The University of Michigan Medical School Central Biorepository (CBR) offers a variety of services to U-M investigators for the safe and monitored management of biospecimens including temperature-controlled storage, preparation of derivatives from these specimens, aliquoting, distribution, and the production of specimen collection kits. The CBR also provides regulatory-compliant processes for biospecimen management and a National Institutes of Health Certificate of Confidentiality for all data associated with or derived from participating research subjects. The CBR is accredited by the College of American Pathologists for its quality management of biorepository services.

All CBR activity is traced and data recorded in the LabVantage Laboratory Information Management System (LV LIMS). Credentialed investigators are able to view biospecimen information and user-defined data directly in LV LIMS. Investigators not using the LV LIMS receive CBR-derived biospecimen data in Excel format.

Please note that these internal rates are currently subsidized by the Medical School Office of Research.

**Storage**
Storage rates are based on the size of the storage container and storage temperature: room temperature (RT) or frozen. Specimens are preferentially stored in liquid nitrogen vapor if appropriate.

- 1-2 mL tube: $0.03/specimen/month
- 5 mL tube: $0.04/specimen/month
- 6-10 mL tube: $0.05/specimen/month
- 50 mL tube: $0.25/specimen/month
- Cassette-sized frozen storage: $0.04/specimen/month
- FFPE block storage (RT): $0.03/specimen/month
- Glass slide storage (RT): $0.03/specimen/month

**Biospecimen Collection Kit Production**
The CBR creates kits for study teams on a fee-for-service-basis. Kit requirements are developed with the study team at project initiation and modified on an as needed basis. Based on experience, investigator-requested kits generally fall into one of seven pricing categories below. Kit type and price is based on the number and kind of components (expensive or inexpensive) in the kit and the labor required for production and quality control.

- Kit type 1: $3.20/kit
- Kit type 2: $7.60/kit
- Kit type 3: $11.90/kit
- Kit type 4: $22.00/kit
- Kit type 5: $30.00/kit
- Kit type 6: $39.40/kit
- Kit type 7: $51.10/kit
DNA extraction from whole blood (PAXgene or EDTA vacutainer) or buffy coat $20.70/specimen
DNA is isolated using a QIAsymphony robot, quantified by PicoGreen Assay for double-stranded DNA (dsDNA), and average size estimated with agarose gel electrophoresis as a quality control measure. Biospecimens and their derivatives are tracked by LV LIMS.

DNA extraction from Oragene saliva kit $21.30/specimen
DNA is isolated using a QIAsymphony robot, quantified by PicoGreen Assay for dsDNA, and average size estimated with agarose gel electrophoresis as a quality control measure. Biospecimens and their derivatives are tracked by LV LIMS.

Manual DNA extraction from whole blood or buffy coat $15.90/specimen
DNA is isolated using a Qiagen QIAamp DNA Blood Maxi Kit, quantified by PicoGreen Assay for dsDNA, and average size estimated with agarose gel electrophoresis as a quality control measure. Manual extraction is low-throughput and offered only when automated extraction cannot meet a project’s requirements.

PicoGreen Quantification of DNA $3.70/specimen
This is a stand-alone service for quantification of dsDNA using the PicoGreen Assay. DNA concentrations are stored in the LV LIMS.

RNA extraction from whole blood (PAXgene preps) $39.00/specimen
RNA is isolated using a QIAsymphony robot; quantification and quality are determined by capillary electrophoresis with an Agilent 4200 TapeStation. Biospecimens and their derivatives are tracked by LV LIMS.

Standard Automated Aliquoting $1.60/specimen
Removal of a specific volume from a source biospecimen or derivative to a new, fully-labeled container. The rate is per child aliquot produced. Most specimens are easily aliquoted; however, some can be viscous making it difficult to remove a representative aliquot. Pricing for viscous biospecimens (e.g. frozen plasma) is below.

- Viscous biospecimen plating to 96-well plates $1.70/specimen
- Viscous biospecimen aliquoting to cryovials $2.60/specimen

Isolation of plasma or serum (up to 3 aliquots) $4.40/specimen
Whole blood in appropriate vacutainers is centrifuged and plasma or serum is transferred to a new, pre-labeled container.

Ethanol precipitation and resuspension of DNA $2.40/specimen
DNA is precipitated by standard ethanol precipitation and resuspend in buffer or water depending on investigator requirements. This process is commonly used to concentrate DNA or remove impurities.

Accessioning specimens not tracked in LV LIMS $1.70/specimen
This charge is applied when the CBR receives retrospective samples (with Governance Committee approval) or when the CBR performs processing services only (e.g. DNA extraction on Principal Investigator-managed biospecimens). Biospecimens in the latter example are typically returned the Principal Investigator when processing is complete.
<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Specimen or plate retrieval</td>
<td>$1.00/unit</td>
</tr>
<tr>
<td>Specimens or plates removed from storage for distribution to researchers, to secondary users, or for destruction.</td>
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<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Distribution</td>
<td>$49.00/event</td>
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<tr>
<td>This charge includes loading delivery boxes, prepping box for transport at appropriate temperature (e.g. refrigerated of frozen gel packs), arranging courier pickup or in person delivery, and tracking shipments in the LV LIMS. The charge is per distribution event, not per biospecimen.</td>
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<tr>
<th>Service</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Relabeling</td>
<td>$2.30/specimen</td>
</tr>
<tr>
<td>In the event the CBR receives a mislabeled biospecimen or if the label is damaged or unreadable, our technical staff will reprint and relabel the biospecimens as necessary.</td>
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<table>
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<tr>
<th>Service</th>
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<tbody>
<tr>
<td>PBMC Isolation (ACD-SepMate)</td>
<td>$125.60/preparation</td>
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<tr>
<td>Whole blood is collected into acid citrate dextrose (ACD) tubes and peripheral blood mononuclear cells (PBMCs) are isolated with SepMate™ tubes (STEMCELL Technologies). Cell numbers and viability (Trypan blue) are determined for each preparation.</td>
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<tr>
<th>Service</th>
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<tbody>
<tr>
<td>Archive Biorepository Storage</td>
<td></td>
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<tr>
<td>The Archive Biorepository is designed for individuals or projects with valuable biospecimens requiring relatively long-term storage with limited access. This biorepository accepts and tracks only boxes of biospecimens.</td>
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<table>
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<tr>
<th>Size</th>
<th>Cost</th>
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<tbody>
<tr>
<td>2” x 5” x 5” freezer box</td>
<td>$0.10/box/month</td>
</tr>
<tr>
<td>3” x 5” x 5” freezer box</td>
<td>$0.17/box/month</td>
</tr>
</tbody>
</table>

Prices quoted are for clients internal to the University of Michigan and are billable via shortcode. For clients external to the University of Michigan, please contact us at 734 763 6423 or CBR.Requests@umich.edu for information.