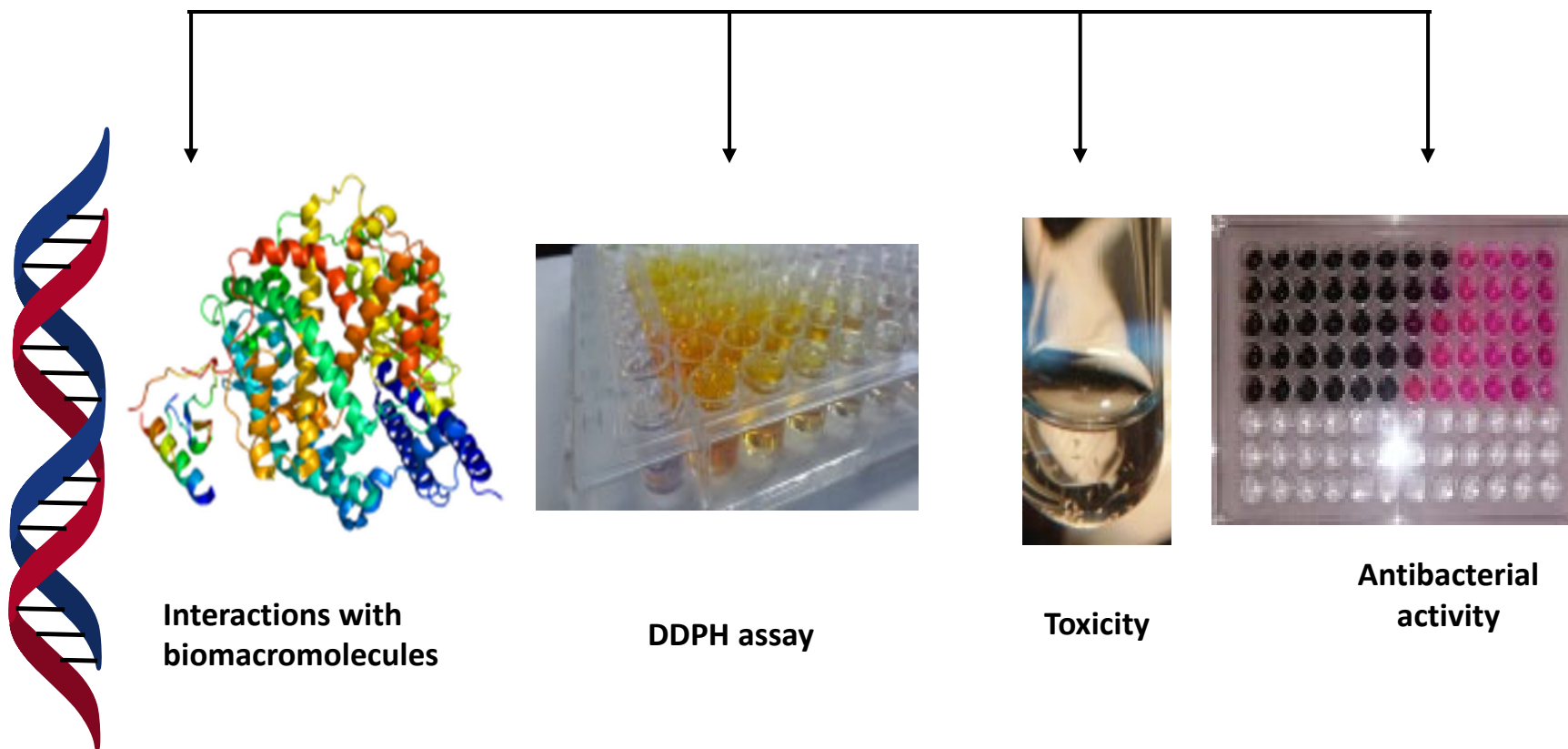
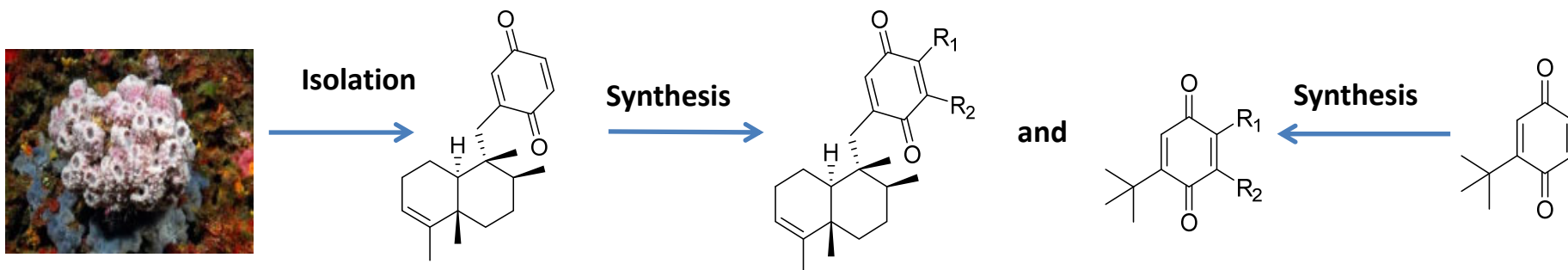
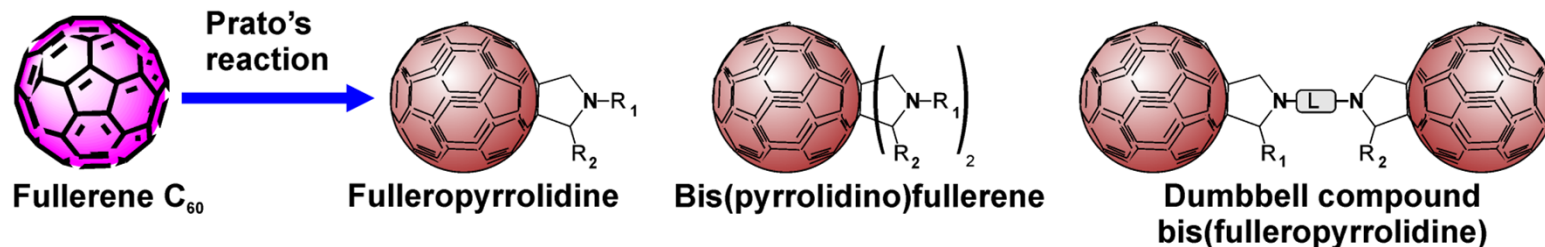


## Biologically active sesquiterpene quinones and their biomimetics

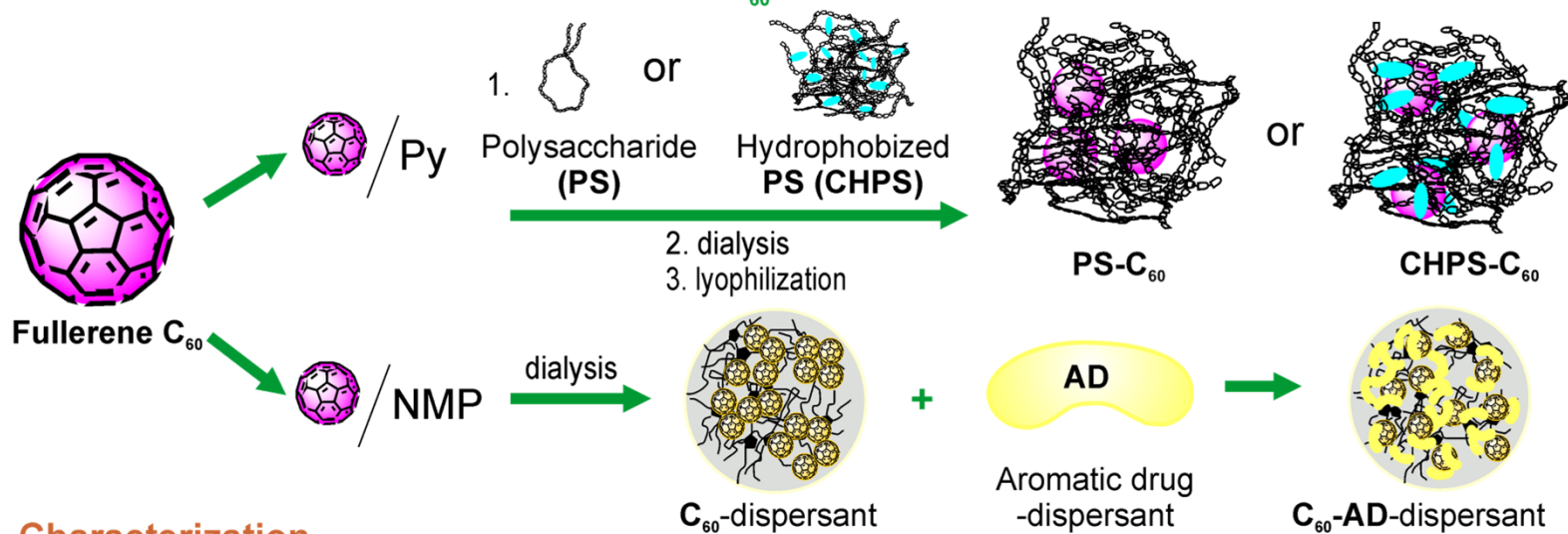


# Supramolecular chemistry of fullerene and fullerene-based conjugates

## Covalent modifications of fullerene C<sub>60</sub>



## Non-covalent modifications of fullerene C<sub>60</sub>

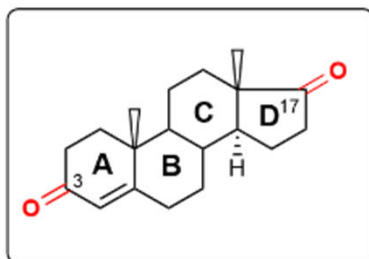


## Characterization

- DLS, SEM
- supramolecular interactions
- cyclic voltammetry

- antioxidant activity
- antitumor activity
- antiinflammatory activity

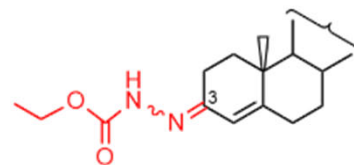
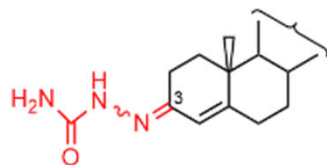
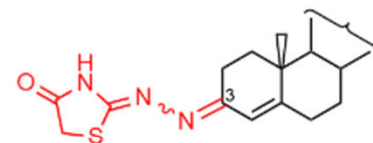
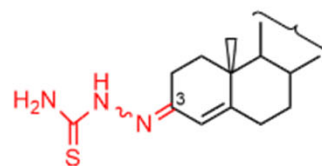
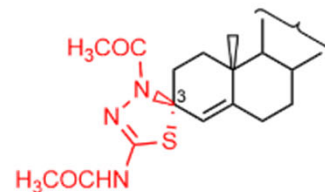
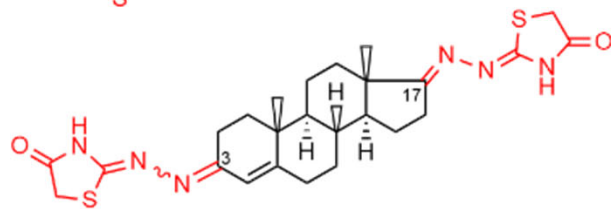
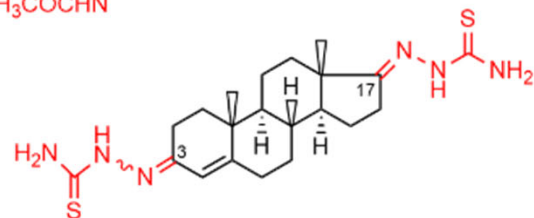
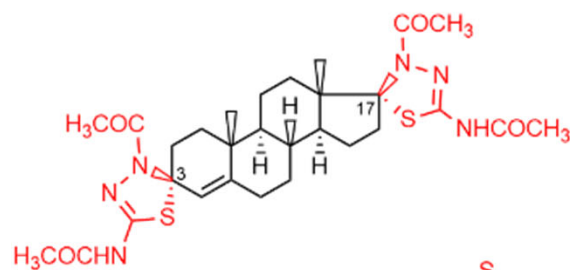
## Bioactive steroidal hydrazone derivatives



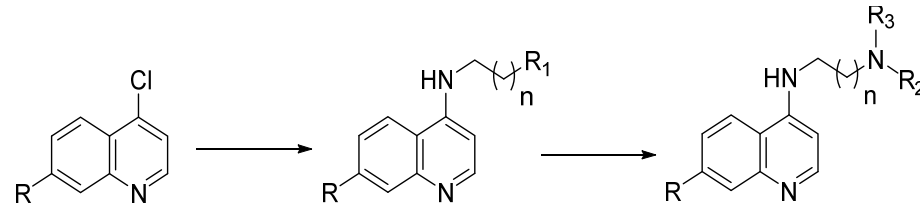
### STEROIDAL HYDRAZONE DERIVATIVES

New compounds  
Potential drugs

Antimicrobial activity?  
Antitumour activity?  
Mechanism of activity?  
Apoptosis?  
By means of caspases?  
Angiogenesis?  
Selectivity for tumour cells?

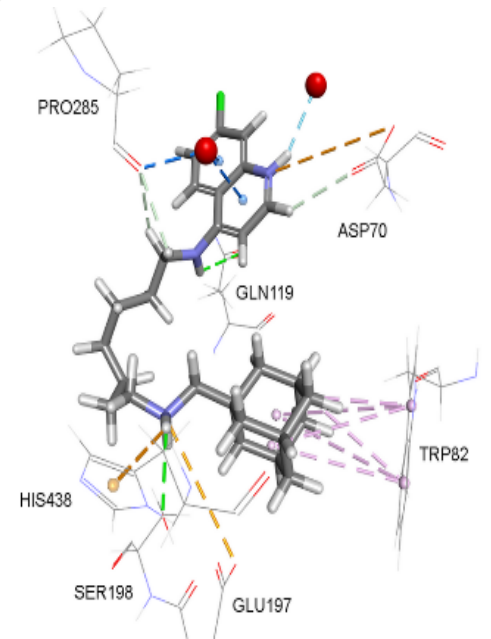
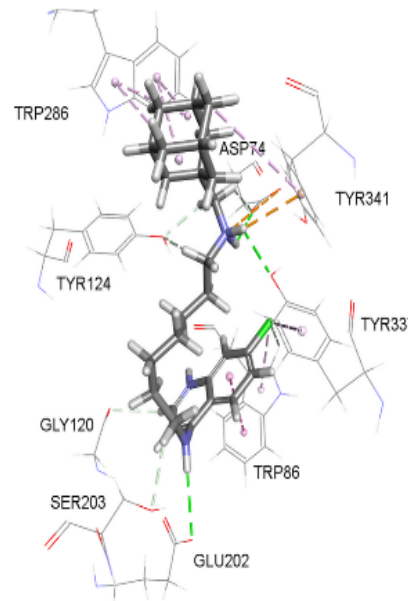
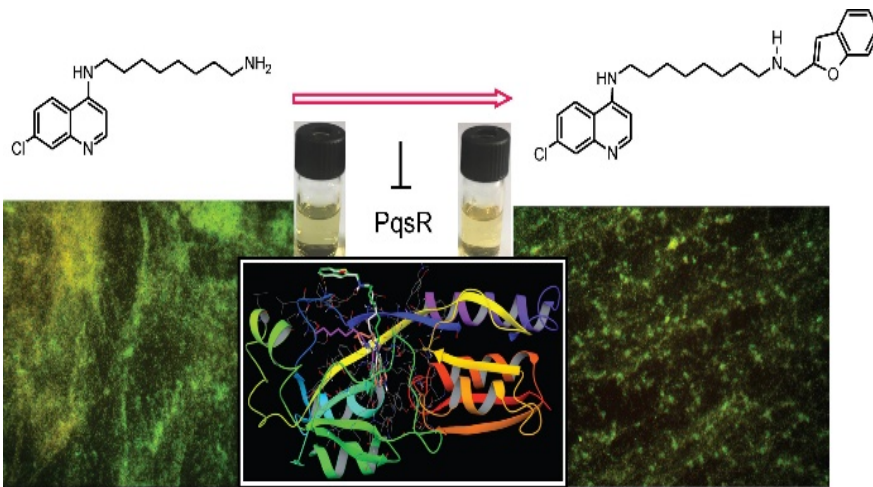


## Development quorum sensing and cholinesterase inhibitor

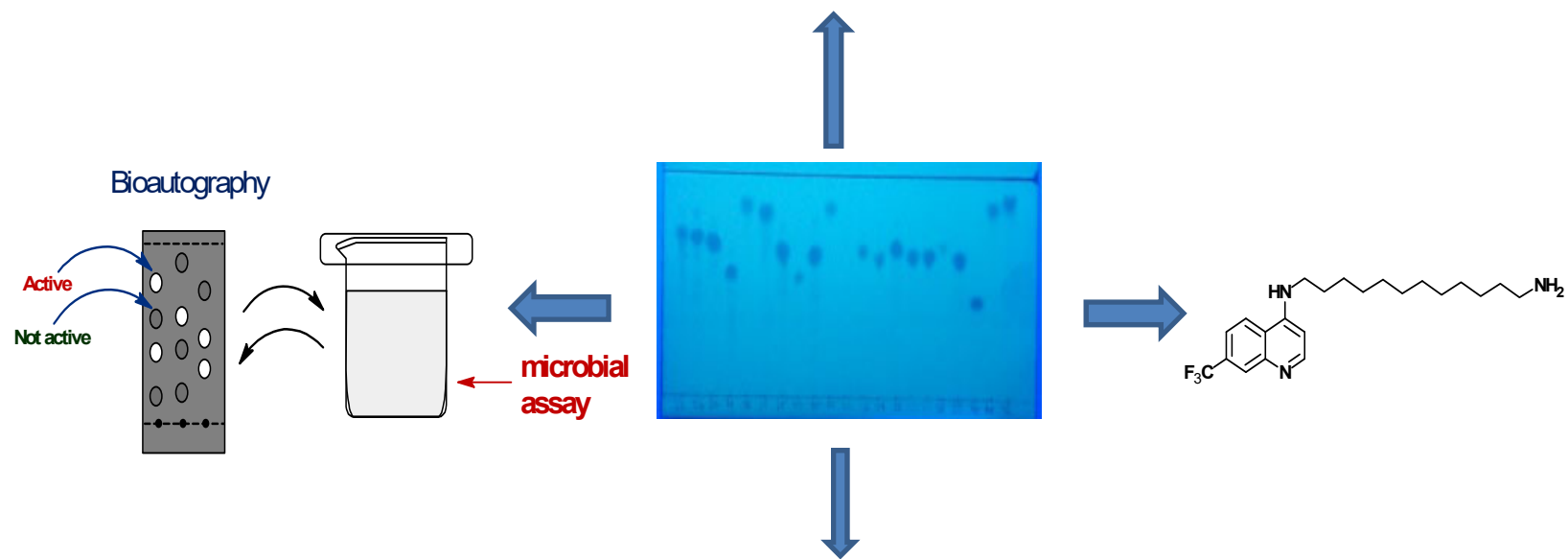
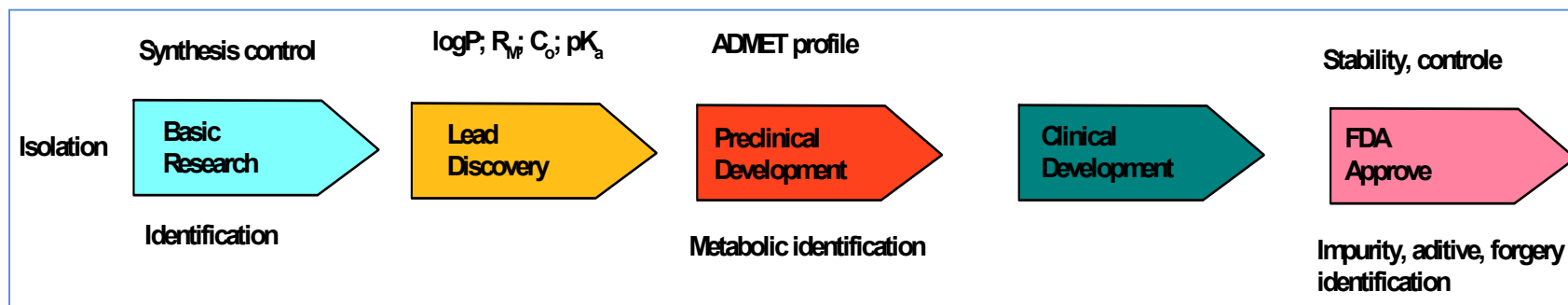


Quorum sensing inhibition

AChE and BChE inhibition



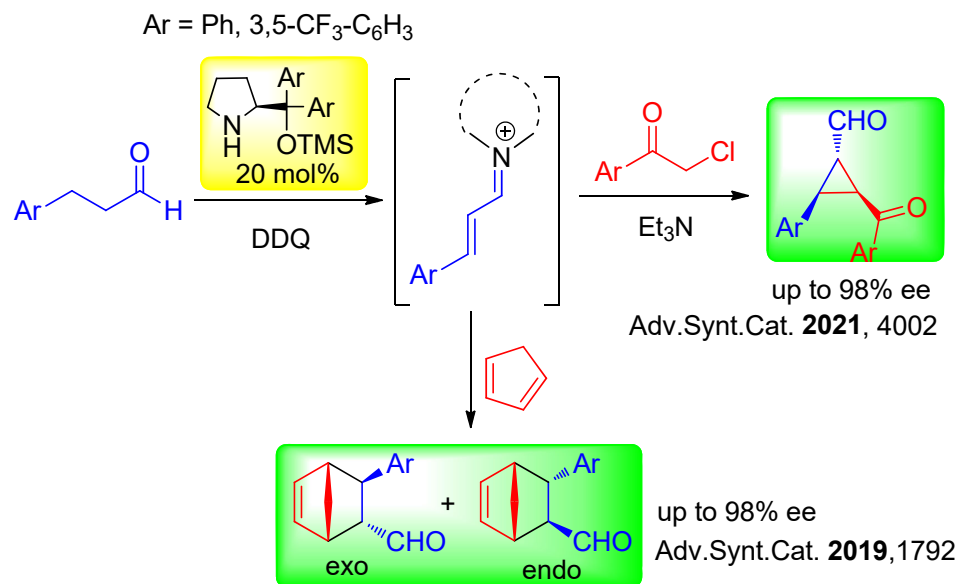
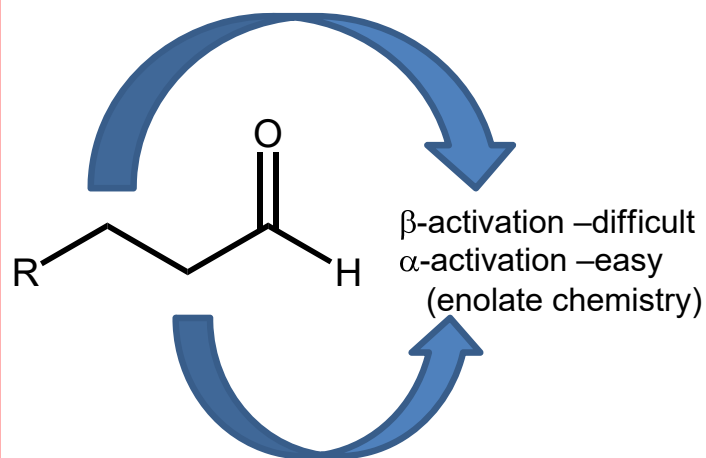
## Application of chromatography in development of bioactive molecules



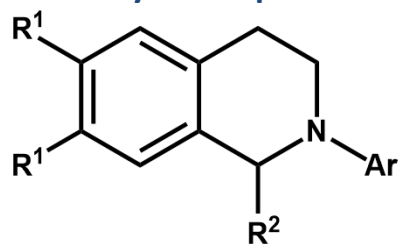
QSAR, QSRR, QSPR, PCA, HCA

# Organocatalysis and microfluidics

## Aldehydes

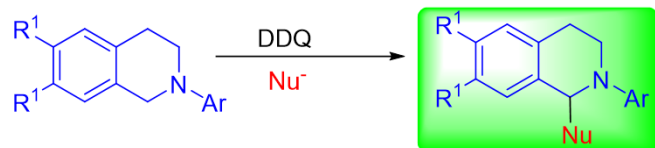


## Tetrahydroisoquinolines



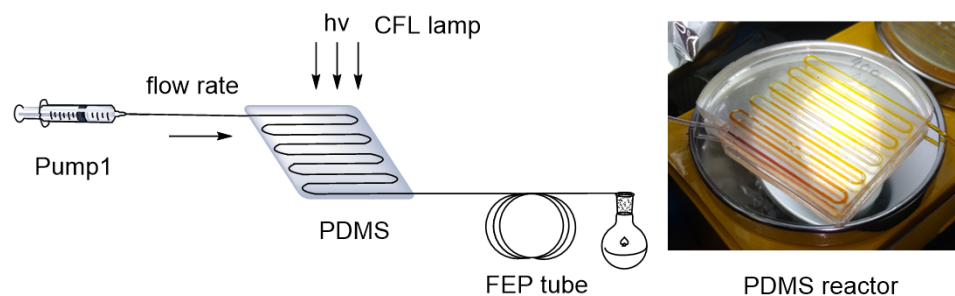
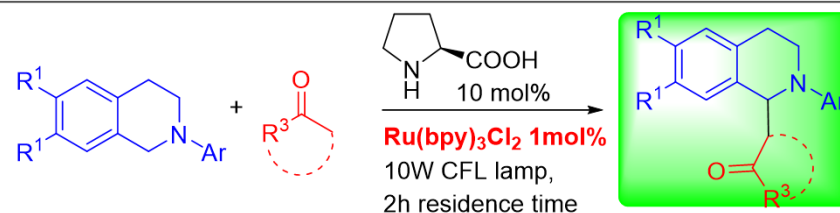
DNAse I inhibitors, Anticholinergic activity

Organic, single electron oxidation reagents



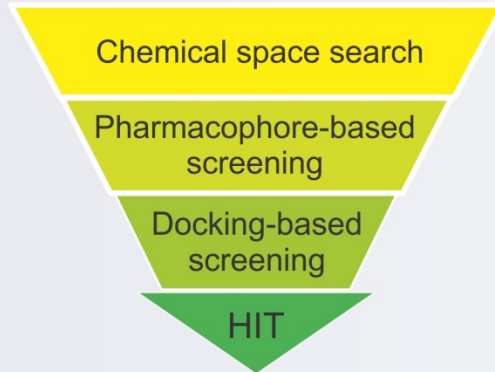
Org.Biomol.Chem. **2019**, 6420

## Microreactor synthesis of functionalized THIQs



# Development of new, potential CNS targeting drugs

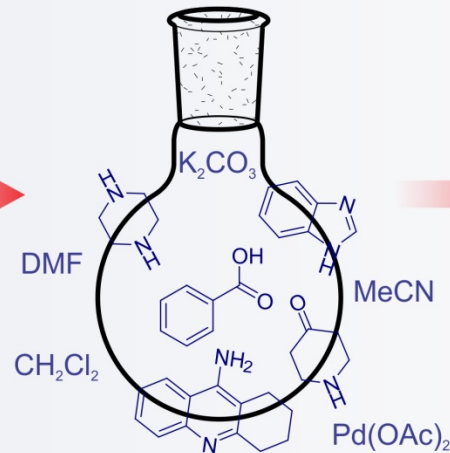
## Computationally Aided Drug Design



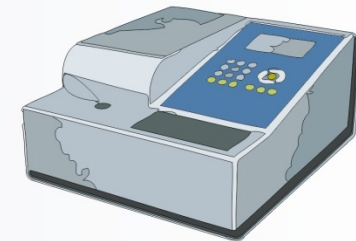
## Potential New Drugs

- Serotonergic and dopaminergic system acting ligands
- $\mu$ -Opioid receptor agonists
- $\beta$ -Amyloid aggregation inhibitors
- Cholinesterase inhibitors
- MAO-B inhibitors

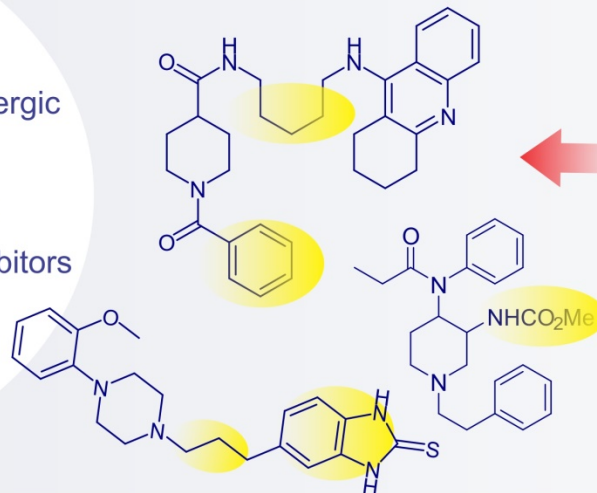
## Synthesis



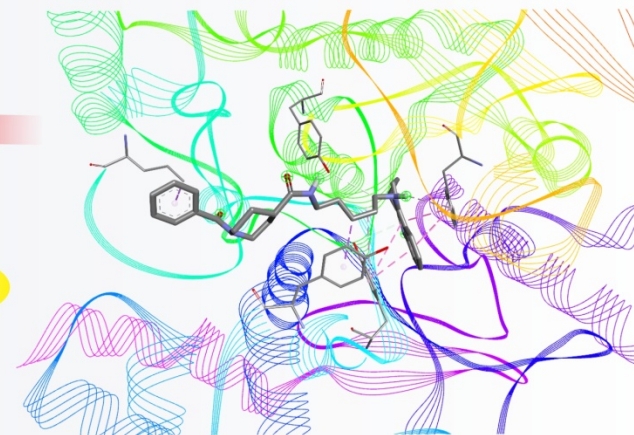
## Pharmacological Evaluation



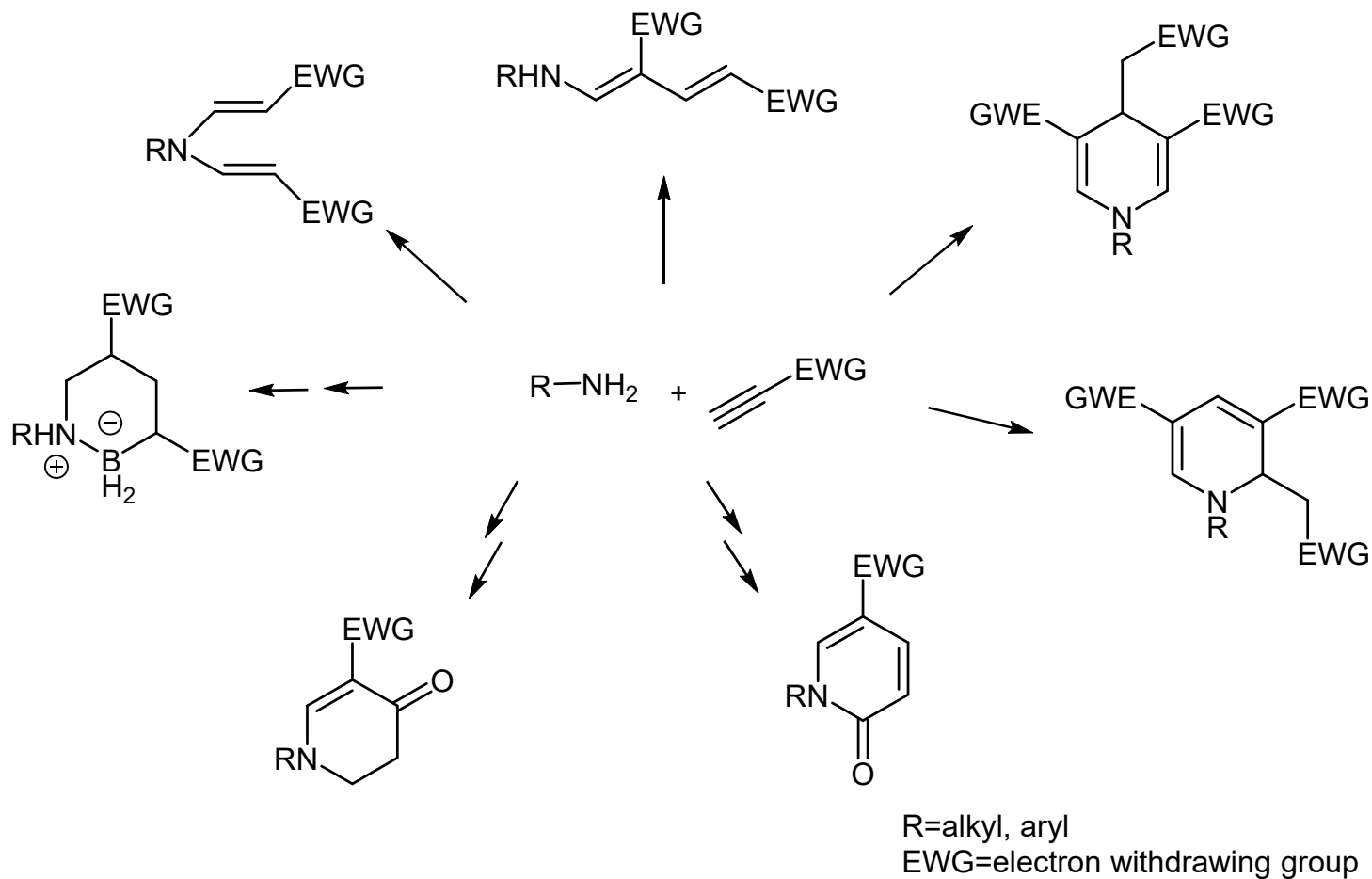
## Lead Optimization



## Ligand-Target Interactions



## Development of methodology for synthesis of heterocyclic molecules



Reactions of amines with activated acetylenic compounds on a solid phase:  
fine tuning of chemo- and regioselectivity in simple synthesis of various heterocycles.