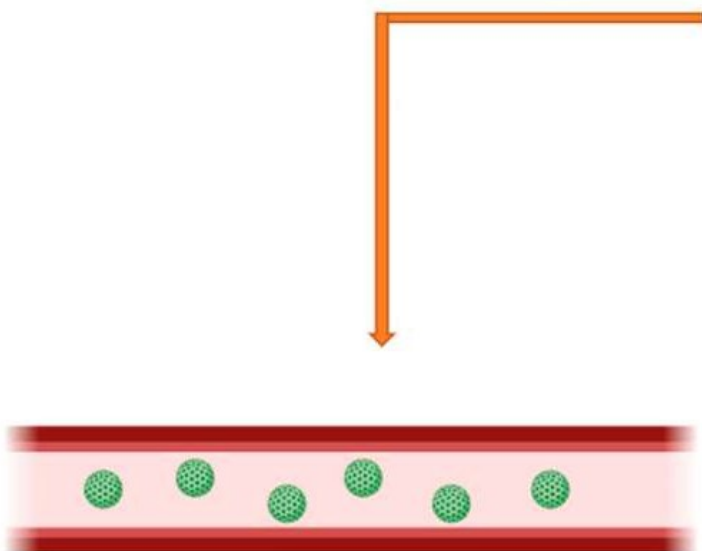
Polymeric Nanoparticle



Stimuli responsive Polymeric Nanoparticle



Injecting nanoparticle based drugs



Representation showing various approaches to drug targeting:

- (a) Passive transport of nanocarriers through the permeable blood vessels of tumor tissue via extravasation;
- (b) Active targeted delivery to cancer cells;
- (c) Adaptive nanomedicines engineered to release anticancer agents in response to internal or external cue