

ISME Scholar Program Fund report

To attend the International FISH course

September 25-29, 2023

Investigating the application of Fluorescence In Situ Hybridization (FISH) on zooplankton

Dr Kathryn Morrissey – Postdoctoral researcher, Rhodes University, South Africa

Overview of the activity

The course offered a thorough initiation into the basics of fluorescence in situ hybridization (FISH)-based microscopy, emphasizing the identification, quantification, and co-localization of microorganisms. During the hands-on sessions, we delved into the essential elements of FISH, utilizing rRNA-targeted oligonucleotide probes. Notably, I had the exclusive chance to apply FISH techniques to my personal samples, further enriching my practical understanding of the methodology.

Lectures covered

- Principles of fluorescence *in situ* hybridization
- Application of FISH in microbial ecology
- Confocal laser scanning microscopy (CLSM) and computer-assisted image analysis
- Analysis of microbial community structure and function by FISH
- Novel FISH methods (CARD-FISH, FISH-MAR, Raman-FISH, DOPE-FISH, Click-FISH)
- *In silico* probe design and evaluation
- Participants' seminar (5-10 minutes each)

Laboratory course

- Introduction into FISH with selected pure cultures and environmental samples
- Practical work with own samples

Research and personal career outcomes

The course provided valuable insights, offering me a wealth of essential considerations for my future endeavours. It served as a beneficial exercise, prompting a re-evaluation of our approach and influencing our scientific conclusions. Working with chitin proved particularly useful, enhancing my comprehension of its implications on microscopy methods.

Achieved outcomes:

- Deepened comprehension of the molecular principles underlying FISH and diverse FISH-based techniques
- Acquired practical experience handling zooplankton, navigating challenges associated with chitin-based samples
- Formulated a precise working protocol tailored to my specific samples
- Explored and experimented with various strategies to enhance image quality
- Enhanced understanding of bacterial distribution on zooplankton surfaces, sparking innovative experiment ideas

- Cultivated a positive relationship with course tutors, establishing a resource for ongoing guidance
- Established valuable connections with individuals potentially beneficial for both the penguin and zooplankton projects in the future.

In conclusion, participating in this course proved to be incredibly valuable. The insights gained will significantly contribute to furthering my research. Specifically, the methodologies learned hold great potential for application in several ongoing projects. This is particularly relevant in the context of identifying the spatial distribution of bacteria in known and unknown niches. The knowledge and hands-on experience acquired during the course provided me with knowledge and confidence in using this techniques to enhance the precision and depth of my labs research methodologies.

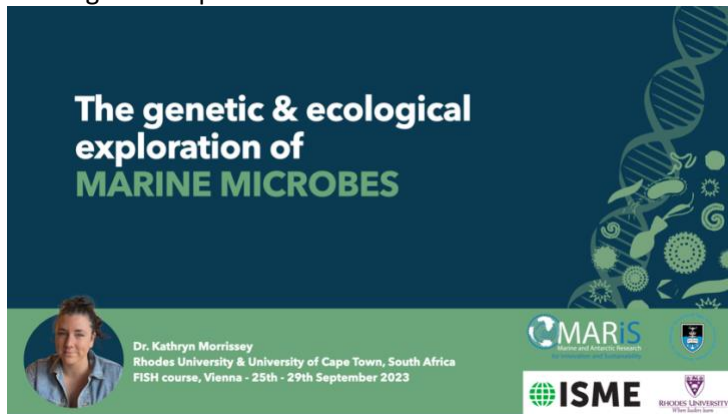
ISME funding

Funding from ISME was instrumental in my ability to attend this course. This funding was used to purchase flight tickets from Cape Town, South Africa to Vienna, Austria; as well as to pay for my Visa fee and processing from VFS global.

Promoting and highlighting ISME

During the course we had the opportunity to present a participant seminar, where I displayed the ISME logo and also invited the participants to attend ISME19 in Cape Town. I spoke individually to all the participants and encouraged them to apply to come to ISME19. I also posted a few Instagram stories about what we did day-to-day about the event also acknowledging ISME's funding.

Starting slide of presentation:



End slide of presentation:

