

**Supplementary Table 7 Cluster analysis for PPI network**

Cluster	Score	Nodes	Edges	Genes
1	14	50	343	HSP90AA1, CDK4, AKT1, PTK2, AURKA, IL2, CCND1, MMP3, IL1B, ERBB3, CXCL10, E2F2, FOS, CXCL8, ESR2, E2F1, MTOR, PTGS2, JUN, RUNX2, PTEN, CDKN1A, CDKN2A, MYC, MPO, CCL2, IFNG, IL4, ICAM1, PTPRC, CAV1, PCNA, ALB, EGFR, CDK5, CRP, IL6, CDK6, TNF, IGF1R, MAPK14, CHEK1, TYMS, ERBB2, TOP2A, AURKB, BIRC5, PLK1, MDM2, IL1A
2	7.935	32	123	ESR1, IKBKB, HIF1A, MET, MAPK1, NFKBIA, MMP1, CCNB1, IL10, PLG, TP53, CCNA2, BAX, PGR, ANXA5, HSPA8, CYCS, TERT, GSK3B, CTNNA1, CASP9, CDK1, EGF, CASP8, SRC, ERBB4, PTPN1, CDK2, MMP9, RB1, BCL2, STAT1
3	5.923	27	77	PIK3R1, VEGFA, MAPK8, BCL2L1, CASP3, HSPA5, NOS2, MAPK10, PPARG, LCK, PTPN11, HDAC2, APP, PDPK1, ADAM17, RAC1, RASA1, PRKCB, MCL1, CHUK, CD40LG, KDR, NR3C1, CASP1, NFE2L2, AR, RELA
4	5	5	10	CYP3A4, CYP1A2, CYP2C9, GSTM1, GSTP1
5	4	4	6	PTGS1, PLA2G4A, PLA2G2A, ALOX5
6	4	5	8	CYP17A1, CYP1A1, CYP19A1, HSD17B1, CYP1B1
7	3.5	5	7	PRKCA, MAP2K1, MAP2K4, BRAF, RAF1