Dear members and friends of the CRC 1461,

we hope you are having a great summer! This newsletter is a littler longer than you are used to as it contains a travel report on the fieldtrip to the Everglades and Puerto Rico recently performed by subproject A2 – Enjoy!

Women in Science and Engineering Breakfast (WSB)

Within the framework of the International Intelligent Materials 2022, the 2nd Women in Science and Engineering Breakfast took place on 01. July 2022. The concept of this interactive event included differently themed tables covering various family and career topics. In the different groups, experienced female experts from research and the research environment provided young scientists with their knowledge and experience on one of the following topics:

Compatibility of an academic career with a family (Bridget Murphy, CAU; Svetlana Mintova, Normandy University, France)

Women in start-up companies (Christina Wittke, myStandards GmbH)

Industry or academia? (Iris Hayes, Phi-Stone AG; Berit Zeller-Plumhoff, Helmholtz Zentrum Hereon Geesthacht)

Alternative career paths in academia (Sonja Reich, CAU; Eva Sittig, CAU)

Career promotion after the PhD/Post-Doc: EU and German funding opportunities (Lisa Lugert, CAU).

Impression from the round tables at the 2nd Women in Science and Engineering Breakfast at Hotel Atlantic, Kiel.

The event was well received and participants enjoyed the informal setting and relaxed atmosphere with lively discussions and exchange of information.

(Text and photo by Tina Kerby.)

Upcoming Events

Jul. 28, 2022, 16:00 h CRC 1461 Colloquium: *Brain state dependent stimulus processing and perception* – Julian Keil (CAU)

Aug. 18 – 19, 2022 ATM B3/B4 (CAU Kiel): *Introduction to dynamical systems on networks*

Aug. 29, 2022 ATM B2 (CAU Kiel): *Circuit Design*

Aug. 31 - Sep. 02, 2022 **Summer School** (NEZ Kollhorst, Kiel, agenda now available in OLAT!)

Sep. 05 – 08, 2022 **CRC International Workshop** (CAU and Color Line)

Members of the CRC
A2 – A Fieldtrip for Jellyfishing

Part 1 - Everglades, Miami, Florida

Greetings from project A2. As you recall, we are working on the visual nervous system of the box jellyfish *Tripedalia cystophora*. To illuminate different properties of the nervous system, it is beneficial to have genetically modified organisms readily available. These organisms could for example contain reporter-coupled proteins that enable visualization of cell type specific calcium fluxes or voltage changes. To generate stable modified organisms, all modifications must occur in the germline. Unfortunately, we are currently unable to culture mature female jellyfish in our facility, and it is therefore not possible to perform the necessary transfections and modifications on fertilised eggs or early embryos.

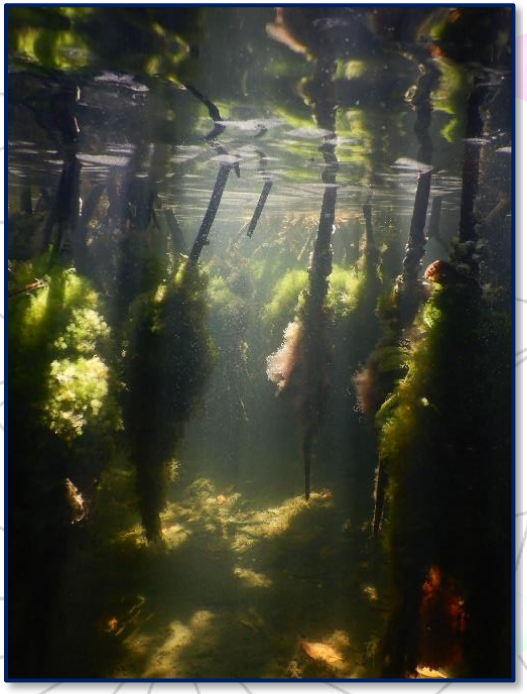
Tripedalia cystophora in its natural habitat. The gonads can be clearly seen as white "stripes". (*Photo by Allison Irwin*).

The natural habitat of *Tripedalia cystophora* lies in the Caribbeans, more specifically around Puerto Rico and the Dominican Republic. There are reported sightings of *Tripedalia* in the Gulf of Mexico near Everglades City, U.S.A.

The main goals of our field trip were to:

- Acquire healthy and mature female jellyfish
- Acquire mature male jellyfish or extracted sperm.
- Study biotic and abiotic properties of the natural habitat (salinity, microbiota, temperature, composition of micro-nutrients)
- Transfect early-stage embryos
- Verify sightings of *Tripedalia* near Everglades City

Our trip started on the 12th of June in Frankfurt with a flight to Madrid, followed by a flight to Miami. Arriving almost twelve hours later, we drove two hours to Everglades City, where we were staying in small motel. We were accompanied by Prof. Dr. Anders Lydik Garm from the University of Copenhagen and his Postdoc, Allison Irwin. The following day was used to assess the characteristics of the surroundings and look for suitable habitats where jellyfish might be found. By pure chance Prof. Garm found a single jellyfish drifting in the Ranger Station harbour – most likely flushed from its primary habitat somewhere in the unknown. Having the previous sightings of *Tripedalia* confirmed, the only thing missing to identify the primary habitat in the mangrove creeks, was a boat. Unfortunately, Everglades City is a small town focussed on tourism and we were visiting off-season, so finding a captain or a rental boat proved to be quite challenging. After quite some time we were able to arrange for a captain to accommodate our needs.



Natural habitat of *T. cystophora*. The roots of the red mangrove trees block the passage of light and cause the formation of light shafts, where the animals gather and hunt. (*Photo by Allison Irwin*).

Upon tardy arrival, a local captain in his seventies took us out to sea. Unfortunately, our captain (Oh captain!) had never heard of, or seen any, jellyfish in the mangroves and did not know of any spots where they could be located. Blessed by a never-ending stream of stories and anecdotes from our captain, Prof. Garm and Dr. Bielecki checked the map for any places with suitable conditions for *Tripedalia*. After checking several spots, traumatizing a lot of dolphins and destroying a lot of mangrove trees, we decided that it would be better to arrange for a boat ourselves and pursue a gentler approach. After returning to the city, we were told where we could rent a boat without a captain and settled for this. While checking the available boats, we were greeted by a small alligator who seemed to be quite interested in our group and decided to watch us from a safe distance. After dinner we planned our route for the next day using google earth's satellite data and went to sleep.

In high spirits and eager to finally find a larger population of T. c, we went out to the sea around 0700 on Tuesday and studied the locations discussed in the night before. And who would've thought -without crashing into the mangroves or getting stuck in the soil we were finally able to find a primary habitat of *Tripedalia* in the Everglades! The box jellyfish were fairly big compared to the ones in our facility and Prof. Garm decided to collect some specimens for genetic analysis. After being able to confirm the sightings of *Tripedalia cystophora* in the South Florida region, we were greeted by a local news team who asked Prof. Garm for an interview. Perhaps the locals may know a little bit more about the cnidarians in their area in the future – only time will tell.

Our flight to Puerto Rico was scheduled early the next day and so we went to bed early and left Everglades City on Wednesday the 15th.

Part 2 - Puerto Rico

We arrived San Juan, the capital of Puerto Rico, in the afternoon and made headway to our final destination, the small village La Parguera, some 172 km away. We arrived at the house around midnight and immediately turned on all working ACs – Puerto Rico is hot and humid. After settling in, we went to bed to get some rest.

Sargassum-infested mangrove cove in Puerto Rico. (*Photo by Allison Irwin*).

The Universitario de Mayaguez operates a small institute for Marine Science on the island of Magueyes, where we set up a small field laboratory. After being introduced to the local scientists and our personal captains, we brought our equipment and settled in a small room in the basement of the building. We were joined by the group of Professor Oakley from the University of California, Santa Barbara. Their main scientific interest revolves around the bioluminescent ostracods conveniently available off the coast of La Parguera. The following days, we were able to acquire a great number of box jellyfish and see a lot of beautiful phenomena of the underwater world. Unfortunately, Climate Change has also affected the Caribbean – due to the rising temperature, the severity and size of algae blooms increases steadily. The natural habitat of the box jellyfish was contaminated and disturbed by a huge amount of Sargassum, a seaweed, thus decreasing the fitness of the population. The natural habitat of the jellyfish was contaminated and disturbed by a huge amount of *Sargassum*, a seaweed, thus decreasing the fitness of the population.

We tried to transfect pregnant female *Tripedalia* with reporter plasmids and fixed jellyfish to conduct further research in our own labs, while Prof. Oakley's group prepared animals for genomic sequencing. On our last day in Puerto Rico (20th), we collected as many (supposedly) healthy box jellyfish as possible to bring home. We transported them using thermos flasks, hoping that the temperature of the water would remain high enough to increase chance of survival. To our dismay, the adult animals did not survive the trip. However, Dr. Bielecki was able to save some of the eggs contained within the dead females, nurture them and get them to grow into larvae and primary polyps – tedious and time-consuming work. Let's hope that the new polyps will grow into healthy medusae and reach fertility – and thereby enable us to create stable transfected animals.

(Text by Jan Freiberg.)

Last but not least…

We hope you enjoyed this newsletter and might even consider to send us a contribution yourself 😊

CRC 1461 - Publication Performance	
Journal papers (peer-reviewed)	21
Conference papers (peer-reviewed)	8
Conference contributions	37
Total	**66**

Another quick reminder: Please continue to send us your papers and conference contributions to keep the stats up to date!

Cheers, Sonja, Leonie and Hermann