**Supplementary Table S1**. Summary of included studies (n = 24) on differential protein expressions in GDM and controls

| Author (Ref) | Year | Country | Continent | Age Analysis | Trimester (Analysis) | GDM Diagnosis Criteria | Glucose Dose | Age at GDM diagnosis | Trimester (GDM diagnosis) | Study Type | Control (n) | GDM (n) | Sample type | Proteomic platform | NOS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ai, T., et al (1) | 2015 | China | Asia | 24 weeks | 2 | IADPSG | 75 g | 24 weeks | 2 | case-control | 10 | 11 | serum | MALDI-TOF MS | 8 |
| Boisvert, MR., et al (2) | 2010 | Canada | North America | 12-20 weeks | 2 | ADA | 75 g | 12-20 weeks (mean 15 weeks) | 2 | case-control | 26 | 26 | amniotic Fluid | QTOF-MS | 9 |
| Boyle, KE., et al (3) | 2014 | America | North America | 37 weeks | 2 | CC | 100 g | 24-28 weeks | 2 | case-control | 6 | 6 | rectus abdominus skeletal muscle tissue | LTQ-FTICR MS | 8 |
| Fruscalzo, A., et al (4) | 2015 | Italy | Europe | 11-14 weeks | 1-2 | IADPSG | 75 g | 24-28 weeks | 2 | case-control | 44 | 32 | serum | MALDI-TOF MS | 8 |
| Guo, Y., et al (5) | 2018 | China | Asia | 15-20 weeks and 24-28 weeks | 2 | IADPSG | 75 g | 24 to 28 weeks | 2 | case-control and longitudinal | 16 | 16 | urine | iTRAQ LC-MS/MS | 8 |
| Hajduk, J., et al (6) | 2015 | Poland | Europe | 24 to 28 weeks | 2 | Polish GS standard | 75 g | 24 to 28 weeks | 2 | case-control | 13 | 18 | plasma | MALDI-TOF MS | 9 |
| Ilyas, S., et al (7) | 2020 | Pakistan | Asia | 16-20 weeks and 24-28 weeks | 2 | ACOG | 100 g | 24 to 28 weeks | 2 | case-control and longitudinal | 84 | 84 | plasma | 2-DE-LC-MS/MS | 8 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jayabalan, N., et al (8) | 2019 | Australia | Australia | 22-28 weeks | 2 | ADIPS and WHO | 75 g | 24 to 28 weeks | 2 | case-control | 11 | 11 | plasma | SWATH-MS | 8 |
| Kim, SM., et al (9) | 2012 | Korea | Asia | 16-20 weeks and 24-28 weeks | 2 | ACOG | 100 g | 24 to 28 weeks | 2 | case-control and longitudinal | 12 | 12 | peripheral plasma | SELDI-TOF MS | 9 |
| Kopylov, A.T., et al (10), | 2020 | Russia | Europe | 23 to 28 weeks | NA | IADPSG and adopted Russian AOG | 75 g | 23 to 28 weeks | 2 | case-control | 36 | 80 | plasma | LC-MS/MS | 8 |
| Li, J., et al (11) | 2021 | China | Asia | NA | NA | IADPSG | 75g | 24 to 28 weeks | 2 | case-control | 8 | 12 | serum | 2-DE-LC-MS/MS | 8 |
| Liao, Y., et al (12) | 2018 | China | Asia | *NA | NA | IADPSG | 75 g | 24 to 28 weeks | 2 | case-control | 4 | 4 | peripheral plasma; umbilical venous plasma | iTRAQ LC-MS/MS | 9 |
| Liu, B., et al (13) | 2018 | China | Asia | NA | NA | ADA | 75 g | 24 to 28 weeks | 2 | case-control | 25 | 25 | placenta villi | 2-DE-MALDI-TOF/TOF | 8 |
| Liu, F., et al (14) | 2016 | China | Asia | *NA | NA | IADPSG and ADA | 75 g | 24 to 28 weeks | 2 | case-control | 30 | 30 | umbilical cord plasma | LC-MS/MS | 9 |
| Liu, X., et al (15) | 2020 | China | Asia | 16-18 weeks | 2 | Chinese PLA General Hospital | NA | 24 to 28 weeks | 2 | case-control and longitudinal | 22 | 22 | plasma | LC-MS/MS | 9 |
| Ma, Y., et al (16) | 2016 | China | Asia | *NA | NA | IADPSG | 75 g | 24-28 weeks | 2 | case-control | 6 | 6 | omental adipose tissue | LC-MS/MS | 8 |
| Mavreli, D., et al (17) | 2020 | Greece | Europe | 11-13 weeks | 1 | ACOG | 75 g | 24 to 28 weeks | 2 | case-control and longitudinal | 5 | 5 | plasma | TMT LC-MS/MS | 9 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Miao, Z., et al (18) | 2016 | China | Asia | NA | NA | ADA | 75 g | 24 to 28 weeks | 2 | case-control and longitudinal | 30 | 30 | umbilical vein blood plasma | TMT LC-MS/MS | 9 |
| Ramachandrarao, SP., et al (19) | 2016 | America | North America | 20 weeks | 2-3 | The California Sweet Success Program | NA | at first or second trimester | 1 or 2 | case-control and longitudinal | 10 | 8 | urine exosomes | LC-MS/MS | 8 |
| Ravnsborg, T., et al (20) | 2016 | Denmark | Europe | 8 - 13 weeks | 1 | the Danish GDM guideline | NA | NA | NA | case-control | 208 | 199 | serum | SIL peptide LC-MS/MS | 9 |
| Ravnsborg, T., et al (21) | 2019 | Denmark | Europe | 8 - 13 weeks | 1 | the Danish GDM guideline | NA | NA | NA | case-control | 30 | 30 | peripheral serum | TMT LC-MS/MS | 9 |
| Shen, L., et al (22) | 2019 | China | Asia | 12–16 weeks and 24-28 weeks | 1 | IADPSG | 75 g | 24-28 weeks | 2 | case-control and longitudinal | 30 | 30 | peripheral serum | iTRAQ LC-MS/MS | 8 |
| Zhao, C., et al (23) | 2015 | China | Asia | 16-18 weeks | 2 | Hospital of Nanjing | 75 g | 24-28 weeks | 2 | case-control | 20 | 20 | peripheral plasma | TMT LC-MS/MS | 9 |
| Zhao, D., et al (24) | 2017 | China | Asia | 12-16 weeks | 2 | IADPSG | 75 g | 24-28 weeks | 2 | case-control and longitudinal | 10 | 10 | serum | iTRAQ LC-MS/MS | 8 |

Note: Abbreviations IADPSG (International Association of the Diabetes and Pregnancy Study Groups), ADA (the American Diabetes Association), WHO (World Health Organization), ACOG (The American College of Obstetricians and Gynecologists), CC (Carpenter-Coustan Criteria), ADIPS (Australasian Diabetes in Pregnancy Society), NA (data not available), NOS (Newcastle-Ottawa Scale), MS (Mass Spectrometer), MALDI (Matrix Assisted Laser Desorption/Ionization), TOF (Time of Flight), LTQ (Hybrid Linear Ion Trap), FTICR (Fourier Transform Ion Cyclotron Resonance), iTRAQ (Isobaric Tagging for Relative and Absolute Quantification), LC (Liquid Chromatography), 2DE (Two-Dimensional Gel Electrophoresis), SWATH (Sequential Window Acquisition of All Theoretical), SELDI (Surface-Enhanced Laser Desorption/Ionization), SIL (Stable Isotope Labeled)

**Supplementary Table S2.** Diagnostic criteria using the OGTT for GDM guidelines used in included studies

| Diagnostic Criteria | Guidelines | Glucose Dose | Fasting Glucose mg/dl (mmol/l) | 1 hour mg/dl (mmol/l) | 2 hours mg/dl (mmol/l) | 3 hours mg/dl (mmol/l) | |
|---|---|---|---|---|---|---|---|
| 1 | ADA(75) | 75g | 95(5.3) | 180(10.0) | 155(8.6) | | 2 or more |
| 2 | ADIPS | 75g | 99(5.5) | | 144(8.0) | | 1 or more |
| 3 | EASD | 75g | 108(6.0) | | 162(9.0) | | 1 or more |
| 4 | IADPSG | 75g | 92(5.1) | 180(10.0) | 153(8.5) | | 1 or more |
| 5 | WHO 1999 /Modified | 75g | 126(7.0)/110(6.1) | | 140(7.8) | | 1 or more |
| 6 | ACOG/ C&C/ADA(100) | 100g | 95(5.3) | 180(10.0) | 155(8.6) | 140(7.8) | 2 or more |
| 7. | Polish GS standard | 75g | 92(5.1) | 180(10.0) | 153(8.5) | | 1 or more |
| 8. | Adopted Russian AOG | 75g | 104.4 (5.8) | 176.4(9.8) | | | 1 or more |
| 9. | Chinese PLA General Hospital | 75g | 92(5.1) | 180(10.0) | 153(8.5) | | 1 or more |
| 10. | The California Sweet Success program | 75g | 92(5.1) | 180(10.0) | 153(8.5) | | 1 or more |
| 11. | The Danish GDM | 75g | 110(6.1) | | 140(7.8) | | 1 or more |
| 12. | Hospital of Nanjing | 75g | 92(5.1) | 180(10.0) | 153(8.5) | | 1 or more |

**Supplementary Table S3**. Study quality assessment using Newcastle-Ottawa scale for case-control studies

| First author, year (reference) | **Selection** | | | | **Comparability** | **Outcome** | | | **Total score** |
|---|---|---|---|---|---|---|---|---|---|
| | Adequate case definition | Representativeness of cases | Selection of controls | Definition of controls | Comparability of cases-controls | Ascertainment of exposure | Same method of ascertainment | Non-response rate | |
| Ai, T., 2015 | * | * | * | * | * | * | * | * | 8 |
| Boisvert, MR., 2010 | * | * | * | * | ** | * | * | * | 9 |
| Boyle, KE., 2014 | * | * | * | * | * | * | * | * | 8 |
| Fruscalzo, A., 2015 | * | * | * | * | * | * | * | * | 8 |
| Guo, Y., 2018 | * | * | * | * | * | * | * | * | 8 |
| Hajduk, J., 2015 | * | * | * | * | ** | * | * | * | 9 |
| Ilyas, S., 2020 | * | * | * | * | * | * | * | * | 8 |
| Jayabalan, N., 2019 | * | * | * | * | * | * | * | * | 8 |
| Kim, SM., 2012 | * | * | * | * | ** | * | * | * | 9 |
| Kopylov, AT., 2020 | * | * | * | * | * | * | * | * | 8 |
| Li, J., 2021 | * | * | * | * | * | * | * | * | 8 |
| Liao, Y., 2018 | * | * | * | * | ** | * | * | * | 9 |
| Liu, B., 2012 | * | * | * | * | * | * | * | * | 8 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Liu, F., 2016 | * | * | * | * | ** | * | * | * | 9 |
| Liu, X., 2020 | * | * | * | * | ** | * | * | * | 9 |
| Ma, Y., 2016 | * | * | * | * | * | * | * | * | 8 |
| Mavreli, D., 2020 | * | * | * | * | ** | * | * | * | 9 |
| Miao, Z., 2016 | * | * | * | * | ** | * | * | * | 9 |
| Ramachandrarao, SP., 2016 | * | * | * | * | * | * | * | * | 8 |
| Ravnsborg, T., 2016 | * | * | * | * | ** | * | * | * | 9 |
| Ravnsborg, T., 2019 | * | * | * | * | ** | * | * | * | 9 |
| Shen, L., 2019 | * | * | * | * | * | * | * | * | 8 |
| Zhao, C., 2015 | * | * | * | * | ** | * | * | * | 9 |
| Zhao, D., 2017 | * | * | * | * | * | * | * | * | 8 |

Note: Each asterisk represents if individual criterion within the subsection was fulfilled. A study can be awarded a maximum of one star (*) for each numbered item within the Selection and Exposure categories. A maximum of two stars can be given for Comparability.

Thresholds for converting the Newcastle-Ottawa scales to AHRQ standards (good, fair, and poor):

Good quality: 3 or 4 stars in selection domain AND 1 or 2 stars in comparability domain AND 2 or 3 stars in outcome/exposure domain

Fair quality: 2 stars in selection domain AND 1 or 2 stars in comparability domain AND 2 or 3 stars in outcome/exposure domain

Poor quality: 0 or 1 star in selection domain OR 0 stars in comparability domain OR 0 or 1 stars in outcome/exposure domain

**Supplementary Table S5**. Grouping of replicable CBs by sample type

| Sample Type | Replicable CB | Regulation | Total cohort | Reference (First name, year) | | |
|---|---|---|---|---|---|---|
| **A) Plasma** | | | | | | |
| 2 cohorts | C-reactive protein | up | 3 | Liu, X. 2020 | Zhao, C. 2015 | |
| 2 cohorts | Sex hormone-binding globulin | down | 3 | Liu, X. 2020 | Zhao, C. 2015 | |
| 2 cohorts | Pappalysin 1 | down | 2 | Jayabalan, N. 2019 | Zhao, C. 2015 | |
| 1 cohort | Complement component C9 | down | 3 | Miao, Z. 2016 | | |
| 1 cohort | Ig mu chain C region (Immunoglobulin heavy constant mu) | down | 3 | Liu, X. 2020 | | |
| 1 cohort | Proteoglycan 4 | up | 3 | Liu, X. 2020 | | |
| 1 cohort | Secreted phosphoprotein 24 | down | 3 | Liu, X. 2020 | | |
| 1 cohort | Alpha-1-antitrypsin | down | 2 | Zhao, C. 2015 | | |
| 1 cohort | Apolipoprotein C-III | up | 2 | Kim, SM. 2012 | | |
| 1 cohort | Serum amyloid P-component | up | 2 | Liu, X. 2020 | | |
| **B) Serum** | | | | | | |
| 3 cohorts | Apolipoprotein A-V | up | 3 | Shen, L. 2019 | Zhao, D. 2017 | Li, J. 2021 |
| 3 cohorts | Apolipoprotein E | up | 3 | Shen, L. 2019 | Zhao, D. 2017 | Li, J. 2021 |
| 3 cohorts | Gelsolin | down | 3 | Shen, L. 2019 | Zhao, D. 2017 | Li, J. 2021 |
| 2 cohort | Alpha-2-macroglobulin | down | 2 | Ravnsborg, T. 2016 | Li, J. 2021 | |
| 2 cohorts | Antithrombin-III | down | 2 | Ravnsborg, T. 2019 | Zhao, D. 2017 | |
| 2 cohort | Apolipoprotein C-III | up | 3 | Shen, L. 2019 | Li, J. 2021 | |
| 2 cohort | Apolipoprotein L1 | up | 2 | Ravnsborg, T. 2016 | Li, J. 2021 | |
| 2 cohorts | Complement component C9 | down | 3 | Shen, L. 2019 | Zhao, D. 2017 | |
| 2 cohorts | Ig mu chain C region (Immunoglobulin heavy constant mu) | down | 3 | Shen, L. 2019 | Zhao, D. 2017 | |
| 2 cohorts | Proteoglycan 4 | up | 3 | Shen, L. 2019 | Zhao, D. 2017 | |
| 2 cohorts | Secreted phosphoprotein 24 | down | 3 | Ravnsborg, T. 2019 | Shen, L. 2019 | |

| | | | | | |
|---|---|---|---|---|---|
| 2 cohorts | C4b-binding protein alpha chain | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Coagulation factor IX | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Coagulation factor X | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Coagulation factor XII | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Complement C1s subcomponent | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Complement component C6 | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Complement component C7 | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Complement component C8 beta chain | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Complement component C8 gamma chain | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Complement factor H | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Endoplasmin | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Glyceraldehyde-3-phosphate dehydrogenase | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Insulin-like growth factor-binding protein 5 | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Serum paraoxonase/arylesterase 1 | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 1 cohort | Alpha-1-antitrypsin | down | 2 | Shen, L. 2019 | |
| 1 cohort | C-reactive protein | up | 3 | Shen, L. 2019 | |
| 1 cohort | Haptoglobin | up | 2 | Ravnsborg, T. 2016 | |
| 1 cohort | Serum amyloid P-component | up | 2 | Ravnsborg, T. 2019 | |
| 1 cohort | Sex hormone-binding globulin | down | 3 | *Ravnsborg, T. 2016 and 2019 | |
| **C) Urine exosomes** | | | | | |
| 1 cohort | Haptoglobin | up | 2 | Ramachandrarao, SP. 2016 | |

**Supplementary Table S6**. Grouping of replicable CBs by proteomic platform

| Replicable CB | Regulation | Total cohort | Proteomic platform MS-based (number of cohort) | | | | | | Reference (First name, year) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A) Gel image | B) Spectra intensity | | | | | | | |
| | | | | i) Lable free | | | ii) Chemical labeling | | | | |
| | | | 2-DE-MS | MALDI/SELDI-MS | LC-MS/MS | SWATH-MS | TMT LC-MS/MS | iTRAQ LC-MS/MS | | | |
| Complement component C9 | down | 3 | | | | | 1 | 2 | Miao, Z. 2016 | Shen, L. 2019 | Zhao, D. 2017 |
| C-reactive protein | up | 3 | | | 1 | | 1 | 1 | Liu, X. 2020 | Shen, L. 2019 | Zhao, C. 2015 |
| Ig mu chain C region | down | 3 | | | 1 | | | 2 | Liu, X. 2020 | Shen, L. 2019 | Zhao, D. 2017 |
| Proteoglycan 4 | up | 3 | | | 1 | | | 2 | Liu, X. 2020 | Shen, L. 2019 | Zhao, D. 2017 |
| Secreted phosphoprotein 24 | down | 3 | | | 1 | | 1 | 1 | Liu, X. 2020 | Ravnsborg, T. 2019 | Shen, L. 2019 |
| Sex hormone-binding globulin | down | 3 | | | 1 | | 2 | | Liu, X. 2020 | *Ravnsborg, T. 2016 and 2019 | Zhao, C. 2015 |
| Alpha-1-antitrypsin | down | 2 | | | | | 1 | 1 | Shen, L. 2019 | Zhao, C. 2015 | |
| Alpha-2-macroglobulin | down | 2 | 1 | | | | 1 | | Ravnsborg, T. 2016 | Li, J. 2021 | |
| Antithrombin-III | down | 2 | | | | | 1 | 1 | Ravnsborg, T. 2019 | Zhao, D. 2017 | |
| Apolipoprotein A-V | up | 3 | 1 | | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | Li, J. 2021 |
| Apolipoprotein C-III | up | 3 | 1 | 1 | | | | 1 | Kim, SM. 2012 | Shen, L. 2019 | Li, J. 2021 |
| Apolipoprotein E | up | 3 | 1 | | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | Li, J. 2021 |
| Apolipoprotein L1 | up | 2 | 1 | | | | 1 | | Ravnsborg, T. 2016 | Li, J. 2021 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| C4b-binding protein alpha chain | down | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Coagulation factor IX | up | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Coagulation factor X | up | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Coagulation factor XII | up | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Complement C1s subcomponent | up | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Complement component C6 | down | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Complement component C7 | down | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Complement component C8 beta chain | down | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Complement component C8 gamma chain | down | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Complement factor H | down | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Endoplasmin | down | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Gelsolin | down | 3 | 1 | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | Li, J. 2021 |
| Glyceraldehyde-3-phosphate dehydrogenase | up | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Haptoglobin | up | 2 | | 1 | 1 | | Ramachandraraao, SP. 2016 | Ravnsborg, T. 2016 | |
| Insulin-like growth factor-binding protein 5 | up | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| Pappalysin1 | down | 2 | | 1 | 1 | | Jayabalan, N. 2019 | Zhao, C. 2015 | |
| Serum amyloid P-component | up | 2 | | 1 | 1 | | Liu, X. 2020 | Ravnsborg, T. 2019 | |
| Serum paraoxonase/arylesterase 1 | up | 2 | | | | 2 | Shen, L. 2019 | Zhao, D. 2017 | |

**Supplementary Table S7**. Grouping of replicable CBs by continent

| Continent | Replicable CB | Country | Regulation | Total cohorts | Reference (First name, year) | | |
|---|---|---|---|---|---|---|---|
| **A) Asia** | | | | | | | |
| 3 cohorts | Complement component C9 | China | down | 3 | Miao, Z. 2017 | Shen, L. 2020 | Zhao, D. 2018 |
| 3 cohorts | C-reactive protein | China | up | 3 | Liu, X. 2020 | Shen, L. 2019 | Zhao, C. 2015 |
| 3 cohorts | Ig mu chain C region (Immunoglobulin heavy constant mu) | China | down | 3 | Liu, X. 2020 | Shen, L. 2019 | Zhao, D. 2017 |
| 3 cohorts | Proteoglycan 4 | China | up | 3 | Liu, X. 2020 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Secreted phosphoprotein 24 | China | down | 3 | Liu, X. 2020 | Shen, L. 2019 | |
| 2 cohorts | Sex hormone-binding globulin | China | down | 3 | Liu, X. 2020 | Zhao, C. 2015 | |
| 2 cohorts | Alpha-1-antitrypsin | China | down | 2 | Shen, L. 2019 | Zhao, C. 2015 | |
| 3 cohorts | Apolipoprotein A-V | China | up | 3 | Shen, L. 2019 | Zhao, D. 2017 | Li, J. 2021 |
| 3 cohorts | Apolipoprotein C-III | Korea and China | up | 3 | Kim, SM. 2012 | Shen, L. 2019 | Li, J. 2021 |
| 3 cohorts | Apolipoprotein E | China | up | 3 | Shen, L. 2019 | Zhao, D. 2017 | Li, J. 2021 |
| 3 cohorts | Gelsolin | China | down | 3 | Shen, L. 2019 | Zhao, D. 2017 | Li, J. 2021 |
| 2 cohorts | C4b-binding protein alpha chain | China | down | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| 2 cohorts | Coagulation factor IX | China | up | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| 2 cohorts | Coagulation factor X | China | up | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| 2 cohorts | Coagulation factor XII | China | up | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| 2 cohorts | Complement C1s subcomponent | China | up | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| 2 cohorts | Complement component C6 | China | down | 2 | Shen, L. 2019 | Zhao, D. 2017 | |
| 2 cohorts | Complement component C7 | China | down | 2 | Shen, L. 2019 | Zhao, D. 2017 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 cohorts | Complement component C8 beta chain | China | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Complement component C8 gamma chain | China | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Complement factor H | China | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Endoplasmin | China | down | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Glyceraldehyde-3-phosphate dehydrogenase | China | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Insulin-like growth factor-binding protein 5 | China | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 2 cohorts | Serum paraoxonase/arylesterase 1 | China | up | 2 | Shen, L. 2019 | Zhao, D. 2017 |
| 1 cohort | Alpha-2-macroglobulin | China | down | 2 | Li, J. 2021 | |
| 1 cohort | Antithrombin-III | China | down | 2 | Zhao, D. 2017 | |
| 1 cohort | Apolipoprotein L1 | China | up | 2 | Li, J. 2021 | |
| 1 cohort | Pappalysin1 | China | down | 2 | Zhao, C. 2015 | |
| 1 cohort | Serum amyloid P-component | China | up | 2 | Liu, X. 2020 | |
| **B) Europe** | | | | | | |
| 1 cohort | Alpha-2-macroglobulin | Denmark | down | 2 | Ravnsborg, T. 2016 | |
| 1 cohort | Antithrombin-III | Denmark | down | 2 | Ravnsborg, T. 2019 | |
| 1 cohort | Apolipoprotein L1 | Denmark | up | 2 | Ravnsborg, T. 2016 | |
| 1 cohort | Secreted phosphoprotein 24 | Denmark | down | 3 | Ravnsborg, T. 2019 | |
| 1 cohort | Sex hormone-binding globulin | Denmark | down | 3 | *Ravnsborg, T. 2016 and 2019 (same cohort) | |
| 1 cohort | Haptoglobin | Denmark | up | 2 | Ravnsborg, T. 2016 | |
| 1 cohort | Serum amyloid P-component | Denmark | up | 2 | Ravnsborg, T. 2019 | |

| | | | | | |
|---|---|---|---|---|---|
| **C) North America** | | | | | |
| 1 cohort | Haptoglobin | America | up | 2 | Ramachandrarao, SP. 2016 |
| **D) Australia** | | | | | |
| 1 cohort | Pappalysin 1 | Australia | down | 2 | Jayabalan, N. 2019 |

**Supplementary Table S8**. DAVID functional annotation chart analysis representing pathways in KEGG terms; analysis was conducted for consistent regulation of CBs in 2 or more independent cohorts (see Supplementary Table S1 for UniProt ID of all CBs)

| KEGG pathway term | List of proteins | Percentage, % | Modified Fisher Exact p-value/EASE score | Fold enrichment | Bonferroni corrected p-value < 0.05 |
|---|---|---|---|---|---|
| Complement and coagulation cascades | alpha-2-macroglobulin, coagulation factor IX(F9), coagulation factor X(F10), coagulation factor XII(F12), complement C1s(C1S), complement C6(C6), complement C7(C7), complement C8 beta chain(C8B), complement C8 gamma chain(C8G), complement C9(C9) | 43.3 | 8.1E-23 | 68.2 | 1.5E-19 |
| Systemic lupus erythematosus | complement C1s(C1S), complement C6(C6), complement C7(C7), complement C8 beta chain(C8B), complement C8 gamma chain(C8G), complement C9(C9) | 20.0 | 1.1E-06 | 16.2 | 4.2E-04 |
| Prion diseases | complement C6(C6), complement C7(C7), complement C8 beta chain(C8B), complement C8 gamma chain(C8G), complement C9(C9) | 16.7 | 2.4E-08 | 53.2 | 3.3E-05 |
| Amoebiasis | complement C8 beta chain(C8B), complement C8 gamma chain(C8G), complement C9(C9) | 10.0 | 2.9E-03 | 10.2 | 5.1E-01 |

**Supplementary Table S9**. DAVID functional annotation chart analysis representing pathways in KEGG terms on 27 early pregnancy blood CBs for GDM excluding pilot studies; analysis was conducted for consistent regulation of CBs in 2 or more independent cohorts

| KEGG pathway term | List of proteins | Percentage, % | Modified Fisher Exact p-value/EASE score | Fold enrichment | Bonferroni corrected p-value < 0.05 |
|---|---|---|---|---|---|
| Complement and coagulation cascades | coagulation factor V (F5), coagulation factor IX (F9), coagulation factor X (F10), coagulation factor XII (F12), complement C1s (C1S), complement component C6 (C6), complement component C7 (C7), complement component C8 beta chain (C8B), complement component C8 gamma chain (C8G), complement component C9 (C9), fibrinogen alpha chain (FGA), | 53.8 | 1.9E-25 | 74.2 | 4.7E-22 |
| Coronavirus disease - COVID-19 | complement C1s (C1S), complement component C6 (C6), complement component C7 (C7), complement component C8 beta chain (C8B), complement component C8 gamma chain (C8G), complement component C9 (C9), fibrinogen alpha chain (FGA) | 30.8 | 1.4E-8 | 15.5 | 6.3E-6 |
| Systemic lupus erythematosus | complement C1s (C1S), complement component C6 (C6), complement component C7 (C7), complement component C8 beta chain (C8B), complement component C8 gamma chain (C8G), complement component C9 (C9) | 23.1 | 3.1E-7 | 19.9 | 1.9E-4 |
| Prion diseases | complement component C6 (C6), complement component C7 (C7), complement component C8 beta chain (C8B), complement component C8 gamma chain (C8G), complement component C9 (C9) | 19.2 | 2.5E-4 | 8.3 | 5.9E-2 |
| Amoebiasis | complement component C8 beta chain (C8B), complement component C8 gamma chain (C8G), complement component C9 (C9) | 11.5 | 1.4E-3 | 13.3 | 4.2E-1 |