

Aug 01, 2023

Environmental DNA (eDNA) Sample Shipping Protocol

DOI

<https://dx.doi.org/10.17504/protocols.io.dm6gp38jpvzp/v1>



Meghan M. Shea¹, Alexandria Boehm¹

¹Stanford University



Meghan M. Shea

Stanford University

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.dm6gp38jpvzp/v1>

Protocol Citation: Meghan M. Shea, Alexandria Boehm 2023. Environmental DNA (eDNA) Sample Shipping Protocol. protocols.io <https://dx.doi.org/10.17504/protocols.io.dm6gp38jpvzp/v1>

Manuscript citation:

Shea, M. M., & Boehm, A. B. (2024). Environmental DNA metabarcoding differentiates between micro-habitats within the rocky intertidal. *Environmental DNA*, 6(2), e521. <https://doi.org/10.1002/edn3.521>



License: This is an open access protocol distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

We use this protocol and it's working

Created: June 19, 2023

Last Modified: August 01, 2023

Protocol Integer ID: 83661

Keywords: PCR amplicons, eDNA, shipping, environmental DNA, environmental dna, sample shipping protocol, dna, georgia genomic, edna sample, mailing pcr amplicon, pcr protocol, successful shipping protocol, guidance on successful shipping protocol, bioinformatics core, pcr, protocol, relevant to other shipping context, pcr amplicon, other shipping context, edna

Abstract

This is a protocol for mailing PCR amplicons generated from eDNA samples, specifically via the following earlier sampling & filtration, extraction, and PCR protocols, e.g.:

Protocol



NAME

Coastal Environmental DNA Sampling & Gravity Filtration Protocol

CREATED BY

Meghan M. Shea

Preview

Protocol



NAME

DNA Extraction Protocol from Sterivex Filters

CREATED BY

Meghan M. Shea

Preview

Protocol



NAME

Environmental DNA (eDNA) COI PCR Amplification and Gel Electrophoresis Protocol

CREATED BY

Meghan M. Shea

Preview

While this protocol was designed for mailing to the **Georgia Genomics and Bioinformatics Core**, the general principles may be relevant to other shipping contexts.

Acknowledgements & Attributions:

Thanks to Bradley B. Tolar for guidance on successful shipping protocols.

Image Attribution

Meghan M. Shea

Materials

General Laboratory Equipment:

Equipment	Specific Model Used
10% bleach solution in spray bottle	NA
>70% ethanol solution in spray bottle	NA
RNase Away solution in spray bottle	NA
20 µL multichannel pipette with sterile tips	Various
UV Crosslinker	UVP CL-1000 Ultraviolet Crosslinker
PCR Tube Holders	Various
Ice bin	Various
Parafilm	Various
Kimwipes	Various

Shipping Supplies:

Material	Amount Needed	Source	Link	Approx. Cost
96-well plate	1/96 samples	Applied Biosystems via ThermoFisher Scientific (4346906)	https://www.thermofisher.com/order/catalog/product/4346906	\$129/20 plates
Aluminum adhesive seal for 96-well plate	1/plate	Unknown	NA	Unknown
Cardboard	Enough to cover both sides of each plate	Various	NA	Unknown
Ziploc bags	Various	Various	NA	Unknown
Bubble wrap	Various	Various	NA	Unknown
Hard container for holding plates	Various	Various	NA	Unknown



	Material	Amount Needed	Source	Link	Approx. Cost
	Styrofoam cooler with associated outer cardboard box	1	Reagents previously shipped on ice	NA	Recycled

Preparing Samples for Shipping

- 1 Clean bench area with 10% bleach, 70% ethanol, and RNase Away

Note

Ideally, this should be a designated post-PCR bench area.

- 2 Wipe down 20 μ L multichannel pipette and several PCR tube holders with RNase away. Run in UV Crosslinker for 10 minutes on each side.
- 3 Wipe down ice bin with 10% bleach, 70% ethanol, and RNase Away, fill with ice, and add PCR products stored in 8-strip PCR tubes
- 4 Label all 96-well plates needed for storing samples accordingly
- 5 Being careful not to open PCR tubes directly over the 96-well plates, add 15 μ L of sample to each well using multichannel pipette, making sure you keep track of the orientation of how the plate was filled
- 6 Seal the plates carefully with aluminum adhesive seals
 - 6.1 Press around the edges of each well to make sure they are sealed
- 7 Parafilm around the edges of each plate
- 8 Wrap each plate in Kimwipes to absorb any condensation that occurs during shipping
- 9 Cut two pieces of cardboard that fit on either side of each plate; tape the cardboard around each plate to form a sandwich (to keep it from getting punctured while shipping)
- 10 Seal each plate in a new Ziploc bag and label accordingly



- 11 Bubble wrap around each plate and place in a hard container (cardboard freezer box, pipette tip box, etc.)
- 12 Seal hard container with tape and place in its own Ziploc bag; label accordingly
- 13 Place bagged box in a Styrofoam cooler that fits in an associated cardboard box and fill with ice packs
- 14 Tape Styrofoam cooler closed and secure it in the corresponding cardboard box

Note

If you need to include any order information or documents alongside the samples, don't forget to put them in the box here.

- 15 Store cardboard box at -20°C until ready to mail