

Table S1. Discovery sets of maternal-fetal interface transcriptome for the associated factors.

| Tissue/condition | Sample size (n=eligible/original) | | | |
|--|--|---------------------------|--------------|-----|
| <i>Endometrium</i> | <i>GSE4888 (n=15/27)</i> | <i>GSE6364 (n=13/37)</i> | <i>Total</i> | |
| Proliferative (PRE) | 2 | 2 | | 4 |
| Early secretory (ESE) | 2 | 3 | | 5 |
| Mid secretory (MSE) | 8 | 8 | | 16 |
| Late secretory (LSE) | 3 | 0 | | 3 |
| <i>Decidua</i> | <i>EMTAB680 (n=21/24)</i> | | <i>Total</i> | |
| Ectopic, non-decidualized (EPND) | 5 | | | 5 |
| Ectopic, intermediate-decidualized (EPID) | 6 | | | 6 |
| Intrauterine, intermediate-decidualized (IPID) | 5 | | | 5 |
| Intrauterine, confluent-decidualized (IPCD) | 5 | | | 5 |
| <i>Placenta</i> | <i>GSE12767 (n=8/12)</i> | <i>GSE9984 (n=10/12)</i> | <i>Total</i> | |
| First trimester (T1) | 8 | 4 | | 12 |
| Second trimester (T2) | 0 | 3 | | 3 |
| Term (TE) | 0 | 3 | | 3 |
| <i>Placenta</i> | <i>GSE75010* (n=103/109)</i> | <i>GSE98224 (n=43/48)</i> | <i>Total</i> | |
| Second trimester, non-chorioamnionitis (NC2) | 3 | 1 | | 4 |
| Second trimester, chorioamnionitis (CHOR2) | 4 | 0 | | 4 |
| Third trimester, non-chorioamnionitis (NC3) | 85 | 42 | | 127 |
| Third trimester, chorioamnionitis (CHOR3) | 11 | 0 | | 11 |
| <i>Placenta</i> | <i>GSE75010* (n=103/109)</i> | <i>GSE98224 (n=43/48)</i> | <i>Total</i> | |
| Second trimester, non-HELLP (NH2) | 5 | 0 | | 5 |
| Second trimester, HELLP (HELLP2) | 2 | 1 | | 3 |
| Third trimester, non-HELLP (NH3) | 81 | 38 | | 119 |
| Third trimester, HELLP (HELLP3) | 15 | 4 | | 19 |

*, excluding the samples that overlap with those of GSE98224.

Table S2. Discovery sets of placental transcriptome for the subtypes.

| Condition | Sample size (<i>n</i> =eligible/original) | | | Total |
|---|--|--------------------------------|---------------------------------|-------|
| | GSE75010* (<i>n</i> =83/109) | GSE98224 (<i>n</i> =39/48) | GSE100415 (<i>n</i> =17/20) | |
| <i>Control</i> | | | | |
| Normotensive pregnancy | 12 | 6 | 0 | 18 |
| <i>Isolated PE</i> | | | | |
| Early-onset, mild-to-moderate (EOMPE) † | 0 | 1 | 0 | 1 |
| Late-onset, mild-to-moderate (LOMPE) † | 2 | 0 | 0 | 2 |
| Early-onset, severe (EOSPE) | 12 | 3 | 0 | 15 |
| Late-onset, severe (LOSPE) | 4 | 3 | 0 | 7 |
| <i>PE with fetal growth restriction</i> | | | | |
| Early-onset, mild-to-moderate (EOMPE-FGR) | 3 | 1 | 0 | 4 |
| Late-onset, mild-to-moderate (LOMPE-FGR) | 1 | 2 | 0 | 3 |
| Early-onset, severe (EOSPE-FGR) | 7 | 4 | 0 | 11 |
| Late-onset, severe (LOSPE-FGR) | 4 | 3 | 0 | 7 |
| <i>Superimposed PE</i> | | | | |
| Late-onset, mild-to-moderate (SIM-LOMPE) | 2 | 1 | 0 | 3 |
| Early-onset, severe (SIM-EOSPE) | 6 | 3 | 0 | 9 |
| Late-onset, severe (SIM-LOSPE) † | 0 | 2 | 0 | 2 |
| <i>Superimposed PE with fetal growth restriction</i> | | | | |
| Late-onset, mild-to-moderate (SIM-LOMPE-FGR) † | 0 | 1 | 0 | 1 |
| Early-onset, severe (SIM-EOSPE-FGR) | 3 | 3 | 0 | 6 |
| Late-onset, severe (SIM-LOSPE-FGR) † | 2 | 0 | 0 | 2 |
| <i>Gestational hypertension</i> | | | | |
| Early-onset (EGH) | 5 | 1 | 0 | 6 |
| Late-onset (LGH) | 4 | 1 | 0 | 5 |
| <i>Gestational hypertension with fetal growth restriction</i> | | | | |
| Late-onset (LGH-FGR) | 0 | 0 | 6 | 6 |
| <i>Chronic hypertension</i> | | | | |
| Early-onset (ECH) † | 1 | 0 | 0 | 1 |
| Late-onset (LCH) | 5 | 0 | 0 | 5 |
| <i>Chronic hypertension with fetal growth restriction</i> | | | | |
| Early-onset (ECH-FGR) | 4 | 4 | 0 | 8 |
| Late-onset (LCH-FGR) | 6 | 0 | 0 | 6 |
| <i>Isolated fetal growth restriction</i> | | | | |
| Late-onset (LFGR) | 0 | 0 | 11 | 11 |

*, excluding the samples that overlap with those of GSE98224; †, ineligible due to small sample size; PE, preeclampsia.

Table S3. Validation sets of placental transcriptome for the subtypes.

| Condition | Sample size (<i>n</i> =eligible/original) | | | | | | | Total |
|--|--|--------------------------------|--------------------------------|--------------------------------|------------------------------|-------------------------------|-----------------------------------|-------|
| | GSE30186 (<i>n</i> =9/12) | GSE10588 (<i>n</i> =39/43) | GSE24129 (<i>n</i> =19/24) | GSE25906 (<i>n</i> =31/60) | GSE4707 (<i>n</i> =4/14) | GSE44711 (<i>n</i> =7/16) | GSE128381 (<i>n</i> =166/183) | |
| <i>Control</i> | | | | | | | | |
| Normotensive pregnancy | 6 | 23 | 8 | 27 | 4 | 6 | 155 | 229 |
| <i>Isolated PE</i> | | | | | | | | |
| Early-onset, severe (EOSPE) † | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| Late-onset, severe (LOSPE) | 1 | 5 | 4 | 0 | 0 | 0 | 0 | 10 |
| <i>PE with fetal growth restriction</i> | | | | | | | | |
| Late-onset, mild-to-moderate (LOMPE-FGR) † | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Early-onset, severe (EOSPE-FGR) | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 |
| Late-onset, severe (LOSPE-FGR) | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 6 |
| <i>Gestational hypertension</i> | | | | | | | | |
| Late-onset (LGH) | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 |
| <i>Isolated fetal growth restriction</i> | | | | | | | | |
| Late-onset (LFGR) | 0 | 1 | 6 | 4 | 0 | 0 | 3 | 14 |

*, excluding the samples that overlap with those of GSE98224; †, ineligible due to small sample size; PE, preeclampsia.

Table S4. List of samples in discovery and validation datasets for the associated factors and the subtypes.

| Variable | Set | Tissue | Description | Series | Samples |
|-------------------|---------------|-------------|--|----------|--|
| Associated factor | Discovery set | Endometrium | Proliferative (PRE) | GSE4888 | GSM109814, GSM109815 |
| | | | | GSE6364 | GSM150198, GSM150201 |
| | | | Early secretory (ESE) | GSE4888 | GSM109820, GSM109821 |
| | | | | GSE6364 | GSM150208, GSM150209, GSM150210 |
| | | | Mid secretory (MSE) | GSE4888 | GSM109824, GSM109825, GSM109826, GSM109827, GSM109828, GSM109829, GSM109830, GSM109831 |
| | | | | GSE6364 | GSM150220, GSM150221, GSM150222, GSM150223, GSM150224, GSM150225, GSM150226, GSM150227 |
| | | | Late secretory (LSE) | GSE4888 | GSM109836, GSM109838, GSM109839 |
| | | | Ectopic, non-decidualized (EPND) | EMTAB680 | 3-12.CEL, 3-13.CEL, 3-4.CEL, 3-5.CEL, 3-9.CEL |
| | | | Ectopic, intermediate-decidualized (EPID) | EMTAB680 | 3-1.CEL, 3-10.CEL, 3-11.CEL, 3-3.CEL, 3-6.CEL, 3-7.CEL |
| | | | Intrauterine, intermediate-decidualized (IPID) | EMTAB680 | 1-6.CEL, 2-2.CEL, 2-3.CEL, 2-8.CEL, 2-9.CEL |
| | | | Intrauterine, confluent-decidualized (IPCD) | EMTAB680 | 1-2.CEL, 1-4.CEL, 2-1.CEL, 2-12.CEL, 2-7.CEL |
| | | Placenta | First trimester (T1) | GSE12767 | GSM320282, GSM320285, GSM320286, GSM320287, GSM320289, GSM320290, GSM320291, GSM320293 |
| | | | | GSE9984 | GSM252349, GSM252350, GSM252351, GSM252352 |
| | | | Second trimester (T1) | GSE9984 | GSM252353, GSM252354, GSM252355 |
| | | | Term (TE) | GSE9984 | GSM252357, GSM252358, GSM252359 |
| | | Placenta | Second trimester, non-chorioamnionitis (NC2) | GSE75010 | GSM1940562, GSM1940568, GSM1940620 |
| | | | | GSE98224 | GSM1940589 |
| | | | Second trimester, chorioamnionitis (CHOR2) | GSE75010 | GSM1940538, GSM1940585, GSM1940588, GSM1940605 |
| | | | Third trimester, non-chorioamnionitis (NC3) | GSE75010 | GSM1940492, GSM1940493, GSM1940494, GSM1940497, GSM1940498, GSM1940503, GSM1940504, GSM1940510, GSM1940512, GSM1940514, GSM1940515, GSM1940516, GSM1940521, GSM1940523, GSM1940525, GSM1940528, GSM1940530, GSM1940531, GSM1940532, GSM1940533, GSM1940536, GSM1940537, GSM1940540, GSM1940541, GSM1940543, GSM1940546, GSM1940550, GSM1940551, GSM1940552, GSM1940554, GSM1940555, GSM1940557, GSM1940558, GSM1940560, GSM1940561, GSM1940563, GSM1940564, GSM1940565, GSM1940566, GSM1940567, GSM1940570, GSM1940571, GSM1940572, GSM1940573, GSM1940574, GSM1940575, GSM1940577, GSM1940578, GSM1940579, GSM1940580, GSM1940584, GSM1940590, GSM1940591, GSM1940592, GSM1940595, GSM1940596, GSM1940597, GSM1940598, GSM1940599, GSM1940600, GSM1940604, GSM1940610, GSM1940611, GSM1940612, GSM1940613, GSM1940615, GSM1940616, GSM1940617, GSM1940619, GSM1940624, GSM1940627, GSM1940628, GSM1940629, GSM1940631, GSM1940632, GSM1940633, GSM1940634, GSM1940635, GSM1940637, GSM1940639, GSM1940640, GSM1940641, GSM1940643, GSM1940646, GSM1940648 |
| | | | | GSE98224 | GSM1940495, GSM1940496, GSM1940499, GSM1940500, GSM1940501, GSM1940502, GSM1940505, GSM1940506, GSM1940507, GSM1940508, GSM1940509, GSM1940518, |

| Variable | Set | Tissue | Description | Series | Samples |
|----------|---------------|----------|---|----------|--|
| | | Placenta | Third trimester, chorioamnionitis (CHOR3) | GSE75010 | GSM1940520, GSM1940524, GSM1940534, GSM1940535, GSM1940542, GSM1940545, GSM1940548, GSM1940549, GSM1940553, GSM1940582, GSM1940583, GSM1940586, GSM1940593, GSM1940594, GSM1940602, GSM1940603, GSM1940606, GSM1940608, GSM1940614, GSM1940618, GSM1940621, GSM1940622, GSM1940623, GSM1940625, GSM1940626, GSM1940630, GSM1940638, GSM1940642, GSM1940644, GSM1940645 |
| | | | | | GSM1940511, GSM1940513, GSM1940517, GSM1940529, GSM1940539, GSM1940544, GSM1940581, GSM1940587, GSM1940601, GSM1940609, GSM1940647 |
| | | | | | GSM1940538, GSM1940568, GSM1940585, GSM1940588, GSM1940605 |
| | | | | | GSM1940562, GSM1940620 |
| | | | | | GSM1940589 |
| | | | | | GSM1940492, GSM1940493, GSM1940494, GSM1940497, GSM1940503, GSM1940504, GSM1940510, GSM1940511, GSM1940512, GSM1940513, GSM1940514, GSM1940515, GSM1940516, GSM1940517, GSM1940521, GSM1940523, GSM1940525, GSM1940528, GSM1940529, GSM1940530, GSM1940531, GSM1940532, GSM1940533, GSM1940536, GSM1940537, GSM1940539, GSM1940540, GSM1940541, GSM1940543, GSM1940544, GSM1940546, GSM1940550, GSM1940551, GSM1940554, GSM1940555, GSM1940557, GSM1940560, GSM1940561, GSM1940563, GSM1940566, GSM1940567, GSM1940570, GSM1940571, GSM1940574, GSM1940575, GSM1940578, GSM1940579, GSM1940580, GSM1940581, GSM1940584, GSM1940587, GSM1940590, GSM1940591, GSM1940592, GSM1940595, GSM1940596, GSM1940597, GSM1940598, GSM1940600, GSM1940601, GSM1940609, GSM1940610, GSM1940611, GSM1940613, GSM1940615, GSM1940619, GSM1940624, GSM1940627, GSM1940628, GSM1940629, GSM1940631, GSM1940634, GSM1940635, GSM1940637, GSM1940639, GSM1940640, GSM1940641, GSM1940643, GSM1940646, GSM1940647, GSM1940648 |
| | | | | | GSM1940495, GSM1940496, GSM1940499, GSM1940500, GSM1940501, GSM1940502, GSM1940506, GSM1940507, GSM1940509, GSM1940518, GSM1940524, GSM1940534, GSM1940535, GSM1940542, GSM1940545, GSM1940548, GSM1940549, GSM1940553, GSM1940582, GSM1940583, GSM1940586, GSM1940594, GSM1940602, GSM1940603, GSM1940606, GSM1940608, GSM1940614, GSM1940618, GSM1940621, GSM1940622, GSM1940623, GSM1940625, GSM1940626, GSM1940630, GSM1940638, GSM1940642, GSM1940644, GSM1940645 |
| | | | | | GSM1940498, GSM1940552, GSM1940558, GSM1940564, GSM1940565, GSM1940572, GSM1940573, GSM1940577, GSM1940599, GSM1940604, GSM1940612, GSM1940616, GSM1940617, GSM1940632, GSM1940633 |
| | | | | | GSM1940505, GSM1940508, GSM1940520, GSM1940593 |
| | | | | | GSM1940503, GSM1940531, GSM1940532, GSM1940533, GSM1940551, GSM1940555, |
| Subtype | Discovery set | Placenta | Third trimester, HELLP (HELLP3) | GSE75010 | |
| | | | | GSE98224 | |

| Variable | Set | Tissue | Description | Series | Samples |
|----------|-----|--------|---|----------|--|
| | | | Control, normotensive pregnancy | GSE98224 | GSM1940615, GSM1940627, GSM1940629, GSM1940637, GSM1940640, GSM1940643 |
| | | | Isolated preeclampsia, early-onset, mild-to-moderate (EOMPE) | GSE98224 | GSM1940545, GSM1940608, GSM1940621, GSM1940622, GSM1940623, GSM1940638 |
| | | | Isolated preeclampsia, late-onset, mild-to-moderate (LOMPE) | GSE75010 | GSM1940501 |
| | | | Isolated preeclampsia, early-onset, severe (EOSPE) | GSE75010 | GSM1940560, GSM1940647 |
| | | | Isolated preeclampsia, late-onset, severe (LOSPE) | GSE75010 | GSM1940504, GSM1940515, GSM1940521, GSM1940540, GSM1940558, GSM1940574, GSM1940596, GSM1940611, GSM1940612, GSM1940617, GSM1940632, GSM1940648 |
| | | | Preeclampsia with fetal growth restriction, early-onset, mild-to-moderate (EOMPE-FGR) | GSE98224 | GSM1940593, GSM1940602, GSM1940644 |
| | | | Preeclampsia with fetal growth restriction, late-onset, mild-to-moderate (LOMPE-FGR) | GSE75010 | GSM1940525, GSM1940564, GSM1940565, GSM1940631 |
| | | | Preeclampsia with fetal growth restriction, early-onset, severe (EOSPE-FGR) | GSE98224 | GSM1940495, GSM1940502, GSM1940534 |
| | | | Preeclampsia with fetal growth restriction, late-onset, severe (LOSPE-FGR) | GSE75010 | GSM1940512, GSM1940537, GSM1940546 |
| | | | Superimposed preeclampsia, late-onset, mild-to-moderate (LOMPE) | GSE98224 | GSM1940553 |
| | | | Superimposed preeclampsia, early-onset, severe (EOSPE) | GSE75010 | GSM1940528 |
| | | | Superimposed preeclampsia, late-onset, severe (LOSPE) | GSE98224 | GSM1940535, GSM1940582 |
| | | | Superimposed preeclampsia with fetal growth restriction, late-onset, mild-to-moderate (LOMPE-FGR) | GSE75010 | GSM1940514, GSM1940550, GSM1940552, GSM1940584, GSM1940590, GSM1940604, GSM1940616 |
| | | | Superimposed preeclampsia with fetal growth restriction, early-onset, severe (EOSPE-FGR) | GSE98224 | GSM1940505, GSM1940520, GSM1940542, GSM1940625 |
| | | | Superimposed preeclampsia with fetal growth restriction, late-onset, severe (LOSPE-FGR) | GSE75010 | GSM1940492, GSM1940567, GSM1940573, GSM1940641 |
| | | | Superimposed preeclampsia, late-onset, mild-to-moderate (LOMPE) | GSE98224 | GSM1940506, GSM1940518, GSM1940603 |
| | | | Superimposed preeclampsia, early-onset, severe (EOSPE) | GSE75010 | GSM1940510, GSM1940619 |
| | | | Superimposed preeclampsia, late-onset, severe (LOSPE) | GSE98224 | GSM1940606 |
| | | | Superimposed preeclampsia with fetal growth restriction, late-onset, mild-to-moderate (LOMPE-FGR) | GSE75010 | GSM1940498, GSM1940571, GSM1940572, GSM1940577, GSM1940599, GSM1940633 |
| | | | Superimposed preeclampsia with fetal growth restriction, early-onset, severe (EOSPE-FGR) | GSE98224 | GSM1940508, GSM1940549, GSM1940626 |
| | | | Superimposed preeclampsia with fetal growth restriction, late-onset, severe (LOSPE-FGR) | GSE98224 | GSM1940509, GSM1940614 |
| | | | Superimposed preeclampsia with fetal growth restriction, early-onset, severe (EOSPE-FGR) | GSE75010 | GSM1940530, GSM1940541, GSM1940635 |
| | | | | GSE98224 | GSM1940496, GSM1940500, GSM1940583 |

| Variable | Set | Tissue | Description | Series | Samples |
|----------------|-----|----------|---|-----------|---|
| | | | Superimposed preeclampsia with fetal growth restriction, late-onset, severe (LOSPE-FGR) | GSE75010 | GSM1940592, GSM1940610 |
| | | | Gestational hypertension, early-onset (EGH) | GSE75010 | GSM1940517, GSM1940536, GSM1940544, GSM1940570, GSM1940609 |
| | | | Gestational hypertension, late-onset (LGH) | GSE98224 | GSM1940524 |
| | | | Gestational hypertension with fetal growth restriction, late-onset (LGH-FGR) | GSE75010 | GSM1940497, GSM1940613, GSM1940639, GSM1940646 |
| | | | Chronic hypertension, early-onset (ECH) | GSE98224 | GSM1940618 |
| | | | Chronic hypertension, late-onset (LCH) | GSE100415 | GSM2680543, GSM2680544, GSM2680547, GSM2680552, GSM2680555, GSM2680559 |
| | | | Chronic hypertension with fetal growth restriction, late-onset (LCH-FGR) | GSE75010 | GSM1940579 |
| | | | Isolated fetal growth restriction, late-onset (LFGR) | GSE75010 | GSM1940493, GSM1940494, GSM1940575, GSM1940578, GSM1940580 |
| | | | Control, normotensive pregnancy | GSE75010 | GSM1940591, GSM1940597, GSM1940598, GSM1940624 |
| | | | | GSE98224 | GSM1940586, GSM1940594, GSM1940630, GSM1940642 |
| | | | | GSE75010 | GSM1940523, GSM1940543, GSM1940566, GSM1940595, GSM1940600, GSM1940628 |
| | | | | GSE100415 | GSM2680540, GSM2680541, GSM2680542, GSM2680545, GSM2680546, GSM2680549, GSM2680553, GSM2680554, GSM2680556, GSM2680557, GSM2680558 |
| | | | | GSE30186 | GSM747304, GSM747305, GSM747306, GSM747307, GSM747308, GSM747309 |
| | | | | GSE10588 | GSM225470, GSM225471, GSM225472, GSM225473, GSM225474, GSM225475, GSM225476, GSM225477, GSM225478, GSM225479, GSM225480, GSM225484, GSM225485, GSM225486, GSM225488, GSM225489, GSM225490, GSM225491, GSM225492, GSM225493, GSM225494, GSM225496, GSM225497 |
| | | | | GSE24129 | GSM594041, GSM594042, GSM594043, GSM594044, GSM594045, GSM594046, GSM594047, GSM594048 |
| | | | | GSE25906 | GSM635909, GSM635910, GSM635913, GSM635917, GSM635918, GSM635919, GSM635921, GSM635925, GSM635929, GSM635931, GSM635932, GSM635934, GSM635936, GSM635938, GSM635939, GSM635941, GSM635942, GSM635944, GSM635946, GSM635949, GSM635952, GSM635954, GSM635955, GSM635956, GSM635958, GSM635959, GSM635963 |
| | | | | GSE4707 | GSM106249, GSM106250, GSM106274, GSM106275 |
| | | | | GSE44711 | GSM1089237, GSM1089238, GSM1089239, GSM1089241, GSM1089243, GSM1089244 |
| | | | | GSE128381 | GSM3673224, GSM3673225, GSM3673226, GSM3673227, GSM3673228, GSM3673229, GSM3673230, GSM3673232, GSM3673233, GSM3673234, GSM3673235, GSM3673236, GSM3673237, GSM3673239, GSM3673241, GSM3673242, GSM3673243, GSM3673244, GSM3673245, GSM3673246, GSM3673247, GSM3673248, GSM3673250, GSM3673251, GSM3673252, GSM3673253, GSM3673254, GSM3673255, GSM3673257, GSM3673259, GSM3673261, GSM3673262, GSM3673263, GSM3673264, GSM3673265, GSM3673268, |
| Validation set | | Placenta | Control, normotensive pregnancy | GSE30186 | GSM747304, GSM747305, GSM747306, GSM747307, GSM747308, GSM747309 |
| | | | | GSE10588 | GSM225470, GSM225471, GSM225472, GSM225473, GSM225474, GSM225475, GSM225476, GSM225477, GSM225478, GSM225479, GSM225480, GSM225484, GSM225485, GSM225486, GSM225488, GSM225489, GSM225490, GSM225491, GSM225492, GSM225493, GSM225494, GSM225496, GSM225497 |
| | | | | GSE24129 | GSM594041, GSM594042, GSM594043, GSM594044, GSM594045, GSM594046, GSM594047, GSM594048 |
| | | | | GSE25906 | GSM635909, GSM635910, GSM635913, GSM635917, GSM635918, GSM635919, GSM635921, GSM635925, GSM635929, GSM635931, GSM635932, GSM635934, GSM635936, GSM635938, GSM635939, GSM635941, GSM635942, GSM635944, GSM635946, GSM635949, GSM635952, GSM635954, GSM635955, GSM635956, GSM635958, GSM635959, GSM635963 |
| | | | | GSE4707 | GSM106249, GSM106250, GSM106274, GSM106275 |
| | | | | GSE44711 | GSM1089237, GSM1089238, GSM1089239, GSM1089241, GSM1089243, GSM1089244 |
| | | | | GSE128381 | GSM3673224, GSM3673225, GSM3673226, GSM3673227, GSM3673228, GSM3673229, GSM3673230, GSM3673232, GSM3673233, GSM3673234, GSM3673235, GSM3673236, GSM3673237, GSM3673239, GSM3673241, GSM3673242, GSM3673243, GSM3673244, GSM3673245, GSM3673246, GSM3673247, GSM3673248, GSM3673250, GSM3673251, GSM3673252, GSM3673253, GSM3673254, GSM3673255, GSM3673257, GSM3673259, GSM3673261, GSM3673262, GSM3673263, GSM3673264, GSM3673265, GSM3673268, |

| Variable | Set | Tissue | Description | Series | Samples |
|----------|-----|--------|--|-----------------------|--|
| | | | | | GSM3673270, GSM3673271, GSM3673272, GSM3673273, GSM3673274, GSM3673275, GSM3673277, GSM3673278, GSM3673279, GSM3673280, GSM3673282, GSM3673283, GSM3673284, GSM3673285, GSM3673289, GSM3673290, GSM3673291, GSM3673292, GSM3673293, GSM3673294, GSM3673295, GSM3673296, GSM3673297, GSM3673298, GSM3673299, GSM3673300, GSM3673301, GSM3673302, GSM3673303, GSM3673304, GSM3673306, GSM3673307, GSM3673309, GSM3673310, GSM3673311, GSM3673313, GSM3673315, GSM3673317, GSM3673318, GSM3673319, GSM3673320, GSM3673321, GSM3673322, GSM3673323, GSM3673324, GSM3673326, GSM3673327, GSM3673328, GSM3673331, GSM3673332, GSM3673333, GSM3673334, GSM3673335, GSM3673336, GSM3673338, GSM3673339, GSM3673340, GSM3673341, GSM3673342, GSM3673343, GSM3673344, GSM3673345, GSM3673346, GSM3673347, GSM3673348, GSM3673349, GSM3673350, GSM3673351, GSM3673352, GSM3673353, GSM3673354, GSM3673355, GSM3673356, GSM3673357, GSM3673358, GSM3673359, GSM3673360, GSM3673361, GSM3673363, GSM3673364, GSM3673366, GSM3673367, GSM3673368, GSM3673369, GSM3673372, GSM3673373, GSM3673374, GSM3673375, GSM3673376, GSM3673377, GSM3673378, GSM3673379, GSM3673380, GSM3673381, GSM3673382, GSM3673383, GSM3673384, GSM3673385, GSM3673386, GSM3673387, GSM3673388, GSM3673389, GSM3673390, GSM3673391, GSM3673392, GSM3673393, GSM3673394, GSM3673395, GSM3673396, GSM3673397, GSM3673398, GSM3673399, GSM3673400, GSM3673401, GSM3673402, GSM3673403, GSM3673404, GSM3673405, GSM3673406 |
| | | | Isolated preeclampsia, early-onset, severe (EOSPE) | GSE24129 GSE44711 | GSM594060 GSM1089236 |
| | | | Isolated preeclampsia, late-onset, severe (LOSPPE) | GSE30186 GSE10588 | GSM747298 GSM225498, GSM225507, GSM225509, GSM225512, GSM225513 |
| | | | Preeclampsia with fetal growth restriction, late-onset, mild-to-moderate (LOMPE-FGR) | GSE24129 GSE30186 | GSM594057, GSM594059, GSM594061, GSM594063 GSM747303 |
| | | | Preeclampsia with fetal growth restriction, early-onset, severe (EOSPE-FGR) | GSE10588 | GSM225481, GSM225500, GSM225508, GSM225510, GSM225511 |
| | | | Preeclampsia with fetal growth restriction, late-onset, severe (LOSPPE-FGR) | GSE30186 GSE10588 | GSM747299 GSM225499, GSM225502, GSM225504, GSM225505, GSM225506 |
| | | | Gestational hypertension, late-onset (LGH) | GSE128381 GSE10588 | GSM3673240, GSM3673256, GSM3673267, GSM3673269, GSM3673286, GSM3673288, GSM3673329, GSM3673365 GSM225487 |

| Variable | Set | Tissue | Description | Series | Samples |
|----------|-----|--------|--|-----------|--|
| | | | Isolated fetal growth restriction, late-onset (LFGR) | GSE24129 | GSM594050, GSM594051, GSM594053, GSM594054, GSM594055, GSM594056 |
| | | | | GSE25906 | GSM635916, GSM635924, GSM635935, GSM635950 |
| | | | | GSE128381 | GSM3673238, GSM3673266, GSM3673325 |

Table S5. Phenotype characteristics of discovery sets of maternal-fetal interface transcriptome for the associated factors.

| Tissue* | Variable | Value | Event | Nonevent |
|-------------|----------------------------|--|--|---|
| Endometrium | Condition | Control | <i>ESE</i> 3/5 (60%) | <i>PRE</i> 3/4 (75%) |
| | | Leiomyomata (SCH) Celexa | 1/5 (20%) | 0/4 (0%) |
| | | Leiomyomata (TAH) | 1/5 (20%) | 1/4 (25%) |
| | | | <i>MSE</i> | <i>PRE</i> |
| Endometrium | Condition | Control | 12/16 (75%) | 3/4 (75%) |
| | | Leiomyomata (LAVH no endometriosis) | 1/16 (6.2%) | 0/4 (0%) |
| | | Leiomyomata (TAH) | 0/16 (0%) | 1/4 (25%) |
| | | Pelvic pain, no endometriosis at laparoscopy (TVH/TAH) | 1/16 (6.2%) | 0/4 (0%) |
| | | Uterine prolapse (TVH) Allegra, Advil | 1/16 (6.2%) | 0/4 (0%) |
| | | Uterine prolapse, stress urinary incontinence (TVH) | 1/16 (6.2%) | 0/4 (0%) |
| Endometrium | Condition | Control | <i>LSE</i> 0/3 (0%) | <i>PRE</i> 3/4 (75%) |
| | | Leiomyomata (TAH) | 2/3 (67%) | 1/4 (25%) |
| | | Uterine prolapse, other (TVH) Detrol LA | 1/3 (33%) | 0/4 (0%) |
| | | | <i>TI</i> | <i>TE</i> |
| Placenta† | Gestational age | (weeks) | 8.43 ± 0 (n=12; outlier=0; missing=8) | 41 ± 0 (n=3; outlier=0; missing=0) |
| Placenta† | Gestational age | (weeks) | <i>T2</i> 16.43 ± 0 (n=3; outlier=0; missing=0) | <i>TE</i> 41 ± 0 (n=3; outlier=0; missing=0) |
| Placenta | Attempted vaginal delivery | No | <i>CHOR2</i> 0/4 (100%) | <i>NC2</i> 4/4 (100%) |
| | | Yes | 4/4 (100%) | 0/4 (100%) |
| | Delivery | C-Section | 2/4 (50%) | 4/4 (100%) |
| | | Vaginal | 2/4 (50%) | 0/4 (100%) |
| | Gestational age | (weeks) | 26.21 ± 0.3 (n=4; outlier=0; missing=0) | 26.36 ± 0.59 (n=4; outlier=0; missing=0) |
| | HELLP | No | 4/4 (100%) | 1/4 (25%) |
| | | Yes | 0/4 (0%) | 3/4 (75%) |
| | FGR | No | 4/4 (100%) | 4/4 (100%) |
| | | Yes | 0/4 (0%) | 0/4 (0%) |
| | Max. DBP during pregnancy | (mm Hg) | 73.75 ± 13.67 (n=4; outlier=0; missing=0) | 104.5 ± 9.26 (n=4; outlier=0; missing=0) |
| | Max. SBP during pregnancy | (mm Hg) | 131.75 ± 10.31 (n=4; outlier=0; missing=0) | 170.5 ± 20.29 (n=4; outlier=0; missing=0) |
| | Newborn weight | (Z-score) | -0.1 ± 0.93 (n=4; outlier=0; missing=0) | -0.88 ± 0.06 (n=4; outlier=0; missing=0) |
| | PE | No | 4/4 (100%) | 1/4 (25%) |
| | | Yes | 0/4 (0%) | 3/4 (75%) |
| | Previous hypertension | NA | 4/4 (100%) | 4/4 (100%) |
| Placenta | Attempted vaginal delivery | No | <i>CHOR3</i> 0/11 (0%) | <i>NC3</i> 79/127 (62.2%) |
| | | Yes | 11/11 (100%) | 48/127 (37.8%) |
| | Delivery | C-Section | 4/11 (36.4%) | 98/127 (77.17%) |
| | | Vaginal | 7/11 (63.6%) | 29/127 (22.83%) |
| | Gestational age | (weeks) | 30.27 ± 3.4 (n=11; outlier=0; missing=0) | 34.07 ± 3.9 (n=127; outlier=0; missing=0) |
| | HELLP | No | 11/11 (100%) | 108/127 (85.04%) |
| | | Yes | 0/11 (0%) | 19/127 (14.96%) |
| | FGR | No | 11/11 (100%) | 89/127 (70.08%) |
| | | Yes | 0/11 (0%) | 38/127 (29.92%) |
| | Max. DBP during pregnancy | (mm Hg) | 78 ± 13.43 (n=11; outlier=0; missing=0) | 99.4 ± 15.44 (n=127; outlier=0; missing=0) |
| | Max. SBP during pregnancy | (mm Hg) | 123.09 ± 18.25 (n=11; outlier=0; missing=0) | 157.57 ± 25.96 (n=127; outlier=0; missing=0) |
| | Newborn weight | (Z-score) | 0.74 ± 0.69 (n=11; outlier=0; missing=0) | -0.84 ± 1.02 (n=127; outlier=0; missing=0) |
| | PE | No | 10/11 (90.9%) | 55/127 (43.31%) |
| | | Yes | 1/11 (9.1%) | 72/127 (56.69%) |
| | Previous hypertension | NA | 8/11 (72.7%) | 75/127 (59.06%) |
| | | No | 3/11 (27.3%) | 32/127 (25.2%) |

| Tissue* | Variable | Value | Event | Nonevent |
|----------|----------------------------|-----------|--|---|
| Placenta | | Yes | 0/11 (0%) <i>HELLP2</i> | 20/127 (15.75%) <i>NH2</i> |
| | Attempted vaginal delivery | No | 3/3 (100%) | 1/5 (20%) |
| | | Yes | 0/3 (0%) | 4/5 (80%) |
| | Chorio-amnionitis | No | 3/3 (100%) | 1/5 (20%) |
| | | Yes | 0/3 (0%) | 4/5 (80%) |
| | Delivery | C-Section | 3/3 (100%) | 3/5 (60%) |
| | | Vaginal | 0/3 (0%) | 2/5 (40%) |
| | Gestational age | (weeks) | 26.48 ± 0.66 (n=3; outlier=0; missing=0) | 26.17 ± 0.27 (n=5; outlier=0; missing=0) |
| | FGR | No | 3/3 (100%) | 5/5 (100%) |
| | | Yes | 0/3 (0%) | 0/5 (0%) |
| | Max. DBP during pregnancy | (mm Hg) | 109 ± 2.65 (n=3; outlier=0; missing=0) | 77.2 ± 14.13 (n=5; outlier=0; missing=0) |
| | Max. SBP during pregnancy | (mm Hg) | 176 ± 20.88 (n=3; outlier=0; missing=0) | 136.2 ± 13.37 (n=5; outlier=0; missing=0) |
| | Newborn weight | (Z-score) | -0.88 ± 0.08 (n=3; outlier=0; missing=0) | -0.26 ± 0.88 (n=5; outlier=0; missing=0) |
| | PE | No | 0/3 (0%) | 5/5 (100%) |
| | | Yes | 3/3 (100%) | 0/5 (0%) |
| | Previous hypertension | NA | 3/3 (100%) | 5/5 (100%) |
| Placenta | | | <i>HELLP3</i> | <i>NH3</i> |
| | Attempted vaginal delivery | No | 15/19 (78.9%) | 64/119 (53.78%) |
| | | Yes | 4/19 (21.1%) | 55/119 (46.22%) |
| | Chorio-amnionitis | No | 19/19 (100%) | 108/119 (90.76%) |
| | | Yes | 0/19 (0%) | 11/119 (9.24%) |
| | Delivery | C-Section | 18/19 (94.7%) | 84/119 (70.59%) |
| | | Vaginal | 1/19 (5.3%) | 35/119 (29.41%) |
| | Gestational age | (weeks) | 31.03 ± 3.02 (n=19; outlier=0; missing=0) | 34.21 ± 3.96 (n=119; outlier=0; missing=0) |
| | FGR | No | 15/19 (78.9%) | 85/119 (71.43%) |
| | | Yes | 4/19 (21.1%) | 34/119 (28.57%) |
| | Max. DBP during pregnancy | (mm Hg) | 112.26 ± 11.19 (n=19; outlier=0; missing=0) | 95.37 ± 15.82 (n=119; outlier=0; missing=0) |
| | Max. SBP during pregnancy | (mm Hg) | 179.26 ± 21.12 (n=19; outlier=0; missing=0) | 150.92 ± 25.89 (n=119; outlier=0; missing=0) |
| | Newborn weight | (Z-score) | -0.89 ± 0.65 (n=19; outlier=0; missing=0) | -0.69 ± 1.14 (n=119; outlier=0; missing=0) |
| | PE | No | 0/19 (0%) | 65/119 (54.62%) |
| | | Yes | 19/19 (100%) | 54/119 (45.38%) |
| | Previous hypertension | NA | 17/19 (89.5%) | 66/119 (55.46%) |
| | | No | 1/19 (5.3%) | 34/119 (28.57%) |
| | | Yes | 1/19 (5.3%) | 19/119 (15.97%) |

*, no information for other phenotypes of the decidua transcriptome; †, all the samples were from the subjects undergone C-section without HELLP, FGR, OE, and previous hypertension; CHOR2, second-trimester chorioamnionitis; CHOR3, third-trimester chorioamnionitis; ESE, early secretory; FGR, fetal growth restriction; HELLP, hemolysis, elevated liver enzymes, and low platelets; HELLP2, second-trimester HELLP; HELLP3, third-trimester HELLP; LAVH, laparoscopically-assisted vaginal hysterectomy; LSE, late secretory; MSE, mid secretory; NA, not available; NC2, second-trimester non-chorioamnionitis; NC3, third-trimester non-chorioamnionitis; PE, preeclampsia; PRE, proliferative; SCH, subtotal Cesarean hysterectomy; T1, first trimester; T2, second trimester; TAH, total abdominal hysterectomy; TE, term; TVH, transvaginal hysterectomy.

Table S6. Phenotype characteristics of discovery and validation sets of placental transcriptome for the isolated preeclampsia (PE).

| Set | Variable | Value | EOSPE | LOSPE | Control |
|----------------|-----------------------------|-----------|--|--|---|
| Discovery set | Attempted vaginal delivery | No | 10/15 (66.7%) | 1/7 (14%) | 12/18 (66.7%) |
| | | Yes | 5/15 (33.3%) | 6/7 (86%) | 6/18 (33.3%) |
| | Chorio-amnionitis | No | 15/15 (100%) | 7/7 (100%) | 18/18 (100%) |
| | | Yes | 0/15 (0%) | 0/7 (0%) | 0/18 (0%) |
| | Delivery | C-Section | 15/15 (100%) | 2/7 (29%) | 13/18 (72.2%) |
| | | Vaginal | 0/15 (0%) | 5/7 (71%) | 5/18 (27.8%) |
| | Gestational age | (weeks) | 30.66 ± 1.41 (n=15; outlier=0; missing=0) | 36.47 ± 1.78 (n=7; outlier=0; missing=0) | 39.06 ± 0.91 (n=18; outlier=0; missing=0) |
| | HELLP | No | 10/15 (66.7%) | 5/7 (71%) | 18/18 (100%) |
| | | Yes | 5/15 (33.3%) | 2/7 (29%) | 0/18 (0%) |
| | Max. DBP during pregnancy | (mm Hg) | 108.27 ± 8.74 (n=15; outlier=0; missing=0) | 104.29 ± 5.99 (n=7; outlier=0; missing=0) | 76.72 ± 6.94 (n=18; outlier=0; missing=0) |
| | Max. SBP during pregnancy | (mm Hg) | 176 ± 12.68 (n=15; outlier=0; missing=0) | 178.71 ± 13.76 (n=7; outlier=0; missing=0) | 119.56 ± 6.49 (n=18; outlier=0; missing=0) |
| | Newborn weight | (Z-score) | -0.43 ± 0.49 (n=15; outlier=0; missing=0) | -0.23 ± 0.58 (n=7; outlier=0; missing=0) | 0.11 ± 0.71 (n=18; outlier=0; missing=0) |
| | Previous hypertension | NA | 12/15 (80%) | 6/7 (86%) | 6/18 (33.3%) |
| | | No | 3/15 (20%) | 1/7 (14%) | 12/18 (66.7%) |
| | | Yes | 0/15 (0%) | 0/7 (0%) | 0/18 (0%) |
| Validation set | Delivery | NA | | 10/10 (100%) | 202/229 (88.21%) |
| | | C-Section | | 0/10 (0%) | 0/229 (0%) |
| | | Vaginal | | 0/10 (0%) | 27/229 (11.79%) |
| | Gestational age | (weeks) | | 35.12 ± 1.26 (n=10; outlier=0; missing=6) | 38.82 ± 1.64 (n=229; outlier=0; missing=29) |
| | Gestational age at delivery | (weeks) | | NA | 39.16 ± 1.61 (n=229; outlier=0; missing=74) |
| | HELLP | NA | | 10/10 (100%) | 224/229 (97.82%) |
| | | No | | 0/10 (0%) | 5/229 (2.18%) |
| | | Yes | | 0/10 (0%) | 0/229 (0%) |
| | Max. DBP during pregnancy | (mm Hg) | | 105.18 ± 12.11 (n=10; outlier=0; missing=5) | 65.7 ± 8.73 (n=229; outlier=0; missing=215) |
| | Max. SBP during pregnancy | (mm Hg) | | 165.88 ± 9 (n=10; outlier=0; missing=5) | 113.84 ± 6.78 (n=229; outlier=0; missing=215) |
| | Newborn weight | (Z-score) | | 2553.7 ± 676.89 (n=10; outlier=0; missing=0) | 3407.53 ± 485.53 (n=229; outlier=0; missing=10) |
| | Previous hypertension | NA | | 4/10 (40%) | 200/229 (97.34%) |
| | | No | | 6/10 (60%) | 29/229 (12.66%) |
| | | Yes | | 0/10 (0%) | 0/229 (0%) |

DBP, diastolic blood pressure; EOSPE, early-onset, severe PE; HELLP, hemolysis, elevated liver enzymes, and low platelets; LOSPE, late-onset, severe PE; NA, not available; PE, preeclampsia; SBP, systolic blood pressure.

Table S7. Phenotype characteristics of discovery and validation sets of placental transcriptome for preeclampsia (PE) with fetal growth restriction.

| Set | Variable | Value | EOMPE-FGR | LOMPE-FGR | EOSPE-FGR | LOSPE-FGR | Control |
|-----------------------------|----------------------------|---------------------------|--|---|---|---|---|
| Discovery set | Attempted vaginal delivery | No | 4/4 (100%) | 3/3 (100%) | 10/11 (90.9%) | 0/7 (0%) | 12/18 (66.7%) |
| | | Yes | 0/4 (0%) | 0/3 (0%) | 1/11 (9.1%) | 7/7 (100%) | 6/18 (33.3%) |
| | Chorio-amnionitis | No | 4/4 (100%) | 3/3 (100%) | 11/11 (100%) | 7/7 (100%) | 18/18 (100%) |
| | | Yes | 0/4 (0%) | 0/3 (0%) | 0/11 (0%) | 0/7 (0%) | 0/18 (0%) |
| | Delivery | C-Section | 4/4 (100%) | 3/3 (100%) | 11/11 (100%) | 4/7 (57%) | 13/18 (72.2%) |
| | | Vaginal | 0/4 (0%) | 0/3 (0%) | 0/11 (0%) | 3/7 (43%) | 5/18 (27.8%) |
| | Gestational age | (weeks) | 31.36 ± 1.48 (n=4; outlier=0; missing=0) | 36.67 ± 2.36 (n=3; outlier=0; missing=0) | 30.49 ± 2 (n=11; outlier=0; missing=0) | 36.31 ± 1.17 (n=7; outlier=0; missing=0) | 39.06 ± 0.91 (n=18; outlier=0; missing=0) |
| | | HELLP | No | 4/4 (100%) | 3/3 (100%) | 6/11 (54.5%) | 6/7 (86%) |
| | Max. DBP during pregnancy | Yes (mm Hg) | 0/4 (0%) | 0/3 (0%) | 5/11 (45.5%) | 1/7 (14%) | 0/18 (0%) |
| | | No | 100 ± 8.64 (n=4; outlier=0; missing=0) | 96 ± 5.29 (n=3; outlier=0; missing=0) | 109.45 ± 13.23 (n=11; outlier=0; missing=0) | 110.29 ± 6.97 (n=7; outlier=0; missing=0) | 76.72 ± 6.94 (n=18; outlier=0; missing=0) |
| | Max. SBP during pregnancy | (mm Hg) | 149 ± 1.83 (n=4; outlier=0; missing=0) | 142.67 ± 6.43 (n=3; outlier=0; missing=0) | 175.09 ± 18.69 (n=11; outlier=0; missing=0) | 164.71 ± 9.79 (n=7; outlier=0; missing=0) | 119.56 ± 6.49 (n=18; outlier=0; missing=0) |
| | | Newborn weight | (Z-score) | -2.3 ± 0.74 (n=4; outlier=0; missing=0) | -1.99 ± 0.53 (n=3; outlier=0; missing=0) | -1.82 ± 0.43 (n=11; outlier=0; missing=0) | -1.5 ± 0.24 (n=7; outlier=0; missing=0) |
| | Previous hypertension | | | NA | 3/4 (75%) | 2/3 (67%) | 9/11 (81.8%) |
| | Validation set | Delivery | No | 1/4 (25%) | 1/3 (33%) | 2/11 (18.2%) | 1/7 (14%) |
| Yes | | | 0/4 (0%) | 0/3 (0%) | 0/11 (0%) | 0/7 (0%) | 0/18 (0%) |
| | | NA | | | 5/5 (100%) | 6/6 (100%) | 202/229 (88.21%) |
| | | C-Section | | | 0/5 (0%) | 0/6 (0%) | 0/229 (0%) |
| | | Vaginal | | | 0/5 (0%) | 0/6 (0%) | 27/229 (11.79%) |
| | | Gestational age | (weeks) | | | NA | NA |
| Gestational age at delivery | | (weeks) | | | NA | NA | 39.16 ± 1.61 (n=229; outlier=0; missing=74) |
| | | HELLP | NA | | | 5/5 (100%) | 6/6 (100%) |
| | | No | | | 0/5 (0%) | 0/6 (0%) | 5/229 (2.18%) |
| | | Max. DBP during pregnancy | Yes (mm Hg) | | | 0/5 (0%) | 0/6 (0%) |
| No | | | | | NA | 111 ± (n=1; outlier=0; missing=0) | 65.7 ± 8.73 (n=229; outlier=0; missing=215) |
| Max. SBP during pregnancy | | (mm Hg) | | | NA | 168 ± (n=1; outlier=0; missing=0) | 113.84 ± 6.78 (n=229; outlier=0; missing=215) |
| | | Newborn weight | (Z-score) | | | 1649 ± 707.96 (n=5; outlier=0; missing=0) | 1766.33 ± 831.03 (n=6; outlier=0; missing=0) |

| Set | Variable | Value | EOMPE-FGR | LOMPE-FGR | EOSPE-FGR | LOSPE-FGR | Control |
|-----|-----------------------|-------|-----------|-----------|------------|------------|------------------|
| | Previous hypertension | NA | | | 0/5 (0%) | 0/6 (0%) | 200/229 (87.34%) |
| | | No | | | 5/5 (100%) | 6/6 (100%) | 29/229 (12.66%) |
| | | Yes | | | 0/5 (0%) | 0/6 (0%) | 0/229 (0%) |

DBP, diastolic blood pressure; EOMPE, early-onset, mild-to-moderate PE; EOSPE, early-onset, severe PE; FGR, fetal growth restriction; HELLP, hemolysis, elevated liver enzymes, and low platelets; LOMPE, late-onset, mild-to-moderate PE; LOSPE, late-onset, severe PE; NA, not available; PE, preeclampsia; SBP, systolic blood pressure.

Table S8. Phenotype characteristics of discovery sets of placental transcriptome for superimposed preeclampsia (PE).

| Set | Variable | Value | SIM-LOMPE | SIM-EOSPE | SIM-EOSPE-FGR | Control |
|---------------|----------------------------|-----------|--|--|--|--|
| Discovery set | Attempted vaginal delivery | No | 2/3 (67%) | 8/9 (89%) | 5/6 (83%) | 12/18 (66.7%) |
| | | Yes | 1/3 (33%) | 1/9 (11%) | 1/6 (17%) | 6/18 (33.3%) |
| | Chorio-amnionitis | No | 3/3 (100%) | 9/9 (100%) | 6/6 (100%) | 18/18 (100%) |
| | | Yes | 0/3 (0%) | 0/9 (0%) | 0/6 (0%) | 0/18 (0%) |
| | Delivery | C-Section | 2/3 (67%) | 8/9 (89%) | 5/6 (83%) | 13/18 (72.2%) |
| | | Vaginal | 1/3 (33%) | 1/9 (11%) | 1/6 (17%) | 5/18 (27.8%) |
| | Gestational age | (weeks) | 36.95 ± 0.82 (n=3; outlier=0; missing=0) | 30.24 ± 2.26 (n=9; outlier=0; missing=0) | 30.64 ± 1.82 (n=6; outlier=0; missing=0) | 39.06 ± 0.91 (n=18; outlier=0; missing=0) |
| | HELLP | No | 3/3 (100%) | 3/9 (33%) | 6/6 (100%) | 18/18 (100%) |
| | | Yes | 0/3 (0%) | 6/9 (67%) | 0/6 (0%) | 0/18 (0%) |
| | Max. DBP during pregnancy | (mm Hg) | 97.67 ± 6.81 (n=3; outlier=0; missing=0) | 112.11 ± 7.93 (n=9; outlier=0; missing=0) | 116.67 ± 11.31 (n=6; outlier=0; missing=0) | 76.72 ± 6.94 (n=18; outlier=0; missing=0) |
| | Max. SBP during pregnancy | (mm Hg) | 150 ± 7 (n=3; outlier=0; missing=0) | 180.44 ± 20.28 (n=9; outlier=0; missing=0) | 173 ± 20.32 (n=6; outlier=0; missing=0) | 119.56 ± 6.49 (n=18; outlier=0; missing=0) |
| | Newborn weight | (Z-score) | -0.84 ± 0.1 (n=3; outlier=0; missing=0) | -0.94 ± 0.38 (n=9; outlier=0; missing=0) | -1.83 ± 0.35 (n=6; outlier=0; missing=0) | 0.11 ± 0.71 (n=18; outlier=0; missing=0) |
| | Previous hypertension | NA | 0/3 (0%) | 6/9 (67%) | 1/6 (17%) | 6/18 (33.3%) |
| | | No | 0/3 (0%) | 0/3 (0%) | 0/3 (0%) | 12/18 (66.7%) |
| | | Yes | 3/3 (100%) | 3/9 (33%) | 5/6 (83%) | 0/3 (0%) |

DBP, diastolic blood pressure; EOSPE, early-onset, severe PE; FGR, fetal growth restriction; HELLP, hemolysis, elevated liver enzymes, and low platelets; LOMPE, late-onset, mild-to-moderate PE; NA, not available; PE, preeclampsia; SBP, systolic blood pressure; SIM, superimposed.

Table S9. Phenotype characteristics of discovery and validation sets of placental transcriptome for gestational hypertension.

| Set | Variable | Value | EGH | LGH | LGH-FGR | Control |
|----------------|-------------------------------------|-----------|---|--|---|---|
| Discovery set | Attempted vaginal delivery | NA | 0/6 (0%) | 0/5 (0%) | 6/6 (100%) | 0/18 (0%) |
| | | No | 0/6 (0%) | 1/5 (20%) | 0/6 (0%) | 12/18 (66.7%) |
| | | Yes | 6/6 (100%) | 4/5 (80%) | 0/6 (0%) | 6/18 (33.3%) |
| | Chorio-amnionitis | NA | 0/6 (0%) | 0/5 (0%) | 6/6 (100%) | 0/18 (0%) |
| | | No | 3/6 (50%) | 5/5 (100%) | 0/6 (0%) | 18/18 (100%) |
| | | Yes | 3/6 (50%) | 0/5 (0%) | 0/6 (0%) | 0/18 (0%) |
| | Delivery | C-Section | 3/6 (50%) | 2/5 (40%) | 2/6 (33%) | 13/18 (72.2%) |
| | | Vaginal | 3/6 (50%) | 3/5 (60%) | 4/6 (67%) | 5/18 (27.8%) |
| | Gestational age (weeks) | | 29.43 ± 2.37 (n=6; outlier=0; missing=0) | 38.97 ± 1.29 (n=5; outlier=0; missing=0) | 37 ± 1.93 (n=6; outlier=0; missing=0) | 39.06 ± 0.91 (n=18; outlier=0; missing=0) |
| | HELLP | NA | 0/6 (0%) | 0/5 (0%) | 6/6 (100%) | 0/18 (0%) |
| | | No | 6/6 (100%) | 5/5 (100%) | 0/6 (0%) | 18/18 (100%) |
| | | Yes | 0/6 (0%) | 0/5 (0%) | 0/6 (0%) | 0/18 (0%) |
| | Max. DBP during pregnancy (mm Hg) | | 87.83 ± 6.88 (n=6; outlier=0; missing=0) | 89.2 ± 5.81 (n=5; outlier=0; missing=0) | 90 ± 6.42 (n=6; outlier=0; missing=0) | 76.72 ± 6.94 (n=18; outlier=0; missing=0) |
| | Max. SBP during pregnancy (mm Hg) | | 132.5 ± 11.38 (n=6; outlier=0; missing=0) | 143 ± 23.64 (n=5; outlier=0; missing=0) | 140.67 ± 6.47 (n=6; outlier=0; missing=0) | 119.56 ± 6.49 (n=18; outlier=0; missing=0) |
| | Newborn weight (Z-score) | | 0.52 ± 0.78 (n=6; outlier=0; missing=0) | -0.07 ± 0.47 (n=5; outlier=0; missing=0) | -1.95 ± 0.72 (n=6; outlier=0; missing=0) | 0.11 ± 0.71 (n=18; outlier=0; missing=0) |
| | Previous hypertension | NA | 2/6 (33%) | 3/5 (60%) | 6/6 (100%) | 6/18 (33.3%) |
| | | No | 4/6 (67%) | 2/5 (40%) | 0/6 (0%) | 12/18 (66.7%) |
| | | Yes | 0/6 (0%) | 0/5 (0%) | 0/6 (0%) | 0/18 (0%) |
| Validation set | Delivery | NA | | 8/8 (100%) | | 202/229 (88.21%) |
| | | C-Section | | 0/8 (0%) | | 0/229 (0%) |
| | | Vaginal | | 0/8 (0%) | | 27/229 (11.79%) |
| | Gestational age (weeks) | | | 38.75 ± 2.05 (n=8; outlier=0; missing=0) | | 38.82 ± 1.64 (n=229; outlier=0; missing=29) |
| | Gestational age at delivery (weeks) | | | 38.75 ± 2.05 (n=8; outlier=0; missing=0) | | 39.16 ± 1.61 (n=229; outlier=0; missing=74) |
| | HELLP | NA | | 8/8 (100%) | | 224/229 (97.82%) |
| | | No | | 0/8 (0%) | | 5/229 (2.18%) |
| | | Yes | | 0/8 (0%) | | 0/229 (0%) |
| | Max. DBP during pregnancy (mm Hg) | | | NA | | 65.7 ± 8.73 (n=229; outlier=0; missing=215) |
| | Max. SBP during pregnancy (mm Hg) | | | NA | | 113.84 ± 6.78 (n=229; outlier=0; missing=215) |
| | Newborn weight (Z-score) | | | 3162.5 ± 343 (n=8; outlier=0; missing=0) | | 3407.53 ± 485.53 (n=229; outlier=0; missing=10) |
| | Previous hypertension | NA | | 8/8 (100%) | | 0/29 (0%) |
| | | No | | 0/8 (0%) | | 29/29 (100%) |
| | | Yes | | 0/8 (0%) | | 0/29 (0%) |

DBP, diastolic blood pressure; EGH, early-onset GH; FGR, fetal growth restriction; GH, gestational hypertension; HELLP, hemolysis, elevated liver enzymes, and low platelets; LGH, late-onset GH; NA, not available; SBP, systolic blood pressure.

Table S10. Phenotype characteristics of discovery sets of placental transcriptome for chronic hypertension.

| Set | Variable | Value | LCH | ECH-FGR | LCH-FGR | Control |
|---------------|-----------------------------------|-----------|--|--|--|--|
| Discovery set | Attempted vaginal delivery | No | 4/5 (80%) | 8/8 (100%) | 5/6 (83%) | 12/18 (66.7%) |
| | | Yes | 1/5 (20%) | 0/8 (0%) | 1/6 (17%) | 6/18 (33.3%) |
| | Chorio-amnionitis | No | 5/5 (100%) | 8/8 (100%) | 6/6 (100%) | 18/18 (100%) |
| | | Yes | 0/5 (0%) | 0/8 (0%) | 0/6 (0%) | 0/18 (0%) |
| | Delivery | C-Section | 4/5 (80%) | 8/8 (100%) | 6/6 (100%) | 13/18 (72.2%) |
| | | Vaginal | 1/5 (20%) | NA | NA | 5/18 (27.8%) |
| | Gestational age (weeks) | | 37.31 ± 0.94 (n=5; outlier=0; missing=0) | 29.96 ± 1.86 (n=8; outlier=0; missing=0) | 36.21 ± 1.01 (n=6; outlier=0; missing=0) | 39.06 ± 0.91 (n=18; outlier=0; missing=0) |
| | | | | | | |
| | HELLP | No | 5/5 (100%) | 8/8 (100%) | 6/6 (100%) | 18/18 (100%) |
| | | Yes | 0/5 (0%) | 0/8 (0%) | 0/6 (0%) | 0/18 (0%) |
| | Max. DBP during pregnancy (mm Hg) | | 105.8 ± 4.6 (n=5; outlier=0; missing=0) | 101.38 ± 11.44 (n=8; outlier=0; missing=0) | 109.67 ± 6.65 (n=6; outlier=0; missing=0) | 76.72 ± 6.94 (n=18; outlier=0; missing=0) |
| | | | | | | |
| | Max. SBP during pregnancy (mm Hg) | | 166.2 ± 8.96 (n=5; outlier=0; missing=0) | 171.12 ± 16.5 (n=8; outlier=0; missing=0) | 169.17 ± 15.03 (n=6; outlier=0; missing=0) | 119.56 ± 6.49 (n=18; outlier=0; missing=0) |
| | | | | | | |
| | Newborn weight (Z-score) | | -0.44 ± 1.18 (n=5; outlier=0; missing=0) | -1.77 ± 0.47 (n=8; outlier=0; missing=0) | -2.2 ± 0.84 (n=6; outlier=0; missing=0) | 0.11 ± 0.71 (n=18; outlier=0; missing=0) |
| | | | | | | |
| | Previous hypertension | NA | 3/5 (60%) | 6/8 (75%) | 4/6 (67%) | 6/18 (33.3%) |
| | | No | 0/5 (40%) | 2/8 (25%) | 1/6 (17%) | 12/18 (66.7%) |
| | | Yes | 2/5 (40%) | 0/8 (25%) | 1/6 (17%) | 9/18 (0%) |

DBP, diastolic blood pressure; ECH, early-onset CH; FGR, fetal growth restriction; CH, chronic hypertension; HELLP, hemolysis, elevated liver enzymes, and low platelets; LCH, late-onset CH; NA, not available; SBP, systolic blood pressure.

Table S11. Phenotype characteristics of discovery and validation sets of placental transcriptome for the isolated fetal growth restriction.

| Set | Variable | Value | LFGR | Control |
|----------------|-------------------------------------|-----------|---|--|
| Discovery set | Attempted vaginal delivery | NA | 11/11 (100%) | 0/18 (0%) |
| | | No | 0/11 (0%) | 12/18 (66.7%) |
| | | Yes | 0/11 (0%) | 6/18 (33.3%) |
| | Chorio-amnionitis | NA | 11/11 (100%) | |
| | | No | 0/11 (0%) | 18/18 (100%) |
| | | Yes | 0/11 (0%) | |
| | Delivery | C-Section | 5/11 (45.5%) | 13/18 (72.2%) |
| | | Vaginal | 6/11 (54.5%) | 5/18 (27.8%) |
| | Gestational age (weeks) | | 37.22 ± 1.1 (n=11; outlier=0; missing=0) | 39.06 ± 0.91 (n=18; outlier=0; missing=0) |
| | HELLP | NA | 11/11 (100%) | 0/18 (0%) |
| | | No | 0/11 (0%) | 18/18 (100%) |
| | | Yes | 0/11 (0%) | 0/18 (0%) |
| | Max. DBP during pregnancy (mm Hg) | | 73.55 ± 8.13 (n=11; outlier=0; missing=0) | 76.72 ± 6.94 (n=18; outlier=0; missing=0) |
| | Max. SBP during pregnancy (mm Hg) | | 124 ± 11.44 (n=11; outlier=0; missing=0) | 119.56 ± 6.49 (n=18; outlier=0; missing=0) |
| | Newborn weight (Z-score) | | -1.93 ± 0.4 (n=11; outlier=0; missing=0) | 0.11 ± 0.71 (n=18; outlier=0; missing=0) |
| Validation set | Previous hypertension | NA | 11/11 (100%) | 6/18 (33.3%) |
| | | No | 0/11 (0%) | 12/18 (66.7%) |
| | | Yes | 0/11 (0%) | 0/11 (0%) |
| | Delivery | NA | 10/14 (71.4%) | 200/229 (88.21%) |
| | | C-Section | 0/14 (0%) | 0/229 (0%) |
| | | Vaginal | 4/14 (28.6%) | 29/229 (11.79%) |
| | Gestational age (weeks) | | 37.33 ± 1.86 (n=14; outlier=0; missing=1) | 38.82 ± 1.64 (n=229; outlier=0; missing=29) |
| | Gestational age at delivery (weeks) | | 34.67 ± 1.15 (n=14; outlier=0; missing=1) | 39.16 ± 1.61 (n=229; outlier=0; missing=74) |
| | HELLP | NA | 14/14 (100%) | 224/229 (97.82%) |
| | | No | 0/14 (0%) | 5/229 (2.18%) |
| | | Yes | 0/14 (0%) | 0/229 (0%) |
| | Max. DBP during pregnancy (mm Hg) | | 71.47 ± 9.74 (n=6; outlier=0; missing=0) | 65.7 ± 8.73 (n=14; outlier=0; missing=0) |
| | Max. SBP during pregnancy (mm Hg) | | 122.07 ± 6.64 (n=6; outlier=0; missing=0) | 113.84 ± 6.78 (n=14; outlier=0; missing=0) |
| | Newborn weight (Z-score) | | 1956.82 ± 436.82 (n=14; outlier=0; missing=0) | 3407.53 ± 485.53 (n=219; outlier=0; missing=0) |
| | Previous hypertension | NA | 0/1 (0%) | 0/29 (0%) |
| | | No | 1/1 (100%) | 29/29 (100%) |
| | | Yes | 0/1 (0%) | 0/29 (0%) |

DBP, diastolic blood pressure; FGR, fetal growth restriction; HELLP, hemolysis, elevated liver enzymes, and low platelets; LFGR, late-onset FGR; NA, not available; SBP, systolic blood pressure.

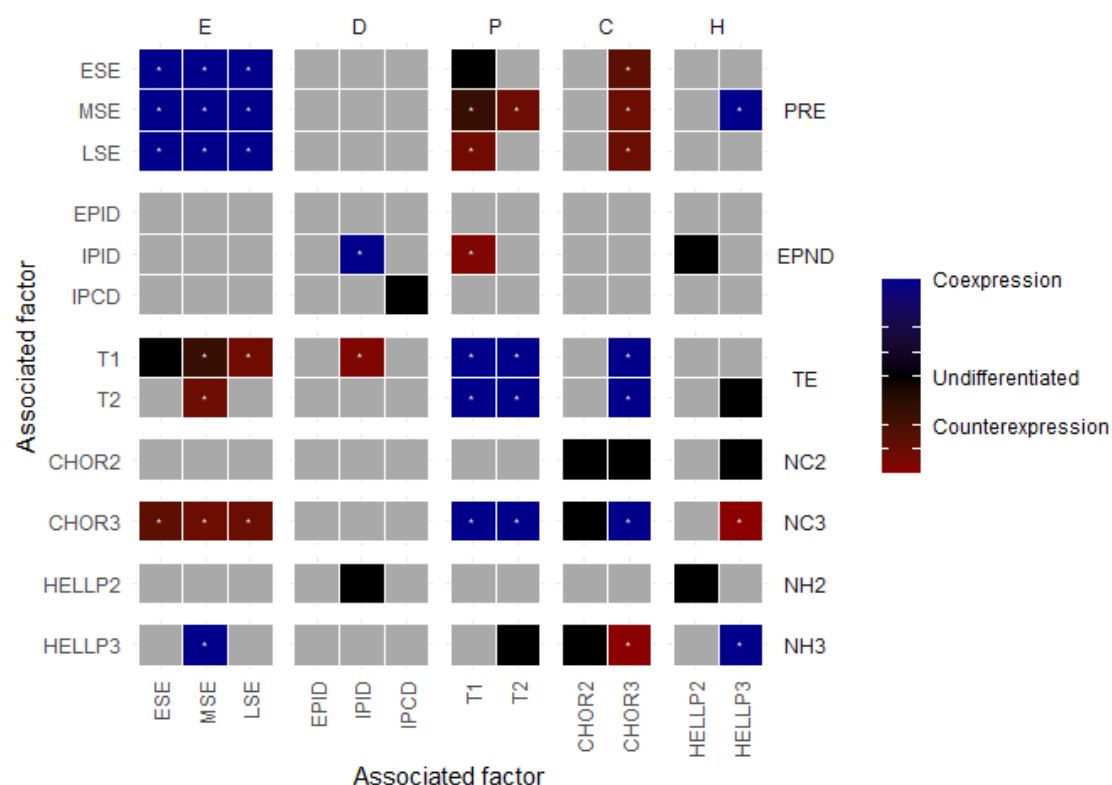


Figure S1. Overlapped DEG analysis among the associated factors. All non-grey tiles are significant for the non-regulation specific overlap. Although a full overlap is definitely applied for the same associated factors, the number may be equivalent to be undifferentiated expression. *, significant for both the non-regulation- and regulation-specific overlaps; C, chorioamnionitis; CHOR2, second-trimester chorioamnionitis placenta; CHOR3, third-trimester chorioamnionitis placenta; D, decidua; E, endometrium; EPID, ectopic-pregnancy, intermediate decidua; EPND, ectopic pregnancy, non-decidualized endometrium; ESE, early-secretory endometrium; H, HELLP; HELLP, hemolysis, elevated liver enzymes, and low platelets; HELLP2, second-trimester HELLP; HELLP3, third-trimester HELLP; LSE, late-secretory endometrium; IPID, intrauterine-pregnancy, confluent decidua; IPID, intrauterine-pregnancy, intermediate decidua; MSE, mid-secretory endometrium; NA, not available; NC2, second-trimester non-chorioamnionitis placenta; NC3, third-trimester non-chorioamnionitis placenta; PRE, proliferative endometrium; T1, first-trimester placenta; T2, second-trimester placenta; TE, term placenta.