

Personal report for the GIANT research internship

Duration of the stay: 10.01.2026 – 24.03.2026

Research area: FN-MC 2 in the group of Prof. Dr. Vijayan

By: Johannes Albert, Chemistry from JMU Würzburg

Laboratory work

I joined the research group of Prof. Vinesh Vijayan to study the mechanism of tau protein fibril formation. Abnormal deposition of these fibrils is associated with several neurodegenerative diseases, including Alzheimer's disease. The mechanism of tau polymerization was investigated using NMR-Spectroscopy. The Spectrometer and the associated workspace are shown in Figure 1A. During my stay, Maria Greve, a PhD associated with the IRTG2991 from the group of Prof. Claudia Höbartner, was also working in Prof. Vinesh Vijayan's group. In addition to NMR-Spectroscopy, I also gained substantial experience in protein expression and purification. The experimental laboratory is shown in Figure 1B.

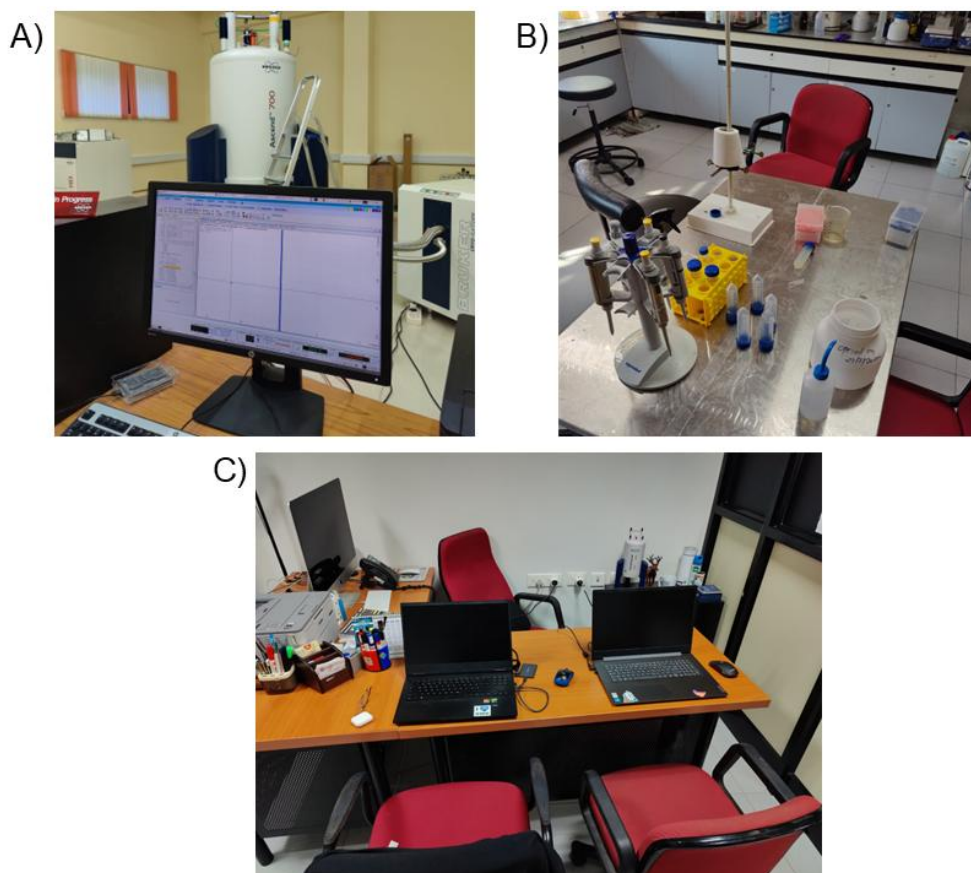


Figure 1: Pictures of the different workplaces: A) NMR-Spectrometer, B) Laboratory, C) Office.

Both of us were kindly supplied with shared office space, shown in Figure 1C, which was used for the evaluation of the acquired NMR-spectroscopy data.

The diverse aspects of this project enabled me to gain hands-on experience with a variety of experimental techniques.

Free time

The campus offers a wide range of sports facilities, as well as several recreational areas where cultural festivals are frequently held. In addition, numerous cafes and restaurants on campus provide opportunities to experience the rich diversity of Indian cuisine. Outside of campus, a variety of activities are available in the surrounding areas and in the city of Thiruvananthapuram. The region around the campus features several hiking trails and hill stations that are easily accessible by bus, such as the Ponmudi hill station and the Vazhvanthol Waterfalls, both shown in Figure 2.

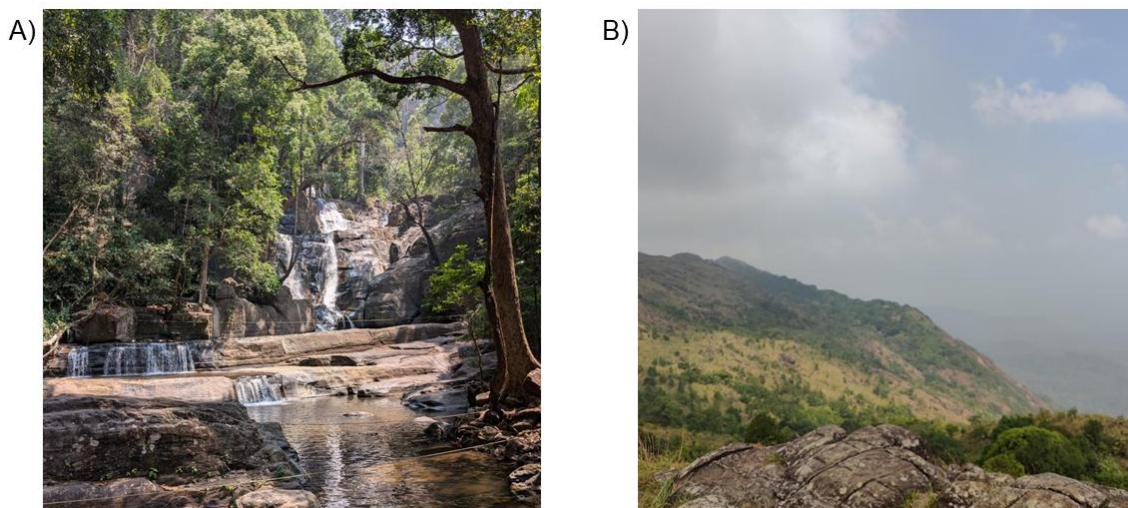


Figure 2: Pictures of the different activities around campus: A) Vazhvanthol Waterfalls, B) Ponmudi hill station.

The city of Thiruvananthapuram offers diverse attractions, including Kovalam Beach and the Lulu mall, shown in Figure 3. Furthermore, the region offers countless opportunities for sightseeing tours that can be done on the weekends including Varkala, Cochi and Munnar.



Figure 3: A) Picture of Entrance of Lulu Mall. B) Picture of Kovalam Beach.

Accommodation

I, along with another GIANT student and the several IRTG2991 members, was provided with a room in the Visitors Forest Retreat (VFR) guest house. The accommodation included a spacious, well-maintained and air-conditioned room with a balcony shown in Figure 4.



Figure 4: Pictures of the guest room in the Visitors Forest Retreat.

In the VFR meals were provided for breakfast, lunch and dinner; however, they were not always consistently available, requiring occasional spontaneous adjustments to plans. During conferences, occasionally meals were not provided, but we were graciously invited to join the conference dinner upon inquiry.

Teaching activities

During my stay at IISER TVM I was able to attend various lectures and workshops. One example is the workshop on Cryo-EM for the IRTG2991 held by Ruchi Anand, shown in Figure 5A. Furthermore, I had the opportunity to attend the 6th Frontiers Symposium in Chemistry held at IISER TVM, where I was able to gain insight into current research topics and learn more about the research at IISER TVM.

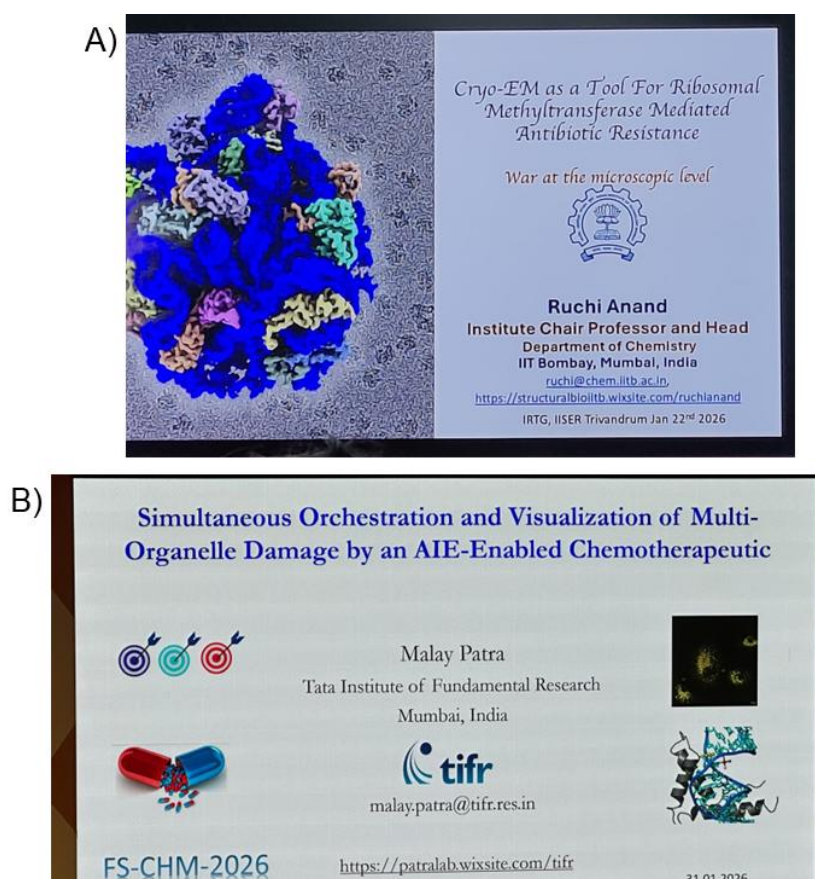


Figure 5: A) Title slide of the lecture held by Prof. Ruchi Anand. B) Title slide of the lecture held by Prof. Malay Patra.

Cultural exchange

The other German students and I were fortunate to visit India during the festival season, which gave us the opportunity to participate in celebrations such as Pongal. Through these experiences, we learned about traditional Indian culture, including customary attire and dances (Figure 6). I also had the opportunity to perform in a dance performance with my working group, which made the experience even more memorable. Beyond the festivals themselves, engaging in active conversations with Indian students allowed us to gain deeper insights into Indian cuisine, traditions, and everyday life, while also sharing aspects of German culture in return. Experiencing India's rich culture and warm hospitality is something I am deeply grateful for and will always remember.

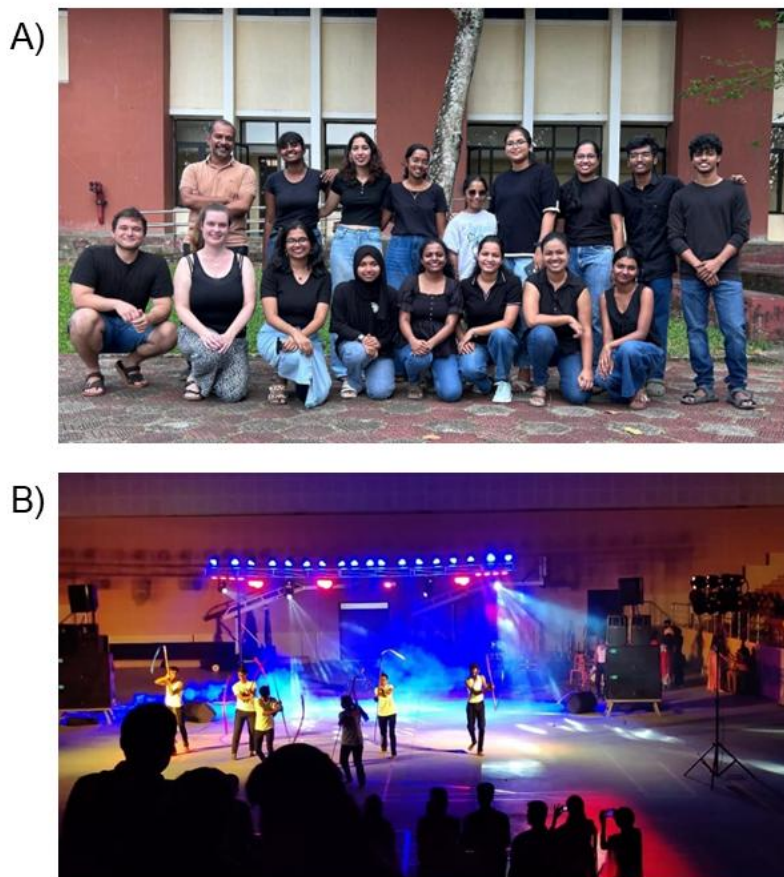


Figure 6: A) Picture of the working group of Prof. Dr. Vinesh Vijayan before the dance performance. B) Traditional dance performance at the Pongal festival.

Conclusion

I enjoyed my time at IISER TVM very much and gained valuable knowledge about NMR-spectroscopy and protein-related research in the working group of Prof. Vinesh

Vijayan. Beyond the academic aspects, I was able to experience the Indian culture closely and actively take part in the cultural exchange between India and Germany. This combination of scientific training and cultural insight made my stay truly unique, and I can highly recommend it to anyone interested in the research taking place at IISER TVM, the Indian culture and the intercultural exchange between India and Germany.