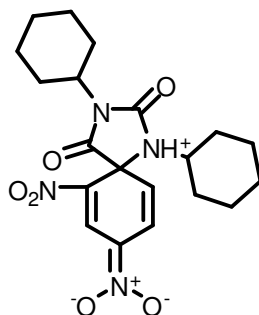


## Meisenheimers, Microwaves and Molecules: Creating Functional Chemicals

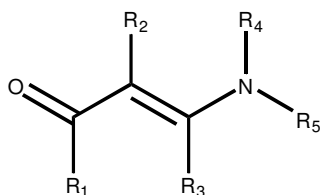
Adrian Culf  
Atlantic Cancer Research Institute  
Moncton, NB.

Dalhousie University, February 2, 12-1pm

This seminar will highlight some of the medicinal chemistry work which is being carried out at ACRI towards new chemicals that can influence cancer biological pathways. Spirobicyclic molecules are emerging as new “privileged” pharmacophoric structures with application to a diverse range of human disease states. We are exploring spirocycles synthesized *via* dearomatizing intramolecular nucleophilic addition for spirohydantoin and spiroamides.



Tertiary enaminones ( $\beta$ -aminovinyl ketones) have been prepared using a novel one-step and highly atom economical synthesis. Extensive NMR and molecular quantum mechanical calculations have defined the structure conclusively. Four of these compounds have shown anti-proliferative activity on NIH's gold-standard NCI-60 human cancer cell culture panel.



Deprotection of permanent amide groups in synthetic DNA methodology is slow in comparison to the phosphoramidite synthesis cycle time for this biomacromolecule. We have used the convenience of superheating with microwave assistance to substantially reduce this final deprotection step, facilitating DNA production.

- 1) **A.S. Culf**, U. Werner-Zwanziger, K.N. Robertson, B.Chen, M. Cuperlovic-Culf, D.A. Barnett, R.J. Ouellette “Polymeric and polymer-ligated SpiroBicyclic Zwitterionic Janovsky complexes” *Tetrahedron Letters*. **50**, 2762-2766 (2009)
- 2) **A.S. Culf**, M. Cuperlovic-Culf, R.J. Ouellette “Chemical Exchange in Novel SpiroBicyclic Zwitterionic Janovsky Complexes using Dynamic  $^1\text{H}$  NMR Spectroscopy” *Magnetic Resonance in Chemistry* **47** 158-164 (2009)
- 3) **A.S. Culf**, M. Cuperlovic-Culf, M. LaFlamme, B.J. Tardiff, R.J. Ouellette “Fast Microwave Assisted Deprotection of Synthetic Oligodeoxyribonucleotides using Standard Reagents” *Oligonucleotides* **18** (1), 81-92, (2008)