RAINWATER™
Charitable Foundation

The Path Forward

Accelerating Biomarker Discovery for Primary Tauopathies

HEALTH RESOURCES IN ACTION

The Rainwater Charitable Foundation (RCF) invests in research to address critical gaps in understanding and treating **primary tauopathies.**

We focus on accelerating progress in basic research, prevention, diagnosis, drug discovery, and clinical trials related to primary tauopathies. These diseases, caused by the buildup of tau protein in the brain, lead to dementia.

RCF partnered with Health Resources in Action (HRiA) to understand how researchers find and access samples and the challenges they face. HRiA:

- Cataloged biorepositories with primary tauopathy liquid biospecimens.
- Conducted interviews with 25 stakeholders in academia, industry, and biorepositories.
- Analyzed stakeholder interviews to identify and outline key steps in the process.

In this report, we detail the journey researchers undertake when working with liquid biospecimens. We also surface the challenges researchers face along the way. This report concludes with an invitation to join the movement to accelerate biomarker discovery for primary tauopathies.

The Challenge:

Improving Access of Tauopathy Biospecimens for Research

Accurately diagnosing primary tauopathies and tracking their progression is difficult because symptoms overlap with other neurodegenerative diseases, including Alzheimer's disease, and diagnosis often requires an autopsy.

Liquid biomarkers, found in blood and cerebrospinal fluid, offer an easier way to diagnose primary tauopathies and study tau changes without post-mortem tissue. However, access to liquid biospecimens from people with primary tauopathies is limited.

Our research network is dedicated to finding rapid and accurate diagnostics and disease monitoring techniques by prioritizing liquid biomarker discovery.

A Multistep Journey:

Obtaining Liquid Biospecimens for Biomarker Research

Advancing liquid biomarker research in primary tauopathies depends on liquid biospecimens biorepository access.To better understand the steps involved, HRiA interviewed academic and industry researchers and biorepository staff.

Before the process officially starts, we learned of one shared reality across all stakeholders. Obtaining samples is a multi-step activity that can take months, with key points of friction at nearly every stage.

Identifying

Process

- Mostly through professional networks and existing collaborators
- Sometimes through literature review and online searches

Barriers

- Limited awareness
- Lack of sample details
- Difficulty accessing samples

> "I think it's hard to know where these biorepositories are. A lot of them aren't advertised very well. It's more word of mouth...so, it would be nice if there was a better way to make these resources known."
>
> – BIOREPOSITORY

Obtaining Samples

There are several steps to obtaining samples, each with their own processes and roadblocks. In order to obtain the samples, researchers must navigate these steps.

Application Development

Process

- Applications submitted through online platforms
- Requirements vary and can be documentation-heavy
- Often involves follow-up and revisions with biorepository staff

Barriers

- Unclear requirements
- Limited sample quantities
- Unforeseen data restrictions

> "All of our studies have different processes for requesting samples."
>
> – BIOREPOSITORY

Decision

Process

- Applications reviewed by an internal committee
- Decisions weigh scientific value and limited sample availability
- Outcomes: approved, modified, or declined

Barriers

Denied requests due to:

- Reduced sample quantity
- Similar research
- Unavailable samples
- Unmet data requirements
- Protocols not permitting data to be used for commercial benefit

> "We have questions like, is the scientific hypothesis reasonable? Do they have enough preliminary data? Has this been done before? Things that are objective because these samples are precious, they're rare, so we need to be good stewards."
>
> – BIOREPOSITORY

Receipt of Samples

Process

- Material Transfer Agreements (MTAs) finalized
- Any required fees processed (often nominal)
- Samples shipped and received (typically high quality)

Barriers

- Delayed MTAs
- Sample quality inconsistencies

> "I think the MTA took 4 months or something like that. So, while everything was ready to go, the samples couldn't be shipped until the MTA was approved."
>
> – BIOREPOSITORY

Next Steps

Once the research is completed, researchers may share the results with the biorepository, determine how to use leftover samples, and potentially publish their findings.

Project Completion

Process

- Researchers share data and/or results back with the biorepository
- A findings report may be requested to support future research

Barriers

- New application required for leftover sample use

> "We do ask that people who apply for our samples to be willing to share data with us because this will only make our samples a better resource for everyone in the future."
>
> – BIOREPOSITORY

Key Findings

Researchers, industry representatives, and biorepository staff discussed the challenges they face when accessing, collecting, storing, and making decisions about who receives liquid biospecimens. Below is a summary of our learnings.

To identify biorepositories researchers depend largely on their **professional networks**, as no singular directory of biorepositories exists.

Application and decision-making processes differ among biorepositories and can require significant back-and-forth between applicants and biorepository staff.

Researchers often receive **fewer samples** or lower sample volumes than initially requested.

Sample collection and preservation methods differ among biorepositories.

Limited staff capacity and storage facilities can restrict the number samples biorepositories can collect.

Delays during multiple steps of the sample acquisition journey slow the pace of research on biomarkers for primary tauopathies.

"That's really about networking...discussion is getting easier and easier as you become more established and more known in the field."

– BIOREPOSITORY

"We've tried [to say] we'll take 80 samples, I have a really good mass spec, I have really fancy software, and they're like, that would wipe out our whole repository... [they're] gonna give me 5. And then, I can't even run a statistical test."

– RESEARCHER

"We should always expect a degree of variability. And if there isn't a harmonized protocol for data collection...you need to keep that in the back of your mind as a limitation of your scientific approach."

– RESEARCHER

Opportunities

Based on these findings, RCF identified three opportunities philanthropic organizations can support to help deliver on the promise of biomarkers for primary tauopathies:

1. **Create an online database of biorepositories** with primary tauopathy fluid biospecimens. This would increase researchers' ability to access samples for biomarker research.

2. **Streamline collection methods, access applications, and related policies** to improve sample quality and speed of obtaining specimens.

3. **Funding infrastructure** would allow biorepositories to collect, store, and distribute a greater number of samples.

The Path Forward Requires Partnership

The path to accelerating the liquid biomarker process starts with incentivizing collaboration and improving researcher access to biospecimens. To meet this moment, RCF seeks partnership with organizations supportive of an improved biomarker process. As philanthropic funders, we have the opportunity to create change.

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Join RCF in paving the path forward.

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