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Supplemental Figures and Tables
Supplemental Figure 1

Directed acyclic graph for cord leptin and adiponectin and long-term adiposity

Baseline Confounders & Pregnancy Characteristic Confounders
1) Maternal Age
2) Maternal Smoking
3) Parity
4) Maternal occupational social class
5) Maternal education
6) Pre-pregnancy BMI
7) Gestational age at birth
8) Mode of delivery
9) Gestational weight gain
10) Hypertensive disorders of pregnancy
11) Diabetes/Glycosuria

Exposure
Cord blood leptin
Cord blood adiponectin
Birthweight adjusted for gestational age

Maternal BMI, GWG, Diabetes
Not possible to mediate due to temporal nature

Analysis
Model 1: Sex and age at outcome measurement
Model 2: Adjusted for sex and confounders 1-6
Model 3: Adjusted for sex and confounders 1-11

Outcomes at age 9 and at age 17
- Offspring BMI
- Offspring Fat mass
- Offspring 95th percentile BMI (obesity)
BMI, GWG and diabetic disorders are all associated with neonatal adiposity (or main exposure in this study) and also offspring adiposity (outcome) in later life. These relationships (which have a biological basis) implicate them as confounders i.e. it is plausible that these characteristics influence neonatal adiposity (including that measured by cord-blood leptin) and later offspring adiposity and hence are, by definition, potential confounders. By contrast they could not be considered mediators as this would only be plausible if we assumed that neonatal adiposity causes maternal pre-pregnancy BMI, GWG and gestational diabetes which in turn go on to cause later offspring adiposity; not only is this not biologically plausible, it is not temporarily possible (see Supplemental Figure 1). It is possible that cord leptin (infant adiposity) mediates the effect of these more distal maternal risk factors on later offspring adiposity, however, that is a different research question than the hypothesis currently being examined.
**Supplemental Table 1**: Characteristics of observed and imputed data at age 9 and 17 years.

| Maternal Characteristics | Observed at age 9 | Multiply Imputed at Age 9 | Observed at Age 17 | Multiply Imputed at Age 17 |
|--------------------------|-------------------|---------------------------|--------------------|---------------------------|
|                          | N missing (%)     | N obs (%)                 | Median IQR         | N missing (%)     | N obs (%)                 | Median IQR         | N missing (%)     | N obs (%)                 | Median IQR         |
| Age                      | 221 (8.0)         | 2554                      | 29, 2775           | 29, 265           | 465 (21.7)                | 29, 1673           | 29, 2138           | 29, 26, 32        |
| Smoking                  | 274 (9.9)         |                            | 26, 32             | 26, 32            | 198 (7.1)                 | 26, 500            | 26, 32             | 26, 32            |
| Never                    | 1894 (75.7)       | 2077 (74.9)               | 1273 (77.6)        | 155 (7.3)         | 497 (23.2)                | 1633 (76.4)        | 155 (7.3)         | 155 (7.3)         |
| Before, not during pregnancy | 178 (7.1)     | 198 (7.1)                 | 118 (7.2)          | 118 (7.2)         | 429 (17.2)                | 500 (18.0)         | 522 (24.4)        | 522 (24.4)        |
| During pregnancy         | 429 (17.2)        | 500 (18.0)                | 250 (15.2)         | 250 (15.2)        | 350 (16.4)                | 350 (16.4)         | 350 (16.4)        | 350 (16.4)        |
| BMI                      | 483 (17.4)        | 2292                      | 22.2, 2775         | 22.4, 630         | 22.0, 2138                | 22.0, 2138         | 22.0, 2138        | 22.0, 2138        |
| Parity                   | 317 (11.4)        |                            | 20.5, 24.4         | 20.5, 24.7        | 20.5, 20.5                | 20.5, 24.4         | 20.5, 24.4        | 20.5, 24.4        |
| 0                        | 1124 (45.7)       | 1294 (46.6)               | 772 (47.8)         | 772 (47.8)        | 1036 (48.5)               | 1036 (48.5)        | 1036 (48.5)       | 1036 (48.5)       |
| 1                        | 906 (36.9)        | 999 (36.0)                | 580 (35.9)         | 580 (35.9)        | 749 (35.0)                | 749 (35.0)         | 749 (35.0)        | 749 (35.0)        |
|       | 2       | 3       | 4+      |       |
|-------|---------|---------|---------|-------|
|       | 322 (13.1) | 364 (13.1) | 196 (12.1) | 265 (12.4) |
|       | 84 (3.4) | 96 (3.5) | 50 (3.1) | 64 (3.0) |
|       | 22 (0.9) | 22 (0.8) | 18 (1.1) | 24 (1.1) |

| Education       |       |
|-----------------|-------|
| Left school at 16 |       |
| A level         |       |
| Degree          |       |
| Social Class    |       |
| Offspring       |       |
| Characteristics | Sex   |

| Sex | 192 (6.9) | 443 (20.7) |
|-----|-----------|------------|
| Male| 1243 (48.1) | 1,343 (48.4) | 722 (42.6) | 969 (45.3) |
| Female | 1,340 (51.9) | 1,432 (51.6) | 973 (57.4) | 1,169 (54.7) |
### Pregnancy Characteristics

| Model of delivery | Gestational age at birth (weeks) | Gestational weight gain (kg) | Hypertension and pre-eclampsia |
|-------------------|----------------------------------|-------------------------------|--------------------------------|
| Spontaneous       | 221 (8.0) 2554 40 2775 40 465 (21.7) 1673 40 2138 40 | 427 (15.4) 2348 12.5 2775 12.5 612 (28.6) 1526 12.5 2138 12.4 | 233 (8.0) 473 (22.1) |
| Breech            | 32 (1.3) 36 (1.3) 2148 (77.4) | 9.6, 15.2 9.5, 15.2 | 2159 (84.9) 2351 (84.7) |
| Caesarean         | 223 (8.8) 247 (8.9) | 148 (5.3) | 342 (13.5) 378 (13.6) |
| Forceps           | 153 (6.0) 164 (5.9) | 96 (5.8) | 342 (13.5) 378 (13.6) |
| Vacuum            | 135 (5.3) 148 (5.3) | 129 (7.8) | 135 (5.3) 148 (5.3) |
| Other             | 31 (1.2) 32 (1.2) | 90 (5.4) | 31 (1.2) 32 (1.2) |
| Gestational weight gain (kg) | | | |
| Hypertension and pre-eclampsia | | | 233 (8.0) 473 (22.1) |
| No hypertensive disorders | 2159 (84.9) 2351 (84.7) | 342 (13.5) 378 (13.6) | 2159 (84.9) 2351 (84.7) |
| Hypertension, no pre-eclampsia | | | 342 (13.5) 378 (13.6) |
| Hypertension and pre-eclampsia | | | 342 (13.5) 378 (13.6) |
| Diabetes | 433 (15.6) | 46 (1.7) | 41 (1.6) 46 (1.7) |
| | | | 531 (24.8) |
| Category                        | Median, Interquartile range | Figures are numbers (%) unless stated otherwise |
|--------------------------------|-----------------------------|------------------------------------------------|
| No glycosuria or diabetes      | 2342 (95.6)                 | 2652 (95.6)                                    |
| Existing diabetes              | 10 (0.4)                    | 11 (0.4)                                       |
| Gestational diabetes           | 16 (0.7)                    | 20 (0.7)                                       |
| Glycosuria                     | 82 (3.4)                    | 92 (3.3)                                       |
|                                | 1536 (95.6)                 | 2038 (95.3)                                     |
|                                | 8 (0.5)                     | 12 (0.6)                                       |
|                                | 6 (0.4)                     | 18 (0.8)                                       |
|                                | 57 (3.6)                    | 70 (3.3)                                       |
|                    | Cord blood | Age 9          | Age 17          |
|--------------------|------------|----------------|-----------------|
|                    | Leptin     | Adiponectin    | FM  | WC  | BMI | FM  | WC (age 15) | BMI |
| Birthweight        | 1451       | 4707           | 2417 | 2527 | 2513 | 1564 | 1448         | 1614 |
|                    | 0.33       | 0.14           | 0.09 | 0.16 | 0.15 | 0.05 | 0.13         | 0.10 |
| Cord blood         |            |                | 2458 | 2572 | 2558 | 1592 | 1472 | 1645 |
| Leptin             | 4962       |                | 0.11 | 0.12 | 0.05 | 0.09 | 0.16 | 0.05 | 0.08 |
|                    | 0.004      | -0.04          | -0.01 | 0.07 | 0.02 | 0.03 |        |      |
| Adiponectin        | 2433       |                | 2547 | 2533 | 1580 | 1456 | 1633 |        |
|                    | 0.004      | -0.04          | -0.01 | 0.07 | 0.02 | 0.03 |        |      |
| Age 9              |            |                | 2452 | 2439 | 1352 | 1271 | 1382 |        |
| FM                 |            |                | 0.82 | 0.90 | 0.74 | 0.60 | 0.64 |        |
| WC                 |            |                | 2554 | 1420 | 1326 | 1452 |        |        |
| BMI                |            |                | 0.88 | 0.52 | 0.66 | 0.63 |        |        |
| Age 17             |            |                | 1407 | 1313 | 1440 |        |        |        |
| FM                 |            |                | 1070 | 1589 |        |        |        |        |
Supplemental Table 2: Spearman correlations between birthweight, adipokines and markers off anthropometry at age 9 and 17

|            | 0.59 | 0.78 |
|------------|------|------|
| WC (age 15) | 1093 | 0.69 |

**Supplemental Table 2**: Spearman correlations between birthweight, adipokines and markers of anthropometry at age 9 and 17.
Supplemental Table 3: Cord blood analyte relative to maternal and pregnancy characteristics

| Maternal Characteristics | Attended at least one clinic assessment | Birthweight |
|--------------------------|----------------------------------------|-------------|
|                          | Cord leptin (pg/ml) | Cord Adiponectin (µg/ml) | median (IQR) or coefficient (95%CI) |
|                          | (N=2,845)           | (N=2,820)           |
| Age (per 1 year increase)| 0.05 (-0.01, 0.11), p=0.10 | -0.26 (-0.46, -0.06), p=0.01 | 5.37 (1.87, 8.86), p=0.003 |
| BMI (per 1kg/m² increase)| 0.43 (0.35, 0.52), p<0.001 | -0.04 (-0.32, 0.23), p=0.74 | 19.20 (14.68, 23.72), p<0.001 |
| Smoking                  |                         |                          |                                  |
| Never                   | 6.33 (3.55, 12.08)    | 75.70 (53.5, 98.15)    | 3418 (3144, 3714)               |
| Before, not during pregnancy | 7.36 (3.42, 13.45) | 76.98 (54.75, 98.11) | 3546 (3257, 3621)               |
| During pregnancy        | 6.19 (3.58, 11.23)    | 74.62 (53.53, 98.28)   | 3354 (3062, 3621)               |
| Parity                  |                         |                          |                                  |
| 0                       | 6.11 (3.23, 11.37)    | 74.36, 52.91, 98.77    | 3329 (3066, 3585)               |
| 1                       | 6.63 (3.74, 12.42)    | 77.66 (56.16, 99.41)   | 3487 (3227, 3760)               |
| 2                       | 6.78 (3.75, 11.91)    | 74.40 (51.93, 95.28)   | 3507 (3210, 3811)               |
| 3                       | 7.90 (4.14, 15.76)    | 76.24 (57.00, 98.07)   | 3501 (3128, 3869)               |
| 4+                      | 7.01 (4.05, 12.25)    | 75.74 (53.29, 102.48)  | 3409 (3142, 3712)               |
| Parity                  |                         |                          |                                  |
| Education               |                         |                          |                                  |
| Left school at 16       | 6.44 (3.59, 12.38)    | 76.03 (54.43, 100.45)  | 3403 (3136, 3705)               |
| A level                 | 6.31 (3.22, 11.91)    | 75.8 (52.33, 97.14)    | 3426 (3141, 3723)               |
| Degree                  | 6.26 (4.00, 11.24)    | 74.18 (63.13, 95.02)   | 3421 (3154, 3726)               |
| Social Class            |                         |                          |                                  |
| I (least disadvantaged) | 5.76 (3.92, 11.32)    | 65.46 (49.79, 91.86)   | 3448 (3144, 3786)               |
| II                      | 6.06 (3.38, 11.79)    | 77.56 (54.47, 98.44)   | 3401 (3142, 3686)               |
### Pregnancy Characteristics

| Model of delivery | Median (Interquartile range) | P values for differences between categories |
|-------------------|------------------------------|---------------------------------------------|
| Spontaneous       | 6.41 (3.58, 12.02) 76.95 (54.64, 99.51) 3415 (3144, 3714) | P=0.09                                      |
| Breech            | 6.72 (3.42, 11.56) 66.24 (41.42, 94.81) 3230 (3042, 3437) | P<0.001                                     |
| Caesarean         | 5.84 (3.36, 11.21) 67.21 (47.38, 89.83) 3425 (3088, 3741) | P=0.61                                      |
| Forceps           | 5.85 (3.18, 12.37) 78.83 (58.27, 102.56) 3409 (3153, 3705) | P=0.006                                     |
| Vacuum            | 7.72 (4.14, 15.31) 72.91 (46.71, 94.78) 3335 (3076, 3598) |                                           |
| Other             | 5.70 (2.98, 11.89) 74.94 (51.66, 101.88) 3271 (3191, 3634) |                                           |

#### Gestational weight gain (per 1kg increase)

- No hypertensive disorders: 0.22 (0.16, 0.29), p<0.001
- Hypertension, no pre-eclampsia: 0.33 (0.11, 0.54), p=0.003
- Hypertension and pre-eclampsia: 21.19 (18.40, 23.98), p<0.001

#### Hypertension and pre-eclampsia

- No hypertensive disorders: 6.32 (3.58, 12.03) 76.43 (54.19, 98.38) 3408 (3142, 3708) | P=0.61 |
- Hypertension, no pre-eclampsia: 6.84 (3.49, 12.82) 73.26 (52.75, 97.22) 3425 (3134, 3716) | P=0.17 |
- Hypertension and pre-eclampsia: 6.87 (3.15, 14.22) 65.58 (50.68, 95.24) 3288 (2952, 3775) | P=0.61 |

#### Diabetes

- No glycosuria or diabetes: 6.26 (3.56, 11.98) 75.99 (53.82, 98.88) 3405 (3138, 3705) | P=0.08 |
- Existing diabetes: 8.90 (7.2, 20.22) 51.15 (36.07, 94.52) 3541 (3094, 4122) | P=0.33 |
- Gestational diabetes: 8.62 (3.15, 21.94) 71.86 (48.86, 86.34) 3746 (3541, 4347) | P<0.001 |
- Glycosuria: 7.88 (3.90, 13.35) 71.42 (52.24, 93.34) 3464 (3181, 3733) | P<0.001 |

**Median (Interquartile range)**

**P values for differences between categories**

**Birthweight adjusted for sex, gestational age and number of offspring**
**Supplemental Table 4:** Associations of birthweight and cord blood analyte with fat mass, waist circumference and BMI at age 9 years. N= 2775

| Exposure | Outcome  | Fat mass* | Waist circumference | BMI   |
|----------|----------|-----------|---------------------|-------|
|          | %        | Change    | 95% CI | P | % | Change | 95% CI | P | % | Change | 95% CI | P  |
| Leptin (10pg/ml) |          |           |         |   |   |         |         |   |   |         |         |   |
| Model 1  | 3.9      | 2.2, 5.7  | <0.001  | 1.0 | 0.6, 1.4 | <0.001 | 1.5 | 0.9, 2.0 | <0.001 |
| Model 2  | 2.0      | 0.3, 3.7  | 0.022   | 0.5 | 0.1, 0.9 | 0.016 | 0.8 | 0.3, 1.3 | 0.003 |
| Model 3  | 1.5      | -0.2, 3.3 | 0.077   | 0.4 | 0.0, 0.8 | 0.069 | 0.6 | 0.1, 1.1 | 0.023 |
| Adiponectin (10µg/ml) |          |           |         |   |   |         |         |   |   |         |         |   |
| Model 1  | 0.0      | -0.5, 0.5 | 0.999   | -0.1 | -0.2, 0.0 | 0.152 | 0.0 | -0.2, 0.1 | 0.830 |
| Model 2  | 0.1      | -0.4, 0.6 | 0.738   | -0.1 | -0.2, 0.0 | 0.236 | 0.0 | -0.1, 0.2 | 0.860 |
| Model 3  | 0.1      | -0.4, 0.6 | 0.758   | -0.1 | -0.2, 0.0 | 0.186 | 0.0 | -0.2, 0.2 | 0.975 |
| Birthweight‡ (100g) |          |           |         |   |   |         |         |   |   |         |         |   |
| Model 1  | 0.5      | 0.0, 0.9  | 0.032   | 0.4 | 0.3, 0.5 | <0.001 | 0.5 | 0.4, 0.7 | <0.001 |
| Model 2  | 0.1      | -0.3, 0.5 | 0.609   | 0.3 | 0.2, 0.4 | <0.001 | 0.4 | 0.3, 0.5 | <0.001 |
| Model 3  | -0.1     | -0.5, 0.4 | 0.710   | 0.3 | 0.2, 0.4 | <0.001 | 0.4 | 0.2, 0.5 | <0.001 |

Model 1: Adjusted for offspring sex and age at measurement.

Model 2: Adjusted for offspring sex, age at measurement and maternal confounders (age, smoking, parity, occupational social class, education and pre-pregnancy BMI).
Model 3: Adjusted for offspring sex, age at measurement and maternal confounders plus pregnancy confounders (gestational age at birth, mode of delivery, gestational weight gain, hypertensive disorders and diabetic disorders of pregnancy).

* Fat mass adjusted for height

‡ Birthweight adjusted for sex, gestational age and singleton/twin pregnancy

% refers to percentage change of outcome per unit increase in exposure
**Supplemental Table 5:** Associations of birthweight and cord blood analyte with fat mass, waist circumference (at age 15 years) and BMI at age 17 years. N= 2138

| Exposure                  | Outcome | Fat mass* | % | 95% CI  | P    | Waist Circumference | % | 95% CI  | P    | BMI     | % | 95% CI  | P    |
|---------------------------|---------|-----------|----|---------|------|---------------------|----|---------|------|---------|----|---------|------|
|                           |         | Change    |    |         |      | Change              |    |         |      | Change  |    |         |      |
| Leptin (10pg/ml)          |         |           |    |         |      |                     |    |         |      |         |    |         |      |
| Model 1                   |         | 3.6       | 0.001| 1.5, 5.8| 0.001| 0.9                 | 0.5, 1.4| <0.001| 1.4 | 0.8, 2.1| <0.001|
| Model 2                   |         | 1.0       | 0.335| -1.0, 3.1| 0.335| 0.4                 | 0.0, 0.9| 0.074| 0.5 | -0.2, 1.1| 0.151|
| Model 3                   |         | 0.6       | 0.568| -1.5, 2.7| 0.568| 0.4                 | -0.1, 0.9| 0.100| 0.3 | -0.3, 1.0| 0.317|
| Adiponectin (10µg/ml)     |         |           |    |         |      |                     |    |         |      |         |    |         |      |
| Model 1                   |         | 0.6       | 0.092| -0.1, 1.2| 0.092| 0.1                 | 0.0, 0.3| 0.061| 0.2 | 0.0, 0.4| 0.083|
| Model 2                   |         | 0.7       | 0.039| 0.0, 1.3| 0.039| 0.2                 | 0.0, 0.3| 0.024| 0.2 | 0.0, 0.4| 0.029|
| Model 3                   |         | 0.6       | 0.048| 0.0, 1.3| 0.048| 0.2                 | 0.0, 0.3| 0.032| 0.2 | 0.0, 0.4| 0.033|
| Birthweight‡ (100g)       |         |           |    |         |      |                     |    |         |      |         |    |         |      |
| Model 1                   |         | 1.2       | <0.001| 0.7, 1.7| <0.001| 0.5                 | 0.4, 0.6| <0.001| 0.5 | 0.3, 0.7| <0.001|
| Model 2                   |         | 0.6       | 0.016| 0.1, 1.2| 0.016| 0.4                 | 0.3, 0.5| <0.001| 0.3 | 0.1, 0.4| <0.001|
| Model 3                   |         | 0.5       | 0.091| -0.1, 1.0| 0.091| 0.4                 | 0.3, 0.5| <0.001| 0.3 | 0.1, 0.4| 0.002|

Model 1: Adjusted for offspring sex and age at measurement.

Model 2: Adjusted for offspring sex, age at measurement and maternal confounders (age, smoking, parity, occupational social class, education and pre-pregnancy BMI).
Model 3: Adjusted for offspring sex, age at measurement and maternal confounders plus pregnancy confounders (gestational age at birth, mode of delivery, gestational weight gain, hypertensive disorders and diabetic disorders of pregnancy).

* Fat mass adjusted for height

‡ Birthweight adjusted for sex, gestational age and singleton/twin pregnancy

% refers to percentage change of outcome per unit increase in exposure
**Supplemental Table 6:** Associations of birthweight and cord blood analyte with fat mass, waist circumference and BMI z-scores and obesity at age 9 years using complete case analysis.

| Exposure                  | Outcome                   | Fat mass z-score * | Waist circumference z-score | BMI z-score | Obesity |
|---------------------------|---------------------------|--------------------|----------------------------|-------------|---------|
|                           | Coefficient  | 95% CI   | P    | Coefficient | 95% CI   | P   | Coefficient | 95% CI   | P   | OR      | 95% CI   | P    |
| Leptin (10pg/ml)          |                          |                    |      |             |          |     |             |          |     |         |          |      |
| Model 1                   | 0.06                     | 0.03, 0.10        | <0.001 | 0.09        | 0.05, 0.13 | <0.001 | 0.09        | 0.05, 0.14 | <0.001 | 1.09    | 0.91, 1.32 | 0.343 |
| Model 2                   | 0.03                     | -0.01, 0.07       | 0.096  | 0.05        | 0.01, 0.09 | 0.014  | 0.05        | 0.01, 0.09 | 0.029  | 0.93    | 0.75, 1.14 | 0.463 |
| Model 3                   | 0.02                     | -0.01, 0.06       | 0.239  | 0.04        | 0.00, 0.08 | 0.051  | 0.03        | -0.01, 0.08 | 0.141  | 0.89    | 0.72, 1.10 | 0.289 |
|                          |                          | N=1,684           |       |             |          |     |             |          |     |         |          |      |
| Adiponectin (10µg/ml)     |                          |                    |      |             |          |     |             |          |     |         |          |      |
| Model 1                   | 0.00                     | -0.01, 0.01       | 0.910  | -0.01       | -0.02, 0.01| 0.393  | 0.00        | -0.01, 0.02 | 0.786  | 1.04    | 0.97, 1.12 | 0.267 |
| Model 2                   | 0.00                     | -0.01, 0.02       | 0.573  | 0.00        | -0.01, 0.01| 0.761  | 0.01        | -0.01, 0.02 | 0.346  | 1.06    | 0.99, 1.14 | 0.116 |
| Model 3                   | 0.00                     | -0.01, 0.02       | 0.498  | 0.00        | -0.02, 0.01| 0.728  | 0.01        | -0.01, 0.02 | 0.356  | 1.06    | 0.98, 1.14 | 0.134 |
|                          |                          | N=1,666           |       |             |          |     |             |          |     |         |          |      |
| Birthweight‡ (100g)       |                          |                    |      |             |          |     |             |          |     |         |          |      |
| Model 1                   | 0.01                     | 0.00, 0.02        | 0.100  | 0.04        | 0.02, 0.05| <0.001 | 0.04        | 0.03, 0.05 | <0.001 | 1.05    | 0.99, 1.11 | 0.128 |
| Model 2                   | 0.00                     | -0.01, 0.01       | 0.707  | 0.03        | 0.02, 0.04| <0.001 | 0.03        | 0.02, 0.05 | <0.001 | 1.02    | 0.96, 1.08 | 0.553 |
| Model 3                   | 0.00                     | -0.01, 0.01       | 0.679  | 0.03        | 0.01, 0.04| <0.001 | 0.03        | 0.02, 0.04 | <0.001 | 1.00    | 0.94, 1.06 | 0.952 |
|                          |                          | N=1,673           |       |             |          |     |             |          |     |         |          |      |

‡Birthweight refers to birthweight in grams.
Model 1: Adjusted for offspring sex and age at measurement.

Model 2: Adjusted for offspring sex, age at measurement and maternal confounders (age, smoking, parity, occupational social class, education and pre-pregnancy BMI).

Model 3: Adjusted for offspring sex, age at measurement and maternal confounders plus pregnancy confounders (gestational age at birth, mode of delivery, gestational weight gain, hypertensive disorders and diabetic disorders of pregnancy).

* Fat mass adjusted for height

‡ Birthweight adjusted for sex, gestational age and singleton/twin pregnancy
**Supplemental Table 7:** Associations of birthweight and cord blood analyte with fat mass, waist circumference (at age 15 years) and BMI z-scores and obesity at age 17 years using complete case analysis.

| Exposure       | Outcome                                                                 | Fat mass z-score * | Waist circumference z-score | BMI z-score | Obesity |
|----------------|-------------------------------------------------------------------------|--------------------|-----------------------------|-------------|---------|
|                 |                                                                         | Coefficient        | 95% CI                      | P           | Coefficient | 95% CI | P | Coefficient | 95% CI | P | OR | 95% CI | P |
| Leptin (10pg/ml)| Model 1                                                                 | 0.08 | 0.03, 0.13 | 0.001 | 0.06 | 0.01, 0.11 | 0.023 | 0.09 | 0.03, 0.14 | 0.003 | 1.17 | 1.00, 1.38 | 0.049 |
|                 | Model 2                                                                 | 0.03 | -0.02, 0.08 | 0.224 | 0.03 | -0.02, 0.08 | 0.271 | 0.02 | -0.04, 0.07 | 0.485 | 0.96 | 0.78, 1.18 | 0.679 |
|                 | Model 3                                                                 | 0.02 | -0.03, 0.07 | 0.393 | 0.04 | -0.02, 0.09 | 0.171 | 0.01 | -0.05, 0.06 | 0.765 | 0.93 | 0.75, 1.16 | 0.543 |
|                 |                                                                        | N=1,143 | N=1,055 | N=1,177 | N=1,177 |
| Adiponectin (10µg/ml)| Model 1                                                                 | 0.01 | -0.01, 0.03 | 0.257 | 0.01 | -0.01, 0.03 | 0.266 | 0.01 | -0.01, 0.03 | 0.497 | 1.02 | 0.95, 1.10 | 0.554 |
|                 | Model 2                                                                 | 0.01 | -0.01, 0.03 | 0.244 | 0.01 | 0.00, 0.03 | 0.164 | 0.01 | -0.01, 0.03 | 0.439 | 1.03 | 0.95, 1.11 | 0.482 |
|                 | Model 3                                                                 | 0.01 | -0.01, 0.03 | 0.208 | 0.01 | 0.00, 0.03 | 0.135 | 0.01 | -0.01, 0.03 | 0.383 | 1.04 | 0.96, 1.12 | 0.386 |
|                 |                                                                        | N=1,132 | N=1,041 | N=1,166 | N=1,166 |
| Birthweight‡ (100g)| Model 1                                                                 | 0.03 | 0.01, 0.04 | <0.001 | 0.03 | 0.01, 0.04 | <0.001 | 0.03 | 0.02, 0.05 | <0.001 | 1.09 | 1.04, 1.15 | 0.001 |
|                 | Model 2                                                                 | 0.01 | 0.00, 0.03 | 0.149 | 0.02 | 0.01, 0.04 | 0.001 | 0.02 | 0.01, 0.04 | 0.022 | 1.05 | 0.99, 1.12 | 0.093 |
|                 | Model 3                                                                 | 0.01 | 0.00, 0.02 | 0.02 | 0.01, 0.04 | <0.001 | 0.02 | 0.00, 0.03 | 1.05 | 0.98, 1.11 | 0.159 |
|                 |                                                                        | N=1,136 | N=1,048 | N=1,170 | N=1,170 |
Model 1: Adjusted for offspring sex and age at measurement.
Model 2: Adjusted for offspring sex, age at measurement and maternal confounders (age, smoking, parity, occupational social class, education and pre-pregnancy BMI).
Model 3: Adjusted for offspring sex, age at measurement and maternal confounders plus pregnancy confounders (gestational age at birth, mode of delivery, gestational weight gain, hypertensive disorders and diabetic disorders of pregnancy).
* Fat mass adjusted for height
‡ Birthweight adjusted for sex, gestational age and singleton/twin pregnancy
## Supplemental Table 8: Associations of birthweight and cord blood analyte with fat mass, waist circumference and BMI at age 9 years using complete case analysis.

| Exposure | Fat mass* | Waist circumference | BMI |
|----------|-----------|---------------------|-----|
|          | %        | %                  | %   |
|          | Change    | 95% CI             | P   | Change    | 95% CI             | P   | Change    | 95% CI             | P   |
| Leptin (10pg/ml) |          |                     |     |           |                     |     |           |                     |     |
| Model 1  | 3.3       | 1.2, 5.4            | 0.002 | 1.0   | 0.5, 1.5 | <0.001 | 1.0   | 0.7, 1.9 | <0.001 |
| Model 2  | 1.4       | -0.6, 3.4           | 0.160 | 0.6   | 0.1, 1.0 | 0.019  | 0.5   | 0.1, 1.3 | 0.024  |
| Model 3  | 0.9       | -1.1, 2.9           | 0.373 | 0.4   | 0.0, 0.9 | 0.068  | 0.3   | -0.1, 1.1 | 0.121  |
| N=1,684  | N=1,776   | N=1,764             |      |       |         |       |       |         |       |
| Adiponectin (10µg/ml) |          |                     |     |           |                     |     |           |                     |     |
| Model 1  | 0.1       | -0.6, 0.8           | 0.752 | 0.0   | -0.2, 0.1 | 0.559  | 0.0   | -0.2, 0.3 | 0.651  |
| Model 2  | 0.3       | -0.3, 1.0           | 0.336 | 0.0   | -0.2, 0.1 | 0.937  | 0.1   | -0.1, 0.3 | 0.270  |
| Model 3  | 0.4       | -0.3, 1.0           | 0.280 | 0.0   | -0.2, 0.1 | 0.922  | 0.1   | -0.1, 0.3 | 0.272  |
| N=1,666  | N=1,758   | N=1,746             |      |       |         |       |       |         |       |
| Birthweight‡ (100g) |          |                     |     |           |                     |     |           |                     |     |
| Model 1  | 0.4       | -0.1, 0.9           | 0.153 | 0.4   | 0.3, 0.6 | <0.001 | 0.5   | 0.4, 0.7 | <0.001 |
| Model 2  | 0.0       | -0.5, 0.6           | 0.965 | 0.4   | 0.2, 0.5 | <0.001 | 0.4   | 0.3, 0.6 | <0.001 |
| Model 3  | -0.2      | -0.8, 0.3           | 0.433 | 0.3   | 0.2, 0.4 | <0.001 | 0.4   | 0.2, 0.5 | <0.001 |
| N=1,673  | N=1,765   | N=1,753             |      |       |         |       |       |         |       |

Model 1: Adjusted for offspring sex and age at measurement.
Model 2: Adjusted for offspring sex, age at measurement and maternal confounders (age, smoking, parity, occupational social class, education and pre-pregnancy BMI).
Model 3: Adjusted for offspring sex, age at measurement and maternal confounders plus pregnancy confounders (gestational age at birth, mode of delivery, gestational weight gain, hypertensive disorders and diabetic disorders of pregnancy).

* Fat mass adjusted for height
‡ Birthweight adjusted for sex, gestational age and singleton/twin pregnancy
% refers to percentage change of outcome per unit increase in exposure
**Supplemental Table 9:** Associations of birthweight and cord blood analyte with fat mass, waist circumference (at age 15 years) and BMI at age 17 years using complete case analysis.

| Outcome                | Fat mass* | Waist circumference | BMI          |
|------------------------|-----------|--------------------|--------------|
|                        | %         | 95% CI             | %            | 95% CI      | %             | 95% CI      | P         |
|                        | Change    | P                  | Change       | 95% CI      | P             | Change       | P         |
| **Leptin (10pg/ml)**   |           |                    |              |             |               |              |           |
| Model 1                | 3.9       | 1.4, 6.6           | 0.002        | 0.7         | 0.1, 1.3      | 0.022        | 1.4        | 0.7, 2.1 | <0.001 |
| Model 2                | 1.3       | -1.2, 3.8          | 0.317        | 0.3         | -0.3, 0.9     | 0.309        | 0.5        | -0.2, 1.1 | 0.173  |
| Model 3                | 0.8       | -1.7, 3.4          | 0.536        | 0.4         | -0.3, 1.0     | 0.194        | 0.4        | -0.3, 1.1 | 0.244  |
|                        | N=1,143   |                    |              |             |               |              |           |
| **Adiponectin (10µg/ml)** |           |                    |              |             |               |              |           |
| Model 1                | 0.4       | -0.5, 1.3          | 0.397        | 0.1         | -0.1, 0.3     | 0.357        | 0.0        | -0.2, 0.3 | 0.750  |
| Model 2                | 0.4       | -0.5, 1.2          | 0.376        | 0.1         | -0.1, 0.3     | 0.231        | 0.1        | -0.1, 0.3 | 0.410  |
| Model 3                | 0.4       | -0.4, 1.3          | 0.343        | 0.1         | -0.1, 0.3     | 0.192        | 0.1        | -0.1, 0.3 | 0.410  |
|                        | N=1,132   |                    |              |             |               |              |           |
| **Birthweight‡ (100g)** |           |                    |              |             |               |              |           |
| Model 1                | 1.3       | 0.6, 2.0           | <0.001       | 0.3         | 0.2, 0.5      | <0.001       | 0.5        | 0.3, 0.7 | <0.001 |
| Model 2                | 0.7       | 0.0, 1.4           | 0.049        | 0.2         | 0.1, 0.4      | 0.003        | 0.3        | 0.1, 0.5 | 0.001  |
| Model 3                | 0.5       | -0.2, 1.3          | 0.137        | 0.3         | 0.1, 0.4      | 0.001        | 0.3        | 0.1, 0.5 | 0.003  |
|                        | N=1,136   |                    |              |             |               |              |           |

Model 1: Adjusted for offspring sex and age at measurement.
Model 2: Adjusted for offspring sex, age at measurement and maternal confounders (age, smoking, parity, occupational social class, education and pre-pregnancy BMI).

Model 3: Adjusted for offspring sex, age at measurement and maternal confounders plus pregnancy confounders (gestational age at birth, mode of delivery, gestational weight gain, hypertensive disorders and diabetic disorders of pregnancy).

* Fat mass adjusted for height

‡ Birthweight adjusted for sex, gestational age and singleton/twin pregnancy

% refers to percentage change of outcome per unit increase in exposure