



ÚOCHB AV ČR

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Supervisor's evaluation and report
on PhD thesis
Development of new glycosylation methods for synthesis of nucleosides

author: **A. Michael Downey**

Michael Downey did his PhD work under my supervision from 2013 till 2017. He originally started a different project but as a side-project he discovered a novel glycosylation reaction which was so interesting and important on itself that it prompted me to change his PhD topic and focus entirely on further development of this reaction and turn it into the general methodology for synthesis of nucleosides. He fully succeeded in that and in the first part, in collaboration with the Mahrwald group from HU Berlin, developed a new Mitsunobu protocol for the synthesis of nucleosides. Reaction of unprotected ribose gave pyranosides, whereas the use of 5-*O*-trityl-ribose followed by acidic treatment gave desired ribofuranoside nucleosides in one pot. By deeper study of the mechanism and by further optimization he developed an improved method, which is more general and efficient for the synthesis of ribonucleosides with various nucleobases and also enables synthesis of different 5'-modified nucleosides. The work has been published in two papers (*Org. Lett.* and *Chem. Eur. J.*) and he also published a review on glycosylation strategies without protection groups.

Mike is a very creative and talented chemist. He worked very independently and with a lot of enthusiasm. He is also very good in writing up papers. In my opinion, he has a very promising potential for his future independent career. Based on his excellent results, he has been accepted for postdoc to the group of Peter Seeberger at the MPI for Colloids and Interfaces in Potsdam.

I am happy to conclude that A. M. Downey fulfilled all the requirements for the PhD title and I recommend his thesis for defense and further proceeding to be awarded the PhD degree.

V Praze 6. 12. 2017


Prof. Ing. Michal Hocek, CSc., DSc.