UT Southwestern Medical Center

Tissue Collection and Storage Audit

Internal Audit Report 23:22CF

January 18, 2024

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Executive Summary – Background, Project Scope, and Objectives

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A biorepository functions as a library that stores and manages specimens for use in research. Specimens may include tissue, blood, plasma, saliva, urine, etc. These specimens may contain de-identified clinical information from patients or research participants who supplied the specimens. Scientists and researchers can check out and request transfers of donated samples and data for various scientific studies and research. Under Title 21 Code of Federal Regulations, Part 1271 (21 CFR Part 1271) Subpart D, the Food and Drug Administration released the Current Good Tissue Practice (CGTP) to provide guidance for processing, storage, labeling, packing, distribution, and equipment and facility maintenance.

In July 2018, the UTSW Biorepository Oversight Committee was established as an Institutional Standing Committee to ensure that specimens to be used for research are responsibly collected, stored, and distributed and to ensure the necessary protections of the rights of individuals who have donated the human biospecimens. In 2019, the UTSW Internal Audit Department conducted an audit (*Human Biospecimen Collection, Storage, Movement, and Disposal Audit*) of several biorepositories on campus. The audit included interviews with lab leads and Physician Investigators (PIs) associated with each lab but did not include any walk-throughs of the included labs. The prior *Human Biospecimen Collection, Storage, Movement, and Disposal Audit* had three (3) major observations for improvement (1 high risk and 2 medium risks). Those observations included: (1) develop standardized guidelines and establish oversight for freezer management (high); (2) establish clearly defined roles, responsibilities, and a single point of accountability (medium); and (3) establish human biospecimen inventory management processes and controls (medium).

The Office of Institutional Compliance and Audit Services has completed its Tissue Collection and Storage Audit. This was a risk-based audit and part of the fiscal year 2023 Audit Plan.

The audit scope period included activities of the biorepositories from July 2023 to September 2023. The eight (8) in-scope biorepositories reviewed included the 1) Radiation Oncology, 2) Hamon Center for Therapeutic Oncology, 3) Brain Collection Psychiatry, 4) Brain Collection Pathology, 5) Simmons Cancer Center, 6) Dallas Heart Study, 7) COVID-19, and 8) Neurology biorepositories. Audit procedures included interviews with stakeholders, including biorepository leads responsible for day-to-day operations, onsite lab walkthroughs, review of policies and procedures and other documentation, and limited testing. The scope of this audit also included assessing if the risks identified from the previous *Human Biospecimen Collection, Storage, Movement, and Disposal Audit* remain remediated. During this audit, the Biorepository Oversight Committee Meeting minutes from October 22, 2020 were reviewed and noted that the Biorepository Oversight Committee requested an extension for the completion of management action plans from the 2019 audit. In 2021, new leadership was appointed to the committee and during interviews, several Committee members disclosed that they were not aware of the previous management action plans that remained to be executed or requested extension from the 2019 Audit. Therefore, the current audit team is unable to verify that the original action plans were ever fully implemented.

We conducted our examination according to guidelines set forth by the Institute of Internal Auditors' International Standards for the Professional Practice of Internal Auditing.

Fieldwork was initiated, performed, and completed between July and September 2023, and consisted of the following primary objectives:

- Tissue Compliance: Assessed tissue policies and procedures for both animal and human research tissues for compliance with key regulatory requirements, UTSW's Research Sponsor requirements, and UT System requirements (if applicable).
- Tissue Processes: Reviewed documentation to determine if the original gaps identified in the 2019 audit were remediated (to the extent feasible / available). Performed limited testing to verify tissue processes and key controls (e.g., procurement, labeling, collection, storage [including disaster recovery], monitoring, disposal, reporting, etc.) are designed and operating, as per policy.
- Tissue Analysis and Testing: Performed limited testing to validate the completeness, accuracy, and timeliness of tissue documentation forms, tissue equipment maintenance logs, incident reporting forms and disposal tracking forms to identify any gaps and/or discrepancies.

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Executive Summary – Conclusion and Improvement Opportunities

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Overall, Internal Audit identified four opportunities to strengthen processes and develop more robust oversight standards of the biorepository labs.

Included in the table below is a summary of the observations noted, along with the respective disposition of these observations within the Medical Center internal audit risk definition and classification process. See Appendix A for Risk Rating Classifications and Definitions.

Priority (0)	High (0)	Medium (3)	Low (1)	Total (4)

Key observations are listed below.

- **Biorepository Oversight Committee Roles and Responsibilities** – The Biorepository Oversight Committee does not have monitoring procedures in place to ensure all biorepositories have documented protocols for critical processes such as specimen inventory management, business continuity plans, disaster recovery, freezer management, and documentation of temperature controls. The roles and responsibilities of the committee are stated in *RES-155 Biorepository Oversight Committee*; however, it is unclear how the committee is ensuring accountability for these practices at each biorepository.

- **Business Continuity Plans and Emergency Management Protocols** – Business Continuity Plans (BCPs) are not documented for ~63% of biorepositories to ensure safety and viability of specimens. While there are departmental BCPs established and reviewed annually, they do not contain adequate business continuity details for the biorepositories. Further, the majority of biorepository leads could not speak to the contents of their departmental BCPs and annual review thereof. In addition, emergency management procedures are also not documented for ~63% of biorepositories outlining critical functions and steps to be taken when an emergency event occurs such as losing power to the biorepository or if a freezer is out of service.

- **Specimen Inventory Management, Tracking, and Monitoring Processes** – ~63% of biorepositories have developed and maintain their own specimen inventory management and tracking spreadsheets; however, the Biorepository Oversight Committee and other applicable departments / committees do not have direct access to these spreadsheets to conduct audits or other monitoring processes for ensuring accuracy of inventory. In addition, there is no clear oversight or governance of these spreadsheets, except for the three (3) biorepositories that leverage the REDCap and OpenSpecimen applications.

Management has plans to address the issues identified in the report and in some cases has already implemented corrective actions. Action Plan Owners are designated individuals responsible for implementing the issue resolution. Action Plan Executives are individuals responsible for overseeing or managing the issue resolution. Executive Sponsors are Senior Leadership members who are responsible for ensuring the identified issue is resolved. These responses, along with additional details for the key improvement opportunities identified above are listed in the Observations and Action Plans Matrix (Matrix) section of this report.

We would like to take the opportunity to thank the departments and individuals included in this audit for the courtesies extended to us and for their cooperation during our review.

Sincerely,

Natalie Ramello, J.D., Vice President of Compliance and Chief Compliance Officer / Interim Audit Executive

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Observation	Recommendation	Management Response
Risk Rating: Medium 🟡 1. **Biorepository Oversight Committee Roles and Responsibilities** The Biorepository Oversight Committee does not have monitoring procedures in place to ensure all biorepositories have documented protocols for critical processes such as specimen inventory management, business continuity plans, disaster recovery, freezer management, and documentation of temperature controls. The roles and responsibilities of the committee are stated in *RES-155 Biorepository Oversight Committee*; however, it is unclear how the committee is ensuring accountability for these practices at each biorepository. While a Biorepository Oversight Committee was established in 2018, new leadership took over in 2021 due to turnover. Key takeaways, pertinent information, risks, meeting minutes, etc., are not shared with the biorepository leads. Meeting minutes are also not consistently documented. This observation (Biorepository Oversight Committee Roles and Responsibilities) was previously reported in the Human Biospecimen Collection, Storage, Movement, and Disposal Audit report issued in October 2019 (Observation #2). Please note that the previous follow-up to the 2019 management action plans associated with this observation is currently not fully mitigated.	The Biorepository Oversight Committee should: 1. Work with biorepository leads to ensure they have documented protocols for critical processes such as specimen inventory management, business continuity plans, disaster recovery, freezer management, and documentation of temperature controls. See additional details in observations 2, 3, and 4 below. 2. Define monitoring procedures, communicate expectations with the biorepository leads, and monitor periodically (e.g., monthly, quarterly, etc.) to ensure accurate practices are being followed and upheld. 3. Consistently document meeting minutes for each meeting. Key takeaways and/or the meeting minutes should be communicated to the biorepository leads to ensure their practices are up to date with the expectations of the Biorepository Oversight Committee. *Please note, some of these recommendations are consistent with what was recommended in the Human Biospecimen Collection, Storage, Movement, and Disposal Audit report issued in 2019.*	**Management Action Plans:** The Biorepository Oversight Committee will: 1. Develop a definition of "biorepository" based on both size and risk-based analysis of tissue collections, for the purposes of determining requirements for policies and procedures. 2. Assist with providing guidance to biorepository leads regarding best practice protocols for critical processes and work with leads to update existing or create new protocols leveraging the guidance. See additional detail in management action plan response for observation 4.1 below. 3. Determine the feasibility of establishing a biorepository registration process and associated database to enable communication of the expectations to the Biorepositories. 4. If action plan 3 above is feasible, a periodic attestation and monitoring program will be implemented to ensure standards are met. If action plan 3 above is not feasible, determine another approach to communicate their expectations. 5. Key takeaways of Biorepository Oversight Committee meetings will be communicated to the leads of the biorepositories and minutes of meetings will be documented to allow for follow-up of action items. **Target Completion Dates:** February 29, 2024

* *Applies to biorepositories that meet criteria determined by Biorepository Oversight Committee for being defined as a "biorepository" in action plan 1.1.*

Observation	Recommendation	Management Response
		Action Plan Owner(s): Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair **Action Plan Executive(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair **Executive Sponsor(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair
Risk Rating: Medium 2. **Business Continuity Plans and Emergency Management Protocols** Business Continuity Plans (BCPs) are not documented for all biorepositories to ensure safety and viability of specimens. Per *SEC-251 Institutional Resilience and Business Continuity Planning*, "all business units will have a Business Continuity Plan." While there are departmental BCPs established and reviewed annually by the department, they do not contain adequate business continuity details for the biorepositories. Further, the majority of the	The Biorepository Oversight Committee should: 1. Ensure that all biorepositories have a BCP documented that includes mitigation strategies for critical functions / alternative methods to address disrupted processes, orders of succession, plan activation procedures, and a communications plan. 2. Remain, formally and regularly, aligned with the institutional Business Continuity Management policy (*SEC-251 Institutional*	**Management Action Plans:** The Biorepository Oversight Committee will: 1. Develop best practice guidance for BCP for biorepositories either as part of a department BCP or standalone plan as part of the biorepository documented policies. The items outlined within each biorepository's* BCP will be aligned with the expectations of Business Continuity Management at UTSW and will be required to be updated to align with UTSW and departmental requirements.

Observation	Recommendation	Management Response
biorepository leads could not speak to the contents of their departmental BCPs and annual review thereof. • 5 of 8 in-scope biorepositories (~63%) do not have a documented BCP. In addition, emergency management procedures are also not documented for most biorepositories outlining critical functions and steps to be taken when an emergency event occurs such as losing power to the biorepository or if a freezer is out of service. Per *SOP 155-05 Freezer Oversight, Management and Monitoring*, "large scale biorepositories that obtain and collect biospecimens must include plans for preventative maintenance, backup power sources coordinated with Facilities Administration, and theft / loss procedures." • 5 of 8 in-scope biorepositories (~63%) do not have an emergency plan in place that documents business resumption activities and procedures in the event of a disruption or related event requiring specimens to be moved; however, staff did demonstrate adequate knowledge of critical functions and steps to be taken when a disruption occurs. If these procedures are not well documented and understood by the biorepository staff, they run the risk of potentially losing specimens, research, and grants that could result in financial loss, damage to the biospecimen assets, reputational implications, and operational inefficiencies. The adequacy of BCPs to ensure the safety of biospecimens was previously reported in the Human Biospecimen Collection, Storage, Movement, and Disposal Audit report issued in October 2019 (Observation #1) to include plans for preventative	*Resilience and Business Continuity Planning*) to ensure required processes, actions taken, personnel engaged, and program maintenance cadence is aligned to management expectations. 3. Ensure that all biorepositories have documented emergency management procedures / plans that outline critical functions and steps to be taken when a crisis / emergency event occurs. 4. Leverage existing BCP and emergency management protocols from biorepositories where they are already completed and tailor those documents for their specific biorepository. 5. The BCP and emergency management protocols should be reviewed annually or at times of material process change, in line with *SEC-251 Institutional Resilience and Business Continuity Planning*, with any necessary updates. 6. Ensure staff are trained annually on these BCPs and emergency management protocols, in line with *SEC-251 Institutional Resilience and Business Continuity Planning*. *Please note, some of these recommendations are consistent with what was recommended in the Human Biospecimen Collection, Storage, Movement, and Disposal Audit report issued in 2019.*	2. Ensure that emergency management procedures are documented for all biorepositories* via review of documents or attestation process as part of the biorepository registration. 3. Staff will be trained on hire and annually with refreshers over the BCP and emergency management procedures including any recent updates. **Target Completion Dates:** August 31, 2024 **Action Plan Owner(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair **Action Plan Executive(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair **Executive Sponsor(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair

* *Applies to biorepositories that meet criteria determined by Biorepository Oversight Committee for being defined as a "biorepository" in action plan 1.1.*

Observation	Recommendation	Management Response
maintenance, backup power sources, and theft / loss. Please note that the previous follow-up to the 2019 management action plans associated with this observation is currently not fully mitigated.		
Risk Rating: Medium 3. **Specimen Inventory Management, Tracking, and Monitoring Processes** Multiple biorepositories have developed and maintain their own specimen inventory management and tracking spreadsheets; however, the Biorepository Oversight Committee and other applicable departments / committees do not have direct access to these spreadsheets to conduct audits or other monitoring processes for ensuring accuracy of inventory. In addition, there is no clear oversight or governance of these spreadsheets, except for the three (3) biorepositories that leverage the REDCap and OpenSpecimen applications. • 5 of 8 in-scope biorepositories (~63%) utilize protected Excel spreadsheets for their specimen inventory management tool and the Biorepository Oversight Committee does not have access to these files. Failure to maintain oversight and access to the specimen inventory tracking will present risks such as inability to track specimens in case of emergency or personnel turnover. Lack of protocols and guidelines for an inventory management process was previously reported in the Human Biospecimen Collection, Storage, Movement, and Disposal Audit report issued in October 2019 (Observation #3) to develop monitoring processes to ensure accurate tracking procedures are in place.	The Biorepository Oversight Committee should: 1. Establish standards for oversight of the biorepositories' applications and spreadsheets and determine what access is appropriate for the various types of applications including potential need for backup procedures for accessing the information beyond the current end-users for each biorepository. 2. Establish a methodology to ensure accurate inventory tracking procedures are in place for each biorepository. 3. Monitor that inventory tracking is taking place periodically (e.g., quarterly, semi-annually, annually, etc.). *Please note, some of these recommendations are consistent with what was recommended in the Human Biospecimen Collection, Storage, Movement, and Disposal Audit report issued in 2019.*	**Management Action Plans:** The Biorepository Oversight Committee will: 1. Review inventory management requirements for biorepositories*. This will include an evaluation to determine who requires access beyond the end-users for the purposes of monitoring and oversight, backup procedures, etc. 2. Develop requirements that tracking systems and/or spreadsheets are password protected; maintained in a secure network, SharePoint / OneDrive, or other secure shared location; and accessible to multiple members of biorepository staff, biorepository owners, and for some level of Biorepository Oversight Committee. 3. Develop best practice guidelines and procedures to ensure inventory tracking and monitoring procedures are in place for each biorepository*. 4. Biorepository Oversight Committee will assess benefits of the registration process evaluated in recommendation 1.2 including information related to inventory tracking systems so that there is knowledge of the inventory management systems being used across UTSW. **Target Completion Dates:** August 31, 2024

Observation	Recommendation	Management Response
Please note that the previous follow-up to the 2019 management action plans associated with this observation is currently not fully mitigated.		**Action Plan Owner(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair **Action Plan Executive(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair **Executive Sponsor(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair
Risk Rating: Low 🟢 4. **Biorepository-Specific Policies and Procedures** Key processes (e.g., specimen handling, freezer and liquid nitrogen tank management, environmental controls, emergency protocols, equipment maintenance, etc.) for managing all biorepositories are not documented with sufficient detail for the biorepository staff to effectively perform their roles. • 2 of 8 in-scope biorepositories (25%) do not have documented policies and/or procedures in place; however, staff did demonstrate adequate	The Biorepository Oversight Committee should: 1. Ensure all biorepositories have policies and/or procedures documented for key processes applicable to their study and functions. The advisory procedures previously created should be leveraged to document the biorepository-specific details of protocols for staff to perform effectively. a. Biorepository procedures should address specimen handling, transfer	**Management Action Plans:** The Biorepository Oversight Committee will: 1. Review and update advisory policies and procedures to support critical functions and day-to-day processes for biorepository leads. 2. Develop procedures to ensure biorepositories have documentation to support key processes applicable to their study and functions. Existing procedures will be leveraged to develop any outstanding procedures.

Observation	Recommendation	Management Response
knowledge of critical functions and day-to-day processes for biorepository operations. Failure to maintain biorepository-specific policies and procedures will hinder consistency, safety, and accountability. In addition, there are no policies and/or procedures outlined for how long temperature logs should be retained. The Central Data Acquisition System (CDAS) will only store temperatures for 100 days and will send out monthly reports that managers are expected to retain. Further, no policy and/or procedure is in place that outlines documentation of response to incidents of when freezer temperatures go out of range. Lastly, while equipment maintenance conducted by vendors are documented, minor maintenance work conducted by UTSW staff (such as filter changes for freezers) are not recorded for all biorepositories. The Biorepository Oversight Committee developed "advisory" procedures due to the diverse nature of operations within each of the biorepositories but there is no oversight mechanism in place to ensure each biorepository has leveraged the advisory procedures and tailored them to create their specific biorepository procedures.	guidelines, freezer and liquid nitrogen tank management, retention of temperature control records, and equipment maintenance. 2. Consider sharing existing policies, procedures, and leading practices amongst the biorepositories to standardize to the extent possible and enhance current practices. 3. Review policies and procedures every five years or at times of material process change, in line with the *ADM-103 Policy on Policies*, with any necessary updates. 4. As a leading practice, ensure staff are trained on hire and annually on these policies and procedures.	3. Policies and procedures will be reviewed every five (5) years at a minimum. 4. Staff will be trained upon hire and annually with refresher trainings over policies and procedures. **Target Completion Dates:** August 31, 2024 **Action Plan Owner(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair **Action Plan Executive(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair **Executive Sponsor(s):** Dr. Joan Conaway, Vice Provost and Dean of Basic Research, Biorepository Oversight Committee Co-Chair Dr. Eric Peterson, Vice Provost and Senior Associate Dean, Clinical Research, Biorepository Oversight Committee Co-Chair

Appendix A – Risk Classifications and Definitions

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Each observation has been assigned a risk rating according to the perceived degree of risk that exists based upon the identified deficiency combined with the subsequent priority of action to be undertaken by management. The following chart is intended to provide information with respect to the applicable definitions, color coded depictions, and terms utilized as part of our risk ranking process:

Degree of Risk and Priority of Action	
Priority	An issue identified by Internal Audit that, if not addressed immediately, has a high probability to directly impact achievement of a strategic or important operational objective of a UT institution or the UT System as a whole.
High	A finding identified by Internal Audit that is considered to have a high probability of adverse effects to the UT institution either as a whole or to a significant college / school / unit level. As such, immediate action is required by management in order to address the noted concern and reduce risks to the organization.
Medium	A finding identified by Internal Audit that is considered to have a medium probability of adverse effects to the UT institution either as a whole or to a college / school / unit level. As such, action is needed by management in order to address the noted concern and reduce the risk to a more desirable level.
Low	A finding identified by Internal Audit that is considered to have minimal probability of adverse effects to the UT institution either as a whole or to a college / school / unit level. As such, action should be taken by management to address the noted concern and reduce risks to the organization.

It is important to note that considerable professional judgment is required in determining the overall ratings. Accordingly, others could evaluate the results differently and draw different conclusions. It is also important to note that this report provides management with information about the condition of risks and internal controls at one point in time. Future changes in environmental factors and actions by personnel may significantly and adversely impact these risks and controls in ways that this report did not and cannot anticipate.