

LifeWatchGreece Hellenic Centre for Marine Research



- 400 CPU cores & 20 nodes
- up to 640GB RAM on a single node
- 40Gbps Infiniband interconnection



more than 200
state-of-the-art
software suites
for research analyses



more than 50 users,
20 countries
and 30 projects



NGS data analyses (de novo
assembly, annotation, SNP
discovery, phylogeny, statistics and
more)



PEMA

a pipeline for eDNA metabarcoding analysis





Marine Biodiversity



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— DNA (genomics, genetics, metagenomics, phylogenomics, metabarcoding, population genomics)

- Area 52 lab metabarcoding (Haris Zafeiropoulos, IMBBC, HCMR) [View](#)
- Microbial community diversity in the lagoonal complex of Amvrakikos Gulf (Ionian Sea, Western Greece) (Dr. Christina Pavloudi, IMMBC, HCMR) [View](#)
- Eukaryotic Microbial Plankton in the Western Levantine Basin (Eastern Mediterranean Sea) (Dr. Iliana Santi, IO, HCMR) [View](#)
- High nutrient addition of different intensities alters plankton composition and the biotic relationships among plankton species (Dr. Iliana Santi, IO, HCMR) [View](#)
- SPELMED: Population Genomics analysis of the small pelagic fish stocks in the Northwestern Mediterranean Sea (Dr. Costas Tsigenopoulos) [View](#)
- Genome analysis of *Pseudomonas* strains isolated from Kolumbo, Santorini. Panos Bravakos [View](#)
- Hybrid assembly and genome analysis of an epitheliocystis related agent. Maria Chiara Cascarano Phd student [View](#)
- Phylogenomics investigation of sparids (Teleostei: Spariformes) using high-quality proteomes highlights the importance of taxon sampling (Dr. Tereza Manousaki) [View](#)
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Institute of Marine Biology, Biotechnology and Aquaculture - HCMR

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MOUNT



Containerization



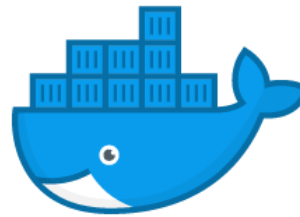
PEMA

a pipeline for eDNA metabarcoding analysis

<https://github.com/hariszaf/pema>

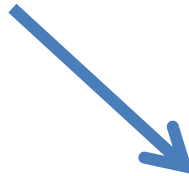


<https://singularity-hub.org/collections/2295>



docker

<https://hub.docker.com/r/hariszaf/pema>



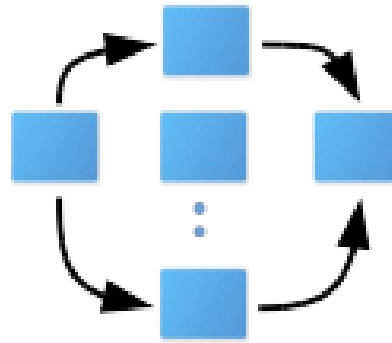
Containerization



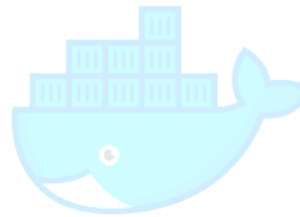
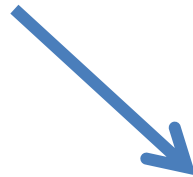
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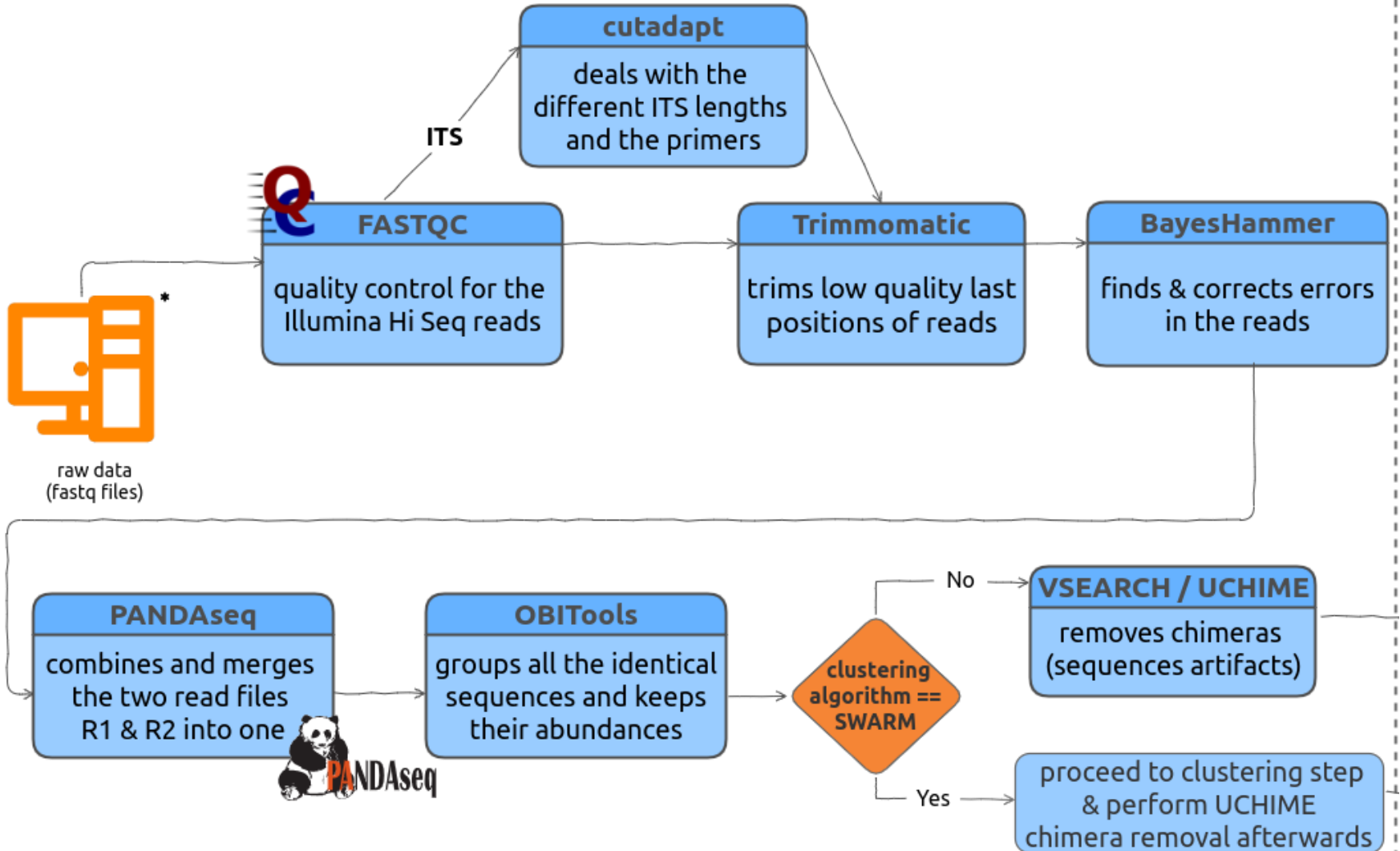
docker

<https://hub.docker.com/r/hariszaf/pema>

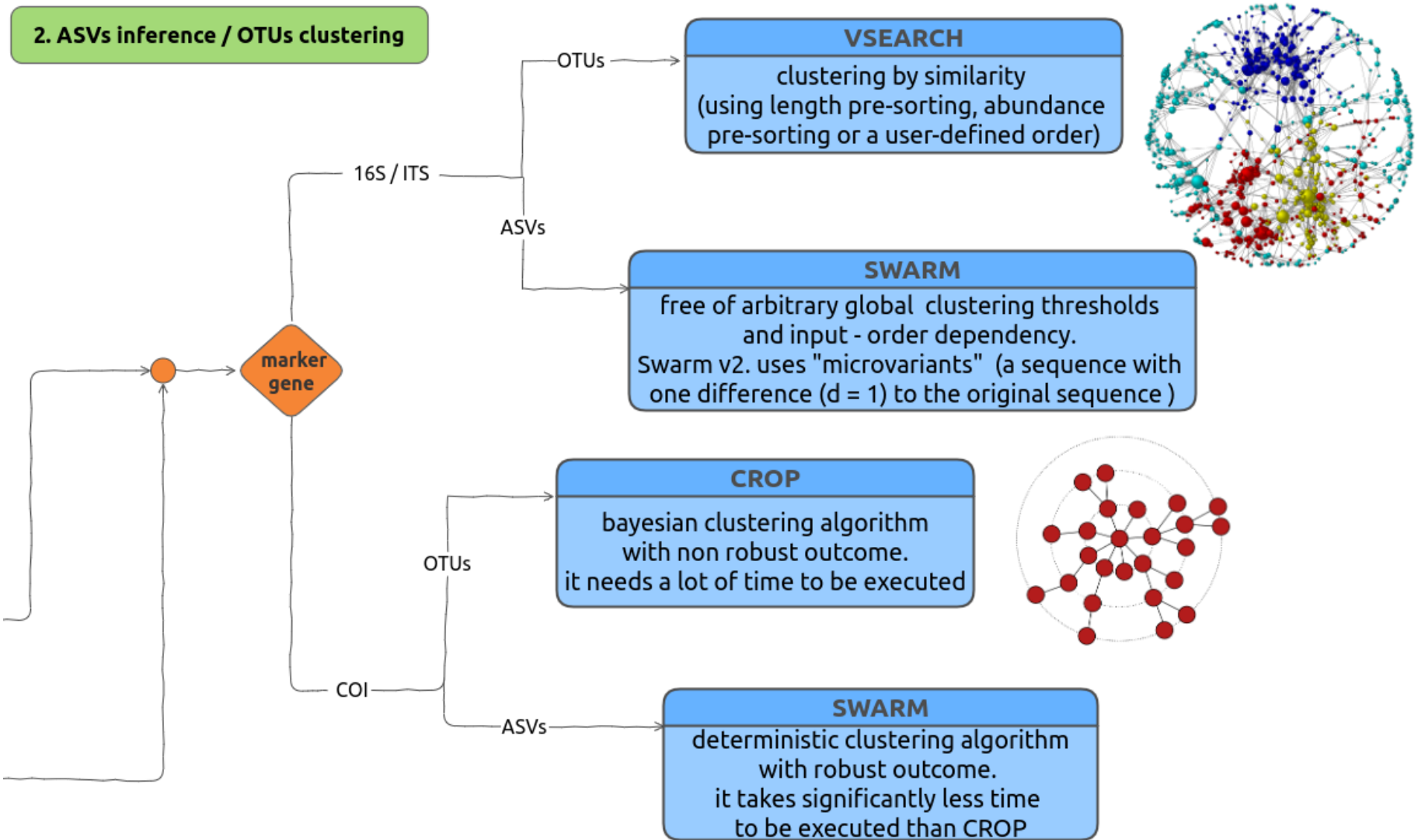


PEMA in a nutshell

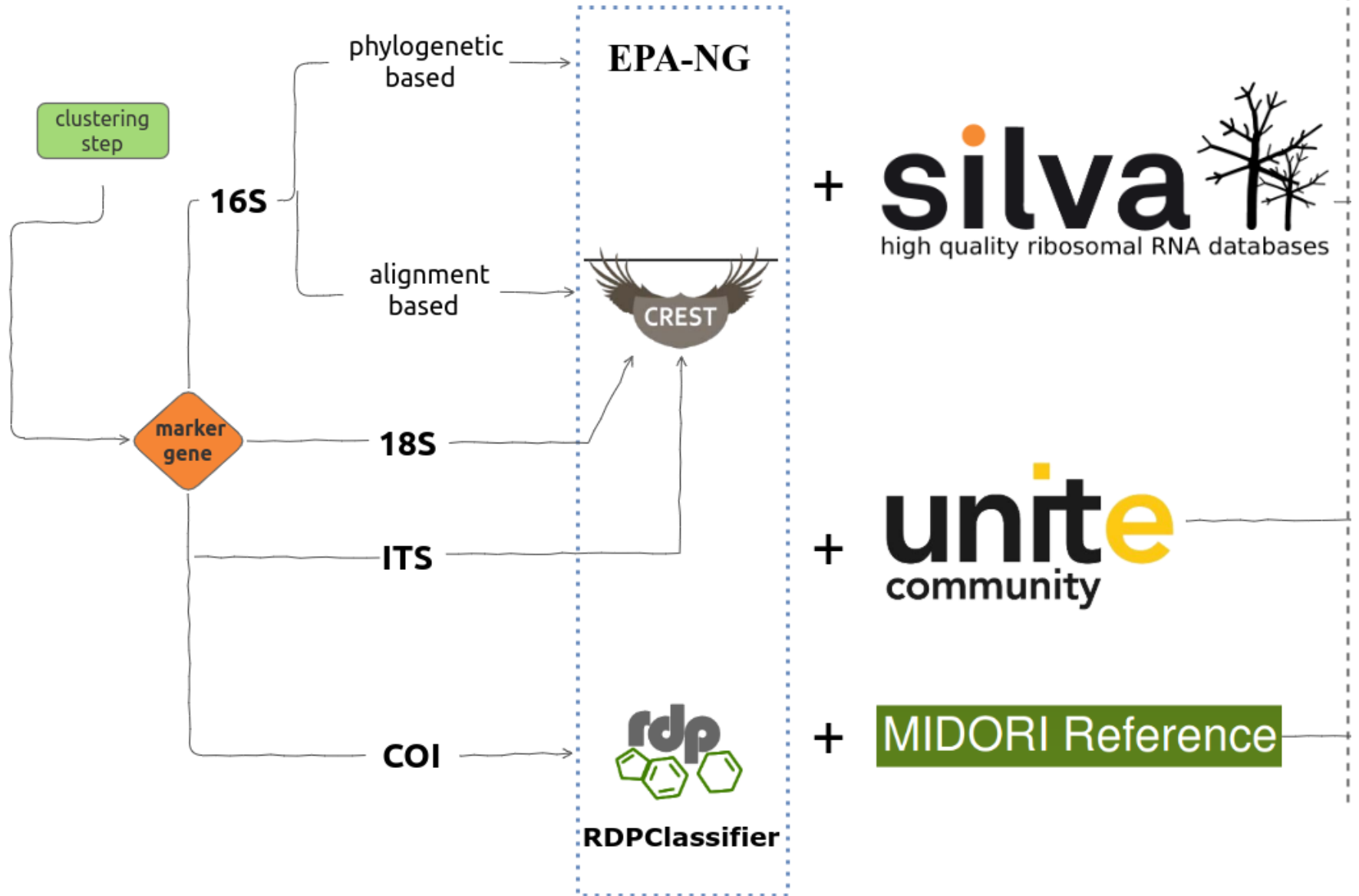
1. quality control & preprocess of fastq files



2. ASVs inference / OTUs clustering



3. methods for taxonomic assignment



4. output and biodiversity analysis



 package
phyloseq



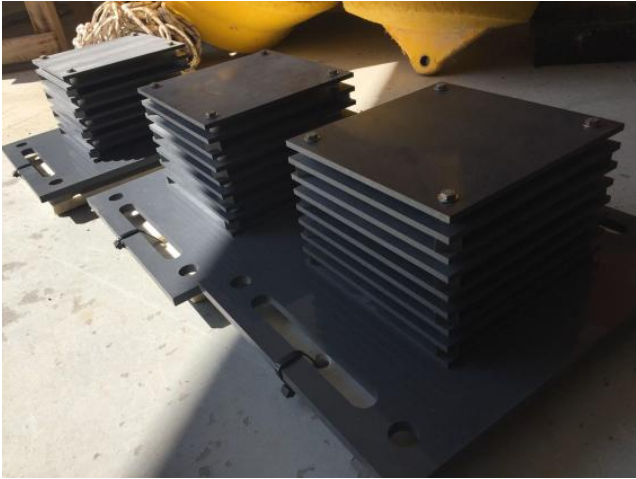
(M)OTU / ASV tables
and per sample output
(abundance included)

Images of PEMA
are available on:



Illustrations with asterisk are from the Noun Project

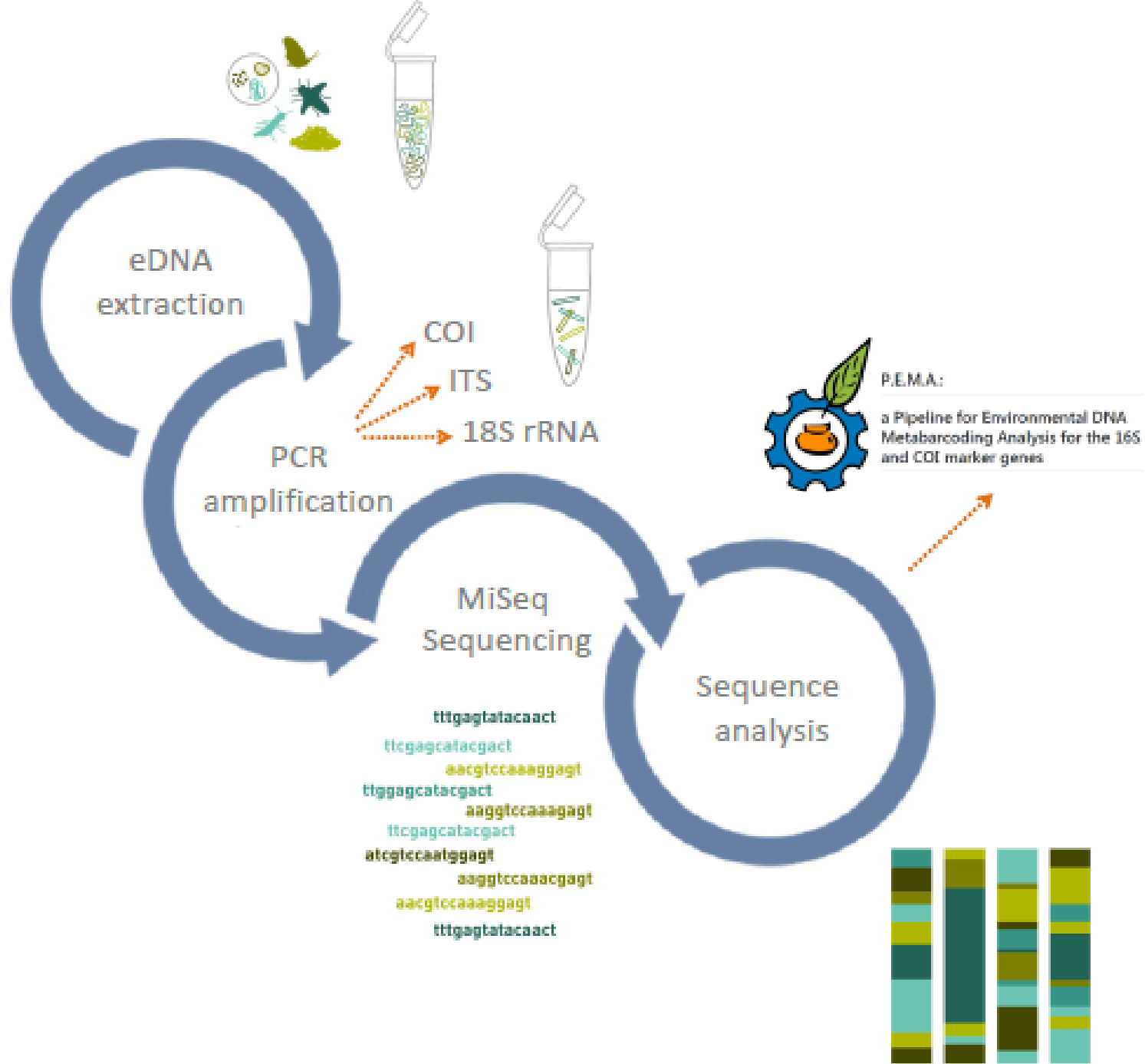
Artificial Reef Monitoring Structures (ARMS)



ARMS assembled (before deployment)



ARMS deployed in one of the chosen locations



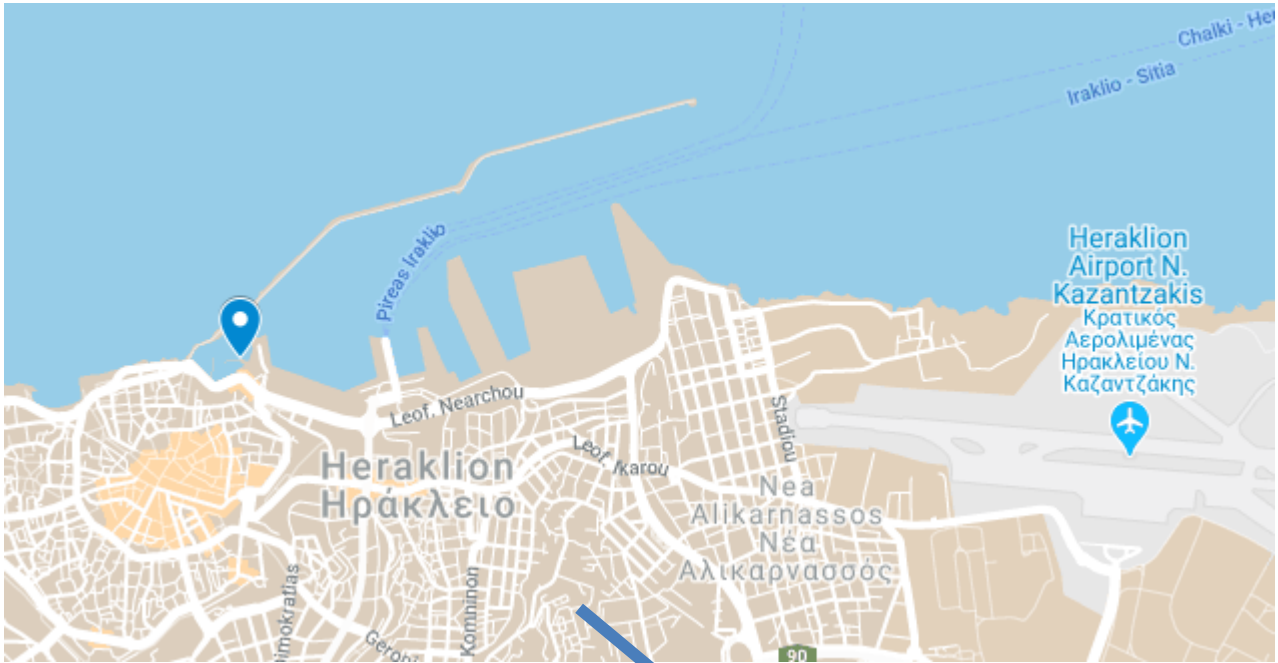
Success story!

**First record of the nudibranch *Anteaeolidiella lurana* (Ev. Marcus & Er. Marcus, 1967)
in Greek waters**

Vasilis GEROVASILEIOU¹, Christina PAVLOUDI¹, Francisco SEDANO^{1,2}

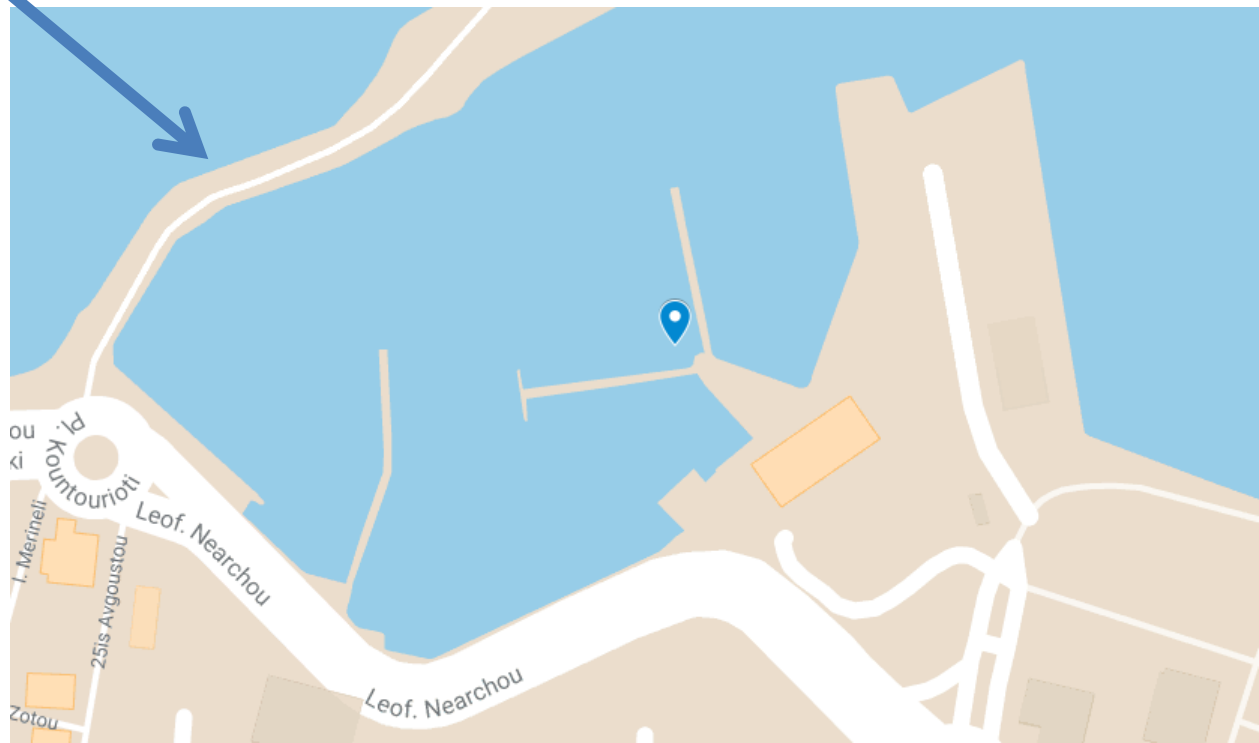
¹ Institute of Marine Biology, Biotechnology and Aquaculture, Hellenic Centre for Marine Research, Heraklion, Greece

² Laboratorio de Biología Marina, Departamento de Zoología, Universidad de Sevilla, Spain



1st deployment:
28/9/2018-28/1/2019

2nd deployment:
12/6/2019-11/10/2019



1st deployment:

28/9/2018-28/1/2019

→ molecular evidence (eDNA) for the presence of *Anteaeolidiella lurana*

→ *How can we be sure?*

Only three of the accepted *Anteaeolidiella* species (*A. indica*, *A. ireneae*, and *A. orientalis*) do not have sequence data associated with them.

All the rest (8) species, including *A. lurana*, have COI sequences in the **MIDORI reference database**, which was used for the taxonomic assignment.

The degree of certainty for the identification based on the eDNA is high.

2nd deployment:
12/6/2019-11/10/2019

→ photographic documentation



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