specimens compared to disease controls (2.4±1.4 vs.1.6±0.8 and 1.8± 0.9 vs. 0.96±0.4 respectively) and correlated with the activity (r=0.4), chronicity (r=0.5) and interstitial fibrosis scores (r=0.5). In vitro, RGC- 32 mRNA and protein expression was upregulated in PTEC by nephritogenic cytokines including IL-1 (7.8 fold), TNFα (5 fold), TGFβ (3.1 fold) and to a lesser extent by IFNγ (2.1 fold). TGFβ induced mRNA production of Collagen 1a1 and collagen III by in vitro cultured human PTEC was increased in RGC-32 transfected cells vs. control.

**Conclusions** RGC-32 expression is increased in glomeruli and tubulointerstitium in kidneys of patients with lupus nephritis. Upregulation of RGC-32 is mediated by proinflammatory cytokines and may play pathogenetic role in organ damage in SLE by promoting manifestations of progressive renal disease such as interstitial fibrosis. Thus RGC-32 is a potential therapeutic target in the treatment of lupus nephritis.

**Acknowledgments**

**Trial Registration**

**Lay summary** RGC-32 expression is increased in glomeruli and tubulointerstitium in kidneys of patients with lupus nephritis. Upregulation of RGC-32 is mediated by proinflammatory cytokines and may play pathogenetic role in organ damage in SLE by promoting manifestations of progressive renal disease such as interstitial fibrosis. Thus RGC-32 is a potential therapeutic target in the treatment of lupus nephritis.

**Abstract 1106 Table 1**

| | Condition | Mean | Spearman Correlation Coefficient | P-value |
|---|---|---|---|---|
| **Adiponectin** | Baseline | 1.94 | 0.97 | <0.01 |
| | Dry Ice | 1.90 | 0.99 | <0.01 |
| | Shipping | 2.05 | 0.96 | <0.01 |
| | Fridge | 2.13 | 1.00 | <0.01 |
| | RT | 2.03 | 0.89 | <0.01 |
| | FT1 | 1.86 | 0.98 | <0.01 |
| | FT2 | 1.98 | 0.99 | <0.01 |
| | 1MO | 1.95 | 0.98 | <0.01 |
| | 3MO | 1.63 | 0.91 | <0.01 |
| **Ceruloplasmin** | Baseline | 3.62 | 0.99 | <0.01 |
| | Dry-Ice | 3.55 | 1.00 | <0.01 |
| | Shipping | 3.55 | 1.00 | <0.01 |
| | Fridge | 3.48 | 0.98 | <0.01 |
| | RT | 3.61 | 1.00 | <0.01 |
| | FT1 | 3.69 | 0.87 | <0.01 |
| | FT2 | 3.49 | 1.00 | <0.01 |
| | 1MO | 3.80 | 1.00 | <0.01 |
| | 3MO | 4.25 | 0.95 | <0.01 |
| **Hemopexin** | Baseline | 5.52 | 0.92 | <0.01 |
| | Dry Ice | 5.52 | 0.99 | <0.01 |
| | Shipping | 5.53 | 0.98 | <0.01 |
| | Fridge | 5.51 | 0.96 | <0.01 |
| | RT | 5.41 | 0.96 | <0.01 |
| | FT1 | 5.49 | 0.96 | <0.01 |
| | FT2 | 5.47 | 0.97 | <0.01 |
| | 1MO | 5.54 | 0.97 | <0.01 |
| | 3MO | 5.82 | 0.92 | <0.01 |
| **MCP-1** | Baseline | 4.56 | 1.00 | <0.01 |
| | Dry Ice | 4.60 | 1.00 | <0.01 |
| | Shipping | 4.56 | 1.00 | <0.01 |
| | Fridge | 4.50 | 1.00 | <0.01 |
| | RT | 4.43 | 1.00 | <0.01 |
| | FT1 | 4.55 | 1.00 | <0.01 |
| | FT2 | 4.47 | 1.00 | <0.01 |
| | 1MO | 4.67 | 0.99 | <0.01 |
| | 3MO | 4.61 | 0.10 | <0.01 |

Abbreviations: RT: Room Temperature, FT: Freeze Thaw, MO: Month

## Lupus Nephritis

### 1106 STABILITY OF NOVEL URINARY BIOMARKERS USED FOR LUPUS

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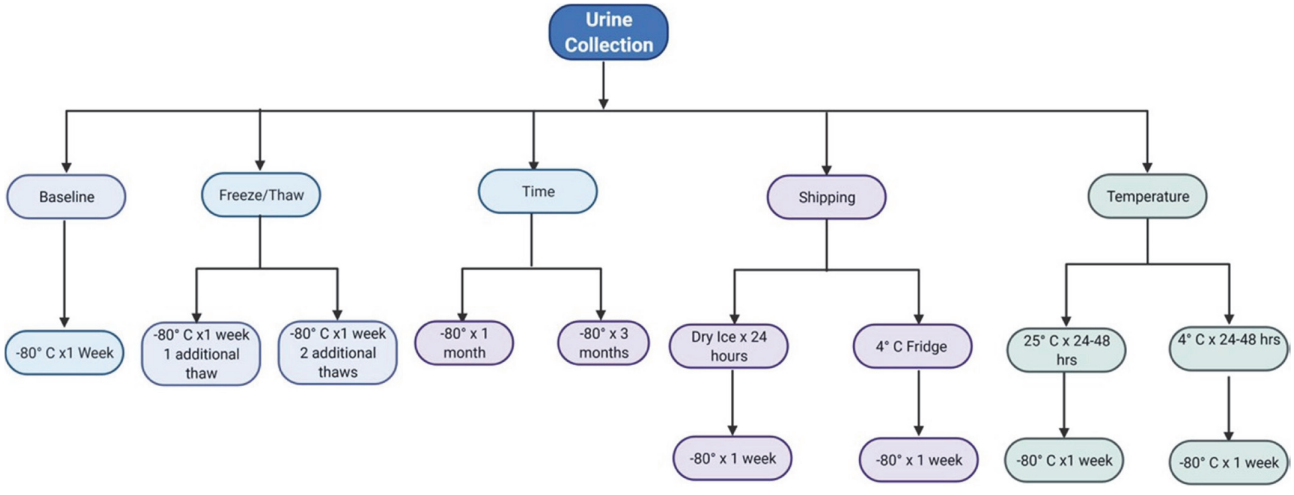
10.1136/lupus-2022-lupus21century.71

**Background** We have developed and validated the Renal Activity Index for Lupus (RAIL), a composite score of six urinary




**Abstract 1106 Figure 1**

biomarkers including neutrophil gelatinase – associated lipocalin (NGAL), monocyte chemoattractant protein-1 (MCP-1/CCL2), kidney injury molecule-1 (KIM-1), ceruloplasmin, adiponectin, and hemopexin) to monitor disease activity. It is critical to establish optimal sample handling conditions and storage prior to widespread clinical deployment and meaningful use in clinical trials. We have previously demonstrated the excellent short-term storage stability of NGAL and KIM-1; here we expand testing to include the other 4 RAIL biomarkers.

**Methods** Urine was collected from 10 patients enrolled in the SLE Clinical and Research Database (IRB 2008-0635). The urine was then aliquoted and tested under shipping conditions, including freeze/thaw, ambient and longer-term storage (figure 1). MCP-1, Ceruloplasmin, Adiponectin and Hemopexin were assayed by single-plex ELISA assay via commercially available kits. We performed Pearson Correlation Coefficient, Deming regression and Bland-Altman analysis.

**Results** There was no statistical difference in biomarker concentrations in any of the four biomarkers in any of the experimental conditions. Urinary MCP-1, Adiponectin, Hemopexin and Ceruloplasmin are stable following storage at -80°C for up to 3 months, and at 4° or 25°C up to 48 hours followed by -80° C. In addition, shipping on dry ice or with refrigeration leads to no significant loss of signal. The addition of 1 or 2 additional freeze thaw cycles also did not change mean biomarker levels.

**Conclusions** RAIL biomarkers are stable following short-term storage at clinically relevant conditions, including shipping on ice.

## 1107 IMMUNE CELL HETEROGENEITY IN LUPUS NEPHRITIS KIDNEYS AND ITS RELATION TO HISTOPATHOLOGICAL FEATURES: LESSONS FROM THE ACCELERATING MEDICINES PARTNERSHIP (AMP) IN SLE CONSORTIUM

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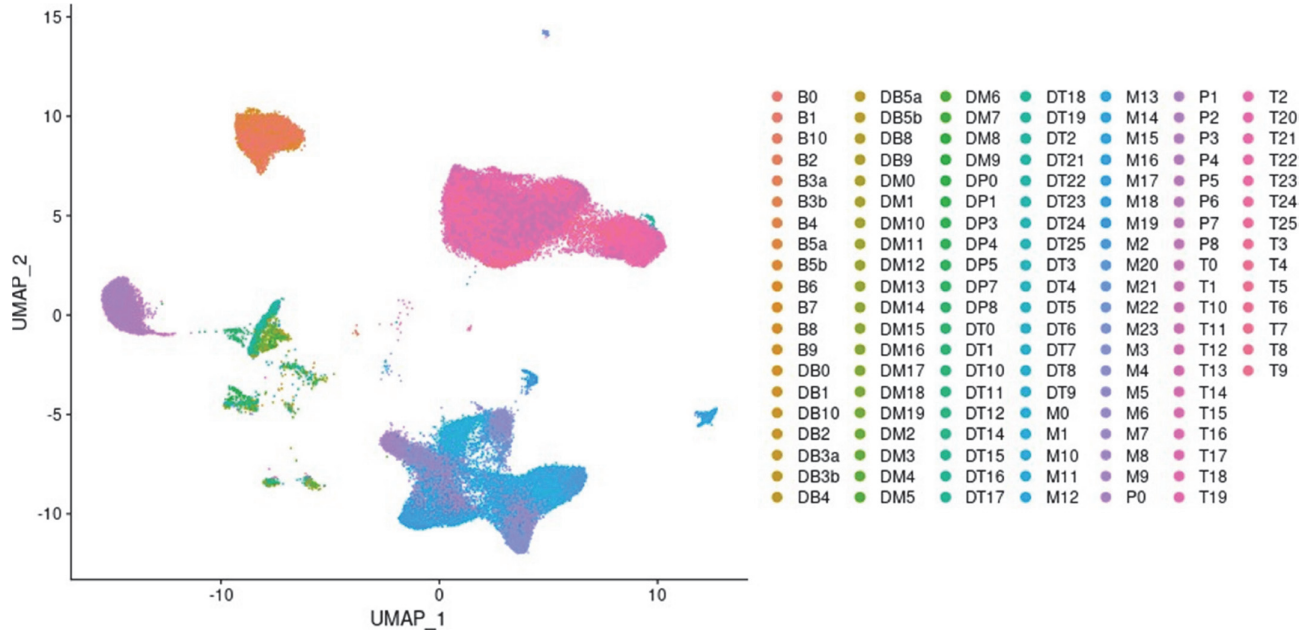
10.1136/lupus-2022-lupus21century.72

**Background** Lupus nephritis (LN) is characterized by considerable variability in its clinical manifestations and histopathological findings. Understanding the cellular and molecular mechanisms underlying this heterogeneity is key for the development of personalized treatments for LN.




**Abstract 1107 Figure 1** Single-cell RNA-sequencing was used to profile immune cells isolated from the kidneys of LN patients and healthy controls. Five main lineages of cells were identified, as shown in a Uniform Manifold Approximation and Projection (UMAP) plot: myeloid cells, T/NK cells, B cells, plasma cells and dividing cells. The cells of each lineage were further split into finer subsets of cells (color-coded).