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Advanced Materials Research Institute

Science Bridges China Research Profile

Name: **Kamyar Afarinkia**

Position: **Head of medicinal Chemistry and Senior Lecturer**

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SUMMARY OF MY RELEVANT RESEARCH AREAS:

Synthetic and medicinal chemistry, Molecular modelling, Drug discovery, Novel polymer synthesis, and Design and synthesis of peptidomimetic foldamers.

合成和药物化学，分子模拟，药物发现，新型聚合物的合成，肽类折叠体的设计和合成.

Primary Research interests:

Synthetic and medicinal chemistry: My group has widely published on the use of pyran-2-ones, pyridones and 1,4-oxazinones as dienes in Diels-Alder reactions and the application of the methodology for the synthesis of natural products and medicinally important targets. We are also active in the use of chiral organophosphorus reagents in synthesis as well as synthesis of a number of natural products.

Molecular modeling: We have extensive expertise in homology modeling of GPCR receptors, virtual high-throughput screening and identification of molecular probes that interact with these receptors

Drug discovery: Using our dual expertise in medicinal chemistry and molecular modeling, we have discovered a number of small molecule antagonists of chemotactic receptors, including CXCR4 antagonist ICT5040, CCR7 antagonist ICT5888 and FPR-1 antagonist ICT5100, that are being developed at ICT as new anti-metastatic and anti-inflammatory agents.

Novel polymer synthesis: Our group has developed methods for the synthesis of co-polymers of poly lactic acid with a view of modifying the bulk properties of this ecologically important and valuable material.

Design and synthesis of peptidomimetic foldamers: Related to our work on new polymers, we have developed synthetic tools to access

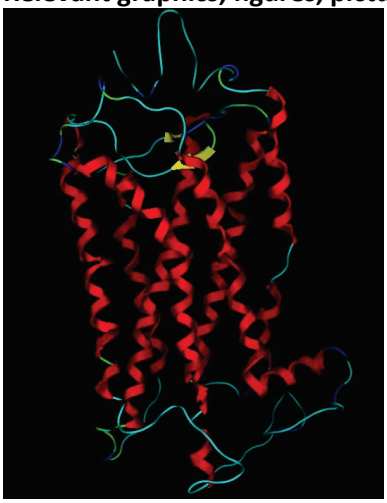
Topics in which you would like to develop collaborative research:

Study and applications of new eco-friendly materials, application of phosphatise activated drug agents.

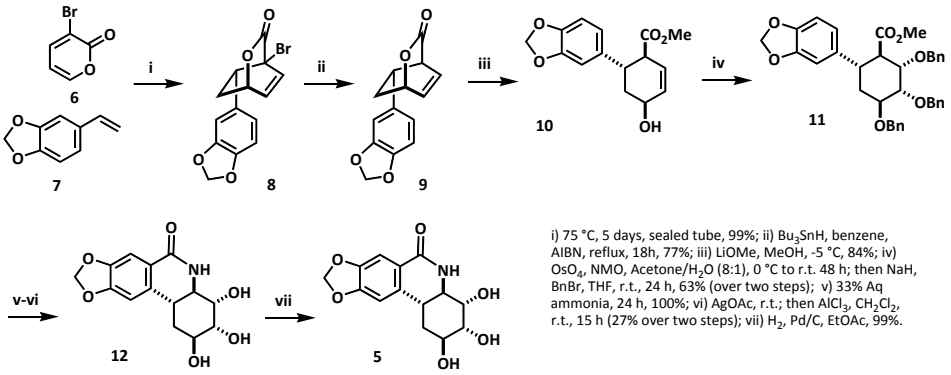
Relevant existing collaborations (academic/clinical/commercial) inside or outside China.

GlaxoSmithKline: Unravelling the role of dietary phytosterols in cancer; GlaxoSmithKline: Role of SHIP-1 in cancer and inflammation;

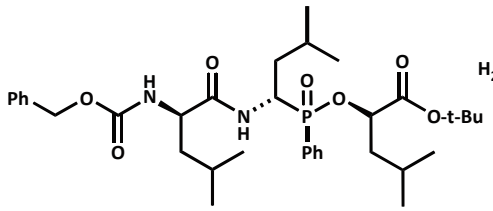
Relevant graphics, figures, pictures:



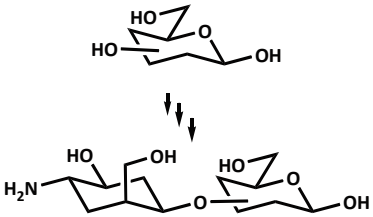
Homology model of FPR-1 based on bovine rhodopsin (unpublished)



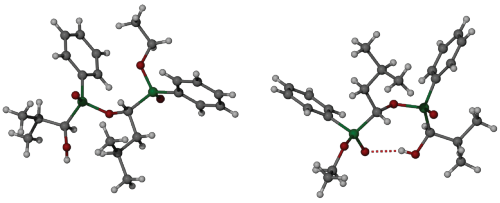
The most concise synthesis of proapoptotic modulator 7-deoxy-*trans*-dihydronarciclasine (*Synlett*, 1940-1944, **2007**)



A peptidomimetic trimer (unpublished)



Glycomic approach to drug discovery (Org Lett, 5564-5566, **2010**)



Control of intramolecular H-bonding by a P stereogenic center (Org Biomol. Chem., 600-606, **2010**)

Publications and other outputs relevant to your interest in this programme (up to 5)

For a complete list see Google Scholar profile: http://scholar.google.co.uk/citations?user=8indfyIAAAAJ&hl=en

Vinader, V.; **Afarinkia, K.** "A Beginner's Guide to Chemokines" *Future Medicinal Chemistry*, **7**, 845-852, (**2012**).

Vinader, V.; Al-Saraireh, Y.; Wiggins, H. L.; Rappoport, J. Z.; Shnyder, S. D.; Patterson L. H.; **Afarinkia, K.** "An Agarose Spot Chemotaxis Assay for Chemokine Receptor Antagonists", *Journal of Pharmacological and Toxicological Methods*, **64**, 213-216, (**2011**).

Afarinkia, K.; Royappa, M.; Scowen, I. J.; Steed, J. W.; Yu, H-w. "A synthesis of oligomeric α-hydroxy phenylphosphinates and a study of the conformational preferences of the dimers" *Organic and Biological Chemistry*, 600-606. (**2010**).

Afarinkia, K.; Haji Abdullahi, M.; Scowen I. J. "A Synthesis of Carbasugar-Sugar Pseudodisaccharides via a Cycloaddition-Cycloreversion Reaction of 2(H)-Pyran-2-ones" *Organic Letters*, **12**, 5564-5566, (**2010**).

Anderson, K. M.; **Afarinkia, K.**; Yu, H. W., Goeta, A. E.; Steed, J. W. "When Z '=2 is better than Z '=1: supramolecular centrosymmetric hydrogen-bonded dimers in chiral systems" *Crystal Growth and Design*, **6**, 2109-2113, (**2006**).