

| Supplemental table 5: results of the INRICH analyses of all gene-sets | | | |
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| GENE-SET | P1 in Clumping | P | P_{CORR} (P*19) |
| Synaptic: Cell adhesion and trans-synaptic signaling | 0.0001 | 0,6963 | 1 |
| Synaptic: Ion balance/transport | 0.0001 | 0,0576 | 1 |
| Synaptic: Ligand-gated ion channel signaling | 0.0001 | 1 | 1 |
| Synaptic: Neurotransmitter metabolism | 0.0001 | 1 | 1 |
| Synaptic: Peptide/neurotrophin signals | 0.0001 | 1 | 1 |
| Synaptic: Protein cluster | 0.0001 | 0,0512 | 0,9726062 |
| Synaptic: RPSFB | 0.0001 | 1 | 1 |
| Synaptic: Structural plasticity | 0.0001 | 1 | 1 |
| Synaptic: Tyrosine kinase signaling | 0.0001 | 1 | 1 |
| Synaptic: Unknown | 0.0001 | 1 | 1 |
| Synaptic: Cell metabolism | 0.0001 | 0,0704 | 1 |
| Synaptic: Endocytosis | 0.0001 | 1 | 1 |
| Synaptic: Excitability | 0.0001 | 1 | 1 |
| Synaptic: Exocytosis | 0.0001 | 1 | 1 |
| Synaptic: GPCR signaling | 0.0001 | 1 | 1 |
| Synaptic: G protein relay | 0.0001 | 1 | 1 |
| Synaptic: Intracellular signal transduction | 0.0001 | 0,2921 | 1 |
| Synaptic: Intracellular trafficking | 0.0001 | 1 | 1 |
| Synaptic: Sanders FDR 0.01 large synaptic | 0.0001 | 1 | 1 |
| GENE-SET | P1 IN CLUMPING | P | P_{CORR} (P*3) |
| FMRP targets (Ascano) | 0.0001 | 0,530 | 1 |
| FMRP targets (Ascano Autism overlap) | 0.0001 | 1 | 1 |
| FMRP targets (Darnell) | 0.0001 | 0,010 | 0,031 |
| GENE_SET | P1 IN CLUMPING | P | P_{CORR} (P*3) |
| Glia astrocytes Duncan | 0.0001 | 1 | 1 |
| Glia oligodendrocytes Duncan | 0.0001 | 1 | 1 |
| Glia Duncan | 0.0001 | 1 | 1 |
| GENE_SET | P1 IN CLUMPING | P | P_{CORR} (P*1) |
| Glutamate Duncan | 0.0001 | 0,694 | 0,694 |
| GENE_SET | P1 IN CLUMPING | P | P_{CORR} (P*6) |
| Mitochondria: Crista Duncan | 0.0001 | 1 | 1 |
| Mitochondria: Distribution Duncan | 0.0001 | 1 | 1 |
| Mitochondria: Duncan | 0.0001 | 1 | 1 |
| Mitochondria: Fission Duncan | 0.0001 | 1 | 1 |
| Mitochondria: Fission_plus Duncan | 0.0001 | 1 | 1 |
| Mitochondria: Fusion Duncan | 0.0001 | 1 | 1 |
| GENE-SET | P1 in Clumping | P | P_{CORR} (P*19) |
| Synaptic: Cell adhesion and trans-synaptic signaling | 0.01 | 1,00000 | 1 |
| Synaptic: Ion balance/transport | 0.01 | 0,77705 | 1 |
| Synaptic: Ligand-gated ion channel signaling | 0.01 | 0,97421 | 1 |
| Synaptic: Neurotransmitter metabolism | 0.01 | 0,23035 | 1 |
| Synaptic: Peptide/neurotrophin signals | 0.01 | 0,99820 | 1 |
| Synaptic: Protein cluster | 0.01 | 0,99940 | 1 |
| Synaptic: RPSFB | 0.01 | 0,67527 | 1 |
| Synaptic: Structural plasticity | 0.01 | 0,63047 | 1 |
| Synaptic: Tyrosine kinase signaling | 0.01 | 0,99960 | 1 |
| Synaptic: Unknown | 0.01 | 0,77485 | 1 |

| Synaptic: Cell metabolism | 0.01 | 0,35493 | 1 |
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| Synaptic: Endocytosis | 0.01 | 0,99700 | 1 |
| Synaptic: Excitability | 0.01 | 0,99200 | 1 |
| Synaptic: Exocytosis | 0.01 | 0,99840 | 1 |
| Synaptic: GPCR signaling | 0.01 | 1,00000 | 1 |
| Synaptic: G protein relay | 0.01 | 0,77425 | 1 |
| Synaptic: Intracellular signal transduction | 0.01 | 0,99720 | 1 |
| Synaptic: Intracellular trafficking | 0.01 | 0,92821 | 1 |
| Synaptic: Sanders FDR 0.01 large synaptic | 0.01 | 0,99940 | 1 |
| GENE-SET | P1 IN CLUMPING | P | P _{CORR} (P*3) |
| FMRP targets (Ascano) | 0.01 | 1 | 1 |
| FMRP targets (Ascano Autism overlap) | 0.01 | 0,9996 | 1 |
| FMRP targets (Darnell) | 0.01 | 1 | 1 |
| GENE_SET | P1 IN CLUMPING | P | P _{CORR} (P*3) |
| Glia astrocytes Duncan | 0.01 | 0,355 | 1 |
| Glia oligodendrocytes Duncan | 0.01 | 0,603 | 1 |
| Glia Duncan | 0.01 | 0,983 | 1 |
| GENE_SET | P1 IN CLUMPING | P | P _{CORR} (P*1) |
| Glutamate Duncan | 0.01 | 1 | 1 |
| GENE_SET | P1 IN CLUMPING | P | P _{CORR} (P*6) |
| Mitochondria: Crista Duncan | 0.01 | 0,723 | 1 |
| Mitochondria: Distribution Duncan | 0.01 | 0,857 | 1 |
| Mitochondria: Duncan | 0.01 | 0,930 | 1 |
| Mitochondria: Fission Duncan | 0.01 | 0,195 | 1 |
| Mitochondria: Fission_plus Duncan | 0.01 | 0,612 | 1 |
| Mitochondria: Fusion Duncan | 0.01 | 0,106 | 0,635 |
| GENE-SET | P1 in Clumping | P | P _{CORR} (P*19) |
| Synaptic: Cell adhesion and trans-synaptic signaling | 0.00896288 | 1 | 1 |
| Synaptic: Ion balance/transport | 0.00896288 | 0,826635 | 1 |
| Synaptic: Ligand-gated ion channel signaling | 0.00896288 | 0,933213 | 1 |
| Synaptic: Neurotransmitter metabolism | 0.00896288 | 0,152370 | 1 |
| Synaptic: Peptide/neurotrophin signals | 0.00896288 | 0,997401 | 1 |
| Synaptic: Protein cluster | 0.00896288 | 0,997001 | 1 |
| Synaptic: RPSFB | 0.00896288 | 0,638672 | 1 |
| Synaptic: Structural plasticity | 0.00896288 | 0,753449 | 1 |
| Synaptic: Tyrosine kinase signaling | 0.00896288 | 0,997201 | 1 |
| Synaptic: Unknown | 0.00896288 | 0,598080 | 1 |
| Synaptic: Cell metabolism | 0.00896288 | 0,341532 | 1 |
| Synaptic: Endocytosis | 0.00896288 | 0,991002 | 1 |
| Synaptic: Excitability | 0.00896288 | 0,984803 | 1 |
| Synaptic: Exocytosis | 0.00896288 | 0,991202 | 1 |
| Synaptic: GPCR signaling | 0.00896288 | 1,000000 | 1 |
| Synaptic: G protein relay | 0.00896288 | 0,946011 | 1 |
| Synaptic: Intracellular signal transduction | 0.00896288 | 0,996001 | 1 |
| Synaptic: Intracellular trafficking | 0.00896288 | 0,929414 | 1 |
| Synaptic: Sanders FDR 0.01 large synaptic | 0.00896288 | 0,996401 | 1 |
| GENE-SET | P1 IN CLUMPING | P | P _{CORR} (P*3) |
| FMRP targets (Ascano) | 0.00896288 | 1 | 1 |
| FMRP targets (Ascano Autism overlap) | 0.00896288 | 0,998 | 1 |

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| FMRP targets (Darnell) | 0.00896288 | 1 | 1 |
| GENE_SET | P1 IN CLUMPING | P | P_{CORR} (P*3) |
| Glia astrocytes Duncan | 0.00896288 | 0,339 | 1 |
| Glia oligodendrocytes Duncan | 0.00896288 | 0,585 | 1 |
| Glia Duncan | 0.00896288 | 0,984 | 1 |
| GENE_SET | P1 IN CLUMPING | P | P_{CORR} (P*1) |
| Glutamate Duncan | 0.00896288 | 1 | 1 |
| GENE_SET | P1 IN CLUMPING | P | P_{CORR} (P*6) |
| Mitochondria: Crista Duncan | 0.00896288 | 0,688 | 1 |
| Mitochondria: Distribution Duncan | 0.00896288 | 0,814 | 1 |
| Mitochondria: Duncan | 0.00896288 | 0,962 | 1 |
| Mitochondria: Fission Duncan | 0.00896288 | 0,338 | 1 |
| Mitochondria: Fission_plus Duncan | 0.00896288 | 0,720 | 1 |
| Mitochondria: Fusion Duncan | 0.00896288 | 0,211 | 1 |
| GENE-SET | P1 in Clumping | P | P_{CORR} (P*19) |
| Synaptic: Cell adhesion and trans-synaptic signaling | 0.0008106764 | 0,902 | 1 |
| Synaptic: Ion balance/transport | 0.0008106764 | 0,345 | 1 |
| Synaptic: Ligand-gated ion channel signaling | 0.0008106764 | 0,388 | 1 |
| Synaptic: Neurotransmitter metabolism | 0.0008106764 | 0,520 | 1 |
| Synaptic: Peptide/neurotrophin signals | 0.0008106764 | 0,744 | 1 |
| Synaptic: Protein cluster | 0.0008106764 | 0,750 | 1 |
| Synaptic: RPSFB | 0.0008106764 | 0,299 | 1 |
| Synaptic: Structural plasticity | 0.0008106764 | 0,797 | 1 |
| Synaptic: Tyrosine kinase signaling | 0.0008106764 | 1 | 1 |
| Synaptic: Unknown | 0.0008106764 | 0,126 | 1 |
| Synaptic: Cell metabolism | 0.0008106764 | 0,224 | 1 |
| Synaptic: Endocytosis | 0.0008106764 | 1 | 1 |
| Synaptic: Excitability | 0.0008106764 | 0,748 | 1 |
| Synaptic: Exocytosis | 0.0008106764 | 0,590 | 1 |
| Synaptic: GPCR signaling | 0.0008106764 | 0,724 | 1 |
| Synaptic: G protein relay | 0.0008106764 | 0,741 | 1 |
| Synaptic: Intracellular signal transduction | 0.0008106764 | 0,773 | 1 |
| Synaptic: Intracellular trafficking | 0.0008106764 | 0,688 | 1 |
| Synaptic: Sanders FDR 0.01 large synaptic | 0.0008106764 | 0,611 | |
| GENE-SET | P1 IN CLUMPING | P | P_{CORR} (P*3) |
| FMRP targets (Ascano) | 0.0008106764 | 0,141 | 0,424 |
| FMRP targets (Ascano Autism overlap) | 0.0008106764 | 0,376 | 1 |
| FMRP targets (Darnell) | 0.0008106764 | 0,143 | 0,428 |
| GENE_SET | P1 IN CLUMPING | P | P_{CORR} (P*3) |
| Glia astrocytes Duncan | 0.0008106764 | 0,198 | 0,594 |
| Glia oligodendrocytes Duncan | 0.0008106764 | 0,359 | 1 |
| Glia Duncan | 0.0008106764 | 0,396 | 1 |
| GENE_SET | P1 IN CLUMPING | P | P_{CORR} (P*1) |
| Glutamate Duncan | 0.0008106764 | 0,824 | 0,824 |
| GENE_SET | P1 IN CLUMPING | P | P_{CORR} (P*6) |
| Mitochondria: Crista Duncan | 0.0008106764 | 1 | 1 |
| Mitochondria: Distribution Duncan | 0.0008106764 | 1 | 1 |
| Mitochondria: Duncan | 0.0008106764 | 0,774 | 1 |
| Mitochondria: Fission Duncan | 0.0008106764 | 0,120 | 0,721 |

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| Mitochondria: Fission_plus Duncan | 0.0008106764 | 0,491 | 1 |
| Mitochondria: Fusion Duncan | 0.0008106764 | 0,072 | 0,434 |

P_{CORR} = P value corrected for multiple testing = $P*N$ gene-sets per hypothesis

$P1$ in clumping procedure based on:

0.01 = strict SNP P-value cut off

0.001 = strict SNP P-value cut off

0.00896288 = cut off SNP P-value of top 1%

0.0008106764 = cut off SNP P-value of top 0.1%