Insulin-like Growth Factor 1 Inversely Relates to Monocyte Activation Markers in HIV
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METHODS
• Chronic innate immune activation is an important mechanism of serious non-AIDS events in HIV such as cardiovascular disease and neurocognitive dysfunction
• Biomarkers associated with monocyte/macrophage activation including interleukin-6 (IL-6), soluble CD163 (sCD163), and soluble CD14 (sCD14) have been shown to be increased in HIV, and to correlate with adverse outcomes

Insulin-like Growth Factor 1 (IGF-1)
• Insulin-like growth factor 1 (IGF-1) is a peptide that acts in an endocrine and autocrine/paracrine manner to regulate growth, differentiation, and cell survival
• While hepatocytes primarily secrete circulating IGF-1 in response to growth hormone, monocytes/macrophages also produce IGF-1 and express IGF-1 receptors
• IGF-1 has been shown to attenuate the monocyte/macrophage pro-inflammatory response in animal models of atherosclerosis, diet-induced obesity, and colitis
• Inflammatory cytokines also have shown to suppress hepatic IGF-1 production, which contributes to low IGF-1 in conditions such as inflammatory bowel disease and nonalcoholic steatohepatitis

RESULTS
Individuals with HIV Were Immunologically Well-Controlled
We investigated for the first time relationships between systemic levels of IGF-1 and disease or viral hepatitis
IGF-1 is expressed as a Z-score that denotes the number of standard deviations a value is above or below the population mean, adjusted for age and sex

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We would like to thank Tricia H. Burt (Temple University) and Kenneth C. Williams (Boston College) for their contributions to the immunologic assays included in this work.

CONCLUSIONS
• We show for the first time that low IGF-1 is associated with increased monocyte/macrophage activation markers among individuals with HIV
• Since IGF-1 has been shown to suppress monocytes/macrophage activity in animal models, low IGF-1 may promote innate immune activation and related sequelae in HIV
• Prospective studies are needed to evaluate the IGF-1 system as a novel target for immune modulation in HIV

OBJECTIVE
Central Question: Does perturbed IGF-1 signaling potentiate chronic innate immune activation in HIV?
We investigated for the first time relationships between systemic levels of IGF-1 and inflammatory markers in HIV, focusing on those associated with monocyte/macrophage activation.

METHODS
• Observational study of 131 HIV+ and 65 HIV- men and women without known cardiac disease or viral hepatitis
• Individuals who reported taking growth hormone, glucocorticoids, or anti-inflammatory medications or who had acute infection were excluded
• Subjects underwent history, physical exam, anthropometrics, single-slice abdominal computed tomography (CT) scan, and laboratory assessment of inflammatory markers and IGF-1
• IGF-1 is expressed as a z-score that denotes the number of standard deviations a value is above or below the population mean, adjusted for age and sex

RESULTS
Individuals with HIV and Uninfected Controls Were Well-Matched
Continuous variables are expressed as mean ± SD if normally distributed or median [IQR] if not normally distributed.

RATIONAL
Chronic Innate Immune Activation in HIV
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• Biomarkers associated with monocyte/macrophage activation including interleukin-6 (IL-6), soluble CD163 (sCD163), and soluble CD14 (sCD14) have been shown to be increased in HIV, and to correlate with adverse outcomes

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