## The identification of a TNBC liver metastasis gene signature by sequential CTC-xenograft modelling

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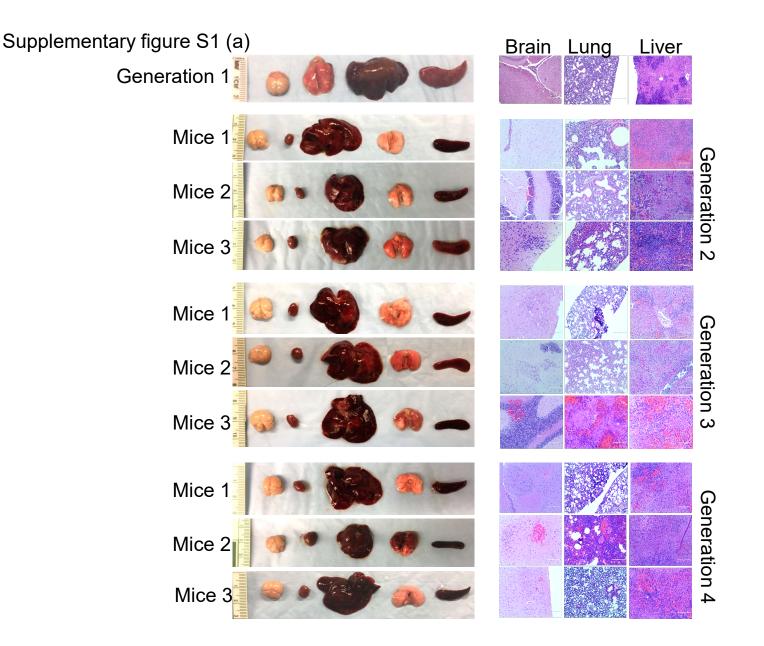
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Houston, 77030 TX, USA.

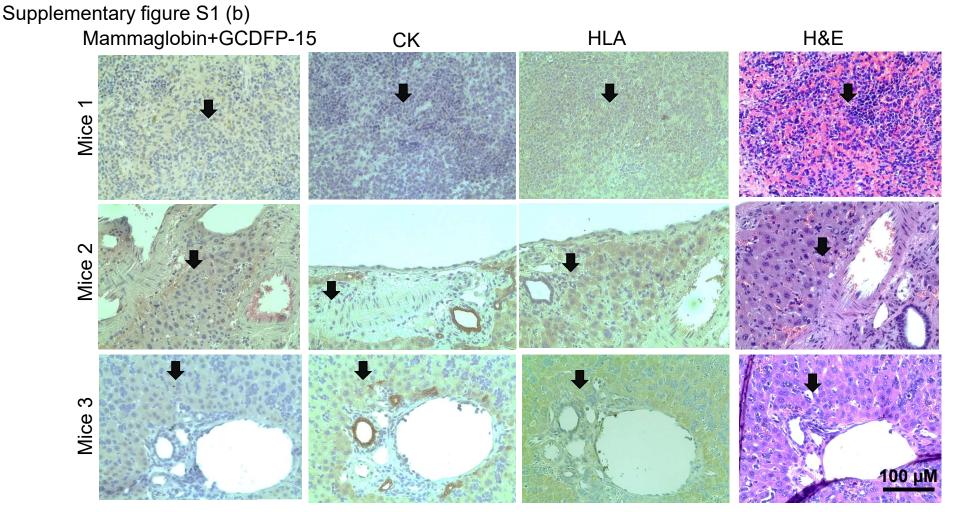
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|            | -       | •                            | •     |          |           |           |               |
|------------|---------|------------------------------|-------|----------|-----------|-----------|---------------|
|            |         |                              |       |          | PIK3CA &  |           |               |
|            | Primary |                              |       |          | BRCA1/2   | Stage at  |               |
| Patient ID | cancer  | Metastatic site              | Her-2 | ER/PR    | mutation  | diagnosis | Ki67 Results  |
| Pt 1       | Breast  | Lung and node                | Neg   | Neg/ Neg | Wild type | T2N3b     | Positive      |
| Pt 2       | Breast  | Bones, nodes, lung and liver | Neg   | Neg/Neg  | Wild type | 4         | Positive      |
| Pt 3       | Breast  | Node, lung and bone          | Neg   | Neg/Neg  | Wild type | 4         | Not available |

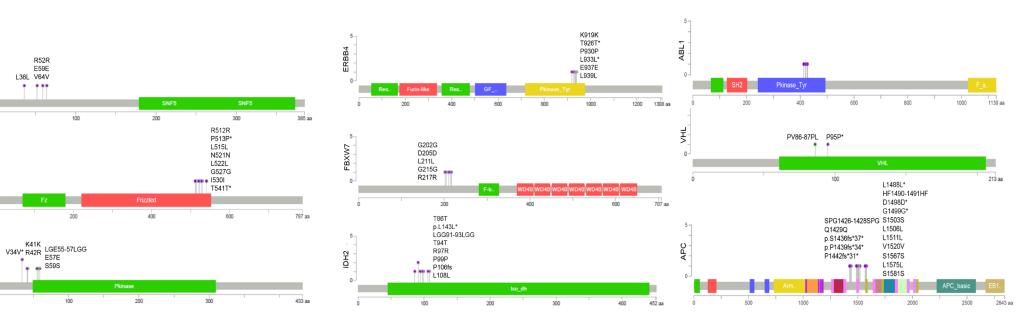
Supplementary Table S1: Clinical parameters of TNBC patients used in this study

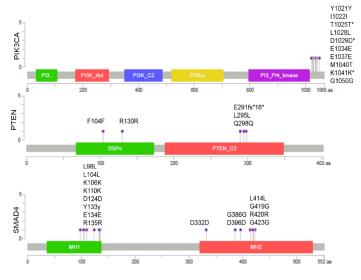


Supplementary figure S1a: Left panel showing macroscopic liver metastasis vs other organs (brain, heart, lung and spleen) and right panel showing H&E staining of brain, lung and liver derived from liver metastatic TNBC CDX mouse for each successive generations.



(b) Histopathological evaluation showing staining of human (HLA-ABC), epithelial tumor (Pan-CK) and breast origin (mammoglobin+GCDFP15) markers in CDX-derived liver tissue of fourth generation. Left panel showing anti-GCDFP-15+ anti-mammaglobin (brown color) and anti-GCDFP-15 only (red color) markers staining



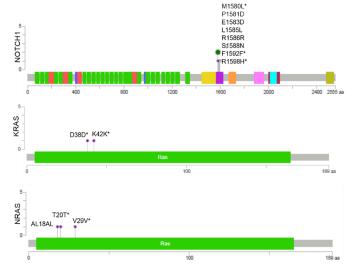


SMARCB1

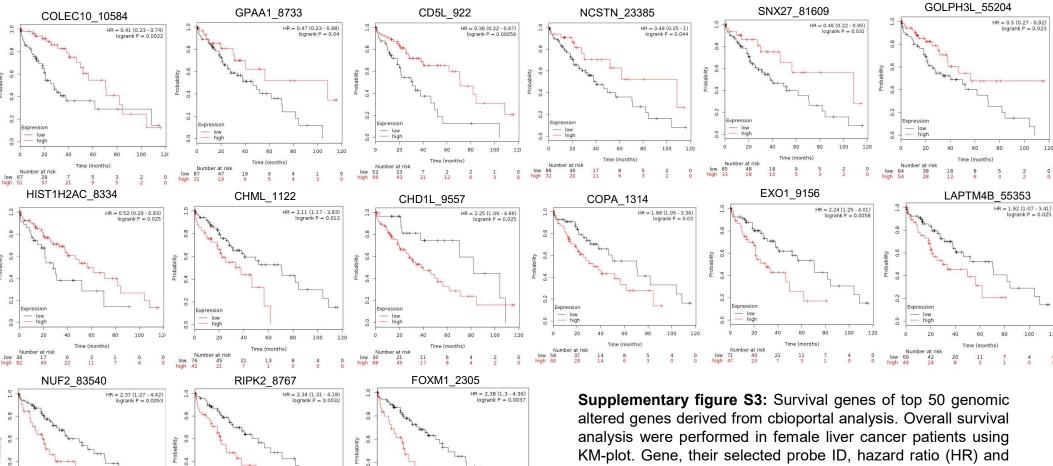
SMO

STK11

0



Supplementary figure S2: Identical genomic mutational pattern of CDX model (1-4 generations) derived from sequencing of 50 cancer genes through AmpliSeq Ion Torrent Sequencing panel. Respective gene map showing location and type of mutation present on gene. Green and purple color represents other missense and mutations respectively. Asterisk represents cosmic mutations present in respective gene (http://www.cbioportal.org/mutation mapp er.jsp)



0.4 0.2 0.2 xpression xpression low low hia high 80 100 12 100 120 40 60 60 80 100 20 60 80 120 Time Time Time (months Number Number at risk low 87 53 high 31 13 24 14 4 low high 22 12 0 73 46 13 24 4 0 53 13

0.2

0.0

pression

Number

85

low high

20

at 51 altered genes derived from cbioportal analysis. Overall survival analysis were performed in female liver cancer patients using KM-plot. Gene, their selected probe ID, hazard ratio (HR) and logrank *P*-value were mentioned at top of each survival graph. Red indicated high expression and black indicates low expression of respective gene. X-axis representing number of patients survived in months and Y-axis represents the probability. Supplementary Table S2: Twenty-four gene pairs with significant 502 co-occurrent alterations

|            |            |         | A<br>Not | B<br>Not |      | Log<br>Odds |         | Adjusted |               |
|------------|------------|---------|----------|----------|------|-------------|---------|----------|---------------|
| Gene A     | Gene B     | Neither | В        | A        | Both | Ratio       | p-Value | p-Value  | Tendency      |
| SQLE       | WASHC5     | 176     | 0        | 0        | 80   | >3          | <0.001  | <0.001   | Co-occurrence |
| ATAD2      | SQLE       | 173     | 3        | 3        | 77   | >3          | <0.001  | <0.001   | Co-occurrence |
| ATAD2      | WASHC5     | 173     | 3        | 3        | 77   | >3          | <0.001  | <0.001   | Co-occurrence |
| GBA        | GBAP1      | 211     | 0        | 0        | 45   | >3          | <0.001  | <0.001   | Co-occurrence |
| ATP6V1C1   | YWHAZ      | 183     | 4        | 4        | 65   | >3          | <0.001  | <0.001   | Co-occurrence |
| COPA       | NCSTN      | 212     | 0        | 0        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| ССТ3       | SSR2       | 212     | 0        | 0        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| NUF2       | RGS5       | 214     | 0        | 0        | 42   | >3          | <0.001  | <0.001   | Co-occurrence |
| PIP5K1A    | PRUNE1     | 214     | 0        | 0        | 42   | >3          | <0.001  | <0.001   | Co-occurrence |
| ССТ3       | GBA        | 211     | 0        | 1        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| CCT3       | GBAP1      | 211     | 0        | 1        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| COPA       | PEA15      | 211     | 0        | 1        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| PEA15      | NCSTN      | 211     | 1        | 0        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| GBA        | SSR2       | 211     | 1        | 0        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| GBAP1      | SSR2       | 211     | 1        | 0        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| ILF2       | UBAP2L     | 208     | 2        | 0        | 46   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2AC  | HIST2H2BE  | 215     | 0        | 0        | 41   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2AC  | HIST2H4B   | 215     | 0        | 0        | 41   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2BE  | HIST2H4B   | 215     | 0        | 0        | 41   | >3          | <0.001  | <0.001   | Co-occurrence |
| COLEC10    | ATAD2      | 166     | 10       | 4        | 76   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2AA3 | HIST2H2BC  | 216     | 0        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2AA3 | HIST2H2AA4 | 216     | 0        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2BC  | HIST2H2AA4 | 216     | 0        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| GOLPH3L    | PIP5K1A    | 213     | 1        | 0        | 42   | >3          | <0.001  | <0.001   | Co-occurrence |
| GOLPH3L    | PRUNE1     | 213     | 1        | 0        | 42   | >3          | <0.001  | <0.001   | Co-occurrence |
| PEA15      | TAGLN2     | 210     | 1        | 1        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2AC  | HIST2H2AA3 | 215     | 1        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2BE  | HIST2H2AA3 | 215     | 1        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H4B   | HIST2H2AA3 | 215     | 1        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2AC  | HIST2H2BC  | 215     | 1        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2BE  | HIST2H2BC  | 215     | 1        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H4B   | HIST2H2BC  | 215     | 1        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2AC  | HIST2H2AA4 | 215     | 1        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H2BE  | HIST2H2AA4 | 215     | 1        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| HIST2H4B   | HIST2H2AA4 | 215     | 1        | 0        | 40   | >3          | <0.001  | <0.001   | Co-occurrence |
| GOLPH3L    | VPS45      | 212     | 1        | 1        | 42   | >3          | <0.001  | <0.001   | Co-occurrence |
| GBA        | UBAP2L     | 209     | 1        | 2        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
| GBAP1      | UBAP2L     | 209     | 1        | 2        | 44   | >3          | <0.001  | <0.001   | Co-occurrence |
|            |            |         |          |          |      |             |         |          |               |

| GNPAT     | TTC13          | 216 | 0  | 1 | 39 | >3 | <0.001  | <0.001  | Co-occurrence |
|-----------|----------------|-----|----|---|----|----|---------|---------|---------------|
| COPA      | TAGLN2         | 210 | 1  | 2 | 43 | >3 | <0.001  | <0.001  | Co-occurrence |
| NCSTN     | TAGLN2         | 210 | 1  | 2 | 43 | >3 | <0.001  | <0.001  | Co-occurrence |
| CCT3      | CD5L           | 210 | 2  | 1 | 42 | >3 | < 0.001 | <0.001  | Co-occurrence |
| CD5L      | SSR2           | 211 | 1  | 2 | 42 | >3 | <0.001  | <0.001  | Co-occurrence |
| CCT3      | UBAP2L         | 209 | 1  | 3 | 43 | >3 | <0.001  | <0.001  | Co-occurrence |
| SSR2      | UBAP2L         | 209 | 1  | 3 | 43 | >3 | <0.001  | <0.001  | Co-occurrence |
| PIP5K1A   | VPS45          | 212 | 1  | 2 | 41 | >3 | < 0.001 | <0.001  | Co-occurrence |
| PRUNE1    | VPS45          | 212 | 1  | 2 | 41 | >3 | <0.001  | <0.001  | Co-occurrence |
| COLEC10   | SQLE           | 164 | 12 | 6 | 74 | >3 | <0.001  | <0.001  | Co-occurrence |
| COLEC10   | WASHC5         | 164 | 12 | 6 | 74 | >3 | <0.001  | <0.001  | Co-occurrence |
| ILF2      | GBA            | 207 | 4  | 1 | 44 | >3 | <0.001  | <0.001  | Co-occurrence |
| ILF2      | GBAP1          | 207 | 4  | 1 | 44 | >3 | <0.001  | <0.001  | Co-occurrence |
| RBM12B    | INTS8          | 198 | 5  | 3 | 50 | >3 | <0.001  | <0.001  | Co-occurrence |
| CD5L      | GBA            | 210 | 1  | 3 | 42 | >3 | <0.001  | <0.001  | Co-occurrence |
| CD5L      | GBAP1          | 210 | 1  | 3 | 42 | >3 | <0.001  | < 0.001 | Co-occurrence |
| SNX27     | PIP5K1A        | 211 | 3  | 1 | 41 | >3 | <0.001  | < 0.001 | Co-occurrence |
| SNX27     | PRUNE1         | 211 | 3  | 1 | 41 | >3 | < 0.001 | < 0.001 | Co-occurrence |
| S100A10   | SNX27          | 205 | 7  | 0 | 44 | >3 | < 0.001 | < 0.001 | Co-occurrence |
| CHML      | EXO1           | 223 | 0  | 0 | 33 | >3 | <0.001  | < 0.001 | Co-occurrence |
| ILF2      | CCT3           | 207 | 5  | 1 | 43 | >3 | <0.001  | < 0.001 | Co-occurrence |
| ILF2      | SSR2           | 207 | 5  | 1 | 43 | >3 | <0.001  | <0.001  | Co-occurrence |
| SNX27     | GOLPH3L        | 210 | 3  | 2 | 41 | >3 | < 0.001 | < 0.001 | Co-occurrence |
| RBM12B    | RIPK2          | 196 | 5  | 5 | 50 | >3 | < 0.001 | < 0.001 | Co-occurrence |
| YWHAZ     | LAPTM4B        | 185 | 13 | 2 | 56 | >3 | <0.001  | <0.001  | Co-occurrence |
| CD5L      | TAGLN2         | 209 | 2  | 4 | 41 | >3 | <0.001  | <0.001  | Co-occurrence |
| GNPAT     | SIPA1L2        | 215 | 2  | 2 | 37 | >3 | <0.001  | <0.001  | Co-occurrence |
| CD5L      | UBAP2L         | 208 | 2  | 5 | 41 | >3 | <0.001  | <0.001  | Co-occurrence |
| ССТ3      | TAGLN2         | 208 | 3  | 4 | 41 | >3 | <0.001  | <0.001  | Co-occurrence |
| SSR2      | TAGLN2         | 208 | 3  | 4 | 41 | >3 | <0.001  | <0.001  | Co-occurrence |
| HIST2H2AC | VPS45          | 211 | 2  | 4 | 39 | >3 | <0.001  | <0.001  | Co-occurrence |
| HIST2H2BE | VPS45          | 211 | 2  | 4 | 39 | >3 | <0.001  | <0.001  | Co-occurrence |
| HIST2H4B  | VPS45          | 211 | 2  | 4 | 39 | >3 | <0.001  | <0.001  | Co-occurrence |
| ATP6V1C1  | LAPTM4B        | 184 | 14 | 3 | 55 | >3 | <0.001  | <0.001  | Co-occurrence |
| SIPA1L2   | TTC13          | 214 | 2  | 3 | 37 | >3 | <0.001  | <0.001  | Co-occurrence |
| SNX27     | VPS45          | 209 | 4  | 3 | 40 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBA       | TAGLN2         | 207 | 4  | 4 | 41 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBAP1     | TAGLN2         | 207 | 4  | 4 | 41 | >3 | <0.001  | <0.001  | Co-occurrence |
| S100A10   | <b>GOLPH3L</b> | 204 | 9  | 1 | 42 | >3 | <0.001  | <0.001  | Co-occurrence |
| RIPK2     | ZNF704         | 198 | 9  | 3 | 46 | >3 | <0.001  | <0.001  | Co-occurrence |
| ILF2      | CD5L           | 206 | 7  | 2 | 41 | >3 | <0.001  | <0.001  | Co-occurrence |
| CD5L      | PEA15          | 208 | 3  | 5 | 40 | >3 | <0.001  | <0.001  | Co-occurrence |
|           |                |     |    |   |    |    |         |         |               |

| HIST2H2AA3     | VPS45      | 211 | 2  | 5 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
|----------------|------------|-----|----|---|----|-----|---------|---------|---------------|
| HIST2H2BC      | VPS45      | 211 | 2  | 5 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| VPS45          | HIST2H2AA4 | 211 | 5  | 2 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| HIST2H2AC      | PIP5K1A    | 211 | 3  | 4 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| HIST2H2BE      | PIP5K1A    | 211 | 3  | 4 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| HIST2H4B       | PIP5K1A    | 211 | 3  | 4 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| HIST2H2AC      | PRUNE1     | 211 | 3  | 4 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| HIST2H2BE      | PRUNE1     | 211 | 3  | 4 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| HIST2H4B       | PRUNE1     | 211 | 3  | 4 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| CHD1L          | HIST2H2AA3 | 214 | 2  | 4 | 36 | >3  | <0.001  | <0.001  | Co-occurrence |
| CHD1L          | HIST2H2BC  | 214 | 2  | 4 | 36 | >3  | <0.001  | <0.001  | Co-occurrence |
| CHD1L          | HIST2H2AA4 | 214 | 2  | 4 | 36 | >3  | <0.001  | <0.001  | Co-occurrence |
| S100A10        | PIP5K1A    | 204 | 10 | 1 | 41 | >3  | <0.001  | <0.001  | Co-occurrence |
| S100A10        | PRUNE1     | 204 | 10 | 1 | 41 | >3  | <0.001  | <0.001  | Co-occurrence |
| CCT3           | PEA15      | 207 | 4  | 5 | 40 | >3  | <0.001  | <0.001  | Co-occurrence |
| PEA15          | SSR2       | 207 | 5  | 4 | 40 | >3  | <0.001  | <0.001  | Co-occurrence |
| <b>GOLPH3L</b> | HIST2H2AC  | 210 | 5  | 3 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| GOLPH3L        | HIST2H2BE  | 210 | 5  | 3 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| GOLPH3L        | HIST2H4B   | 210 | 5  | 3 | 38 | >3  | <0.001  | <0.001  | Co-occurrence |
| LAPTM4B        | INTS8      | 193 | 10 | 5 | 48 | >3  | <0.001  | <0.001  | Co-occurrence |
| CHD1L          | HIST2H2AC  | 213 | 2  | 5 | 36 | >3  | <0.001  | <0.001  | Co-occurrence |
| CHD1L          | HIST2H2BE  | 213 | 2  | 5 | 36 | >3  | <0.001  | <0.001  | Co-occurrence |
| CHD1L          | HIST2H4B   | 213 | 2  | 5 | 36 | >3  | <0.001  | <0.001  | Co-occurrence |
| CD5L           | COPA       | 208 | 4  | 5 | 39 | >3  | <0.001  | <0.001  | Co-occurrence |
| CD5L           | NCSTN      | 208 | 4  | 5 | 39 | >3  | <0.001  | <0.001  | Co-occurrence |
| GBA            | PEA15      | 206 | 5  | 5 | 40 | >3  | <0.001  | <0.001  | Co-occurrence |
| GBAP1          | PEA15      | 206 | 5  | 5 | 40 | >3  | <0.001  | <0.001  | Co-occurrence |
| HIST2H2AA3     | PIP5K1A    | 211 | 3  | 5 | 37 | >3  | <0.001  | <0.001  | Co-occurrence |
| HIST2H2BC      | PIP5K1A    | 211 | 3  | 5 | 37 | >3  | <0.001  | < 0.001 | Co-occurrence |
| HIST2H2AA3     | PRUNE1     | 211 | 3  | 5 | 37 | >3  | <0.001  | <0.001  | Co-occurrence |
| HIST2H2BC      | PRUNE1     | 211 | 3  | 5 | 37 | >3  | <0.001  | <0.001  | Co-occurrence |
| PIP5K1A        | HIST2H2AA4 | 211 | 5  | 3 | 37 | >3  | <0.001  | <0.001  | Co-occurrence |
| PRUNE1         | HIST2H2AA4 | 211 | 5  | 3 | 37 | >3  | < 0.001 | < 0.001 | Co-occurrence |
| S100A10        | VPS45      | 203 | 10 | 2 | 41 | >3  | <0.001  | <0.001  | Co-occurrence |
| CCT3           | COPA       | 207 | 5  | 5 | 39 | >3  | <0.001  | < 0.001 | Co-occurrence |
| CCT3           | NCSTN      | 207 | 5  | 5 | 39 | >3  | <0.001  | <0.001  | Co-occurrence |
| COPA           | SSR2       | 207 | 5  | 5 | 39 | >3  | <0.001  | <0.001  | Co-occurrence |
| NCSTN          | SSR2       | 207 | 5  | 5 | 39 | >3  | <0.001  | <0.001  | Co-occurrence |
| COLEC10        | ATP6V1C1   | 165 | 22 | 5 | 64 | >3  | <0.001  | <0.001  | Co-occurrence |
| GOLPH3L        | HIST2H2AA3 | 210 | 6  | 3 | 37 | >3  | <0.001  | <0.001  | Co-occurrence |
| GOLPH3L        | HIST2H2AA  | 210 | 6  | 3 | 37 | >3  | <0.001  | <0.001  | Co-occurrence |
| GOLPH3L        | HIST2H2BO  | 210 | 6  | 3 | 37 | >3  | <0.001  | <0.001  | Co-occurrence |
|                |            | 210 | 0  | U | 01 | - 0 | -0.001  | -0.001  |               |

| TAGLN2       | UBAP2L     | 205        | 5  | 6 | 40 | >3 | <0.001           | <0.001           | Co-occurrence |
|--------------|------------|------------|----|---|----|----|------------------|------------------|---------------|
| LAPTM4B      | RBM12B     | 191        | 10 | 7 | 48 | >3 | <0.001           | <0.001           | Co-occurrence |
| TARBP1       | RBM34      | 214        | 7  | 1 | 34 | >3 | <0.001           | <0.001           | Co-occurrence |
| COPA         | GBA        | 206        | 5  | 6 | 39 | >3 | <0.001           | <0.001           | Co-occurrence |
| COPA         | GBAP1      | 206        | 5  | 6 | 39 | >3 | <0.001           | <0.001           | Co-occurrence |
| GBA          | NCSTN      | 206        | 6  | 5 | 39 | >3 | <0.001           | <0.001           | Co-occurrence |
| GBAP1        | NCSTN      | 206        | 6  | 5 | 39 | >3 | <0.001           | <0.001           | Co-occurrence |
| RIPK2        | INTS8      | 194        | 9  | 7 | 46 | >3 | <0.001           | <0.001           | Co-occurrence |
| PEA15        | NUF2       | 207        | 7  | 4 | 38 | >3 | <0.001           | <0.001           | Co-occurrence |
| PEA15        | RGS5       | 207        | 7  | 4 | 38 | >3 | <0.001           | <0.001           | Co-occurrence |
| NUF2         | TAGLN2     | 207        | 4  | 7 | 38 | >3 | <0.001           | <0.001           | Co-occurrence |
| RGS5         | TAGLN2     | 207        | 4  | 7 | 38 | >3 | <0.001           | <0.001           | Co-occurrence |
| ILF2         | TAGLN2     | 203        | 8  | 5 | 40 | >3 | <0.001           | <0.001           | Co-occurrence |
| COLEC10      | YWHAZ      | 164        | 23 | 6 | 63 | >3 | <0.001           | <0.001           | Co-occurrence |
| SNX27        | HIST2H2AC  | 208        | 7  | 4 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| SNX27        | HIST2H2BE  | 208        | 7  | 4 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| SNX27        | HIST2H4B   | 208        | 7  | 4 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| ATAD2        | ATP6V1C1   | 168        | 19 | 8 | 61 | >3 | <0.001           | <0.001           | Co-occurrence |
| CD5L         | NUF2       | 208        | 6  | 5 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| CD5L         | RGS5       | 208        | 6  | 5 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| PEA15        | UBAP2L     | 204        | 6  | 7 | 39 | >3 | <0.001           | <0.001           | Co-occurrence |
| MTR          | CHML       | 218        | 5  | 2 | 31 | >3 | <0.001           | <0.001           | Co-occurrence |
| MTR          | EXO1       | 218        | 5  | 2 | 31 | >3 | <0.001           | <0.001           | Co-occurrence |
| ССТ3         | NUF2       | 207        | 7  | 5 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| COPA         | NUF2       | 207        | 7  | 5 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| NCSTN        | NUF2       | 207        | 7  | 5 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| ССТ3         | RGS5       | 207        | 7  | 5 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| COPA         | RGS5       | 207        | 7  | 5 | 37 | >3 | <0.001           | <0.001           | Co-occurrence |
| NCSTN        | RGS5       | 207        | 7  | 5 | 37 | >3 | < 0.001          | < 0.001          | Co-occurrence |
| SSR2         | RGS5       | 207        | 7  | 5 | 37 | >3 | < 0.001          | <0.001           | Co-occurrence |
| NUF2         | SSR2       | 207        | 5  | 7 | 37 | >3 | < 0.001          | < 0.001          | Co-occurrence |
| CHD1L        | VPS45      | 210        | 3  | 8 | 35 | >3 | <0.001           | <0.001           | Co-occurrence |
| SNX27        | HIST2H2AA3 | 208        | 8  | 4 | 36 | >3 | < 0.001          | <0.001           | Co-occurrence |
| SNX27        | HIST2H2BC  | 208        | 8  | 4 | 36 | >3 | <0.001           | <0.001           | Co-occurrence |
| SNX27        | HIST2H2AA4 | 208        | 8  | 4 | 36 | >3 | < 0.001          | <0.001           | Co-occurrence |
| ATP6V1C1     | INTS8      | 183        | 20 | 4 | 49 | >3 | < 0.001          | <0.001           | Co-occurrence |
| YWHAZ        | INTS8      | 183        | 20 | 4 | 49 | >3 | <0.001           | <0.001           | Co-occurrence |
| GBA          | NUF2       | 206        | 8  | 5 | 37 | >3 | < 0.001          | <0.001           | Co-occurrence |
| GBAP1        | NUF2       | 200        | 8  | 5 | 37 | >3 | <0.001<br><0.001 | <0.001           | Co-occurrence |
| GBAFT        | RGS5       | 200        | 8  | 5 | 37 | >3 | <0.001<br><0.001 | <0.001           | Co-occurrence |
| GBA<br>GBAP1 | RGS5       | 200<br>206 | 8  | 5 | 37 | >3 | <0.001<br><0.001 | <0.001<br><0.001 | Co-occurrence |
| SNX27        | CHD1L      | 200        | 9  | 3 | 35 | >3 | <0.001<br><0.001 | <0.001           | Co-occurrence |
| JINALI       | ONDIL      | 203        | 9  | 5 | 55 | -0 | NU.001           | <b>NU.UU</b>     | CO-OCCUITENCE |

| SQLE     | ATP6V1C1       | 167 | 20 | 9  | 60 | >3 | <0.001 | <0.001  | Co-occurrence |
|----------|----------------|-----|----|----|----|----|--------|---------|---------------|
| WASHC5   | ATP6V1C1       | 167 | 20 | 9  | 60 | >3 | <0.001 | <0.001  | Co-occurrence |
| COPA     | UBAP2L         | 204 | 6  | 8  | 38 | >3 | <0.001 | <0.001  | Co-occurrence |
| NCSTN    | UBAP2L         | 204 | 6  | 8  | 38 | >3 | <0.001 | <0.001  | Co-occurrence |
| ILF2     | PEA15          | 204 | 9  | 6  | 39 | >3 | <0.001 | <0.001  | Co-occurrence |
| S100A10  | HIST2H2AC      | 202 | 13 | 3  | 38 | >3 | <0.001 | <0.001  | Co-occurrence |
| S100A10  | HIST2H2BE      | 202 | 13 | 3  | 38 | >3 | <0.001 | <0.001  | Co-occurrence |
| S100A10  | HIST2H2BL      | 202 | 13 | 3  | 38 | >3 | <0.001 | <0.001  | Co-occurrence |
| NUF2     | UBAP2L         | 202 | 5  | 9  | 37 | >3 | <0.001 | <0.001  | Co-occurrence |
| RGS5     | UBAP2L         | 205 | 5  | 9  | 37 | >3 | <0.001 | < 0.001 | Co-occurrence |
| ZNF704   | ARMC1          | 200 | 12 | 3  | 37 | >3 | <0.001 | <0.001  | Co-occurrence |
| CHD1L    | PIP5K1A        | 210 | 4  | 8  | 34 | >3 | <0.001 | <0.001  | Co-occurrence |
| CHD1L    | PRUNE1         | 210 | 4  | 8  | 34 | >3 | <0.001 | <0.001  | Co-occurrence |
| ILF2     | COPA           | 202 | 10 | 6  | 38 | >3 | <0.001 | <0.001  | Co-occurrence |
| ILF2     | NCSTN          | 202 | 10 | 6  | 38 | >3 | <0.001 | <0.001  | Co-occurrence |
| CHD1L    | GOLPH3L        | 209 | 4  | 9  | 34 | >3 | <0.001 | <0.001  | Co-occurrence |
| S100A10  | HIST2H2AA3     | 202 | 14 | 3  | 37 | >3 | <0.001 | <0.001  | Co-occurrence |
| S100A10  | HIST2H2BC      | 202 | 14 | 3  | 37 | >3 | <0.001 | <0.001  | Co-occurrence |
| S100A10  | HIST2H2AA4     | 202 | 14 | 3  | 37 | >3 | <0.001 | < 0.001 | Co-occurrence |
| ATAD2    | YWHAZ          | 166 | 21 | 10 | 59 | >3 | <0.001 | <0.001  | Co-occurrence |
| SQLE     | YWHAZ          | 166 | 21 | 10 | 59 | >3 | <0.001 | < 0.001 | Co-occurrence |
| WASHC5   | YWHAZ          | 166 | 21 | 10 | 59 | >3 | <0.001 | < 0.001 | Co-occurrence |
| S100A10  | CHD1L          | 203 | 15 | 2  | 36 | >3 | <0.001 | <0.001  | Co-occurrence |
| ILF2     | NUF2           | 203 | 11 | 5  | 37 | >3 | <0.001 | < 0.001 | Co-occurrence |
| ILF2     | RGS5           | 203 | 11 | 5  | 37 | >3 | <0.001 | <0.001  | Co-occurrence |
| RBM12B   | ZNF704         | 194 | 13 | 7  | 42 | >3 | <0.001 | <0.001  | Co-occurrence |
| INTS8    | ZNF704         | 195 | 12 | 8  | 41 | >3 | <0.001 | <0.001  | Co-occurrence |
| LAPTM4B  | RIPK2          | 188 | 13 | 10 | 45 | >3 | <0.001 | <0.001  | Co-occurrence |
| MTR      | RBM34          | 215 | 6  | 5  | 30 | >3 | <0.001 | <0.001  | Co-occurrence |
| ATP6V1C1 | RBM12B         | 180 | 21 | 7  | 48 | >3 | <0.001 | <0.001  | Co-occurrence |
| YWHAZ    | RBM12B         | 180 | 21 | 7  | 48 | >3 | <0.001 | <0.001  | Co-occurrence |
| YWHAZ    | RIPK2          | 180 | 21 | 7  | 48 | >3 | <0.001 | <0.001  | Co-occurrence |
| RIPK2    | ARMC1          | 198 | 18 | 3  | 37 | >3 | <0.001 | <0.001  | Co-occurrence |
| ILF2     | <b>GOLPH3L</b> | 201 | 12 | 7  | 36 | >3 | <0.001 | <0.001  | Co-occurrence |
| ILF2     | VPS45          | 201 | 12 | 7  | 36 | >3 | <0.001 | <0.001  | Co-occurrence |
| GNPAT    | RBM34          | 212 | 9  | 5  | 30 | >3 | <0.001 | <0.001  | Co-occurrence |
| SIPA1L2  | RBM34          | 212 | 9  | 5  | 30 | >3 | <0.001 | <0.001  | Co-occurrence |
| YWHAZ    | ZNF704         | 182 | 25 | 5  | 44 | >3 | <0.001 | <0.001  | Co-occurrence |
| TTC13    | RBM34          | 211 | 10 | 5  | 30 | >3 | <0.001 | <0.001  | Co-occurrence |
| ILF2     | PIP5K1A        | 201 | 13 | 7  | 35 | >3 | <0.001 | <0.001  | Co-occurrence |
| ILF2     | PRUNE1         | 201 | 13 | 7  | 35 | >3 | <0.001 | <0.001  | Co-occurrence |
| ATAD2    | LAPTM4B        | 169 | 29 | 7  | 51 | >3 | <0.001 | <0.001  | Co-occurrence |
|          |                |     |    |    |    |    |        |         |               |

| SQLE     | LAPTM4B        | 169 | 29 | 7  | 51 | >3 | <0.001  | <0.001  | Co-occurrence |
|----------|----------------|-----|----|----|----|----|---------|---------|---------------|
| WASHC5   | LAPTM4B        | 169 | 29 | 7  | 51 | >3 | < 0.001 | < 0.001 | Co-occurrence |
| S100A10  | ILF2           | 195 | 13 | 10 | 38 | >3 | < 0.001 | < 0.001 | Co-occurrence |
| UBAP2L   | PIP5K1A        | 202 | 12 | 8  | 34 | >3 | <0.001  | <0.001  | Co-occurrence |
| UBAP2L   | PRUNE1         | 202 | 12 | 8  | 34 | >3 | < 0.001 | < 0.001 | Co-occurrence |
| ATAD2    | RBM12B         | 170 | 31 | 6  | 49 | >3 | <0.001  | <0.001  | Co-occurrence |
| ATP6V1C1 | RIPK2          | 178 | 23 | 9  | 46 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBA      | CHD1L          | 205 | 13 | 6  | 32 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBAP1    | CHD1L          | 205 | 13 | 6  | 32 | >3 | <0.001  | <0.001  | Co-occurrence |
| ATP6V1C1 | ZNF704         | 181 | 26 | 6  | 43 | >3 | <0.001  | <0.001  | Co-occurrence |
| LAPTM4B  | ZNF704         | 189 | 18 | 9  | 40 | >3 | <0.001  | <0.001  | Co-occurrence |
| ILF2     | SNX27          | 199 | 13 | 9  | 35 | >3 | <0.001  | <0.001  | Co-occurrence |
| UBAP2L   | <b>GOLPH3L</b> | 201 | 12 | 9  | 34 | >3 | <0.001  | <0.001  | Co-occurrence |
| UBAP2L   | VPS45          | 201 | 12 | 9  | 34 | >3 | <0.001  | <0.001  | Co-occurrence |
| TARBP1   | GNPAT          | 207 | 10 | 8  | 31 | >3 | <0.001  | <0.001  | Co-occurrence |
| TARBP1   | SIPA1L2        | 207 | 10 | 8  | 31 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBA      | SNX27          | 201 | 11 | 10 | 34 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBAP1    | SNX27          | 201 | 11 | 10 | 34 | >3 | <0.001  | <0.001  | Co-occurrence |
| RBM34    | CHML           | 215 | 8  | 6  | 27 | >3 | <0.001  | <0.001  | Co-occurrence |
| RBM34    | EXO1           | 215 | 8  | 6  | 27 | >3 | <0.001  | <0.001  | Co-occurrence |
| S100A10  | GBA            | 196 | 15 | 9  | 36 | >3 | <0.001  | <0.001  | Co-occurrence |
| S100A10  | GBAP1          | 196 | 15 | 9  | 36 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBA      | PIP5K1A        | 202 | 12 | 9  | 33 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBAP1    | PIP5K1A        | 202 | 12 | 9  | 33 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBA      | PRUNE1         | 202 | 12 | 9  | 33 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBAP1    | PRUNE1         | 202 | 12 | 9  | 33 | >3 | <0.001  | <0.001  | Co-occurrence |
| SNX27    | UBAP2L         | 200 | 10 | 12 | 34 | >3 | <0.001  | <0.001  | Co-occurrence |
| TARBP1   | TTC13          | 206 | 10 | 9  | 31 | >3 | <0.001  | <0.001  | Co-occurrence |
| ATAD2    | INTS8          | 170 | 33 | 6  | 47 | >3 | <0.001  | <0.001  | Co-occurrence |
| SQLE     | RBM12B         | 169 | 32 | 7  | 48 | >3 | <0.001  | <0.001  | Co-occurrence |
| WASHC5   | RBM12B         | 169 | 32 | 7  | 48 | >3 | <0.001  | <0.001  | Co-occurrence |
| CCT3     | CHD1L          | 205 | 13 | 7  | 31 | >3 | <0.001  | <0.001  | Co-occurrence |
| SSR2     | CHD1L          | 205 | 13 | 7  | 31 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBA      | HIST2H2AA3     | 203 | 13 | 8  | 32 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBAP1    | HIST2H2AA3     | 203 | 13 | 8  | 32 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBA      | HIST2H2BC      | 203 | 13 | 8  | 32 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBAP1    | HIST2H2BC      | 203 | 13 | 8  | 32 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBA      | HIST2H2AA4     | 203 | 13 | 8  | 32 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBAP1    | HIST2H2AA4     | 203 | 13 | 8  | 32 | >3 | <0.001  | <0.001  | Co-occurrence |
| COLEC10  | LAPTM4B        | 163 | 35 | 7  | 51 | >3 | <0.001  | <0.001  | Co-occurrence |
| S100A10  | UBAP2L         | 195 | 15 | 10 | 36 | >3 | <0.001  | <0.001  | Co-occurrence |
| GBA      | GOLPH3L        | 201 | 12 | 10 | 33 | >3 | <0.001  | <0.001  | Co-occurrence |
|          |                |     |    |    |    |    |         |         |               |

| GBAP1   | <b>GOLPH3L</b> | 201 | 12 | 10 | 33 | >3 | <0.001  | <0.001 | Co-occurrence |
|---------|----------------|-----|----|----|----|----|---------|--------|---------------|
| GBA     | VPS45          | 201 | 12 | 10 | 33 | >3 | <0.001  | <0.001 | Co-occurrence |
| GBAP1   | VPS45          | 201 | 12 | 10 | 33 | >3 | <0.001  | <0.001 | Co-occurrence |
| CCT3    | SNX27          | 201 | 11 | 11 | 33 | >3 | <0.001  | <0.001 | Co-occurrence |
| SSR2    | SNX27          | 201 | 11 | 11 | 33 | >3 | <0.001  | <0.001 | Co-occurrence |
| ILF2    | HIST2H2AC      | 200 | 15 | 8  | 33 | >3 | <0.001  | <0.001 | Co-occurrence |
| ILF2    | HIST2H2BE      | 200 | 15 | 8  | 33 | >3 | <0.001  | <0.001 | Co-occurrence |
| ILF2    | HIST2H4B       | 200 | 15 | 8  | 33 | >3 | <0.001  | <0.001 | Co-occurrence |
| S100A10 | CCT3           | 196 | 16 | 9  | 35 | >3 | <0.001  | <0.001 | Co-occurrence |
| S100A10 | SSR2           | 196 | 16 | 9  | 35 | >3 | <0.001  | <0.001 | Co-occurrence |
| UBAP2L  | HIST2H2AA3     | 202 | 14 | 8  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| UBAP2L  | HIST2H2BC      | 202 | 14 | 8  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| UBAP2L  | HIST2H2BA4     | 202 | 14 | 8  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| GBA     | HIST2H2AC      | 202 | 13 | 9  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| GBAP1   | HIST2H2AC      | 202 | 13 | 9  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| GBA     | HIST2H2BE      | 202 | 13 | 9  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| GBAP1   | HIST2H2BE      | 202 | 13 | 9  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| GBA     | HIST2H4B       | 202 | 13 | 9  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| GBAP1   | HIST2H4B       | 202 | 13 | 9  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| TARBP1  | MTR            | 208 | 12 | 7  | 29 | >3 | <0.001  | <0.001 | Co-occurrence |
| CCT3    | PIP5K1A        | 202 | 12 | 10 | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| SSR2    | PIP5K1A        | 202 | 12 | 10 | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| CCT3    | PRUNE1         | 202 | 12 | 10 | 32 | >3 | < 0.001 | <0.001 | Co-occurrence |
| SSR2    | PRUNE1         | 202 | 12 | 10 | 32 | >3 | < 0.001 | <0.001 | Co-occurrence |
| UBAP2L  | CHD1L          | 203 | 15 | 7  | 31 | >3 | <0.001  | <0.001 | Co-occurrence |
| UBAP2L  | HIST2H2AC      | 201 | 14 | 9  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| UBAP2L  | HIST2H2BE      | 201 | 14 | 9  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| UBAP2L  | HIST2H4B       | 201 | 14 | 9  | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| CD5L    | CHD1L          | 205 | 13 | 8  | 30 | >3 | <0.001  | <0.001 | Co-occurrence |
| ССТ3    | HIST2H2AA3     | 203 | 13 | 9  | 31 | >3 | <0.001  | <0.001 | Co-occurrence |
| SSR2    | HIST2H2AA3     | 203 | 13 | 9  | 31 | >3 | <0.001  | <0.001 | Co-occurrence |
| ССТ3    | HIST2H2BC      | 203 | 13 | 9  | 31 | >3 | <0.001  | <0.001 | Co-occurrence |
| SSR2    | HIST2H2BC      | 203 | 13 | 9  | 31 | >3 | <0.001  | <0.001 | Co-occurrence |
| CCT3    | HIST2H2AA4     | 203 | 13 | 9  | 31 | >3 | <0.001  | <0.001 | Co-occurrence |
| SSR2    | HIST2H2AA4     | 203 | 13 | 9  | 31 | >3 | <0.001  | <0.001 | Co-occurrence |
| CCT3    | GOLPH3L        | 201 | 12 | 11 | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| SSR2    | GOLPH3L        | 201 | 12 | 11 | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| CCT3    | VPS45          | 201 | 12 | 11 | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| SSR2    | VPS45          | 201 | 12 | 11 | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| CD5L    | SNX27          | 201 | 11 | 12 | 32 | >3 | <0.001  | <0.001 | Co-occurrence |
| GNPAT   | ACBD3          | 211 | 12 | 6  | 27 | >3 | <0.001  | <0.001 | Co-occurrence |
| S100A10 | CD5L           | 196 | 17 | 9  | 34 | >3 | <0.001  | <0.001 | Co-occurrence |
|         |                |     |    |    |    |    |         |        |               |

| ILF2    | HIST2H2AA3 | 200 | 16 | 8  | 32 | >3    | <0.001  | <0.001  | Co-occurrence |
|---------|------------|-----|----|----|----|-------|---------|---------|---------------|
| ILF2    | HIST2H2BC  | 200 | 16 | 8  | 32 | >3    | <0.001  | <0.001  | Co-occurrence |
| ILF2    | HIST2H2AA4 | 200 | 16 | 8  | 32 | >3    | < 0.001 | <0.001  | Co-occurrence |
| GNPAT   | MTR        | 209 | 11 | 8  | 28 | >3    | <0.001  | <0.001  | Co-occurrence |
| SIPA1L2 | MTR        | 209 | 11 | 8  | 28 | >3    | < 0.001 | <0.001  | Co-occurrence |
| ILF2    | CHD1L      | 201 | 17 | 7  | 31 | >3    | < 0.001 | <0.001  | Co-occurrence |
| CCT3    | HIST2H2AC  | 202 | 13 | 10 | 31 | >3    | < 0.001 | <0.001  | Co-occurrence |
| SSR2    | HIST2H2AC  | 202 | 13 | 10 | 31 | >3    | <0.001  | <0.001  | Co-occurrence |
| CCT3    | HIST2H2BE  | 202 | 13 | 10 | 31 | >3    | < 0.001 | <0.001  | Co-occurrence |
| SSR2    | HIST2H2BE  | 202 | 13 | 10 | 31 | >3    | < 0.001 | < 0.001 | Co-occurrence |
| CCT3    | HIST2H4B   | 202 | 13 | 10 | 31 | >3    | < 0.001 | <0.001  | Co-occurrence |
| SSR2    | HIST2H4B   | 202 | 13 | 10 | 31 | >3    | < 0.001 | <0.001  | Co-occurrence |
| TTC13   | ACBD3      | 210 | 13 | 6  | 27 | >3    | < 0.001 | < 0.001 | Co-occurrence |
| COLEC10 | INTS8      | 164 | 39 | 6  | 47 | >3    | < 0.001 | <0.001  | Co-occurrence |
| INTS8   | ARMC1      | 196 | 20 | 7  | 33 | >3    | < 0.001 | < 0.001 | Co-occurrence |
| TTC13   | MTR        | 208 | 12 | 8  | 28 | >3    | < 0.001 | <0.001  | Co-occurrence |
| PEA15   | CHD1L      | 203 | 15 | 8  | 30 | >3    | < 0.001 | < 0.001 | Co-occurrence |
| TAGLN2  | CHD1L      | 203 | 15 | 8  | 30 | >3    | <0.001  | <0.001  | Co-occurrence |
| PEA15   | SNX27      | 199 | 13 | 12 | 32 | >3    | <0.001  | <0.001  | Co-occurrence |
| SNX27   | TAGLN2     | 199 | 12 | 13 | 32 | >3    | <0.001  | <0.001  | Co-occurrence |
| NUF2    | CHD1L      | 205 | 13 | 9  | 29 | >3    | < 0.001 | < 0.001 | Co-occurrence |
| RGS5    | CHD1L      | 205 | 13 | 9  | 29 | >3    | <0.001  | <0.001  | Co-occurrence |
| S100A10 | PEA15      | 194 | 17 | 11 | 34 | >3    | <0.001  | <0.001  | Co-occurrence |
| S100A10 | TAGLN2     | 194 | 17 | 11 | 34 | >3    | <0.001  | <0.001  | Co-occurrence |
| YWHAZ   | ARMC1      | 183 | 33 | 4  | 36 | >3    | <0.001  | <0.001  | Co-occurrence |
| RBM12B  | ARMC1      | 194 | 22 | 7  | 33 | >3    | <0.001  | <0.001  | Co-occurrence |
| SQLE    | INTS8      | 168 | 35 | 8  | 45 | >3    | <0.001  | <0.001  | Co-occurrence |
| WASHC5  | INTS8      | 168 | 35 | 8  | 45 | >3    | <0.001  | <0.001  | Co-occurrence |
| ATAD2   | RIPK2      | 167 | 34 | 9  | 46 | >3    | <0.001  | <0.001  | Co-occurrence |
| SIPA1L2 | ACBD3      | 210 | 13 | 7  | 26 | >3    | <0.001  | <0.001  | Co-occurrence |
| SIPA1L2 | CHML       | 210 | 13 | 7  | 26 | >3    | <0.001  | <0.001  | Co-occurrence |
| SIPA1L2 | EXO1       | 210 | 13 | 7  | 26 | >3    | <0.001  | <0.001  | Co-occurrence |
| COPA    | CHD1L      | 203 | 15 | 9  | 29 | >3    | <0.001  | <0.001  | Co-occurrence |
| NCSTN   | CHD1L      | 203 | 15 | 9  | 29 | >3    | <0.001  | <0.001  | Co-occurrence |
| COPA    | SNX27      | 199 | 13 | 13 | 31 | >3    | <0.001  | <0.001  | Co-occurrence |
| NCSTN   | SNX27      | 199 | 13 | 13 | 31 | >3    | <0.001  | <0.001  | Co-occurrence |
| COLEC10 | RBM12B     | 162 | 39 | 8  | 47 | >3    | <0.001  | <0.001  | Co-occurrence |
| CD5L    | PIP5K1A    | 201 | 13 | 12 | 30 | >3    | <0.001  | <0.001  | Co-occurrence |
| CD5L    | PRUNE1     | 201 | 13 | 12 | 30 | >3    | <0.001  | <0.001  | Co-occurrence |
| S100A10 | COPA       | 194 | 18 | 11 | 33 | >3    | <0.001  | <0.001  | Co-occurrence |
| S100A10 | NCSTN      | 194 | 18 | 11 | 33 | >3    | <0.001  | <0.001  | Co-occurrence |
| ATAD2   | GPAA1      | 160 | 29 | 16 | 51 | 2.867 | <0.001  | <0.001  | Co-occurrence |
|         |            |     |    |    |    |       |         |         |               |

| LAPTM4B  | ARMC1      | 191 | 25 | 7  | 33 | >3    | <0.001 | <0.001 | Co-occurrence |
|----------|------------|-----|----|----|----|-------|--------|--------|---------------|
| S100A10  | NUF2       | 195 | 19 | 10 | 32 | >3    | <0.001 | <0.001 | Co-occurrence |
| S100A10  | RGS5       | 195 | 19 | 10 | 32 | >3    | <0.001 | <0.001 | Co-occurrence |
| NUF2     | SNX27      | 200 | 12 | 14 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| RGS5     | SNX27      | 200 | 12 | 14 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| CD5L     | GOLPH3L    | 200 | 13 | 13 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| CD5L     | VPS45      | 200 | 13 | 13 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| CD5L     | HIST2H2AA3 | 202 | 14 | 11 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| CD5L     | HIST2H2BC  | 202 | 14 | 11 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| CD5L     | HIST2H2AA4 | 202 | 14 | 11 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| TARBP1   | CHML       | 208 | 15 | 7  | 26 | >3    | <0.001 | <0.001 | Co-occurrence |
| TARBP1   | EXO1       | 208 | 15 | 7  | 26 | >3    | <0.001 | <0.001 | Co-occurrence |
| ATAD2    | ZNF704     | 169 | 38 | 7  | 42 | >3    | <0.001 | <0.001 | Co-occurrence |
| SQLE     | RIPK2      | 166 | 35 | 10 | 45 | >3    | <0.001 | <0.001 | Co-occurrence |
| WASHC5   | RIPK2      | 166 | 35 | 10 | 45 | >3    | <0.001 | <0.001 | Co-occurrence |
| ATP6V1C1 | ARMC1      | 182 | 34 | 5  | 35 | >3    | <0.001 | <0.001 | Co-occurrence |
| PEA15    | PIP5K1A    | 199 | 15 | 12 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| TAGLN2   | PIP5K1A    | 199 | 15 | 12 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| PEA15    | PRUNE1     | 199 | 15 | 12 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| TAGLN2   | PRUNE1     | 199 | 15 | 12 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| CD5L     | HIST2H2AC  | 201 | 14 | 12 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| CD5L     | HIST2H2BE  | 201 | 14 | 12 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| CD5L     | HIST2H4B   | 201 | 14 | 12 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| NUF2     | PIP5K1A    | 201 | 13 | 13 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| RGS5     | PIP5K1A    | 201 | 13 | 13 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| NUF2     | PRUNE1     | 201 | 13 | 13 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| RGS5     | PRUNE1     | 201 | 13 | 13 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| COLEC10  | RIPK2      | 161 | 40 | 9  | 46 | >3    | <0.001 | <0.001 | Co-occurrence |
| SQLE     | GPAA1      | 159 | 30 | 17 | 50 | 2.747 | <0.001 | <0.001 | Co-occurrence |
| WASHC5   | GPAA1      | 159 | 30 | 17 | 50 | 2.747 | <0.001 | <0.001 | Co-occurrence |
| GNPAT    | CHML       | 209 | 14 | 8  | 25 | >3    | <0.001 | <0.001 | Co-occurrence |
| GNPAT    | EXO1       | 209 | 14 | 8  | 25 | >3    | <0.001 | <0.001 | Co-occurrence |
| PEA15    | HIST2H2AA3 | 200 | 16 | 11 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| TAGLN2   | HIST2H2AA3 | 200 | 16 | 11 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| PEA15    | HIST2H2BC  | 200 | 16 | 11 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| TAGLN2   | HIST2H2BC  | 200 | 16 | 11 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| PEA15    | HIST2H2AA4 | 200 | 16 | 11 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| TAGLN2   | HIST2H2AA4 | 200 | 16 | 11 | 29 | >3    | <0.001 | <0.001 | Co-occurrence |
| PEA15    | GOLPH3L    | 198 | 15 | 13 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| TAGLN2   | GOLPH3L    | 198 | 15 | 13 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| PEA15    | VPS45      | 198 | 15 | 13 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
| TAGLN2   | VPS45      | 198 | 15 | 13 | 30 | >3    | <0.001 | <0.001 | Co-occurrence |
|          |            |     |    |    |    |       |        |        |               |

| NUF2     | <b>GOLPH3L</b> | 200        | 13 | 14      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
|----------|----------------|------------|----|---------|----------|----------|---------|------------------|---------------|
| RGS5     | GOLPH3L        | 200        | 13 | 14      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
| NUF2     | VPS45          | 200        | 13 | 14      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
| RGS5     | VPS45          | 200        | 13 | 14      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
| TTC13    | CHML           | 200        | 15 | 8       | 25       | >3       | <0.001  | <0.001           | Co-occurrence |
| TTC13    | EXO1           | 208        | 15 | 8       | 25       | >3       | <0.001  | <0.001           | Co-occurrence |
| PEA15    | HIST2H2AC      | 200<br>199 | 16 | 12      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
| TAGLN2   | HIST2H2AC      | 199        | 16 | 12      | 29<br>29 | >3       | <0.001  | <0.001           | Co-occurrence |
| PEA15    | HIST2H2BE      | 199        | 16 | 12      | 29<br>29 | ~3<br>>3 | <0.001  | <0.001<br><0.001 | Co-occurrence |
| TAGLN2   | HIST2H2BE      | 199        | 16 | 12      | 29<br>29 | ~3<br>>3 | <0.001  | <0.001<br><0.001 | -             |
| PEA15    | HIST2H2BE      | 199        | 16 | 12      | 29<br>29 |          | <0.001  | <0.001           | Co-occurrence |
|          |                |            |    | 12      |          | >3       |         |                  | Co-occurrence |
| TAGLN2   | HIST2H4B       | 199        | 16 |         | 29<br>20 | >3       | <0.001  | <0.001           | Co-occurrence |
| COPA     | PIP5K1A        | 199        | 15 | 13      | 29       | >3       | < 0.001 | <0.001           | Co-occurrence |
| NCSTN    | PIP5K1A        | 199        | 15 | 13      | 29       | >3       | < 0.001 | <0.001           | Co-occurrence |
| COPA     | PRUNE1         | 199        | 15 | 13      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
|          | PRUNE1         | 199        | 15 | 13      | 29       | >3       | < 0.001 | <0.001           | Co-occurrence |
| COLEC10  | GPAA1          | 154        | 35 | 16<br>7 | 51       | 2.641    | <0.001  | <0.001           | Co-occurrence |
| COLEC10  | ZNF704         | 163        | 44 | 7       | 42       | >3       | <0.001  | <0.001           | Co-occurrence |
| COPA     | GOLPH3L        | 198        | 15 | 14      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
| NCSTN    | GOLPH3L        | 198        | 15 | 14      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
| COPA     | VPS45          | 198        | 15 | 14      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
| NCSTN    | VPS45          | 198        | 15 | 14      | 29       | >3       | <0.001  | <0.001           | Co-occurrence |
| COPA     | HIST2H2AA3     | 200        | 16 | 12      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| NCSTN    | HIST2H2AA3     | 200        | 16 | 12      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| COPA     | HIST2H2BC      | 200        | 16 | 12      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| NCSTN    | HIST2H2BC      | 200        | 16 | 12      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| COPA     | HIST2H2AA4     | 200        | 16 | 12      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| NCSTN    | HIST2H2AA4     | 200        | 16 | 12      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| ATP6V1C1 | GPAA1          | 165        | 24 | 22      | 45       | 2.644    | <0.001  | <0.001           | Co-occurrence |
| GPAA1    | YWHAZ          | 165        | 22 | 24      | 45       | 2.644    | <0.001  | <0.001           | Co-occurrence |
| COPA     | HIST2H2AC      | 199        | 16 | 13      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| NCSTN    | HIST2H2AC      | 199        | 16 | 13      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| COPA     | HIST2H2BE      | 199        | 16 | 13      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| NCSTN    | HIST2H2BE      | 199        | 16 | 13      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| COPA     | HIST2H4B       | 199        | 16 | 13      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| NCSTN    | HIST2H4B       | 199        | 16 | 13      | 28       | >3       | <0.001  | <0.001           | Co-occurrence |
| NUF2     | HIST2H2AA3     | 201        | 15 | 13      | 27       | >3       | <0.001  | <0.001           | Co-occurrence |
| RGS5     | HIST2H2AA3     | 201        | 15 | 13      | 27       | >3       | <0.001  | <0.001           | Co-occurrence |
| NUF2     | HIST2H2BC      | 201        | 15 | 13      | 27       | >3       | <0.001  | <0.001           | Co-occurrence |
| RGS5     | HIST2H2BC      | 201        | 15 | 13      | 27       | >3       | <0.001  | <0.001           | Co-occurrence |
| NUF2     | HIST2H2AA4     | 201        | 15 | 13      | 27       | >3       | <0.001  | <0.001           | Co-occurrence |
| RGS5     | HIST2H2AA4     | 201        | 15 | 13      | 27       | >3       | <0.001  | <0.001           | Co-occurrence |
|          |                |            |    |         |          |          |         |                  |               |

| SQLE    | ZNF704    | 167 | 40 | 9  | 40 | 2.921 | <0.001 | <0.001 | Co-occurrence |
|---------|-----------|-----|----|----|----|-------|--------|--------|---------------|
| WASHC5  | ZNF704    | 167 | 40 | 9  | 40 | 2.921 | <0.001 | <0.001 | Co-occurrence |
| MTR     | ACBD3     | 210 | 13 | 10 | 23 | >3    | <0.001 | <0.001 | Co-occurrence |
| NUF2    | HIST2H2AC | 200 | 15 | 14 | 27 | >3    | <0.001 | <0.001 | Co-occurrence |
| RGS5    | HIST2H2AC | 200 | 15 | 14 | 27 | >3    | <0.001 | <0.001 | Co-occurrence |
| NUF2    | HIST2H2BE | 200 | 15 | 14 | 27 | >3    | <0.001 | <0.001 | Co-occurrence |
| RGS5    | HIST2H2BE | 200 | 15 | 14 | 27 | >3    | <0.001 | <0.001 | Co-occurrence |
| NUF2    | HIST2H4B  | 200 | 15 | 14 | 27 | >3    | <0.001 | <0.001 | Co-occurrence |
| RGS5    | HIST2H4B  | 200 | 15 | 14 | 27 | >3    | <0.001 | <0.001 | Co-occurrence |
| COLEC10 | ARMC1     | 166 | 50 | 4  | 36 | >3    | <0.001 | <0.001 | Co-occurrence |
| GPAA1   | LAPTM4B   | 171 | 27 | 18 | 40 | 2.644 | <0.001 | <0.001 | Co-occurrence |
| RBM34   | ACBD3     | 210 | 13 | 11 | 22 | >3    | <0.001 | <0.001 | Co-occurrence |
| ATAD2   | ARMC1     | 170 | 46 | 6  | 34 | >3    | <0.001 | <0.001 | Co-occurrence |
| GPAA1   | INTS8     | 173 | 30 | 16 | 37 | 2.59  | <0.001 | <0.001 | Co-occurrence |
| GPAA1   | RBM12B    | 171 | 30 | 18 | 37 | 2.461 | <0.001 | <0.001 | Co-occurrence |
| SQLE    | ARMC1     | 169 | 47 | 7  | 33 | 2.83  | <0.001 | <0.001 | Co-occurrence |
| WASHC5  | ARMC1     | 169 | 47 | 7  | 33 | 2.83  | <0.001 | <0.001 | Co-occurrence |
| TARBP1  | ACBD3     | 204 | 19 | 11 | 22 | >3    | <0.001 | <0.001 | Co-occurrence |
| GPAA1   | ZNF704    | 174 | 33 | 15 | 34 | 2.481 | <0.001 | <0.001 | Co-occurrence |
| GPAA1   | RIPK2     | 170 | 31 | 19 | 36 | 2.341 | <0.001 | <0.001 | Co-occurrence |
| ACBD3   | CHML      | 209 | 14 | 14 | 19 | >3    | <0.001 | <0.001 | Co-occurrence |
| ACBD3   | EXO1      | 209 | 14 | 14 | 19 | >3    | <0.001 | <0.001 | Co-occurrence |
| GPAA1   | ARMC1     | 176 | 40 | 13 | 27 | 2.212 | <0.001 | <0.001 | Co-occurrence |
| CD5L    | GNPAT     | 194 | 23 | 19 | 20 | 2.184 | <0.001 | <0.001 | Co-occurrence |
| CD5L    | TTC13     | 193 | 23 | 20 | 20 | 2.127 | <0.001 | <0.001 | Co-occurrence |
| PEA15   | GNPAT     | 192 | 25 | 19 | 20 | 2.09  | <0.001 | <0.001 | Co-occurrence |
| TAGLN2  | GNPAT     | 192 | 25 | 19 | 20 | 2.09  | <0.001 | <0.001 | Co-occurrence |
| PEA15   | TTC13     | 191 | 25 | 20 | 20 | 2.033 | <0.001 | <0.001 | Co-occurrence |
| TAGLN2  | TTC13     | 191 | 25 | 20 | 20 | 2.033 | <0.001 | <0.001 | Co-occurrence |
| CCT3    | GNPAT     | 192 | 25 | 20 | 19 | 1.987 | <0.001 | <0.001 | Co-occurrence |
| COPA    | GNPAT     | 192 | 25 | 20 | 19 | 1.987 | <0.001 | <0.001 | Co-occurrence |
| NCSTN   | GNPAT     | 192 | 25 | 20 | 19 | 1.987 | <0.001 | <0.001 | Co-occurrence |
| SSR2    | GNPAT     | 192 | 25 | 20 | 19 | 1.987 | <0.001 | <0.001 | Co-occurrence |
| CD5L    | ACBD3     | 197 | 26 | 16 | 17 | 2.086 | <0.001 | <0.001 | Co-occurrence |
| GBA     | GNPAT     | 191 | 26 | 20 | 19 | 1.943 | <0.001 | <0.001 | Co-occurrence |
| GBAP1   | GNPAT     | 191 | 26 | 20 | 19 | 1.943 | <0.001 | <0.001 | Co-occurrence |
| CCT3    | TTC13     | 191 | 25 | 21 | 19 | 1.933 | <0.001 | <0.001 | Co-occurrence |
| COPA    | TTC13     | 191 | 25 | 21 | 19 | 1.933 | <0.001 | <0.001 | Co-occurrence |
| NCSTN   | TTC13     | 191 | 25 | 21 | 19 | 1.933 | <0.001 | <0.001 | Co-occurrence |
| SSR2    | TTC13     | 191 | 25 | 21 | 19 | 1.933 | <0.001 | <0.001 | Co-occurrence |
| CD5L    | TARBP1    | 191 | 24 | 22 | 19 | 1.928 | <0.001 | <0.001 | Co-occurrence |
| GBA     | TTC13     | 190 | 26 | 21 | 19 | 1.889 | <0.001 | 0.001  | Co-occurrence |
|         |           |     |    |    |    |       |        |        |               |

| GBAP1   | TTC13   | 190 | 26     | 21 | 19 | 1.889 | <0.001  | 0.001 | Co-occurrence |
|---------|---------|-----|--------|----|----|-------|---------|-------|---------------|
| NUF2    | GNPAT   | 193 | 24     | 21 | 18 | 1.93  | <0.001  | 0.002 | Co-occurrence |
| RGS5    | GNPAT   | 193 | 24     | 21 | 18 | 1.93  | <0.001  | 0.002 | Co-occurrence |
| CD5L    | SIPA1L2 | 192 | 25     | 21 | 18 | 1.884 | <0.001  | 0.002 | Co-occurrence |
| NUF2    | TTC13   | 192 | 24     | 22 | 18 | 1.879 | <0.001  | 0.003 | Co-occurrence |
| RGS5    | TTC13   | 192 | 24     | 22 | 18 | 1.879 | <0.001  | 0.003 | Co-occurrence |
| NUF2    | ACBD3   | 197 | 26     | 17 | 16 | 1.964 | <0.001  | 0.004 | Co-occurrence |
| RGS5    | ACBD3   | 197 | 26     | 17 | 16 | 1.964 | <0.001  | 0.004 | Co-occurrence |
| CHD1L   | ACBD3   | 200 | 23     | 18 | 15 | 1.981 | <0.001  | 0.005 | Co-occurrence |
| PEA15   | SIPA1L2 | 190 | 27     | 21 | 18 | 1.797 | <0.001  | 0.006 | Co-occurrence |
| TAGLN2  | SIPA1L2 | 190 | 27     | 21 | 18 | 1.797 | <0.001  | 0.006 | Co-occurrence |
| CCT3    | ACBD3   | 195 | 28     | 17 | 16 | 1.88  | <0.001  | 0.008 | Co-occurrence |
| SSR2    | ACBD3   | 195 | 28     | 17 | 16 | 1.88  | <0.001  | 0.008 | Co-occurrence |
| UBAP2L  | GNPAT   | 189 | 28     | 21 | 18 | 1.755 | <0.001  | 0.009 | Co-occurrence |
| CCT3    | TARBP1  | 189 | 26     | 23 | 18 | 1.739 | <0.001  | 0.01  | Co-occurrence |
| SSR2    | TARBP1  | 189 | 26     | 23 | 18 | 1.739 | <0.001  | 0.01  | Co-occurrence |
| NUF2    | SIPA1L2 | 192 | 25     | 22 | 17 | 1.781 | <0.001  | 0.01  | Co-occurrence |
| RGS5    | SIPA1L2 | 192 | 25     | 22 | 17 | 1.781 | <0.001  | 0.01  | Co-occurrence |
| GBA     | ACBD3   | 194 | 29     | 17 | 16 | 1.84  | <0.001  | 0.011 | Co-occurrence |
| GBAP1   | ACBD3   | 194 | 29     | 17 | 16 | 1.84  | <0.001  | 0.011 | Co-occurrence |
| PEA15   | ACBD3   | 194 | 29     | 17 | 16 | 1.84  | <0.001  | 0.011 | Co-occurrence |
| TAGLN2  | ACBD3   | 194 | 29     | 17 | 16 | 1.84  | <0.001  | 0.011 | Co-occurrence |
| CHD1L   | GNPAT   | 195 | 22     | 23 | 16 | 1.819 | <0.001  | 0.012 | Co-occurrence |
| UBAP2L  | TTC13   | 188 | 28     | 22 | 18 | 1.704 | <0.001  | 0.014 | Co-occurrence |
| GBA     | TARBP1  | 188 | 27     | 23 | 18 | 1.695 | <0.001  | 0.015 | Co-occurrence |
| GBAP1   | TARBP1  | 188 | 27     | 23 | 18 | 1.695 | <0.001  | 0.015 | Co-occurrence |
| PEA15   | TARBP1  | 188 | 27     | 23 | 18 | 1.695 | <0.001  | 0.015 | Co-occurrence |
| TAGLN2  | TARBP1  | 188 | 27     | 23 | 18 | 1.695 | <0.001  | 0.015 | Co-occurrence |
| CHD1L   | TTC13   | 194 | 22     | 24 | 16 | 1.771 | <0.001  | 0.018 | Co-occurrence |
| ILF2    | GNPAT   | 187 | 30     | 21 | 18 | 1.676 | <0.001  | 0.018 | Co-occurrence |
| UBAP2L  | TARBP1  | 187 | 28     | 23 | 18 | 1.654 | <0.001  | 0.022 | Co-occurrence |
| ССТ3    | SIPA1L2 | 190 | 27     | 22 | 17 | 1.693 | <0.001  | 0.023 | Co-occurrence |
| COPA    | SIPA1L2 | 190 | 27     | 22 | 17 | 1.693 | <0.001  | 0.023 | Co-occurrence |
| NCSTN   | SIPA1L2 | 190 | 27     | 22 | 17 | 1.693 | <0.001  | 0.023 | Co-occurrence |
| SSR2    | SIPA1L2 | 190 | 27     | 22 | 17 | 1.693 | < 0.001 | 0.023 | Co-occurrence |
| NUF2    | TARBP1  | 190 | 25     | 24 | 17 | 1.683 | < 0.001 | 0.024 | Co-occurrence |
| RGS5    | TARBP1  | 190 | <br>25 | 24 | 17 | 1.683 | < 0.001 | 0.024 | Co-occurrence |
| ILF2    | TTC13   | 186 | 30     | 22 | 18 | 1.624 | <0.001  | 0.029 | Co-occurrence |
| GBA     | SIPA1L2 | 189 | 28     | 22 | 17 | 1.652 | <0.001  | 0.033 | Co-occurrence |
| GBAP1   | SIPA1L2 | 189 | 28     | 22 | 17 | 1.652 | <0.001  | 0.033 | Co-occurrence |
| S100A10 | IDI1    | 182 | 32     | 23 | 19 | 1.547 | <0.001  | 0.041 | Co-occurrence |
| ILF2    | TARBP1  | 185 | 30     | 23 | 18 | 1.574 | <0.001  | 0.045 | Co-occurrence |
|         |         | 100 | 00     | 20 | 10 | 1.074 | -0.001  | 0.040 |               |

| COPA  | ACBD3 | 194 | 29 | 18 | 15 | 1.718 | <0.001 | 0.047 | Co-occurrence |
|-------|-------|-----|----|----|----|-------|--------|-------|---------------|
| NCSTN | ACBD3 | 194 | 29 | 18 | 15 | 1.718 | <0.001 | 0.047 | Co-occurrence |