

# Identifying Freshwater Zooplankton Using DNA Barcoding Technique

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DNA barcoding has emerged as a powerful approach for determining which species are present in an environment or sample. DNA barcoding has many advantages over traditional taxonomic approaches to identifying organisms, including use with any life stage, reliability, and no need for taxonomic expertise. The barcode library has expanded over the past decade to contain sequences of over 100,000 species, because the technique is affordable and easy to learn. DNA barcoding is increasingly common as course-embedded undergraduate research experiences. In this presentation, we described a DNA barcoding lab course offered as an honors add-on to our introductory animal biology class. The wet laboratory experience prepared freshmen for their own research projects and provides publication quality data useful in the research of many OSU faculty and as contributions to DNA barcoding libraries. We focused on identifying freshwater zooplankton, which are the basis for many aquatic food webs and common indicators of water quality. Students obtained plankton samples from scientists conducting research on invasive species and community structure, extracted DNA from individual zooplankton, PCR amplified the mitochondrial cytochrome oxidase subunit I (COI) gene, sent cleaned PCR products for sequencing, then searched a barcode library for the resulting sequences thus identifying the organisms.

**Keywords:** DNA barcoding, freshwater zooplankton, cytochrome oxidase subunit I (COI) gene

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