



# Metallodrugs for cancer therapy: challenges and expectations

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## Contextualization

According to the WHO, cancer is the 2<sup>nd</sup> leading cause of death worldwide with nearly one sixth of all deaths. These prohibitive numbers show the urgency to find new and alternative strategies to fight this disease. In our approach to this field, we have been focused on tackling the major problems associated with cancer treatments: **i)** lack of selectivity for the cancerous cells, responsible for the noxious side effects observed for the drugs in clinical use; **ii)** intrinsic or acquired resistance to chemotherapeutics; and **iii)** development of metastases, that are indeed the main cause of death by cancer conditions. We are particularly interested in those aggressive and metastatic cancers that lack a clinical solution and present the most challenging and defying threat.

## Team

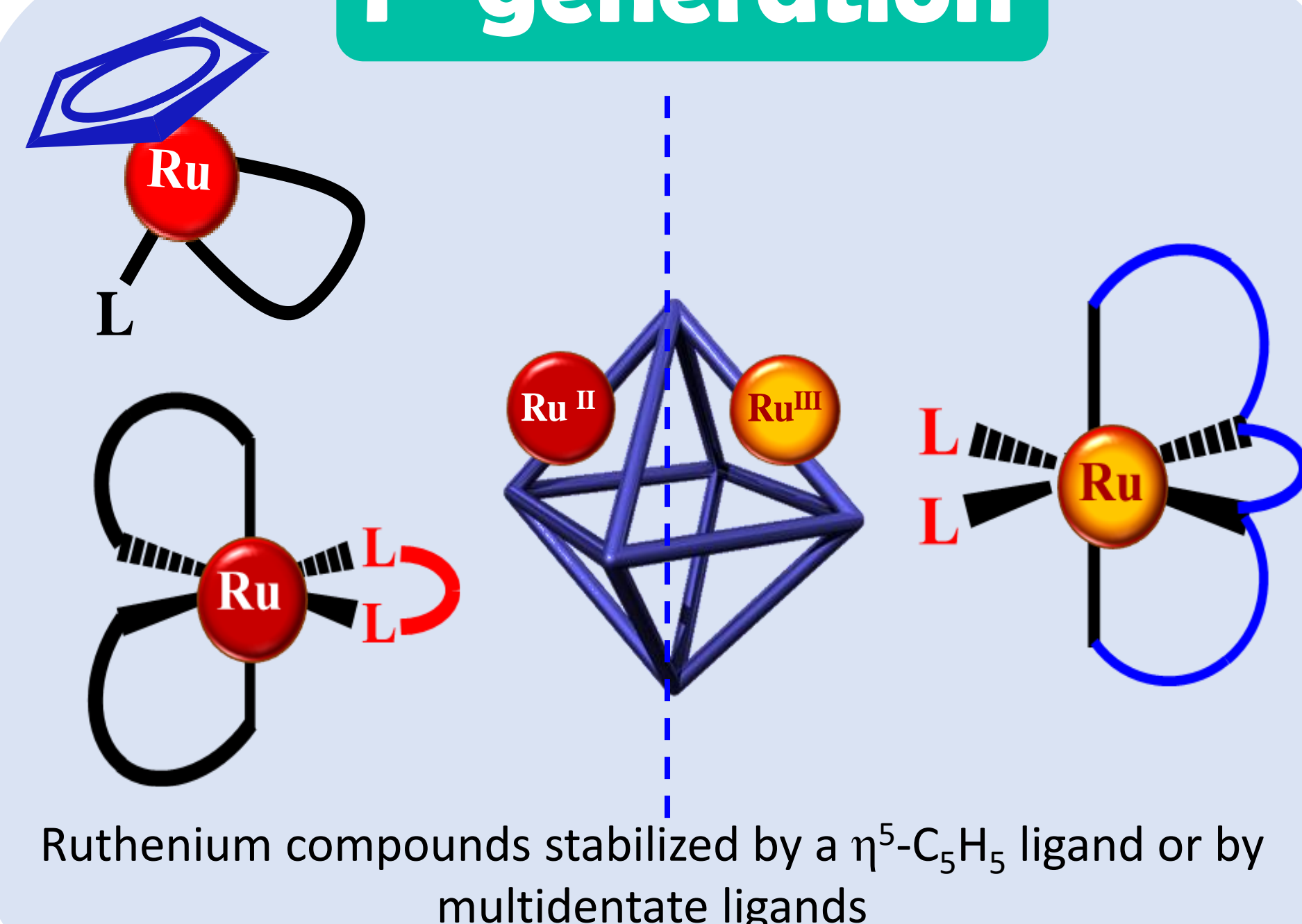


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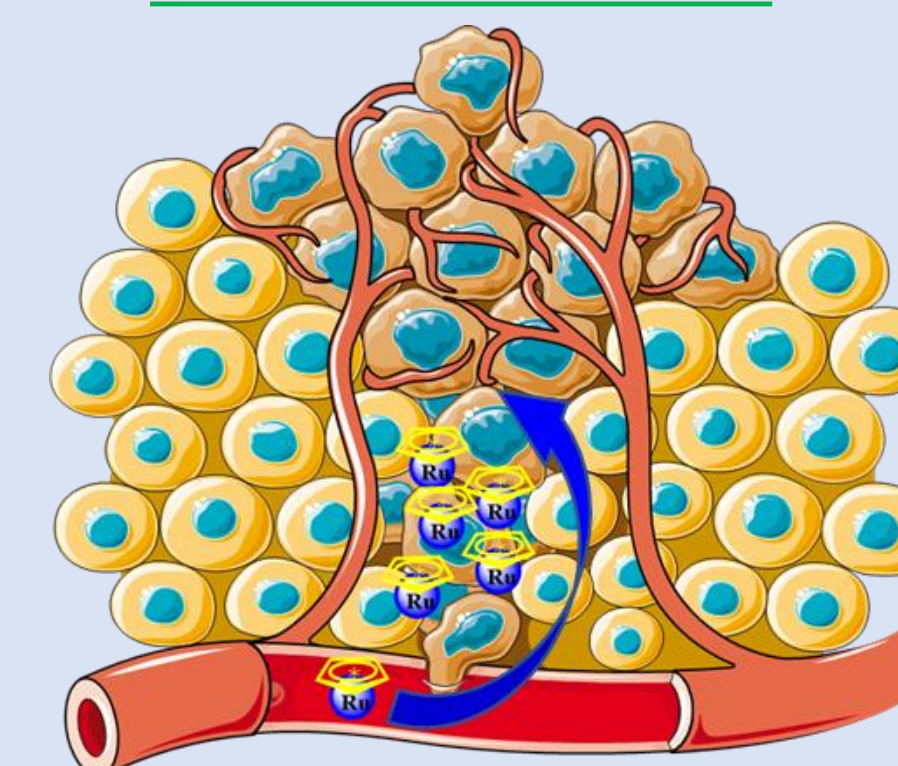
## 1<sup>st</sup> generation



## 2<sup>nd</sup> generation

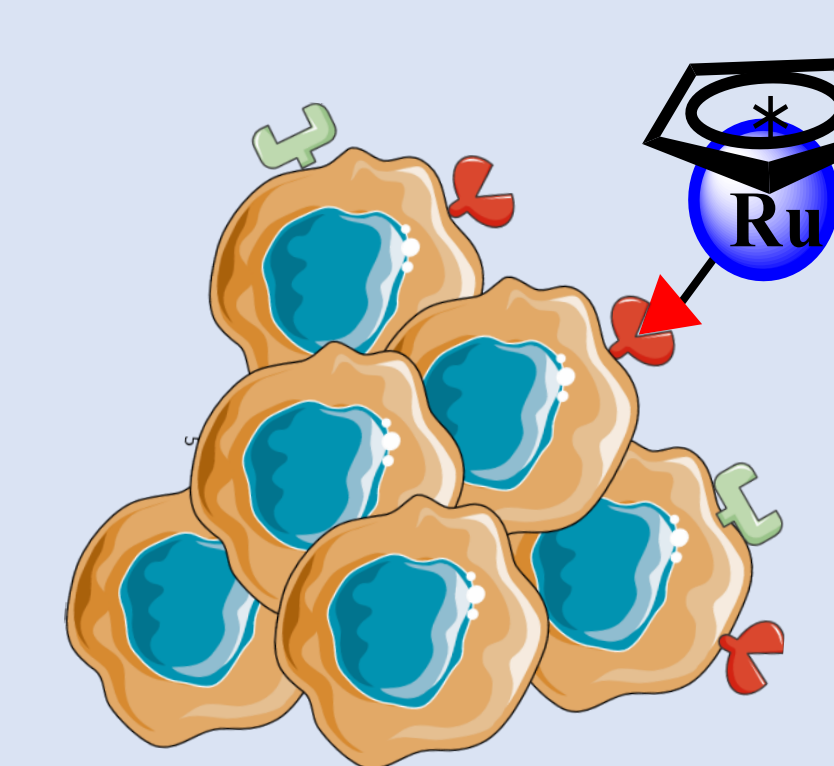


### PASSIVE TARGETING



Enhanced Permeation and Retention Effect (EPR)

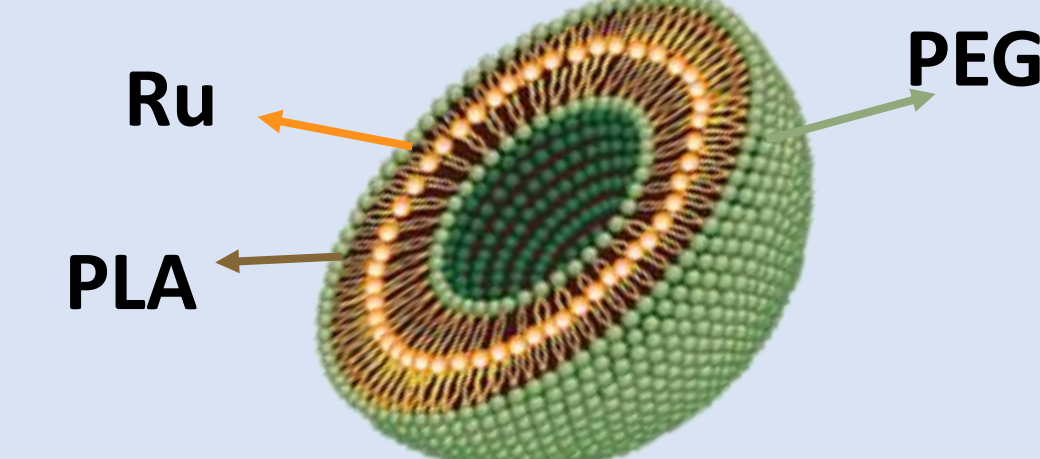
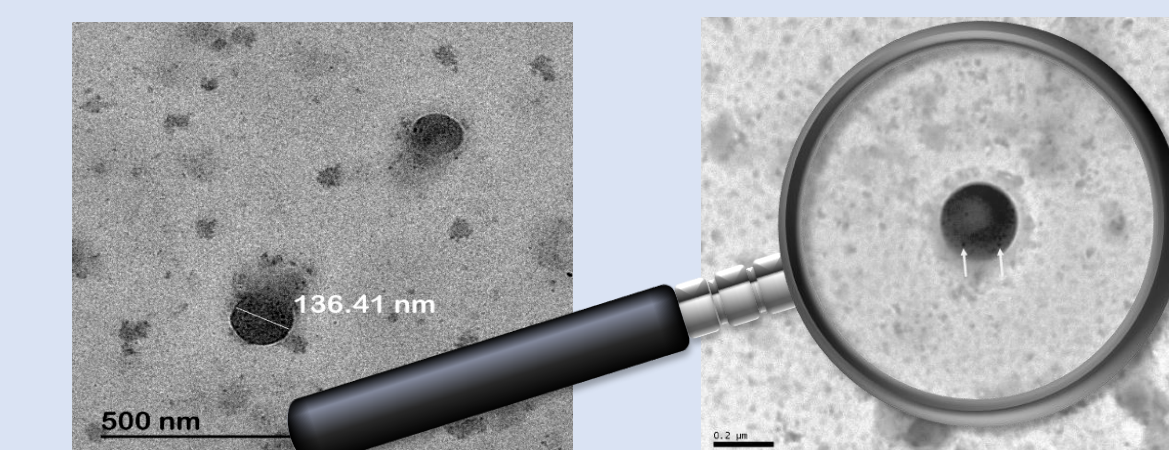
### ACTIVE TARGETING



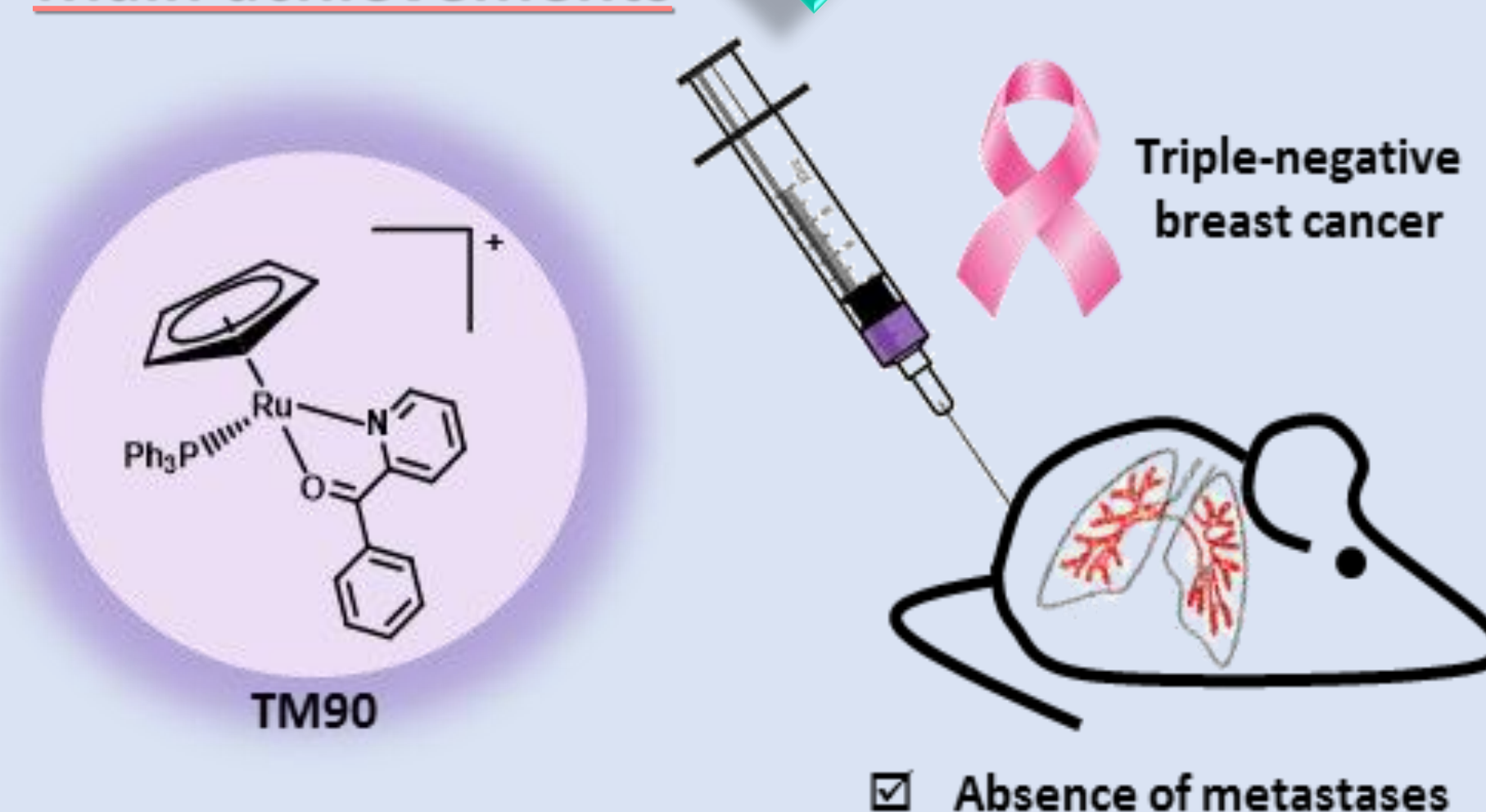
▲ Biomolecule, peptide, among others, whose receptors are overexpressed in cancer cells

## 3<sup>rd</sup> generation

Stable vesicles for the delivery of the new ruthenium anticancer agents *in vivo*



### Main achievements:



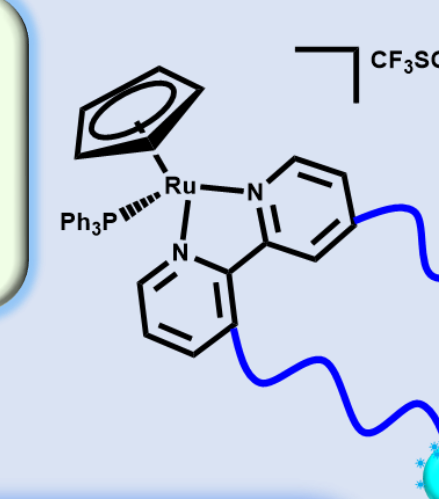
Anti-cancer Agents in Medicinal Chemistry Vol. 17, No. 1, 126-136, 2017.

### Main achievements:

Anti-metastatic  
Overcome resistance  
Selective

Eliminate the deadliest feature of cancer cells – their ability to invade and metastasize

- Eur. J. of Med. Chem. 168, 373-384, 2019.
- J. Inorg. Biochem. 127, 79-81, 2013.
- PCT/IB2015/002312; WO 2016/087932.



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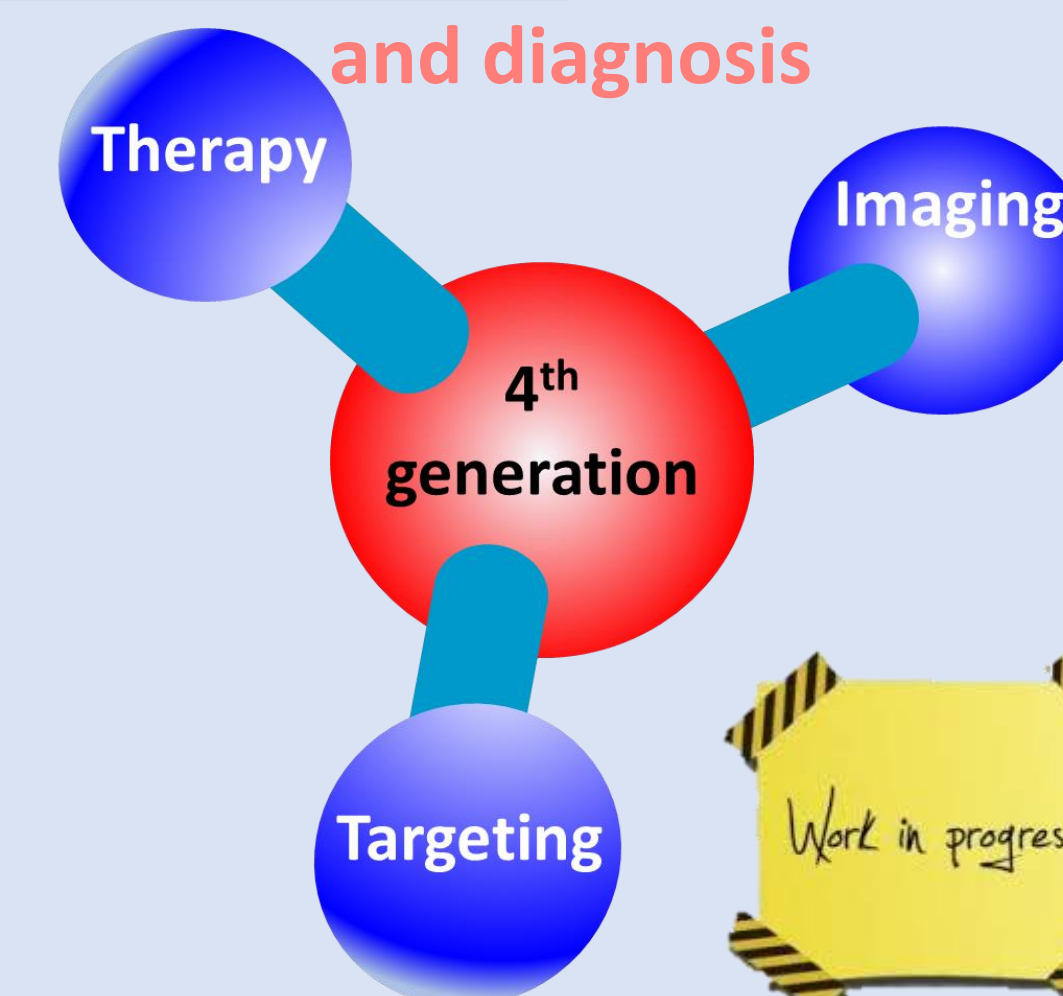
Fight Against Breast Cancer  
**Project "RuPharma"**  
1<sup>st</sup> prize

FC HATLcancer  
Ciências ULisboa Proto-Company

Prodigy Bubble  
Private Investors  
WO/2016/087932

## Next generations

**THERANOSTICS:** targeted therapy and diagnosis



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