

This is the November 2014 issue of *Clinical Chemistry*, Volume 60, Issue 11.

On the cover this month: *Inside a Vial Store*. As new technologies are developed for using biological specimens to diagnose and treat disease, as well as to evaluate genetic risks, both researchers and patients are becoming more aware of the importance and benefits of biobanking. The last 2 decades have seen an increasing interest in the collection and storage of biological samples for further investigation. Although the number of biological specimens that have been collected and stored worldwide is not known, it is likely to be in the millions. This issue of *Clinical Chemistry* contains a Q&A feature in which 5 experts focus on quality management, biobank network design, the long-term sustainability of biobanks, public perceptions, and the controversial issue of returning of research results to biospecimen donors.

### **Quantification of HDL Particle Concentration by Calibrated Ion Mobility Analysis**

By Patrick M. Hutchins, et al.

Recent studies indicate that changes in HDL cholesterol levels do not necessarily reflect changes in heart disease risk. It is therefore critical to identify new metrics, which better reflect HDL's cardioprotective properties. Currently, there is no consensus on the concentration of intact HDL particles in blood—a fundamental measure of HDL abundance. This study provides strong evidence that calibrated ion mobility analysis can accurately measure the absolute concentration of HDL particles from human plasma. In a clinical population this metric was more closely associated with cerebrovascular disease status than HDL cholesterol, the current clinical gold standard.

### **Biomarkers of Cardiovascular Stress and Subclinical Atherosclerosis in the Community**

By Deepa M. Gopal, et al.

Biomarkers of cardiovascular stress can predict incident cardiovascular outcomes in the community; however, underlying mechanisms remain unclear. This study examined the association of 3 biomarkers (growth differentiation factor-15, or GDF-15; soluble ST2; and high-sensitivity troponin I) with measures of subclinical atherosclerosis in the Framingham Heart Study. Maximal internal carotid artery thickness and presence of carotid plaque were found to be associated with GDF-15. When compared with the conventional biomarkers, B-type natriuretic peptide and C-reactive protein, GDF-15 was a stronger predictor of carotid measures. These findings suggest that a higher burden of subclinical atherosclerosis at least partly explains the association between GDF-15 levels and cardiovascular events.

**Association of 1,5-Anhydroglucitol with Diabetes and Microvascular Conditions**

By Elizabeth Selvin, et al.

Serum 1,5-anhydroglucitol or 1,5-AG is inversely related to glucose excursions and may be a useful indicator of short-term, that is, 1-2 week, hyperglycemia, but its prognostic value is unclear. The authors of this study characterized the associations of 1,5-AG with prevalent retinopathy, and with incident chronic kidney disease and incident diabetes during approximately 20 years of follow-up in the community-based ARIC Study. They found that 1,5-AG was associated with long-term risk of important microvascular outcomes, particularly in persons with diagnosed diabetes and even after accounting for hemoglobin A<sub>1c</sub> levels. These results suggest 1,5-AG may capture risk information associated with hyperglycemic excursions.

**Total and Cause-Specific Mortality by Moderately and Markedly Increased Ferritin Concentrations: General Population Study and Metaanalysis**

By Christina Ellervik, et al.

In a general population study the authors of this study tested the hypothesis that increased ferritin concentrations are associated with increased risk of total and cause-specific mortality. Stepwise increasing concentrations of ferritin were found associated with a stepwise increased risk of premature death overall, cancer death, endocrinologic death, and cardiovascular death. Overall median survival was 55 years at ferritin concentrations  $\geq 600$   $\mu\text{g/L}$  and 79 years at ferritin concentrations  $< 200$   $\mu\text{g/L}$ . These study results suggest that increased ferritin concentrations represent a biological biomarker predictive of early death in a dose-dependent linear manner in the general population.

**YKL-40 and Alcoholic Liver and Pancreas Damage and Disease in 86258 Individuals from the General Population: Cohort and Mendelian Randomization Studies**

By Alisa D. Kjaergaard, et al.

The studies described in this paper tested the hypothesis that observationally and genetically elevated YKL-40, a secreted heparin-binding glycoprotein, is associated with alcoholic liver and pancreas damage and disease. For this purpose, the authors performed cohort and Mendelian randomization studies in 86,258 individuals from the Danish general population, with measured levels of plasma YKL-40 in 21,646 individuals, and the variant allele ( $-131\text{C}\rightarrow\text{G}$ ) of Chitinase 3-like 1 promoter genotype in 84,738 individuals. They found that YKL-40 within the top 5% was a marker for alcoholic liver cirrhosis, but they found no evidence to support a causal relationship.

**Prognostic Value of Midregional Pro A-Type Natriuretic Peptide and N-Terminal Pro B-Type Natriuretic Peptide in Patients with Stable Coronary Heart Disease Followed over 8 Years**

By Mahir Karakas, et al.

Since pathophysiological studies suggest that A-type natriuretic peptides might provide valuable information beyond B-type natriuretic peptides about cardiac dysfunction, the authors of this study assessed the predictive value of midregional-proANP for recurrent cardiovascular disease events in stable coronary heart disease patients. Therefore they measured midregional-proANP and NT-proBNP at baseline in a cohort of 1,048 patients aged 30-70 years with coronary heart disease, and participating in an in-hospital rehabilitation program. Increased midregional-proANP concentrations in stable coronary heart disease patients were found to predict long-term cardiovascular disease events similarly to NT-proBNP concentrations.