

Standardized tissue sampling kits for high throughput DNA barcoding

Application

One of the challenges faced in high throughput DNA laboratories is the organization of externally-provided tissue samples into a format compatible with the analytical workflow. Here we describe a solution that has been successfully adopted by the CCDB to complement the 96 well plate format used in laboratory protocols.

Method Overview

In order to streamline sample processing, the arraying of tissue samples into a laboratory-compatible format is facilitated through the use of standardized tissue sampling kits¹. The medium most commonly used for arranging tissue samples in our system is a latched rack of 96 tubes in 12 by 8 format (>2,100 kits dispatched). The TrakMates[®] tubes^a (Matrix Technologies²) used by the CCDB are suitable for a variety of tissue types and storage conditions, and are pre-labelled with 2-D barcodes for individual sample tracking. Prior to distribution, each rack is registered in a custom database, and scanned in a single pass to map individual tube locations. Racks are packaged with a CD containing formatted spreadsheet templates for specimen data, and printed sampling instructions. These kits are dispatched to external collaborators worldwide, who then ship tissue samples and filled data sheets back to the CCDB for DNA barcoding. Returned tissue racks are once again scanned and registered, and are ready for immediate analysis.

A key strength of the tissue sampling kit system developed by the CCDB is that the incoming specimen samples and their data are pre-organized to enter the analytical chain without delay, thus omitting the stage of sorting individual tubes, and removing the associated risk of tube mix-ups. In addition, samples are packaged in a format convenient for a variety of longer-term storage solutions, and can be individually tracked. This system costs approximately \$0.50 CDN per sample, but saves considerable resources otherwise spent on specimen and data handling.

More Information:

1. Hajibabaei M, deWaard JR, Ivanova NV et al. (2005). Critical factors for assembling a high volume of DNA barcodes. *Philosophical Transactions of the Royal Society: Biological Sciences* 360:1959 – 1967.
2. Matrix Technologies, a division of Thermo Fisher Scientific. Websites at: www.thermo.com/matrix, or www.matrixtechcorp.com.

At a glance

- » The 96 tube (12 by 8) format and custom spreadsheet for specimen data is compatible with high throughput laboratory practices
- » Full racks of individually barcoded sample tubes are registered and tracked
- » System also allows flexible storage options
- » Costs around \$0.50 CDN per sample
- » More than 2,100 kits have been distributed (>200K tubes)

Locator	Sample ID	BOX RECORD DATA INPUT SHEET
A01	04-ONT-0234	Please follow the steps below: Enter BOX number from box label: <input type="text" value="BOX-1001"/> Type or paste Sample ID's of your samples into the white cells (in columnar format) After completing data entry, rename this file to incorporate the BOX number, e.g. BOX-1001_REC0F
A02	05-ONT-0002	
A03	05-ONT-0034	
A04	05-ONT-0039	
A05		
A06		
A07		
A08		
A09		
A10		



Materials:

- a. 1.4 mL 2D barcoded TrakMates tubes with latch racks, Catalogue Number 3741