

## Stevenson Fund report

### Research stay at California Institute of Technology – Viktoria Urland



Thanks to the Stevenson Fund I got the opportunity to spend two very exciting months at Caltech in the research group of Prof. Jacqueline Barton. As a visiting PhD student, I was involved in a project on 2<sup>nd</sup> generation Rhodium metalloinsertors that show selective binding towards mismatched DNA. The binding mode is characterized by insertion into the DNA from the minor groove and ejection of both mismatched bases. Our goal was to crystallize a very potent 2<sup>nd</sup> generation Rhodium metalloinsertor in the presence of a 12 bp long DNA which contains two mismatches.

Being part of the group of Prof. Barton, who pioneered in the field of metalloinsertor complexes and who stands out as a highly esteemed and distinguished female scientist, I really got the chance to immerse myself in metal complex based anticancer drug development. The first part of my project involved a six-step synthesis and several HPLC purifications including my first chiral column chromatography. This allowed me to deepen my skills in chemical synthesis and to expand my knowledge of purification methods, especially the purification of chiral molecules. Furthermore, I learnt how to set up crystallization plates in order to screen for the right crystallization conditions. In addition, I was also trained in culturing various mismatch repair deficient and proficient colorectal cancer cell lines. Through the so-called MTT assay – a very common assay to read out the cell viability – we assessed the cytotoxicity of our rhodium complexes. The effect of treatment with our compound was significantly more pronounced in the mismatch repair deficient cell line. At any time, I was supervised by very competent PhD students and Postdocs who never hesitated to answer all my questions and who created a very pleasant working environment.

Being a world-class academic institution Caltech is undoubtedly home to very passionate and dedicated scientists. I very much enjoyed discussions with my lab mates on various scientific topics on a daily basis and I learnt a lot during our group meetings. The departmental chemistry seminars gave me a great insight into the research of other Caltech groups and distinguished speakers from other universities. In this context, I also need to mention the introductory talks for new graduate students by various group leaders from the chemistry department who gave a summary of their current research ranging from natural product synthesis to non-canonical amino acids in protein design. Furthermore, I also attended a teaching conference which was very rich in inspiring sessions on effective teaching strategies, innovative technology and careers in teaching. This conference was of great value for my further TA duties at Imperial College. On top of this, I got the chance to explore Southern California by attending various activities of Caltech Societies encompassing a hiking trip to the Griffith observatory with astonishing views over Los Angeles. Overall, I leave Pasadena with lifelong memories, a better understanding of cutting edge research, very enriching encounters with brilliant scientists, beautiful impressions of California and the desire to come back in the near future.