INSTITUTE OF MICROBIOLOGY
of the Czech Academy of Sciences, v. v. i.
Center for Nanobiology and Structural Biology

SUPERVISORS'S RECOMMENDATION

Nove Hrady, 11.3.2020

To whom it may concern

DEEPIKA UTTAM KALE was working on her PhD thesis under my supervision since spring 2015 on the structure/function relationships of yeast (*S. cerevisiae* and *Komagataella phaffii/pastoris*) cation translocation systems (mainly Trk1). The aim of her project(s) was providing the basis for improving and extending the atomic scale model for Trks that was developed in our lab in collaboration with Rudi Ettrich's group previously. Her main focus was on elucidating the role of the so called "long hydrophilic loop" (LHL), a huge cytoplasmic part of Trk1, comprising more than half of Trk1's residues. She found that LHL surprisingly influence the ion selectivity of Trk1. Deepika also invested an enormous amount of work in attempts to purify Trk1s (full proteins or parts of it) for subsequent crystallisation and crystallography. Even if these efforts not yet lead to sufficient protein amounts, her work set the basis for further optimised and up scaled trials towards this aim. For her work Deepika had to apply and learn a broad range of molecular biological, biochemical, microscopical and physiological methods. During her work, she was also intensely collaborating with theoretically/computationally working colleagues and thus learned to understand and interpret modelling and molecular dynamic simulation data.

Deepika was quickly and independently learning all methods that were new for her and able to impart her knowledge to students (in summer schools, practicals and REU projects). During her PhD studies, she had two research and training stays in Rainer Schindls lab at the Medical University of Graz where she learned electrophysiological techniques (patch clamp) and helped in the adaptation of a genetically encoded fluorescent K^+ sensor for real time monitoring of intracellular K^+ concentration changes in yeast cells. Both extending her already huge repertoire of methods. I am sure that she will in future find her own place within the scientific community.

I can confirm that Deepika Kale certainly fulfilled all pre-requirements for finishing her PhD studies. She published her work in an impacted paper and another manuscript on which she will also be first author is in preparation. She passed her state exam, all courses within her PhD studies and participated in teaching at annual summer schools. I believe that the research presented in her thesis will convince the reviewers and the doctoral commission that Deepika Kale fulfils all demands for obtaining a PhD degree. I certainly recommend her for being awarded the PhD degree.

With kind regards,

(Dr. Jost Ludwig)

Zamek 136
373 33 Nove Hrady

tel.: +420 776 484 098
e-mail: jost.ludwig@nh.cas.cz
www.nh.cas.cz/index.php?node=783