|  |  |  |
| --- | --- | --- |
| **Table S4. Screening target proteins interacted with bioactives of CBFD from SEA and ATP** | | |
| SEA: 363 targets | STP: 502 targets | SEA,STP overlapping targets: 140 targets |
| AKR1B1 | AKR1B1 | AKR1B1 |
| PAOX | GBA | FUCA1 |
| FUCA2 | CA1 | SLC29A1 |
| FUCA1 | TGM2 | ADORA3 |
| SLC29A1 | CA9 | ADORA1 |
| ADORA3 | VDR | DNMT3B |
| DNPH1 | EGFR | CDA |
| ADORA1 | MIF | ADORA2A |
| SLC28A2 | NOS2 | AHCY |
| DNMT3B | HTR6 | GAPDH |
| CDA | TYR | ADK |
| ADORA2A | DAO | HSPA8 |
| AMD1 | KDM4E | TK1 |
| P2RY2 | KDM4A | ADORA2B |
| P2RY6 | KDM4D | ADA |
| AHCY | KDM4C | IMPDH2 |
| SRM | HCAR2 | TYMP |
| DTYMK | P4HTM | EHMT1 |
| GAPDH | DDO | ADH1A |
| ADK | HSP90AA1 | PDCD4 |
| QARS | TLR4 | POLA1 |
| HSPA8 | FUCA1 | PNP |
| TOP1 | ADA | EHMT2 |
| SMS | CDA | POLB |
| DOT1L | ADK | HSPA5 |
| P2RY14 | DPP4 | SLC5A2 |
| RARS | ADORA1 | CA9 |
| KMT5C | ADORA2A | CA12 |
| SETDB1 | ADORA3 | CA14 |
| P2RX1 | HSPA8 | CA1 |
| TARS | GAPDH | OGA |
| TK1 | AHCY | OGT |
| PRMT7 | HSPA5 | GRK1 |
| ADORA2B | TK1 | CA2 |
| IMPDH1 | MAPK1 | AKR1B10 |
| FUT6 | MCL1 | SLC22A6 |
| RNASE1 | PYGM | PPARA |
| RNASE2 | PDCD4 | PLA2G4B |
| HARS | CA2 | OXER1 |
| RNASEL | TYMS | CES2 |
| GPR17 | OGA | LPAR6 |
| HLCS | CA12 | PAM |
| P2RY11 | GAA | FAAH |
| ADA | GSK3B | PHF8 |
| IARS | PNP | GSTK1 |
| PARG | PIM1 | EPHX1 |
| EZH1 | EHMT1 | FABP3 |
| SUV39H1 | EHMT2 | ACP1 |
| DNMT1 | CA14 | HAO1 |
| RAC1 | GRK1 | HMGCR |
| IMPDH2 | CCND1 | KDM2A |
| MARS | F2 | NOD1 |
| P2RX4 | IDO1 | KDM4A |
| TYMP | CDK4 | RARB |
| ATIC | CA7 | CDC25B |
| PRMT1 | CA13 | KDM4C |
| PLCG1 | HDAC1 | PTGER2 |
| UMPS | SLC5A1 | EPHX2 |
| KMT2A | TYMP | TBXAS1 |
| CDC42 | HK2 | S1PR3 |
| TK2 | HK1 | CDC25A |
| EHMT1 | DNMT3B | S1PR4 |
| TPMT | CDK9 | NAAA |
| CD69 | CSNK2A1 | PRKCA |
| P2RY1 | CCNT1 | PLA2G2A |
| SETD7 | CHRNA7 | HSD17B3 |
| HPRT1 | FDFT1 | S1PR5 |
| ADH1A | NPC1L1 | PPARG |
| PDCD4 | PTGER2 | TBXA2R |
| NPEPPS | PTGFR | FOLH1 |
| POLA1 | FNTA | PTGER4 |
| PAX8 | NR1H4 | PLA2G4A |
| PNP | G6PD | FFAR4 |
| INMT | GPBAR1 | GABBR1 |
| LGALS7 | HSD11B1 | FABP4 |
| LGALS7B | ACLY | PTGFR |
| EHMT2 | AR | LAP3 |
| MAP3K7 | CYP19A1 | KDM4E |
| HSPA1A | POLB | PPARD |
| LGALS9 | CDC25A | S1PR1 |
| POLB | AKR1B10 | TRPV1 |
| TRPA1 | FABP4 | CNR1 |
| NCOA3 | PPARA | KDM5C |
| P2RY4 | FABP3 | SQLE |
| HSPA5 | FABP5 | MGLL |
| ST6GAL1 | PPARD | CNR2 |
| HEXA | FFAR1 | SPHK2 |
| HEXB | FABP2 | NPC1L1 |
| POLG | HSD11B2 | CDC45 |
| SLC5A2 | HAO1 | GPBAR1 |
| CA9 | UGT2B7 | SRD5A1 |
| CA12 | SERPINA6 | SRD5A2 |
| CA14 | SHBG | RORA |
| CA1 | HSD17B3 | NR1H4 |
| FGF1 | GABBR1 | NR1H3 |
| OGA | SLC22A6 | SREBF2 |
| FGF2 | GABRA2 | TRIM24 |
| ERAP1 | FNTB | TLR4 |
| OGT | GABRB2 | PRKCE |
| GRK1 | GABRG2 | LPAR5 |
| CA2 | ESR2 | CYP17A1 |
| LGALS3 | PAM | SHBG |
| LGALS1 | ALPL | SERPINA6 |
| MGMT | AKR1A1 | G6PD |
| B4GALT1 | LTA4H | VDR |
| AHCYL1 | PTGS1 | AR |
| IL6 | PTGS2 | ESR2 |
| AKR1B10 | ACE | ESR1 |
| TLR2 | KDM5C | EBP |
| SLC22A6 | PARP14 | CYP19A1 |
| SLC22A8 | PARP1 | CHEK2 |
| PPARA | PARP10 | CBFB |
| GPR84 | CPA1 | HPSE |
| PLA2G4B | TDP2 | SCD |
| BBOX1 | MME | PLG |
| OXER1 | ECE1 | TNKS |
| LPAR4 | ERCC5 | DHODH |
| GNAI1 | FEN1 | PARP2 |
| GNAI3 | PARP2 | CCND1 |
| CYP4F2 | SRD5A1 | PARP1 |
| GABRQ | SRD5A2 | PHLPP1 |
| KDM7A | GRM5 | AKT1 |
| CES2 | HTR7 | ILK |
| LPAR3 | DRD4 | BCHE |
| SLC25A20 | MPO | MAOB |
| LPAR6 | HSD17B7 | AKR1C1 |
| DNM1 | DPP7 | MAOA |
| COL4A3BP | DRD3 | MIF |
| P2RY10 | CHRM2 | SHH |
| CES1 | CHRM1 | UGT2B7 |
| GNAO1 | ADH1A | NR1H2 |
| ACER2 | SLC6A4 | RORC |
| PAM | DPP8 | ABCB1 |
| MPEG1 | DPP9 | TAAR1 |
| ADH7 | SLC6A3 | HSD11B2 |
| KDM5A | GABRB3 | PTPN1 |
| GPR34 | GABRA5 | PTPN2 |
| PLA2G2C | GABRA3 | TAS2R31 |
| POLM | GABRA1 | NPY5R |
| FAAH | GABRA6 | PRF1 |
| PLA2G5 | PHF8 |  |
| FDPS | KDM2A |  |
| GGPS1 | GSTK1 |  |
| LPAR2 | PTPN1 |  |
| PHF8 | NR0B2 |  |
| GSTK1 | CDC45 |  |
| EPHX1 | PTPRC |  |
| LPAR1 | PPARG |  |
| GPR174 | RXRA |  |
| FABP3 | CYP26A1 |  |
| BHMT | CYP26B1 |  |
| SLCO2A1 | RARG |  |
| S1PR2 | RARB |  |
| SELL | RARA |  |
| CDC25C | FAAH |  |
| SLC6A11 | TERT |  |
| SMPD2 | FABP1 |  |
| ADH1B | FFAR4 |  |
| LTB4R | CACNA2D1 | |
| ACP1 | RXRG |  |
| SELP | ALOX15 |  |
| ENPP2 | ALOX12 |  |
| HAO1 | PTGER4 |  |
| HMGCR | RXRB |  |
| GSTM1 | SLC16A1 |  |
| KDM2A | GLRA1 |  |
| NOD1 | ABCC1 |  |
| PLA2G4C | ABCB1 |  |
| KDM4A | EPHX2 |  |
| RARB | HMGCR |  |
| CDC25B | PTGES |  |
| KDM4C | PLG |  |
| PTGER2 | TBXA2R |  |
| EPHX2 | PLA2G4A |  |
| THRB | SCD |  |
| GSR | HTR2B |  |
| POLH | RORB |  |
| THRA | RORA |  |
| TBXAS1 | SAE1 |  |
| S1PR3 | HNF4A |  |
| ENPEP | UBA2 |  |
| CDC25A | CDC25B |  |
| POLL | PRKCG |  |
| POLK | PRKCD |  |
| SPHK1 | PRKCE |  |
| S1PR4 | PRKCH |  |
| ADH1C | PRKCQ |  |
| NAAA | CNR2 |  |
| PLA2G10 | DHCR7 |  |
| PRKCA | PRKCA |  |
| PLA2G2A | PRKCB |  |
| HSD17B3 | RORC |  |
| S1PR5 | GCGR |  |
| PPARG | TRPV1 |  |
| TBXA2R | PSEN2 |  |
| FOLH1 | CNR1 |  |
| DAGLA | PIM3 |  |
| PTGER4 | CYP11B2 |  |
| PTGIR | CXCR3 |  |
| PLA2G4A | TSPO |  |
| FFAR4 | GRIN1 |  |
| SLC22A1 | GNRHR |  |
| GSTA1 | AVPR1A |  |
| GABBR2 | BRD4 |  |
| GABBR1 | KDR |  |
| PTGER3 | ALOX5AP |  |
| FABP4 | MDM2 |  |
| PTGFR | NPY5R |  |
| LAP3 | PKM |  |
| GPR35 | CRHR1 |  |
| ATG4B | QPCT |  |
| KDM4E | ICMT |  |
| GABRR1 | ROCK2 |  |
| PPARD | ROCK1 |  |
| S1PR1 | MTNR1A |  |
| TRPV1 | MTNR1B |  |
| CNR1 | PTAFR |  |
| KDM5C | GCK |  |
| CPT2 | NOD1 |  |
| CA3 | NOD2 |  |
| SQLE | S1PR3 |  |
| KAT5 | S1PR1 |  |
| PAFAH1B2 | MAPK14 |  |
| MGLL | KIF11 |  |
| CNR2 | CHRNA4 |  |
| SOAT2 | OPRD1 |  |
| SPHK2 | OPRK1 |  |
| NPC1L1 | TRIM24 |  |
| CDC45 | MCHR1 |  |
| CD4 | FKBP1A |  |
| GPBAR1 | ADRA2A |  |
| ABCC4 | ADRA2C |  |
| SRD5A1 | IGF1R |  |
| SRD5A2 | EPHX1 |  |
| ST3GAL1 | HRH3 |  |
| RORA | SRC |  |
| SLC10A1 | HRH4 |  |
| NR1H4 | STAT3 |  |
| ABCB11 | ALK |  |
| NR1H3 | PSENEN |  |
| SREBF2 | NCSTN |  |
| TRIM24 | APH1A |  |
| VEGFA | PSEN1 |  |
| TLR4 | APH1B |  |
| PRKCE | CHRNB2 |  |
| PLCG2 | GRIN2B |  |
| ABCC2 | CYP51A1 |  |
| LPAR5 | FOLH1 |  |
| APEX1 | OXER1 |  |
| CYP17A1 | KCNH2 |  |
| SHBG | GRM1 |  |
| SERPINA6 | SLC22A2 |  |
| G6PD | SLC47A1 |  |
| VDR | SLC47A2 |  |
| AR | ALOX5 |  |
| ESR2 | OPRM1 |  |
| SLC10A2 | TUBB1 |  |
| ESR1 | HDAC6 |  |
| EBP | SLC6A15 |  |
| GBA2 | HPGD |  |
| CYP19A1 | OPRL1 |  |
| UGCG | PTGDR |  |
| EPHA7 | BDKRB2 |  |
| EPHA2 | PTGES2 |  |
| EPHA5 | HTR1A |  |
| EPHA4 | CYP17A1 |  |
| EPHA8 | PLK4 |  |
| EPHB3 | SIRT2 |  |
| SLC22A3 | ACP1 |  |
| PDK2 | TRPV4 |  |
| MCHR2 | ITGAL |  |
| CHEK2 | LPAR6 |  |
| CBFB | LPAR5 |  |
| GUSB | IL2 |  |
| HPSE | AKT1 |  |
| PLAUR | PPM1B |  |
| PI4KA | PPP1CC |  |
| NR2E3 | PPP5C |  |
| CCND3 | PPP1CA |  |
| SCD | S1PR5 |  |
| PIP5K1C | S1PR4 |  |
| PLAU | FASN |  |
| PI4KB | ACACB |  |
| WNT3A | GPR119 |  |
| MPL | IKBKE |  |
| TNKS2 | TBK1 |  |
| PLG | ICAM1 |  |
| TNKS | ITGB2 |  |
| DHODH | CES2 |  |
| PARP2 | PTPN2 |  |
| STK38 | RBP4 |  |
| STAT1 | GRIN2A |  |
| PLAT | GRIA2 |  |
| GFER | HCRTR2 |  |
| CCND1 | HCRTR1 |  |
| PARP1 | PFKFB3 |  |
| NEK9 | MET |  |
| TLK2 | CDK5R1 |  |
| MAST1 | DYRK1A |  |
| STK39 | APP |  |
| FGFR1 | TGFBR1 |  |
| NEK5 | CTSL |  |
| NEK7 | CCR1 |  |
| SRPK2 | NTRK1 |  |
| STK11 | SMO |  |
| F7 | CTSS |  |
| NIM1K | NR1H3 |  |
| PRPF4B | ADRA1D |  |
| FADS1 | ADRA1A |  |
| HUNK | ADRA1B |  |
| LATS1 | MAPK11 |  |
| SBK1 | MKNK2 |  |
| PHLPP1 | BRPF1 |  |
| TTPA | AURKA |  |
| AKT1 | P2RX7 |  |
| ILK | EZH2 |  |
| SGK3 | JAK2 |  |
| BCHE | IDH1 |  |
| NQO1 | SYK |  |
| USP4 | MTOR |  |
| USP5 | PLK1 |  |
| PCSK7 | CFD |  |
| BCAT1 | MAPK8 |  |
| ELAVL1 | PIK3CD |  |
| MAOB | PIK3CG |  |
| AKR1C1 | MAPK9 |  |
| NMUR2 | CDK1 |  |
| CALM1 | CDK2 |  |
| MAOA | PIK3CA |  |
| TOP2A | PDE10A |  |
| MIF | AGPAT2 |  |
| TDP1 | PIK3CB |  |
| CCR6 | ITK |  |
| SHH | CCNA2 |  |
| UGT2B7 | GPR4 |  |
| NR1H2 | CTSB |  |
| GC | RAF1 |  |
| CYP24A1 | GHSR |  |
| CYP27B1 | CCNB3 |  |
| EPHB1 | PGGT1B |  |
| EPHA1 | MAP2K1 |  |
| EPHA6 | LRRK2 |  |
| RORC | PDPK1 |  |
| EPHB2 | VCP |  |
| ABCB1 | CSF1R |  |
| AGBL2 | ABL1 |  |
| GSTM2 | AMPD3 |  |
| GSTP1 | PRF1 |  |
| TAAR1 | CCNB1 |  |
| PHLPP2 | CCNB2 |  |
| TAS1R1 | CDK5 |  |
| CD81 | NQO2 |  |
| IL1B | PLA2G4B |  |
| HSD11B2 | MGLL |  |
| PTPN1 | HSD17B1 |  |
| PTPN2 | NR1I3 |  |
| TAS2R31 | CYP2C9 |  |
| PIN1 | NR3C1 |  |
| NR0B1 | HRH1 |  |
| ADCY1 | MAOA |  |
| NPY5R | MAOB |  |
| PRF1 | CTSK |  |
| SMAD3 | CCR2 |  |
|  | SCN2A |  |
|  | SCN10A |  |
|  | GPR139 |  |
|  | ELANE |  |
|  | HSD3B1 |  |
|  | PGR |  |
|  | KCNA5 |  |
|  | GPR88 |  |
|  | CTSH |  |
|  | CACNA1B |  |
|  | NAMPT |  |
|  | C5AR1 |  |
|  | SPHK2 |  |
|  | OGT |  |
|  | CHRM3 |  |
|  | ABCG2 |  |
|  | DRD2 |  |
|  | HTR2A |  |
|  | HTR2C |  |
|  | PDE9A |  |
|  | CENPE |  |
|  | HSD17B2 |  |
|  | LSS |  |
|  | SELE |  |
|  | POLA1 |  |
|  | NR1H2 |  |
|  | TTL |  |
|  | AKR1C1 |  |
|  | PRSS1 |  |
|  | CTRC |  |
|  | ACHE |  |
|  | SSTR4 |  |
|  | BCL2 |  |
|  | TNF |  |
|  | EBP |  |
|  | ANPEP |  |
|  | BACE2 |  |
|  | XPNPEP1 |  |
|  | LAP3 |  |
|  | PEPD |  |
|  | XPNPEP2 |  |
|  | IMPDH2 |  |
|  | CASP3 |  |
|  | IRAK4 |  |
|  | SLC6A2 |  |
|  | AURKB |  |
|  | RPS6KB1 |  |
|  | MMP13 |  |
|  | MMP9 |  |
|  | MMP1 |  |
|  | AKT2 |  |
|  | CHEK2 |  |
|  | CBFB |  |
|  | METAP2 |  |
|  | DHODH |  |
|  | RPS6KA3 |  |
|  | HPSE |  |
|  | ILK |  |
|  | ESR1 |  |
|  | CCKAR |  |
|  | JAK3 |  |
|  | JAK1 |  |
|  | GPR55 |  |
|  | STS |  |
|  | GPR18 |  |
|  | LDLR |  |
|  | PLA2G7 |  |
|  | PDK1 |  |
|  | CDC7 |  |
|  | GLI1 |  |
|  | CALCRL |  |
|  | PHLPP1 |  |
|  | CTSD |  |
|  | SREBF2 |  |
|  | CYP2C19 |  |
|  | BCHE |  |
|  | PTGER1 |  |
|  | SQLE |  |
|  | PTPN6 |  |
|  | TBXAS1 |  |
|  | SIGMAR1 |  |
|  | SHH |  |
|  | PREP |  |
|  | GSK3A |  |
|  | CCNE1 |  |
|  | MMP3 |  |
|  | DAPK3 |  |
|  | TAAR1 |  |
|  | CLK4 |  |
|  | TYK2 |  |
|  | CLK1 |  |
|  | CLK3 |  |
|  | DYRK2 |  |
|  | DCTPP1 |  |
|  | SIRT1 |  |
|  | EPHB4 |  |
|  | C1R |  |
|  | RPS6KA5 |  |
|  | PIP4K2C |  |
|  | GRK2 |  |
|  | MERTK |  |
|  | BCAT2 |  |
|  | TLR9 |  |
|  | PHOSPHO1 | |
|  | MKNK1 |  |
|  | TNKS |  |
|  | CA6 |  |
|  | TTR |  |
|  | CA5B |  |
|  | CA5A |  |
|  | SLC29A1 |  |
|  | TNNI3K |  |
|  | ACVRL1 |  |
|  | ADORA2B |  |
|  | SLC5A2 |  |
|  | DHFR |  |
|  | NAAA |  |
|  | BACE1 |  |
|  | CYP11B1 |  |
|  | FLT3 |  |
|  | PDE4A |  |
|  | PDE4B |  |
|  | PDE4D |  |
|  | PDE4C |  |
|  | CCNA1 |  |
|  | TRPM8 |  |
|  | CA4 |  |
|  | NR3C2 |  |
|  | AKR1C2 |  |
|  | TAS2R31 |  |
|  | HIF1A |  |
|  | EPAS1 |  |
|  | PLA2G2A |  |
|  | ATP12A |  |
|  | AKR1C3 |  |
|  | MAPK10 |  |
|  | PDGFRA |  |
|  | PSMB5 |  |
|  | PDGFRB |  |

|  |  |
| --- | --- |
| **Table S5. Screening target proteins connected to BPH from DiGeNet and GeneCards OMIM databases** | |
| The number of 3,016 gout-related targets | The number of 67 final overlapping targets |
| A1CF | ADORA3 |
| A2M | DNMT3B |
| AAA1 | CDA |
| AAAS | ADORA2A |
| AADACL2-AS1 | GAPDH |
| AAVS1 | ADK |
| ABCA1 | HSPA8 |
| ABCA4 | ADA |
| ABCB1 | TYMP |
| ABCC11 | EHMT1 |
| ABCC2 | PNP |
| ABCC3 | EHMT2 |
| ABCC4 | HSPA5 |
| ABCC5 | SLC5A2 |
| ABCC6 | CA1 |
| ABCC8 | GRK1 |
| ABCC9 | CA2 |
| ABCF1 | SLC22A6 |
| ABCG1 | PPARA |
| ABCG2 | PAM |
| ABHD6 | GSTK1 |
| ABO | ACP1 |
| ACACA | HMGCR |
| ACAD8 | NOD1 |
| ACADM | RARB |
| ACADS | PTGER2 |
| ACAN | S1PR3 |
| ACE | PRKCA |
| ACKR3 | PLA2G2A |
| ACOT7 | PPARG |
| ACOXL | PTGER4 |
| ACP1 | PLA2G4A |
| ACP5 | GABBR1 |
| ACR | PPARD |
| ACSBG1 | S1PR1 |
| ACTA2 | TRPV1 |
| ACTB | CNR1 |
| ACTBL2 | CNR2 |
| ACTG1 | SPHK2 |
| ACTG2 | GPBAR1 |
| ACTN1 | RORA |
| ACVR2A | TLR4 |
| ADA | CYP17A1 |
| ADA2 | SHBG |
| ADAD1 | VDR |
| ADAM10 | AR |
| ADAM11 | ESR2 |
| ADAM15 | ESR1 |
| ADAM17 | EBP |
| ADAM8 | CYP19A1 |
| ADAMTS12 | CHEK2 |
| ADAMTS3 | HPSE |
| ADAMTS4 | SCD |
| ADAMTS5 | PLG |
| ADAMTS7 | DHODH |
| ADAMTS9 | PARP2 |
| ADAR | CCND1 |
| ADARB1 | PARP1 |
| ADCAD2 | AKT1 |
| ADCYAP1R1 | BCHE |
| ADGRE2 | MIF |
| ADGRE5 | SHH |
| ADGRG1 | RORC |
| ADI1 | ABCB1 |
| ADIPOQ | HSD11B2 |
| ADIPOR1 | PTPN2 |
| ADIPOR2 | PRF1 |
| ADK |  |
| ADM |  |
| ADORA2A | |
| ADORA3 |  |
| ADPGK-AS1 | |
| ADRA1A |  |
| ADRA2B |  |
| ADRB2 |  |
| ADRB3 |  |
| ADRM1 |  |
| ADSL |  |
| AFF1 |  |
| AFF3 |  |
| AFP |  |
| AGBL2 |  |
| AGBL3 |  |
| AGER |  |
| AGPAT1 |  |
| AGT |  |
| AGTR1 |  |
| AGTR2 |  |
| AGXT2 |  |
| AHI1 |  |
| AHNAK |  |
| AHR |  |
| AHSA1 |  |
| AHSG |  |
| AICDA |  |
| AIF1 |  |
| AIFM2 |  |
| AIM2 |  |
| AIMP1 |  |
| AIMP2 |  |
| AIRE |  |
| AKAP12 |  |
| AKIRIN2 |  |
| AKR1D1 |  |
| AKT1 |  |
| AKT2 |  |
| ALB |  |
| ALCAM |  |
| ALDH16A1 | |
| ALDH1A1 |  |
| ALDH1A2 |  |
| ALDH1A3 |  |
| ALDH2 |  |
| ALG1L3P |  |
| ALOX12 |  |
| ALOX15 |  |
| ALOX5 |  |
| ALOX5AP |  |
| ALPK1 |  |
| ALPL |  |
| ALPP |  |
| ALX4 |  |
| AMACR |  |
| AMD1 |  |
| AMD1P2 |  |
| AMH |  |
| AMOT |  |
| AMPD1 |  |
| AMPD2 |  |
| ANG |  |
| ANGPT1 |  |
| ANGPT2 |  |
| ANGPTL4 |  |
| ANK1 |  |
| ANKH |  |
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| TRBV7-9 |  |
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| TRIM40 |  |
| TRIM46 |  |
| TRIM54 |  |
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