

## Milan Urban

Cell: +420 605 402 332 Work: +420 585 632 197 email: milan.urban@gmail.com	<b>Professional Address:</b> IMTM, Faculty of Medicine and Dentistry, Palacky University in Olomouc, Hnevotinska 5, 779 00 Olomouc, Czech Republic
--	---

## EDUCATION

---

- 2005, Nov. **Ph.D. Organic chemistry:** Charles University, Prague - Czech Republic Faculty of Science, Dept. of Organic Chemistry; Advisor: Dr. Jan Sarek.
- 2000, May **MS. Organic chemistry:** Charles University, Prague - Czech Republic Faculty of Science, Dept. of Organic Chemistry; Advisor: Prof. Jiri Klinot.

## RESEARCH EXPERIENCE

---

**Senior Researcher: Sept. 2012 – Present.** Palacky University, Olomouc, Czech Republic. I am starting a research group to study chemistry and mechanisms of action of biologically active natural compounds.

### Research Associate - Postdoc:

**Sept. 2006 – Aug. 2012:** University of Colorado, Boulder, **advisor: Prof. M. Caruthers.** I investigated the possibility of preparing of RNA with a backbone modified by borane using modified nucleosides and a variety of protection groups. Borane modified RNAs have the potential to be more stable under physiological conditions than their non-modified counterparts. The boronated RNA's hydrophobicity would potentially allow it to easily penetrate cellular membranes which would prove advantageous for its use as microRNAs or siRNAs. **Advisor: Prof. R. Kuchta.** I used modified nucleosides to study the mechanism of how human and herpes primases discriminate between correct and incorrect nucleotide. I have also purified the recombinant proteins - primases from *e. coli* and baculovirus-infected insect cells.

### Researcher:

**Apr. 2005 – Aug. 2006:** Inst. of Org. Chem. and Biochem., CAS; Dept. of Org. Syntheses for Biomedical Applications, **advisor: Dr. M. Hocek.** I synthesized a group novel substituted pyridine C-nucleosides using reactions of organometals (prepared from dibromopyridines) with protected chlorodeoxyribose and their consequent Pd catalyzed couplings with various organometals and boronic acids. These compounds were used in studies of DNA polymerases in the group of Dr. Romesberg at the Scripps Research Inst. (San Diego, USA).

### Undergraduate and Graduate Research:

**Ph.D. (2005) and M.S. Thesis (2000):** Charles University, Prague, Czech Republic – Faculty of Science, Dept. of Org. Chem., **advisors: Prof. J. Klinot and Dr. J. Sarek.**  
I synthesized over 80 novel lupane triterpenoids starting with betulinic acid and betuline extracted from birch and plane tree bark. I used classical methods of organic synthesis and analysis. The cytotoxic activities of these compounds were studied in the research group of Dr. Hajduch in the Lab. of Experiment. Medicine (Olomouc, Czech Republic).

## SCIENTIFIC and TECHNICAL SKILLS

---

**Chemistry and instruments:** Synthesis of nucleoside analogs, C-nucleosides, triphosphates, and oligonucleotides, synthesis of natural compounds (triterpenoids and steroids), heterocyclic chemistry, multi-step organic synthesis, organometallic chemistry and cross-coupling reactions, enzymology, kinetic analysis, cell culture, NMR (<sup>1</sup>H, <sup>13</sup>C, <sup>31</sup>P, 2D), HPLC, IR, MS (MALDI, ESI, LC-ESI), UV-vis, automatic DNA-synthesizer, gel-electrophoresis, affinity chromatography, ion exchange chromatography, Typhoon variable mode imager, liquid scintillation counter.

## TEACHING

---

**2001-2005** Chemical Informatics (Institute of Chemical Technology, Prague); Seminars of Organic Chemistry (Charles University, Prague – Faculty of Science); Laboratory Technique (Charles University, Prague – Faculty of Science).

**2012-2013** Fundamentals in Bioorganic Chemistry; Bioorganic Chemistry; Development of Virostatics and Cytostatics; Modern Aspects in Drug Development, Chemical Biology; Information Sources in Chemical Science (Classes, Palacky University, Faculty of Science).

## PUBLICATIONS

---

24 original, reviewed and impacted articles, one chapter in a book, one international patent, and multiple conference proceedings at national and international conferences.

1. Vlk M., **Urban M.**, Elbert T., Sarek J.: *J. Radioanal. Nucl. Chem.* **2013**, 298, 1149.
2. Biedermann D., **Urban M.**, Budesinsky M., Kvasnica M., Sarek J.: *J. Fluorine Chem.* **2013**, 148, 30.
3. Olson A. C., Patro J. N., **Urban M.**, Kuchta R. D.: *J. Am. Chem. Soc.* **2013**, 135, 1205.
4. **Urban M.**, Vlk M., Dzubak P., Hajduch M., Sarek J.: *Bioorg. Med. Chem.* **2012**, 20, 3666.
5. Lund T. J., Cavanaugh N. A., Joubert N., **Urban M.**, Patro J. N., Hocek M., Kuchta R. D.: *Biochemistry* **2011**, 50, 7243.
6. **PATENT**: R.D. Kuchta, G. Stengel, B.W. Purse and **M. Urban**, *Compositions, methods and uses for nucleotide analogs*. WO 2011/034895 A1.
7. **BOOK CHAPTER**: *The Potential of Triterpenoids in the Treatment of Melanoma*. Sarek J., Kvasnica M., Vlk M., **Urban M.**, Dzubak P., Hajduch M.: pp. 125 – 158. In *Research on Melanoma – A Glimpse into Current Directions and Future Trends*, edited by Mandi Murph, InTech, Rijeka, Croatia, **2011**.
7. Johnson L. M., Hanson R. R., **Urban M.**, Kuchta R. D., Bowman C. N.: *Biomacromolecules* **2010**, 11, 1133.
8. **Urban M.**, Joubert N., Purse B. W., Hocek M., Kuchta R. D.: *Biochemistry* **2010**, 49, 727.
9. Stengel G., **Urban M.**, Purse B. W., Kuchta R. D.: *Analytical Chemistry* **2010**, 82, 1082.
10. Stengel G., **Urban M.**, Purse B. W., Kuchta R. D.: *Analytical Chemistry* **2009**, 81, 9079.
11. **Urban M.**, Joubert N., Hocek M., Alexander R. E., Kuchta R. D.: *Biochemistry* **2009**, 48, 10866.
12. Cavanaugh N. A., Ramirez-Aguilar K. A., **Urban M.**, Kuchta R. D.: *Biochemistry* **2009**, 48, 10199.
13. Patro J. N., **Urban M.**, Kuchta R. D.: *Biochemistry* **2009**, 48, 8271.
14. Stengel G., Purse B. W., Wilhelmsson M. L., **Urban M.**, Kuchta R. D.: *Biochemistry* **2009**, 48, 7547.
15. Trostler M., Delier A., Beckmann J., **Urban M.**, Patro J. N., Spratt T. E., Beese L. S., Kuchta R. D.: *Biochemistry* **2009**, 48, 4633.
16. Cavanaugh N. A., **Urban M.**, Beckmann J., Spratt T. E., Kuchta R. D.: *Biochemistry* **2009**, 48, 3554.
17. Patro J. N., **Urban M.**, Kuchta R. D.: *Biochemistry* **2009**, 48, 180.
18. Joubert N., **Urban M.**, Pohl R., Hocek M.: *Synthesis-Stuttgart* **2008**, 1918.
19. **Urban M.**, Sarek J., Kvasnica M., Tislerova I., Hajduch M.: *J. Nat. Prod.* **2007**, 70, 526.
20. **Urban M.**, Klinot J., Tislerova I., Biedermann D., Hajduch M., Cisarova I., Sarek J.: *Synthesis-Stuttgart* **2006**, 3979.
21. **Urban M.**, Pohl R., Klepetarova B., Hocek M.: *J. Org. Chem.* **2006**, 71, 7322.
22. Dzubak P., Hajduch M., Vydra D., Hustova A., Kvasnica M., Biedermann D., Markova L., **Urban M.**, Sarek J.: *Nat. Prod. Rep.* **2006**, 23, 394.
23. Sarek J., Kvasnica M., **Urban M.**, Klinot J., Hajduch M.: *Bioorg. Med. Chem. Lett.* **2005**, 15, 4196.
24. **Urban M.**, Sarek J., Tislerova I., Dzubak P., Hajduch M.: *Bioorg. Med. Chem.* **2005**, 13, 5527.
25. **Urban M.**, Sarek J., Klinot J., Korinkova G., Hajduch M.: *J. Nat. Prod.* **2004**, 67, 1100.