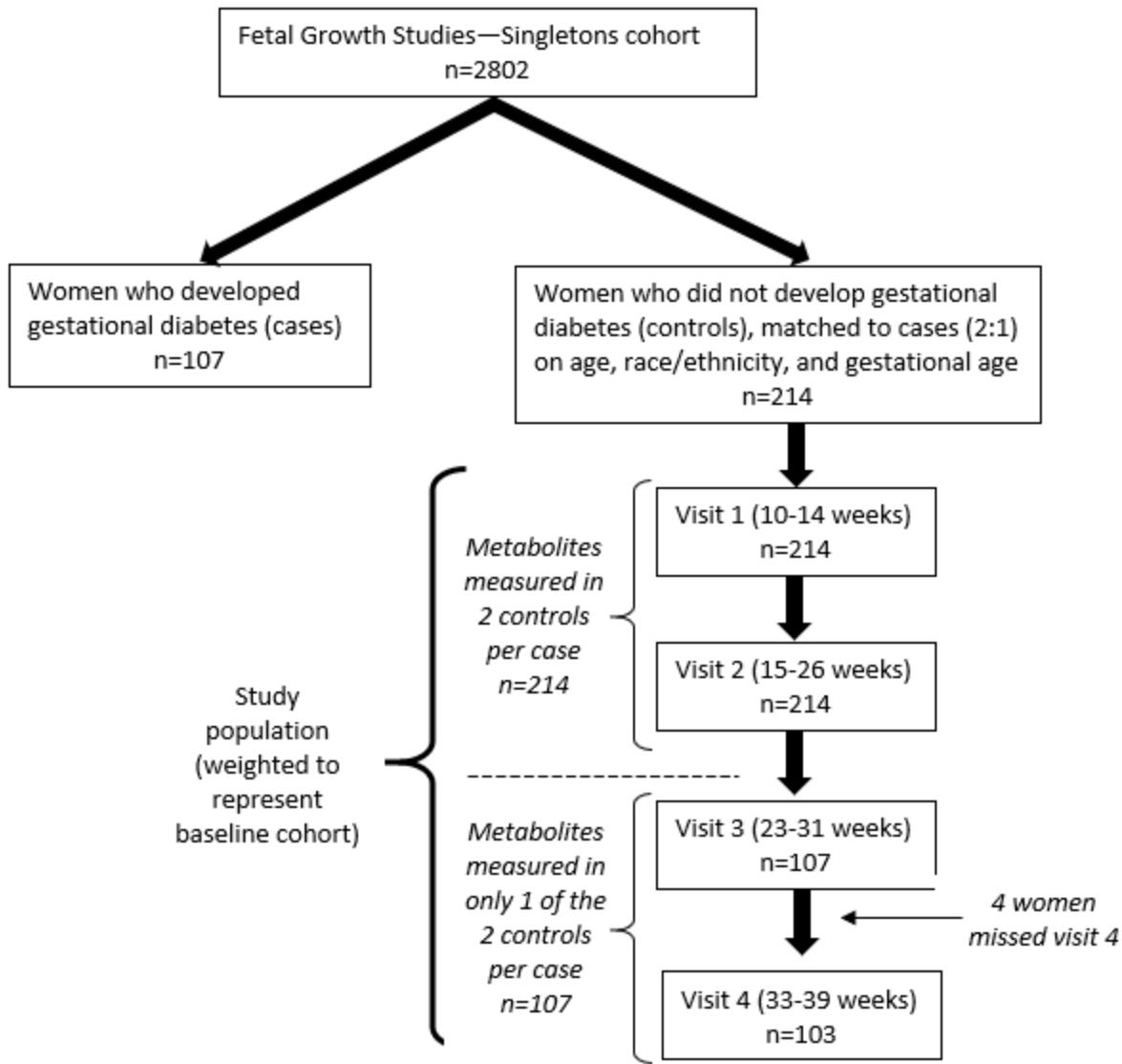


Supplemental Material

Longitudinal plasma metabolomics profile in pregnancy-- a study in an ethnically diverse U.S. pregnancy cohort

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Supplemental Figure S1. Participant flowchart. The study population consists of the matched controls from a nested case-control study, weighted to represent the baseline cohort.

Supplemental Table S1: Quantified targeted metabolites and ratios of metabolites measured in this cohort. Metabolites excluded from analysis are noted with reason for exclusion. The direction of the linear change is based on slopes from linear mixed effects models; statistical significance is determined after FDR correction. KML groups correspond to those shown in Figure 4.

| Class | Metabolite name | Included in analysis? | Significant linear change? | KML group |
|----------------|--------------------------------------|-----------------------|----------------------------|-----------|
| Acylcarnitines | Acetylcarnitine | Yes | Negative | A |
| | Propionylcarnitine | Yes | Negative | A |
| | Iso-/Butyrylcarnitine | No: Undetected >80% | | |
| | Isovaleryl-/2-methylbutyrylcarnitine | No: Undetected >80% | | |
| | Hexanoylcarnitine | No: Undetected >80% | | |
| | 3-OH-hexanoylcarnitine | No: Undetected >80% | | |
| | Octenoylcarnitine | Yes | -- | A |
| | Octanoylcarnitine | No: Undetected >80% | | |
| | Decenoylcarnitine | Yes | Negative | A |
| | Decanoylcarnitine | Yes | Negative | A |
| | Glutarylcarnitine | Yes | Negative | A |
| | Dodecenoylcarnitine | Yes | Negative | A |
| | Dodecanoylcarnitine | Yes | Negative | A |
| | 3-OH-dodecanoylcarnitine | No: Undetected >80% | | |
| | Tetradecandienoylcarnitine | No: Undetected >80% | | |
| | Tetradecenoylcarnitine | Yes | Negative | A |
| | Tetradecanoylcarnitine | Yes | -- | A |
| | 3-OH-tetradecenoylcarnitine | No: Undetected >80% | | |
| | 3-OH-tetradecanoylcarnitine | No: 0s in >50% | | |
| | Hexadecenoylcarnitine | Yes | Negative | A |
| | Hexadecanoylcarnitine | Yes | Negative | A |
| | 3-OH-hexadecenoylcarnitine | No: 0s in >50% | | |
| | 3-OH-hexadecanoylcarnitine | No: 0s in >50% | | |
| | Linoleylcarnitine | Yes | Negative | A |
| | Oleylcarnitine | Yes | Negative | A |
| | Stearoylcarnitine | Yes | Negative | A |

| | | | | |
|-------------|---------------------------------------|---------------------|----------|---|
| | 3-OH-linoleylcarnitine | No: Undetected >80% | | |
| | 3-OH-oleylcarnitine | No: Undetected >80% | | |
| Fatty acids | C14:0 | Yes | -- | B |
| | C15:0 | Yes | Negative | A |
| | C16:0 | Yes | Positive | B |
| | C16:1n7c | Yes | Positive | B |
| | C17:0 | Yes | Negative | A |
| | C18:0 | Yes | Negative | A |
| | C18:1n6c | Yes | Negative | A |
| | C18:1n6-9t | Yes | Negative | A |
| | C18:1n7c | Yes | Negative | A |
| | C18:1n9c | Yes | Positive | B |
| | C18:2n6t/t | Yes | Negative | A |
| | C18:2n6c/t | Yes | Negative | A |
| | C18:2n6t/c | Yes | -- | A |
| | C18:2n6c/c | Yes | Positive | B |
| | C18:3n3 | Yes | Positive | B |
| | C18:3n6 | Yes | -- | A |
| | C20:0 | Yes | -- | B |
| | C20:1n9 | Yes | Negative | A |
| | C20:2n6 | Yes | Negative | A |
| | C20:3n6 | Yes | -- | A |
| | C20:4n6 (Arachidonic acid (AA)) | Yes | Negative | A |
| | C20:5n3 (Eicosapentaenoic acid (EPA)) | Yes | -- | A |
| | C22:0 | Yes | Positive | B |
| | C22:4n6 | Yes | -- | A |
| | C22:5n3 | Yes | Negative | A |
| | C22:5n6 | Yes | Positive | B |
| | C22:6n3 (Docosahexaneonic acid (DHA)) | Yes | Negative | A |
| | C24:0 | Yes | Negative | A |
| | C24:1n9 | Yes | Positive | B |
| | Σ(trans fatty acids) | Yes | Negative | A |

| | | | | |
|-------------|-------------------------------------|----------------|----------|---|
| | $\Sigma(18:2$ trans fatty acids) | Yes | -- | A |
| | $\Sigma(cis$ fatty acids) | Yes | Positive | B |
| | $\Sigma(18:1$ cis fatty acids) | Yes | Positive | B |
| | $\Sigma(EPA, DHA)$ | Yes | Negative | A |
| | AA / EPA | Yes | -- | A |
| | AA / DHA | Yes | Negative | A |
| | AA / $\Sigma(EPA, DHA)$ | Yes | Negative | A |
| Amino Acids | 1-Methylhistidine | No: 0s in >50% | | |
| | 3-Methylhistidine | No: 0s in >50% | | |
| | α -aminobutyric acid | Yes | Negative | A |
| | Alanine | Yes | Positive | B |
| | Amino-Adipic Acid | No: 0s in >50% | | |
| | Anserine | No: 0s in >50% | | |
| | Arginine | Yes | Negative | A |
| | Asparagine | Yes | Positive | B |
| | Aspartic Acid | Yes | -- | A |
| | β -alanine | No: 0s in >50% | | |
| | β -aminoisobutyric acid | No: 0s in >50% | | |
| | Carnosine | No: 0s in >50% | | |
| | Citrulline | Yes | -- | B |
| | Cystathionine | No: 0s in >50% | | |
| | Cysteine | Yes | -- | B |
| | Ethanolamine | No: 0s in >50% | | |
| | γ -aminobutyric acid | No: 0s in >50% | | |
| | Glutamic Acid | Yes | -- | A |
| | Glutamine | Yes | Positive | B |
| | Σ (Glutamic acid, Glutamine) | Yes | -- | B |
| | Glycine | Yes | Negative | A |
| | Histidine | Yes | Positive | B |
| | Hydroxyproline | Yes | Positive | B |
| | Isoleucine | Yes | Negative | A |
| | Leucine | Yes | Negative | A |

| | | | |
|---------------|----------------|----------|---|
| Lysine | Yes | -- | B |
| Methionine | Yes | Positive | B |
| OH-Lysine | No: 0s in >50% | | |
| Ornithine | Yes | -- | B |
| Phenylalanine | Yes | -- | B |
| Proline | Yes | Positive | B |
| Sarcosine | No: 0s in >50% | | |
| Serine | Yes | -- | B |
| Taurine | Yes | Negative | A |
| Threonine | Yes | Positive | B |
| Tyrosine | Yes | -- | B |
| Valine | Yes | Negative | A |

Fatty acids are formatted as C(number of carbons):(number of double bonds)n(location of first double bond). Where needed, fatty acid names are followed by c and/or t to denote cis or trans bonds.

Supplemental Table S2. Linear trajectories for metabolites with significant interactions. Betas show the estimated change in metabolite concentration per gestational week for each fetal sex, maternal race/ethnicity, and maternal BMI, using estimates from linear mixed effects models.

| Metabolite | Stratified betas | | | Interaction p | FDR p |
|------------------------------|-------------------|---------------|---------------------|----------------|--------|
| Stratified by fetal sex | β (Females) | | β (Males) | | |
| C15:0 (%) | -0.0012 | | -0.0021* | 0.031 | 0.66 |
| C22:0 (%) | 0.0056 | | 0.0004* | 0.046 | 0.66 |
| Stearoylcarnitine (nmol/L) | -0.0056 | | -0.23* | 0.020 | 0.66 |
| Propionylcarnitine (nmol/L) | -1.30 | | -2.41* | 0.046 | 0.66 |
| Stratified by race/ethnicity | β (NHW) | β (NHB) | β (Hisp) | β (API) | |
| C20:3n6 (%) | -0.0003 | -0.0205** | -0.0057 | 0.0073 | 0.0042 |
| C20:2n6 (%) | -0.0022 | 0.0001* | -0.0034 | -0.0016 | 0.0054 |
| C18:1n7c (%) | -0.0098 | -0.0038** | -0.0089 | -0.0097 | 0.0091 |
| C22:0 (%) | 0.0094 | 0.0013* | 0.0008* | -0.0004* | 0.021 |
| C18:3n6 (%) | 0.0001 | -0.0012** | -0.0002 | 0.0000 | 0.027 |
| C20:4n6(%) | -0.0873 | -0.0525** | -0.0771 | -0.0822 | 0.042 |
| Proline (umol/dL) | -0.021 | 0.1139* | 0.0885* | 0.0969* | 0.047 |
| Stratified by BMI | β (<25.0) | | β (25.0-29.9) | β ≥30.0) | |
| C20:3n6 (%) | -0.0005 | | -0.0014 | -0.0297** | 0.0016 |
| C17:0 (%) | -0.0044 | | -0.0031* | -0.0018** | 0.0028 |
| C16:1n7c (%) | 0.0065 | | 0.0035 | -0.0010** | 0.022 |
| C16:0 (%) | 0.1100 | | 0.0815* | 0.0774 | 0.039 |
| AA/Σ(EPA+DHA) (%) | -0.0153 | | -0.0095 | -0.0009* | 0.046 |
| Dodecenoylcarnitine (nmol/L) | -0.04 | | -0.54** | -0.45 | 0.017 |
| Alanine (umol/dL) | 0.2940 | | 0.1798 | 0.0864* | 0.030 |

* $P < 0.05$; ** $P < 0.01$; Abbreviations: NHW: Non-Hispanic White; NHB: Non-Hispanic Black; Hisp: Hispanic; API: Asian/Pacific Islander; FDR: Benjamini-Hochberg false discovery rate; BMI: body mass index. Betas stratified by fetal sex are compared to female fetuses; betas stratified by race/ethnicity are compared to NHW; betas stratified by BMI are compared to BMI <25.0

Supplemental Table S3. Linear trajectories for metabolites with significant differences in slope or intercept. Intercepts are estimated levels of each metabolite at baseline (first visit), and slopes are estimated change in concentration per gestational week for each fetal sex, race/ethnicity, and BMI. Estimates from linear mixed effects models.

| Metabolite | Intercept | Slope |
|-------------------------------------|---------------|--------------|
| Acylcarnitines | | |
| Propionylcarnitine (nmol/L) | | |
| Male | 240.02 | -2.41 |
| Female | 207.00 | -1.30 |
| <i>Unadjusted p-value</i> | <i>0.024</i> | <i>0.046</i> |
| Octenoylcarnitine (nmol/L) | | |
| Normal BMI | 75.18 | 0.04 |
| Overweight BMI | 103.10 | -0.72 |
| Obese BMI | 104.49 | -0.40 |
| <i>Unadjusted p-value</i> | <i>0.0087</i> | <i>0.20</i> |
| Dodecenoylcarnitine (nmol/L) | | |
| Normal BMI | 20.86 | -0.04 |
| Overweight BMI | 37.04 | -0.54 |
| Obese BMI | 33.18 | -0.45 |
| Stearoylcarnitine (nmol/L) | | |
| Male | 27.37 | -0.23 |
| Female | 22.62 | -0.01 |
| <i>Unadjusted p-value</i> | <i>0.036</i> | <i>0.02</i> |
| Phospholipid fatty acids | | |
| C14:0 (%) | | |
| Non-Hispanic White | 0.35 | 0.0005 |
| Non-Hispanic Black | 0.26 | -0.0006 |
| Hispanic | 0.31 | 0.0005 |
| Asian/Pacific Islander | 0.28 | 0.0017 |
| <i>Unadjusted p-value</i> | <i>0.0052</i> | <i>0.27</i> |
| C15:0 (%) | | |
| Male | 0.29 | -0.0021 |
| Female | 0.26 | -0.0012 |
| <i>Unadjusted p-value</i> | <i>0.011</i> | <i>0.031</i> |
| C16:0 (%) | | |
| Normal BMI | 25.81 | 0.1100 |
| Overweight BMI | 26.83 | 0.0815 |
| Obese BMI | 27.01 | 0.0774 |
| <i>Unadjusted p-value</i> | <i>0.0039</i> | <i>0.039</i> |
| C16:1n7c (%) | | |
| Normal BMI | 0.43 | 0.0065 |
| Overweight BMI | 0.47 | 0.0035 |
| Obese BMI | 0.59 | -0.0010 |
| <i>Unadjusted p-value</i> | <i>0.038</i> | <i>0.022</i> |

| | | |
|---------------------------|------------------|---------------|
| C17:0 (%) | | |
| Normal BMI | 0.51 | -0.0044 |
| Overweight BMI | 0.48 | -0.0031 |
| Obese BMI | 0.44 | -0.0018 |
| <i>Unadjusted p-value</i> | <i>0.0011</i> | <i>0.0028</i> |
| C18:0 (%) | | |
| Non-Hispanic White | 13.55 | -0.0767 |
| Non-Hispanic Black | 13.84 | -0.0579 |
| Hispanic | 13.56 | -0.0586 |
| Asian/Pacific Islander | 12.70 | -0.0510 |
| <i>Unadjusted p-value</i> | <i>0.0023</i> | <i>0.081</i> |
| 18:1n6-9t (%) | | |
| Non-Hispanic White | 0.91 | -0.0068 |
| Non-Hispanic Black | 0.86 | -0.0060 |
| Hispanic | 0.78 | -0.0045 |
| Asian/Pacific Islander | 0.66 | -0.0046 |
| <i>Unadjusted p-value</i> | <i>0.0029</i> | <i>0.77</i> |
| 18:1n7c (%) | | |
| Non-Hispanic White | 1.56 | -0.0098 |
| Non-Hispanic Black | 1.40 | -0.0038 |
| Hispanic | 1.57 | -0.0089 |
| Asian/Pacific Islander | 1.64 | -0.0097 |
| <i>Unadjusted p-value</i> | <i>0.0005</i> | <i>0.0091</i> |
| 18:1n9c(%) | | |
| Non-Hispanic White | 7.24 | 0.0370 |
| Non-Hispanic Black | 6.59 | 0.0291 |
| Hispanic | 6.73 | 0.0392 |
| Asian/Pacific Islander | 7.58 | 0.0303 |
| <i>Unadjusted p-value</i> | <i>0.0015</i> | <i>0.79</i> |
| 18:3n6 (%) | | |
| Non-Hispanic White | 0.08 | 0.0001 |
| Non-Hispanic Black | 0.10 | -0.0012 |
| Hispanic | 0.08 | -0.0002 |
| Asian/Pacific Islander | 0.07 | 0.0000 |
| <i>Unadjusted p-value</i> | <i>0.08</i> | <i>0.027</i> |
| 20:2n6 (%) | | |
| Non-Hispanic White | 0.53 | -0.0022 |
| Non-Hispanic Black | 0.43 | -0.0001 |
| Hispanic | 0.61 | -0.0034 |
| Asian/Pacific Islander | 0.57 | -0.0016 |
| <i>Unadjusted p-value</i> | <i><.0001</i> | <i>0.0054</i> |
| 20:3n6 (%) | | |
| Non-Hispanic White | 3.54 | -0.0003 |
| Non-Hispanic Black | 3.30 | -0.0205 |
| Hispanic | 3.78 | -0.0057 |

| | | |
|---------------------------------|------------------|---------------|
| Asian/Pacific Islander | 3.08 | 0.0073 |
| <i>Unadjusted p-value</i> | <i>0.004</i> | <i>0.0042</i> |
| Normal BMI | 3.32 | -0.0005 |
| Overweight BMI | 3.44 | -0.0014 |
| Obese BMI | 4.38 | -0.0297 |
| <i>Unadjusted p-value</i> | <i><.0001</i> | <i>0.0016</i> |
| 20:4n6 (%) | | |
| Non-Hispanic White | 12.19 | -0.0873 |
| Non-Hispanic Black | 13.19 | -0.0525 |
| Hispanic | 11.96 | -0.0771 |
| Asian/Pacific Islander | 11.34 | -0.0822 |
| <i>Unadjusted p-value</i> | <i>0.0017</i> | <i>0.042</i> |
| 22:0 (%) | | |
| Non-Hispanic White | 0.55 | 0.0094 |
| Non-Hispanic Black | 0.71 | 0.0013 |
| Hispanic | 0.60 | 0.0008 |
| Asian/Pacific Islander | 0.56 | -0.0004 |
| <i>Unadjusted p-value</i> | <i>0.34</i> | <i>0.021</i> |
| Male | 0.61 | 0.0004 |
| Female | 0.58 | 0.0056 |
| <i>Unadjusted p-value</i> | <i>0.64</i> | <i>0.046</i> |
| 22:5n3 (%) | | |
| Normal BMI | 0.81 | -0.0061 |
| Overweight BMI | 0.71 | -0.0043 |
| Obese BMI | 0.71 | -0.0071 |
| <i>Unadjusted p-value</i> | <i>0.035</i> | <i>0.32</i> |
| 22:5n6 (%) | | |
| Non-Hispanic White | 0.49 | 0.0025 |
| Non-Hispanic Black | 0.56 | 0.0016 |
| Hispanic | 0.52 | 0.0045 |
| Asian/Pacific Islander | 0.40 | 0.0022 |
| <i>Unadjusted p-value</i> | <i>0.033</i> | <i>0.64</i> |
| 22:6n3 (%) | | |
| Non-Hispanic White | 4.27 | -0.0053 |
| Non-Hispanic Black | 4.25 | -0.0107 |
| Hispanic | 4.04 | -0.0140 |
| Asian/Pacific Islander | 5.30 | -0.0132 |
| <i>Unadjusted p-value</i> | <i>0.0003</i> | <i>0.82</i> |
| Σ(trans fatty acids) (%) | | |
| Non-Hispanic White | 1.12 | -0.0070 |
| Non-Hispanic Black | 1.10 | -0.0071 |
| Hispanic | 1.00 | -0.0052 |
| Asian/Pacific Islander | 0.86 | -0.0057 |
| <i>Unadjusted p-value</i> | <i>0.006</i> | <i>0.89</i> |
| Σ(cis fatty acids) (%) | | |

| | | |
|---|------------------|--------------|
| Non-Hispanic White | 29.56 | 0.0635 |
| Non-Hispanic Black | 27.70 | 0.1114 |
| Hispanic | 29.02 | 0.0964 |
| Asian/Pacific Islander | 30.48 | 0.0814 |
| <i>Unadjusted p-value</i> | <i>0.0022</i> | <i>0.15</i> |
| Normal BMI | 29.61 | 0.0853 |
| Overweight BMI | 29.44 | 0.0817 |
| Obese BMI | 27.70 | 0.1122 |
| <i>Unadjusted p-value</i> | <i>0.023</i> | <i>0.51</i> |
| $\Sigma(18:1\text{ cis fatty acids})\ (%)$ | | |
| Non-Hispanic White | 9.02 | 0.0276 |
| Non-Hispanic Black | 8.22 | 0.0239 |
| Hispanic | 8.51 | 0.0296 |
| Asian/Pacific Islander | 9.40 | 0.0198 |
| <i>Unadjusted p-value</i> | <i>0.0007</i> | <i>0.88</i> |
| $\Sigma(\text{EPA, DHA})\ (%)$ | | |
| Non-Hispanic White | 4.63 | -0.0060 |
| Non-Hispanic Black | 4.55 | -0.0117 |
| Hispanic | 4.33 | -0.0157 |
| Asian/Pacific Islander | 5.55 | -0.0139 |
| <i>Unadjusted p-value</i> | <i>0.0008</i> | <i>0.78</i> |
| AA / DHA (%) | | |
| Non-Hispanic White | 3.08 | -0.0203 |
| Non-Hispanic Black | 3.30 | -0.0079 |
| Hispanic | 3.16 | -0.0117 |
| Asian/Pacific Islander | 2.26 | -0.0104 |
| <i>Unadjusted p-value</i> | <i><.0001</i> | <i>0.28</i> |
| AA / $\Sigma(\text{EPA, DHA})\ (%)$ | | |
| Non-Hispanic White | 2.81 | -0.0180 |
| Non-Hispanic Black | 3.05 | -0.0064 |
| Hispanic | 2.94 | -0.0102 |
| Asian/Pacific Islander | 2.14 | -0.0097 |
| <i>Unadjusted p-value</i> | <i><.0001</i> | <i>0.22</i> |
| Normal BMI | 2.66 | -0.0153 |
| Overweight BMI | 2.79 | -0.0095 |
| Obese BMI | 2.86 | -0.0009 |
| <i>Unadjusted p-value</i> | <i>0.47</i> | <i>0.046</i> |
| Amino acids | | |
| Alanine (umol/dL) | | |
| Normal BMI | 23.98 | 0.29 |
| Overweight BMI | 26.49 | 0.18 |
| Obese BMI | 26.18 | 0.09 |
| <i>Unadjusted p-value</i> | <i>0.17</i> | <i>0.030</i> |
| $\Sigma(\text{Glutamic acid, Glutamine})\ (\text{umol/dL})$ | | |
| Male | 41.94 | 0.10 |

| | | |
|----------------------------|--------|-------|
| Female | 44.80 | 0.00 |
| <i>Unadjusted p-value</i> | 0.024 | 0.06 |
| Glycine (umol/dL) | | |
| Non-Hispanic White | 16.80 | -0.06 |
| Non-Hispanic Black | 14.51 | -0.00 |
| Hispanic | 14.42 | -0.02 |
| Asian/Pacific Islander | 15.17 | -0.05 |
| <i>Unadjusted p-value</i> | 0.009 | 0.08 |
| Normal BMI | 16.11 | -0.05 |
| Overweight BMI | 14.79 | -0.03 |
| Obese BMI | 12.69 | 0.00 |
| <i>Unadjusted p-value</i> | 0.0002 | 0.26 |
| Proline (umol/dL) | | |
| Non-Hispanic White | 14.66 | -0.02 |
| Non-Hispanic Black | 11.10 | 0.11 |
| Hispanic | 11.60 | 0.09 |
| Asian/Pacific Islander | 11.01 | 0.10 |
| <i>Unadjusted p-value</i> | 0.023 | 0.047 |
| Threonine (umol/dL) | | |
| Male | 8.57 | 0.30 |
| Female | 10.13 | 0.23 |
| <i>Unadjusted p-value</i> | 0.040 | 0.07 |
| Non-Hispanic White | 8.16 | 0.28 |
| Non-Hispanic Black | 11.58 | 0.21 |
| Hispanic | 9.52 | 0.26 |
| Asian/Pacific Islander | 8.74 | 0.30 |
| <i>Unadjusted p-value</i> | 0.017 | 0.40 |

Abbreviations: AA: arachidonic acid; BMI (body mass index); DHA: docosahexaneonic acid
 dL: deciliter; EPA: eicosapentaenoic acid; L: liter; nmol: nanomol; umol: micromol

Supplemental Table S4. Linear models with all data and after excluding the fasting visit.

| | Linear models: all visits | | Linear models: dropping fasting visit | |
|--|---------------------------|-----------|---------------------------------------|-----------|
| | Intercept | Slope | Intercept | Slope |
| Acylcarnitines (nmol/L) | | | | |
| Acetylcarnitine | 4040.6 | -44.5** | 4045.2 | -43.8** |
| Propionylcarnitine | 224.8 | -1.9** | 239.3 | -2.2** |
| Octenoylcarnitine | 88.5 | -0.3 | 86.3 | -0.3 |
| Decenoylcarnitine | 75.3 | -0.7** | 67.1 | -0.6** |
| Decanoylcarnitine | 94.1 | -1.0 ** | 81.0 | -0.7** |
| Glutarylcarnitine | 19.6 | -0.1** | 18.0 | -0.1* |
| Dodecenoylcarnitine | 27.8 | -0.3** | 24.1 | -0.2** |
| Dodecanoylcarnitine | 39.6 | -0.4** | 36.5 | -0.3** |
| Tetradecenoylcarnitine | 30.0 | -0.4** | 27.3 | -0.4** |
| Tetradecanoylcarnitine | 16.5 | -0.1 | 15.4 | -0.0 |
| Hexadecenoylcarnitine | 13.1 | -0.1** | 12.5 | -0.1** |
| Hexadecanoylcarnitine | 57.7 | -0.3 * | 58.2 | -0.3 |
| Oleylcarnitine | 64.3 | -0.5** | 65.9 | -0.5* |
| Linoleylcarnitine | 30.3 | -0.3* | 30.7 | -0.3 * |
| Stearoylcarnitine | 25.0 | -0.1* | 25.2 | -0.1* |
| Phospholipid fatty acids (relative percent) | | | | |
| C14:0 | 0.31 | 0.0005 | 0.30 | 0.0007 |
| C15:0 | 0.28 | -0.0016** | 0.27 | -0.0016** |
| C16:0 | 26.31 | 0.0960** | 25.90 | 0.1035** |
| C16:1n7c | 0.47 | 0.0045 | 0.46 | 0.0049** |
| C17:0 | 0.49 | -0.0036** | 0.49 | -0.0038** |
| C18:0 | 13.42 | -0.0622** | 13.49 | -0.0628** |
| C18:1n6c | 0.22 | -0.0013** | 0.22 | -0.0013** |
| C18:1n6/9t | 0.80 | -0.0055** | 0.81 | -0.0057** |
| C18:1n7c | 1.55 | -0.0080** | 1.50 | -0.0073** |
| C18:1n9c | 7.03 | 0.0349** | 6.88 | 0.0370** |
| C18:2n6c/c | 19.95 | 0.0603** | 19.60 | 0.0691** |
| C18:2n6c/t | 0.08 | -0.0004* | 0.09 | -0.0005** |
| C18:2n6t/c | 0.08 | -0.0000 | 0.08 | -0.0000 |
| C18:2n6t/t | 0.06 | -0.0003** | 0.05 | -0.0002* |
| C18:3n3 | 0.20 | 0.0020** | 0.19 | 0.0023** |
| C18:3n6 | 0.08 | -0.0003 | 0.08 | -0.0002 |
| C20:0 | 0.25 | 0.0006 | 0.31 | -0.0007* |
| C20:1n9 | 0.15 | -0.0009** | 0.16 | -0.0011** |
| C20:2n6 | 0.55 | -0.0019** | 0.54 | -0.0021** |
| C20:3n6 | 3.50 | -0.0043 | 3.48 | -0.0040 |
| C20:4n6 | 12.01 | -0.0752** | 12.19 | -0.0780** |
| C20:5n3 | 0.30 | -0.0010 | 0.37 | -0.0025** |
| C22:0 | 0.59 | 0.0031* | 0.78 | -0.0009 |
| C22:4n6 | 0.42 | 0.0007 | 0.54 | -0.0023** |
| C22:5n3 | 0.76 | -0.0056** | 0.78 | -0.0060** |

| | | | | |
|-------------------------------------|-------|-----------|-------|-----------|
| C22:5n6 | 0.50 | 0.0028** | 0.52 | 0.0024** |
| C22:6n3 | 4.41 | -0.0104** | 4.50 | -0.0139** |
| C24:0 | 0.59 | -0.0025** | 0.60 | -0.0025** |
| C24:1n9 | 0.78 | 0.0046* | 1.09 | -0.0021 |
| Σ (trans fatty acids) | 1.02 | -0.0063** | 1.03 | -0.0065** |
| Σ (18:2 trans fatty acids) | 0.21 | -0.0006 | 0.22 | -0.0006** |
| Σ (cis fatty acids) | 29.28 | 0.0876** | 28.71 | 0.0999** |
| Σ (18:1 cis fatty acids) | 8.80 | 0.0261** | 8.60 | 0.0283** |
| AA / DHA | 2.96 | -0.0136** | 2.94 | -0.0120** |
| AA/EPA | 52.94 | -0.1811 | 41.19 | 0.0670 |
| AA/ Σ (EPA, DHA) | 2.74 | -0.0120** | 2.70 | -0.0102** |
| Σ (EPA, DHA) | 4.71 | -0.0114** | 4.86 | -0.0160** |
| Amino acids (umol/dL) | | | | |
| α -aminobutyric acid | 1.44 | -0.0042* | 1.48 | -0.0046** |
| Alanine | 25.04 | 0.2303** | 25.68 | 0.2275** |
| Arginine | 6.40 | -0.0385** | 5.68 | -0.0213* |
| Asparagine | 4.43 | 0.0339** | 4.96 | 0.0249** |
| Aspartic acid | 0.80 | 0.0000 | 0.65 | 0.0030* |
| Citrulline | 1.71 | 0.0002 | 1.74 | -0.0001 |
| Cystine | 1.01 | 0.0082 | 1.27 | 0.0018 |
| Glutamic acid | 13.83 | -0.0472 | 11.56 | 0.0039 |
| Glutamine | 29.59 | 0.1088** | 32.24 | 0.0449 |
| Σ (Glutamic acid, Glutamine) | 43.38 | 0.0516 | 43.91 | 0.0462 |
| Glycine | 15.19 | -0.0352** | 15.03 | -0.0298** |
| Histidine | 6.44 | 0.0363** | 6.52 | 0.0372** |
| Hydroxyproline | 0.99 | 0.0107** | 1.05 | 0.0093* |
| Isoleucine | 5.44 | -0.0199* | 5.61 | -0.0224* |
| Leucine | 9.77 | -0.0477** | 10.18 | -0.0539** |
| Lysine | 14.81 | 0.0104 | 14.92 | 0.0107 |
| Methionine | 1.73 | 0.0072** | 1.73 | 0.0083** |
| Ornithine | 2.77 | -0.0042 | 3.06 | -0.0079 |
| Phenylalanine | 4.98 | 0.0001 | 5.20 | -0.0016 |
| Proline | 12.28 | 0.0629** | 13.35 | 0.0431 |
| Serine | 7.87 | 0.0012 | 7.61 | 0.0071 |
| Taurine | 10.16 | -0.0975** | 10.39 | -0.0936** |
| Threonine | 9.35 | 0.2673** | 9.14 | 0.2622** |
| Tyrosine | 4.26 | 0.0061 | 4.53 | 0.0037 |
| Valine | 18.81 | -0.0833** | 19.47 | -0.0878** |

