

Supplemental Data File

Obesity Drives the Change in the HDL Subspecies Profile Among Adolescents with Type 2 Diabetes

Authors: W. Sean Davidson PhD¹, Anna Heink MS², Hannah Sexmith BA², Lawrence M Dolan MD²,
Scott M Gordon PhD³, Jim D Otvos PhD⁴, John T. Melchior PhD¹, Deborah A Elder MD², Jane Khoury
PhD², Esmond Geh PhD², Amy S. Shah MD MS².

¹Center for Lipid and Arteriosclerosis Science, Department of Pathology and Laboratory Medicine,
University of Cincinnati, 2120 East Galbraith Road, Cincinnati, OH 45237-0507, USA.

²Department of Pediatrics, Cincinnati Children's Hospital Research Foundation, 3333 Burnet Avenue,
Cincinnati, OH 45229-3039, USA.

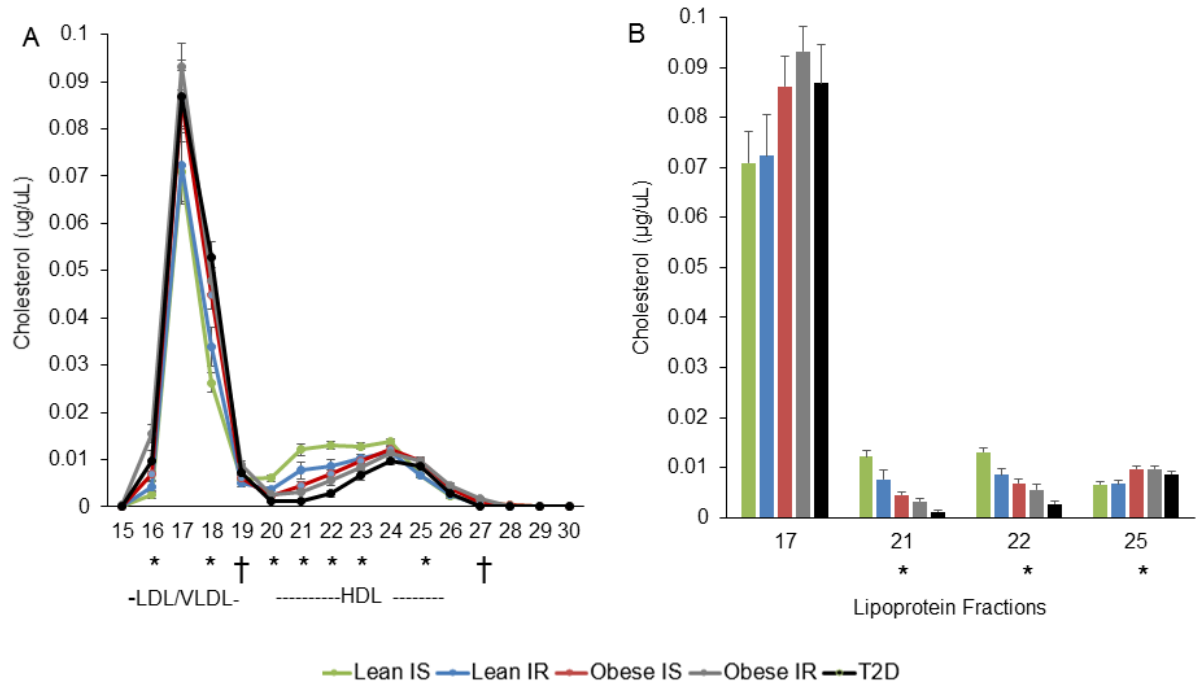
³Lipoprotein Metabolism Section, National Heart, Lung, and Blood Institute, 10 Center Drive, Bethesda,
MD 20892, USA

⁴Laboratory Corporation of America® Holdings, Morrisville, NC 27560, USA.

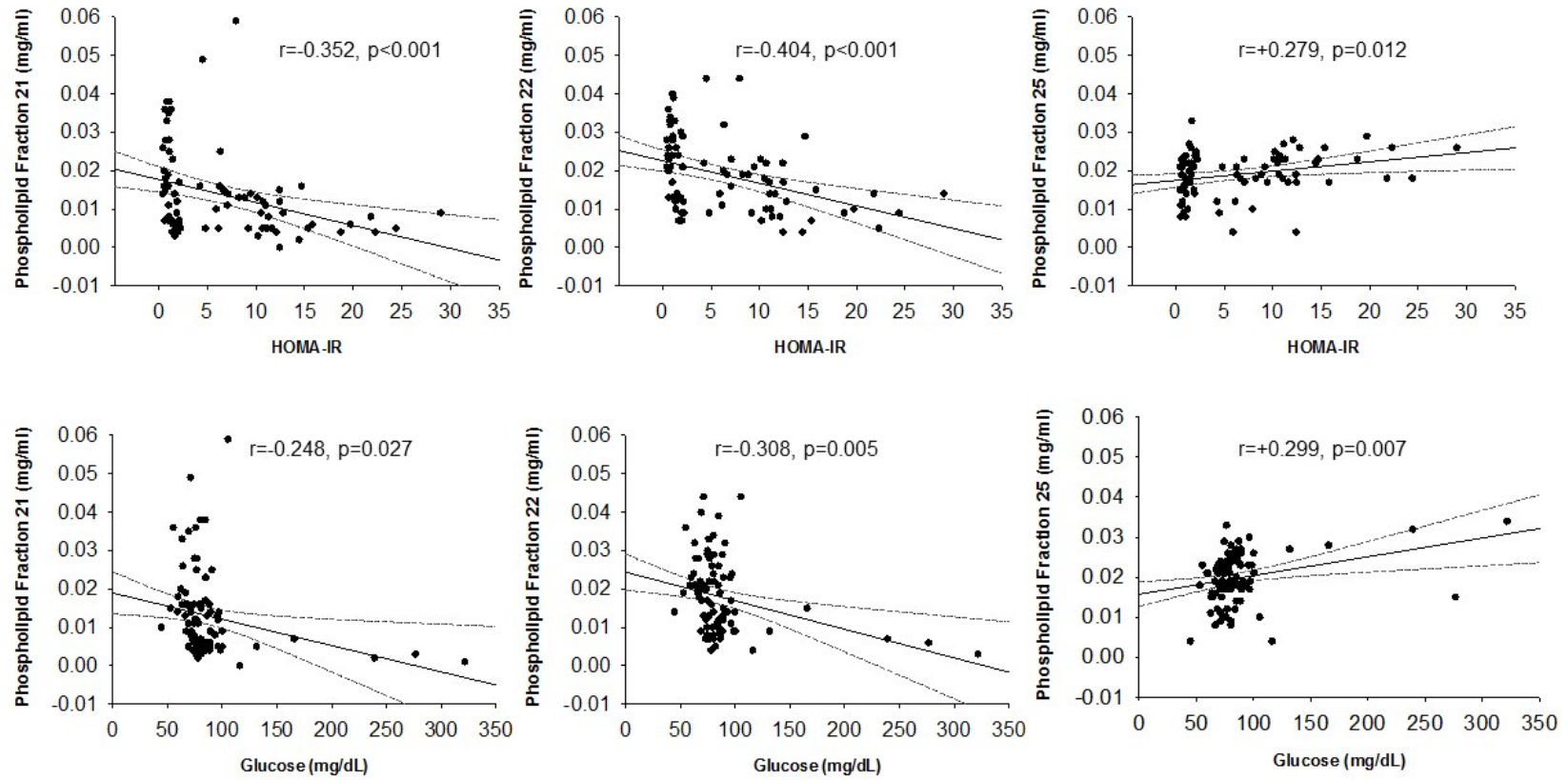
Supplemental Table 1. HDL particle number, distribution, and size measured by NMR.

	Lean IS	Lean IR	Obese IS	Obese IR	p value
HDL-P ($\mu\text{mol/L}$)	19.5 \pm 1.6	18.5 \pm 2.1	18.5 \pm 2.2	18.6 \pm 1.8	0.34
H7P ($\mu\text{mol/L}$)	0.42 \pm 0.17 ^a	0.40 \pm 0.32 ^a	0.28 \pm 0.26 ^{ab}	0.22 \pm 0.17 ^b	<0.01
H6P ($\mu\text{mol/L}$)	0.47 \pm 0.55	0.58 \pm 0.77	0.31 \pm 0.31	0.18 \pm 0.24	0.08
H5P ($\mu\text{mol/L}$)	1.28 \pm 0.83 ^a	1.09 \pm 0.81 ^a	0.59 \pm 0.41 ^b	0.31 \pm 0.28 ^b	<0.01
H4P ($\mu\text{mol/L}$)	1.76 \pm 0.83	1.48 \pm 0.78	1.42 \pm 0.81	1.86 \pm 0.92	0.27
H3P ($\mu\text{mol/L}$)	2.78 \pm 1.15	3.23 \pm 1.64	3.35 \pm 1.27	2.29 \pm 1.07	0.05
H2P ($\mu\text{mol/L}$)	9.12 \pm 1.75 ^a	7.86 \pm 2.38 ^a	9.66 \pm 1.89 ^a	10.00 \pm 1.86 ^b	<0.01
H1P ($\mu\text{mol/L}$)	3.59 \pm 1.16	3.89 \pm 1.62	2.92 \pm 1.42	3.74 \pm 2.26	0.27
HDL size (nm)	9.1 \pm 0.2	9.1 \pm 0.4	8.8 \pm 0.3	8.6 \pm 0.3	<0.01

HDL-P is HDL particle number. H7P- H1P are concentrations of different size HDL particles measured by NMR spectroscopy. Data are mean \pm SD. p values are from ANOVA for a 4 group comparison. If the ANOVA was significant, between group differences were tested and are marked by superscripts. Superscripts marked “a” indicate values are significant different from “b” or “c” at $p < 0.05$. Those marked as “ab” are not different from “a” nor “b”.



Supplemental Figure S1. Cholesterol across lipoprotein fractions. A) cholesterol concentration in serum fractionated by gel filtration chromatography, B) cholesterol concentration in specific LD/VLDL and HDL fractions. For both panels green is lean insulin sensitive, blue is lean insulin resistant, red is obese insulin sensitive, gray is obese insulin resistant, and black is type 2 diabetes. Data are mean and SE. * indicates significant differences at $p < 0.001$ and † indicates significant differences at $p < 0.01$ by ANOVA for the five-group comparison.



Supplemental Figure S2. Relationship between the phospholipid content in fractions containing large HDL subspecies (fraction 21 & 22) and small HDL subspecies (fraction 25) and HOMA-IR and glucose. Pearson correlation coefficients are shown in the Figure.