

## Developing molecular pipelines to provide samples for barcoding and other analyses

Sampling the deep is both costly and time-consuming, and often yield very few (or just one) specimens of each species, so the specimens have to be documented carefully along every step. In this talk is outlined a proposed pipeline to maximize the outcome from every sample taken. Simply barcoding the animals might give some information about distribution and change if samples are taken at different localities and at different times, but to be able to do any predictions at all we need knowledge about what animals are actually down there. From their morphology we might draw some conclusions, e.g. where they live, what they eat and how, and what demands they might have on their surroundings to be able to survive and reproduce. For this, live sorting of samples onboard the ship is invaluable, as is a good photography equipment to document morphology of live animals. Photography also documents colours, which might be important for species identification but is often lost during preservation. After photographing, the specimens should preferably be fixed in ethanol at once and kept in fridge or freezer. For small soft-bodied animals (less than 1-1,5 mm), 80% ethanol is enough for preservation. This lower ethanol concentration is good for keeping the morphology of the animals while still strong enough for future DNA extractions. Before extracting DNA, the animals are again photographed under a stereo microscope, measured, and small details documented using light microscope. A portion of the specimen is then taken for DNA extractions, if possible leaving enough material for further morphology studies (e.g. SEM) and to keep for archiving in voucher collections. After sequencing and comparing sequences (preferably from more than one gene), the animals might be sorted into species groups and, using the collected morphological information, be given a tentative identification. If the animals were complete and enough morphology remained, they can be properly described or identified, and voucher or type material can be assigned from the remains of the specimens.