

**Supplementary Table 2. Enrichment analysis of disease classes using 79 gene list differentially expressed between germline MMR deficient and assumed somatic MMR deficient tumors**

| Category          | Term            | Fold enrichment | p-value | Benjamini | Genes   |
|-------------------|-----------------|-----------------|---------|-----------|---|
| GAD_DISEASE_CLASS | METABOLIC       | 1.34            | 0.03    | 0.46      | <i>ME1, CYP24A1, PDLIM5, OBP2B, CLU, POMC, MEGF11, PGBD5, SAA2, SAA1, BCL11A, LRRTM1, LRRC55, ZC3H12C, GABRG3, ATRNL1, CHI3L2, EDAR, CACNA1S, THSD7B, DKK4, C1QTNF9B, PGPEP1L, GPA33, CYP2A6, C2CD4A, ZNF385B, HAS3, ATP6V0A4, UTP20, PDZK1</i> |
| GAD_DISEASE_CLASS | UNKNOWN         | 1.83            | 0.04    | 0.31      | <i>CYP24A1, GABRG3, CES1, MLH1, EDAR, POMC, CACNA1S, TNNT2, SAA1, NEDD4, BCL11A, PI3, CYP2A6</i>  |
| GAD_DISEASE_CLASS | PSYCH           | 1.61            | 0.07    | 0.37      | <i>CPLX3, GABRG3, CES1, ATRNL1, PDLIM5, CLU, POMC, DKK4, PGBD5, SAA2, BCL11A, CYP2A6, ZNF385B, HAS3</i>   |
| GAD_DISEASE_CLASS | CARDIOVASCULAR  | 1.33            | 0.08    | 0.30      | <i>LMAN1L, CYP24A1, CPLX3, C9ORF66, GABRG3, ATRNL1, CLU, DEFB4A, CX3CL1, EDAR, POMC, MEGF11, THSD7B, TNNT2, PGBD5, SAA2, NEDD4, SAA1, HIVEP3, GPA33, ZNF385B, LRRC55, UTP20, PDZK1, ZC3H12C</i>   |
| GAD_DISEASE_CLASS | PHARMACOGENOMIC | 1.42            | 0.11    | 0.34      | <i>CYP24A1, CES1, EDAR, CX3CL1, POMC, DKK4, TNNT2, GPX2, PDZK1IP1, SEMA5B, SAA2, SAA1, BCL11A, HIVEP3, CYP2A6, HAS3, PDZK1</i>  |
| GAD_DISEASE_CLASS | AGING           | 1.92            | 0.11    | 0.30      | <i>SAA2, ATRNL1, S100A7, PDLIM5, HIVEP3, MLH1, DST, THSD7B</i>  |
| GAD_DISEASE_CLASS | CANCER          | 1.35            | 0.13    | 0.29      | <i>ME1, CYP24A1, LPO, CES1, S100A7, PDLIM5, CLU, MLH1, CX3CL1, POMC, MEGF11, DKK4, EPM2AIP1, GPX2, SEMA5B, NEDD4, DEFA5, LRRTM1, CYP2A6</i>   |
| GAD_DISEASE_CLASS | CHEMDEPENDENCY  | 1.31            | 0.13    | 0.27      | <i>LMAN1L, CPLX3, GABRG3, ATRNL1, CHI3L2, POMC, CACNA1S, THSD7B, KANK1, SEMA5B, SAA2, BCL11A, LRRTM1, HIVEP3, GPA33, CYP2A6, ZNF385B, LRRC55, ATP6V0A4, DST, ZC3H12C</i>  |
| GAD_DISEASE_CLASS | DEVELOPMENTAL   | 1.52            | 0.19    | 0.35      | <i>GABRG3, NEDD4, LRRTM1, TUBA4A, CYP2A6, C2CD4A, ZNF385B, POMC, ZIC1, CACNA1S</i>  |
| GAD_DISEASE_CLASS | NEUROLOGICAL    | 1.26            | 0.25    | 0.41      | <i>GABRG3, ATRNL1, CLU, CHI3L2, EDAR, CX3CL1, POMC, CACNA1S, THSD7B, SAA2, SAA1, LRRTM1, HIVEP3, CYP2A6, ZNF385B, C2CD4A</i>  |
| GAD_DISEASE_CLASS | IMMUNE          | 1.07            | 0.54    | 0.72      | <i>CYP24A1, GABRG3, S100A7, MLH1, DEFB4A, CX3CL1, POMC, ZIC1, KANK1, SAA1, DEFA5, PI3, LRRTM1, ZNF385B</i>  |
| GAD_DISEASE_CLASS | OTHER           | 1.14            | 0.54    | 0.69      | <i>GPX2, PRKY, CYP24A1, LRRTM1, MLH1, CYP2A6, DEFB4A, POMC</i>  |
| GAD_DISEASE_CLASS | NORMALVARIATION | 1.32            | 0.66    | 0.78      | <i>GPX2, CYP2A6, POMC</i>   |
| GAD_DISEASE_CLASS | INFECTION       | 0.95            | 0.73    | 0.82      | <i>ME1, CYP24A1, AMBN, DEFA5, CYP2A6, DEFB4A, CX3CL1, POMC, PRKX</i>  |

Adjusted p-value <0.01 used as significance cut-off.