

**Supplementary Table 9. cMap first 100 ranked compounds that mimic the expression signature induced in KGN cells upon the elimination of FOXL2-C134W mutation.**

| Rank | Score | Name                 | Description                            |
|------|-------|----------------------|----------------------------------------|
| 1    | 99.93 | azathioprine         | Dehydrogenase inhibitor                |
| 2    | 99.86 | SIB-1757             | Glutamate receptor antagonist          |
| 3    | 99.72 | <b>serdemetan*</b>   | MDM inhibitor                          |
| 4    | 99.72 | salvinorin-a         | Opioid receptor agonist                |
| 5    | 99.68 | paxilline            | Potassium channel blocker              |
| 6    | 99.68 | NSC-119889           | Protein synthesis inhibitor            |
| 7    | 99.65 | indole               | aryl hydrocarbon receptor agonist      |
| 8    | 99.61 | necrostatin-1        | RIPK inhibitor                         |
| 9    | 99.44 | PF-3845              | FAAH inhibitor                         |
| 10   | 99.28 | M-3M3FBS             | phospholipase activator                |
| 11   | 99.22 | <b>flouxuridine*</b> | DNA synthesis inhibitor                |
| 12   | 99.19 | HNHA                 | HDAC inhibitor                         |
| 13   | 99.19 | KU-0060648           | DNA dependent protein kinase inhibitor |
| 14   | 99.08 | APHA-compound-8      | HDAC inhibitor                         |
| 15   | 99.04 | benzo(a)pyrene       | Carcinogen                             |
| 16   | 99.01 | <b>everolimus*</b>   | MTOR inhibitor                         |
| 17   | 99.01 | <b>palbociclib*</b>  | CDK inhibitor                          |
| 18   | 98.99 | <b>olaparib*</b>     | PARP inhibitor                         |
| 19   | 98.98 | ISOX                 | HDAC inhibitor                         |
| 20   | 98.98 | BI-2536              | PLK inhibitor                          |
| 21   | 98.96 | zebularine           | DNA methyltransferase inhibitor        |
| 22   | 98.93 | <b>tretinoin*</b>    | Retinoid receptor agonist              |
| 23   | 98.91 | NCH-51               | HDAC inhibitor                         |
| 24   | 98.91 | bumetanide           | Solute carrier family member inhibitor |
| 25   | 98.87 | givinostat           | HDAC inhibitor                         |
| 26   | 98.87 | THM-I-94             | HDAC inhibitor                         |
| 27   | 98.84 | <b>belinostat*</b>   | HDAC inhibitor                         |
| 28   | 98.84 | <b>vorinostat*</b>   | HDAC inhibitor                         |
| 29   | 98.81 | papaverine           | Phosphodiesterase inhibitor            |
| 30   | 98.8  | HC-toxin             | HDAC inhibitor                         |
| 31   | 98.8  | mycophenolic-acid    | Dehydrogenase inhibitor                |
| 32   | 98.78 | <b>panobinostat*</b> | HDAC inhibitor                         |
| 33   | 98.77 | dacinostat           | HDAC inhibitor                         |
| 34   | 98.77 | trichostatin-a       | HDAC inhibitor                         |
| 35   | 98.77 | apicidin             | HDAC inhibitor                         |
| 36   | 98.77 | scriptaid            | HDAC inhibitor                         |
| 37   | 98.77 | XMD-892              | MAP kinase inhibitor                   |
| 38   | 98.7  | XMD-1150             | Leucine rich repeat kinase inhibitor   |
| 39   | 98.7  | cyclazosin           | Adrenergic receptor antagonist         |
| 40   | 98.63 | alprazolam           | Benzodiazepine receptor agonist        |
| 41   | 98.58 | AG-14361             | PARP inhibitor                         |
| 42   | 98.52 | entinostat           | HDAC inhibitor                         |
| 43   | 98.41 | XMD-885              | Leucine rich repeat kinase inhibitor   |
| 44   | 98.27 | chromomycin-a3       | DNA binding agent                      |
| 45   | 98.26 | methylene-blue       | Guanylyl cyclase inhibitor             |
| 46   | 98.24 | lofepramine          | Norepinephrine reuptake inhibitor      |
| 47   | 98.22 | montelukast          | Leukotriene receptor antagonist        |
| 48   | 98.2  | piceid               | ICAM1 inhibitor                        |
| 49   | 98.2  | <b>alvocidib*</b>    | CDK inhibitor                          |
| 50   | 98.17 | ER-27319             | Mediator release inhibitor             |

|     |       |                      |                                                       |
|-----|-------|----------------------|-------------------------------------------------------|
| 51  | 98.12 | UB-165               | Acetylcholine receptor agonist                        |
| 52  | 98.03 | pidorubicine         | Topoisomerase inhibitor                               |
| 53  | 98.03 | mepacrine            | Cytokine production inhibitor                         |
| 54  | 97.99 | PHA-793887           | CDK inhibitor                                         |
| 55  | 97.99 | hydrocotarnine       | Opioid receptor antagonist                            |
| 56  | 97.96 | <b>topotecan*</b>    | Topoisomerase inhibitor                               |
| 57  | 97.96 | AT-7519              | CDK inhibitor                                         |
| 58  | 97.96 | pyroxamide           | HDAC inhibitor                                        |
| 59  | 97.93 | ketoconazole         | Sterol demethylase inhibitor                          |
| 60  | 97.92 | cycloheximide        | Protein synthesis inhibitor                           |
| 61  | 97.9  | lidoflazine          | Calcium channel blocker                               |
| 62  | 97.85 | CFM-1571             | Guanylate cyclase activator                           |
| 63  | 97.82 | Merck60              | HDAC inhibitor                                        |
| 64  | 97.82 | JNJ-7706621          | CDK inhibitor                                         |
| 65  | 97.82 | <b>daunorubicin*</b> | RNA synthesis inhibitor                               |
| 66  | 97.78 | PIK-75               | DNA protein kinase inhibitor                          |
| 67  | 97.74 | <b>camptothecin*</b> | Topoisomerase inhibitor                               |
| 68  | 97.74 | triptolide           | RNA polymerase inhibitor                              |
| 69  | 97.69 | prima-1-met          | thioredoxin inhibitor                                 |
| 70  | 97.67 | pirarubicin          | Topoisomerase inhibitor                               |
| 71  | 97.64 | ZG-10                | JNK inhibitor                                         |
| 72  | 97.64 | WT-171               | HDAC inhibitor                                        |
| 73  | 97.6  | <b>mitoxantrone*</b> | Topoisomerase inhibitor                               |
| 74  | 97.57 | 5-iodotubercidin     | Adenosine kinase inhibitor                            |
| 75  | 97.57 | KN-93                | Calcium-calmodulin dependent protein kinase inhibitor |
| 76  | 97.53 | JWE-035              | Aurora kinase inhibitor                               |
| 77  | 97.51 | naproxen             | Cyclooxygenase inhibitor                              |
| 78  | 97.46 | <b>doxorubicin*</b>  | Topoisomerase inhibitor                               |
| 79  | 97.43 | menadione            | Mitochondrial DNA polymerase inhibitor                |
| 80  | 97.38 | <b>linsitinib*</b>   | IGF-1 inhibitor                                       |
| 81  | 97.32 | anisomycin           | DNA synthesis inhibitor                               |
| 82  | 97.31 | nornicotine          | Acetylcholine receptor agonist                        |
| 83  | 97.27 | carvedilol           | Adrenergic receptor antagonist                        |
| 84  | 97.22 | PAC-1                | Caspase activator                                     |
| 85  | 97.21 | WAY-629              | Serotonin receptor agonist                            |
| 86  | 97.15 | HG-5-113-01          | Protein kinase inhibitor                              |
| 87  | 97.09 | AG-490               | EGFR inhibitor                                        |
| 88  | 97.04 | clomifene            | Estrogen receptor antagonist                          |
| 89  | 97.03 | bepidil              | Calcium channel blocker                               |
| 90  | 96.9  | linifanib            | PDGFR receptor inhibitor                              |
| 91  | 96.9  | PIK-90               | PI3K inhibitor                                        |
| 92  | 96.86 | ellipticine          | Topoisomerase inhibitor                               |
| 93  | 96.86 | JNK-9L               | JNK inhibitor                                         |
| 94  | 96.84 | SN-38                | Topoisomerase inhibitor                               |
| 95  | 96.83 | methyl-angolensate   | Apoptosis inhibitor                                   |
| 96  | 96.77 | PF-562271            | Focal adhesion kinase inhibitor                       |
| 97  | 96.73 | AZD-6482             | PI3K inhibitor                                        |
| 98  | 96.69 | droxinostat          | HDAC inhibitor                                        |
| 99  | 96.62 | BMV-14802            | Sigma receptor antagonist                             |
| 100 | 96.58 | cyclopamine          | Smoothened receptor antagonist                        |

\* Drugs in common with Haltia et al. Gynecol Oncol. 2017