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Head of Research Team in Bioorganic and Medicinal Chemistry

Supervisor's evaluation and report
on PhD thesis

Synthesis and studies of modified DNA: (i) development of DNA targeting molecular scissors and (ii) competitive enzymatic incorporation of base-modified nucleotides

author: **Alessandro Panattoni**

Alessandro Panattoni did his PhD work under my supervision from 2015 till 2020. He was working on two projects. Within an ITN project funded by the EU he worked on the development of TFO-conjugates with copper complexes for sequence selective cleavage of DNA. He developed nucleotide building blocks with superior substrate activities for DNA polymerases and reactivity in Cu-catalyzed click reactions. Then he prepared different oligonucleotides bearing the Cu-complexes at different positions and studied the DNA cleavage which proceeded with good selectivity but only moderate conversions. In the second part of his thesis, he systematically studied competitive enzymatic incorporation of base-modified nucleotides to DNA in presence of their natural counterpart. The findings were very important for in vivo applications of DNA labelling through incorporation of modified nucleotides. He published three papers, two of them as the first author and one as the second author.

Alessandro is a talented and hardworking chemist. He worked very independently and with a lot of enthusiasm. He gained experience both in organic synthesis and in biochemistry.

I am happy to conclude that Alessandro Panattoni 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 1. 9. 2020

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