

Supplementary Materials

Table S1: List of a library of 433 FDA-approved compounds.

| Number | Drug |
|--------|-------------------------------|
| 1 | FG-4592 |
| 2 | Rizatriptan Benzoate |
| 3 | Fulvestrant |
| 4 | Tolfenamic Acid |
| 5 | Ramelteon |
| 6 | Trospium chloride |
| 7 | Granisetron HCl |
| 8 | A-769662 |
| 9 | Losartan Potassium (DuP 753) |
| 10 | Tolazoline HCl |
| 11 | Tenofovir Disoproxil Fumarate |
| 12 | Ataluren (PTC124) |
| 13 | Candesartan |
| 14 | Belinostat (PXD101) |
| 15 | Semagacestat (LY450139) |
| 16 | NVP-ADW742 |
| 17 | NSC 319726 |
| 18 | Icotinib |
| 19 | Ilomastat (GM6001, Galardin) |
| 20 | Rivaroxaban |
| 21 | STF-118804 |
| 22 | Rimonabant |
| 23 | FLI-06 |
| 24 | Sitaxentan sodium |
| 25 | ABT-263 (Navitoclax) |
| 26 | Brinzolamide |
| 27 | Nilotinib (AMN-107) |
| 28 | Tranylcypromine (2-PCPA) HCl |
| 29 | Tandutinib (MLN518) |
| 30 | Zebularine |
| 31 | MLN8054 |
| 32 | PR-619 |
| 33 | Roxatidine Acetate HCl |

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| 34 | GSK1904529A |
| 35 | Atorvastatin Calcium |
| 36 | SNS-032 (BMS-387032) |
| 37 | Naltrexone HCl |
| 38 | Ganetespib (STA-9090) |
| 39 | CGS 21680 HCl |
| 40 | Vemurafenib (PLX4032, RG7204) |
| 41 | Pancuronium dibromide |
| 42 | Loratadine |
| 43 | PNU-120596 |
| 44 | Ruxolitinib (INCB018424) |
| 45 | GW3965 HCl |
| 46 | AZD6482 |
| 47 | SB705498 |
| 48 | Safinamide Mesylate |
| 49 | Tenofovir |
| 50 | P22077 |
| 51 | Aloxistatin |
| 52 | NSC697923 |
| 53 | Apixaban |
| 54 | ML347 |
| 55 | Irinotecan HCl Trihydrate |
| 56 | SSR128129E |
| 57 | VX-765 |
| 58 | Ferrostatin-1 (Fer-1) |
| 59 | Rotundine |
| 60 | MM-102 |
| 61 | PF-3845 |
| 62 | OTX015 |
| 63 | Ibrutinib (PCI-32765) |
| 64 | 4E1RCat |
| 65 | Tofacitinib (CP-690550, Tasocitinib) |
| 66 | PHA-793887 |
| 67 | WZ811 |
| 68 | Allopurinol |
| 69 | HC-030031 |
| 70 | Telmisartan |
| 71 | Mozavaptan |
| 72 | Cyproterone Acetate |

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| 73 | Sodium 4-Aminosalicylate |
| 74 | GSK1292263 |
| 75 | SGC 0946 |
| 76 | LY2157299 |
| 77 | IPA-3 |
| 78 | Esomeprazole Sodium |
| 79 | DMH1 |
| 80 | Ozagrel |
| 81 | AZD4547 |
| 82 | GW9508 |
| 83 | VE-821 |
| 84 | NSC 405020 |
| 85 | GNF-2 |
| 86 | TPCA-1 |
| 87 | T0901317 |
| 88 | PD0325901 |
| 89 | PYR-41 |
| 90 | U0126-EtOH |
| 91 | LDN-212854 |
| 92 | Ki16425 |
| 93 | C646 |
| 94 | Oxcarbazepine |
| 95 | Mdivi-1 |
| 96 | MRS 2578 |
| 97 | AGI-5198 |
| 98 | LY2603618 |
| 99 | BTB06584 |
| 100 | NPS-2143 |
| 101 | Veliparib (ABT-888) |
| 102 | Dalcetrapib (JTT-705, RO4607381) |
| 103 | Vandetanib (ZD6474) |
| 104 | Istradefylline |
| 105 | Iniparib (BSI-201) |
| 106 | Dabrafenib (GSK2118436) |
| 107 | Finasteride |
| 108 | Tyrphostin AG 879 |
| 109 | Cilomilast |
| 110 | TAE226 (NVP-TAE226) |
| 111 | Ozagrel HCl |

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| 112 | Vildagliptin (LAF-237) |
| 113 | Dynasore |
| 114 | Piceatannol |
| 115 | Quizartinib (AC220) |
| 116 | Tenovin-6 |
| 117 | Enzastaurin (LY317615) |
| 118 | CGP 57380 |
| 119 | Bisoprolol fumarate |
| 120 | Bosutinib (SKI-606) |
| 121 | S3I-201 |
| 122 | HA14-1 |
| 123 | TG100-115 |
| 124 | ADL5859 HCl |
| 125 | Voriconazole |
| 126 | BIBR 1532 |
| 127 | Thiazovivin |
| 128 | Anastrozole |
| 129 | SB743921 |
| 130 | EUK 134 |
| 131 | Bergenin |
| 132 | SN-38 |
| 133 | CP-91149 |
| 134 | Wnt-C59 (C59) |
| 135 | NU7026 |
| 136 | BAM7 |
| 137 | ZM 306416 |
| 138 | (+)-JQ1 |
| 139 | GW9662 |
| 140 | KPT-185 |
| 141 | Pifithrin- μ |
| 142 | Batimastat (BB-94) |
| 143 | Sertraline HCl |
| 144 | OG-L002 |
| 145 | MK-1775 |
| 146 | Costunolide |
| 147 | AT101 |
| 148 | GSK690693 |
| 149 | Tropicamide |
| 150 | BMS-707035 |

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| 151 | Raltegravir (MK-0518) |
| 152 | EX 527 (Selisistat) |
| 153 | CCT128930 |
| 154 | Pomalidomide |
| 155 | AS-252424 |
| 156 | Tie2 kinase inhibitor |
| 157 | Ouabain |
| 158 | Ranitidine |
| 159 | SKI II |
| 160 | Fluvastatin Sodium |
| 161 | Propranolol HCl |
| 162 | Erastin |
| 163 | Ifenprodil Tartrate |
| 164 | KPT-276 |
| 165 | AZD2461 |
| 166 | KPT-330 |
| 167 | AGI-6780 |
| 168 | SGL-1027 |
| 169 | Atglistatin |
| 170 | Suvorexant (MK-4305) |
| 171 | SRT1720 |
| 172 | 4EGI-1 |
| 173 | Exemestane |
| 174 | NSC 23766 |
| 175 | 2-Methoxyestradiol (2-MeOE2) |
| 176 | Palbociclib (PD-0332991) HCl |
| 177 | EHop-016 |
| 178 | PF-573228 |
| 179 | ABT-199 (GDC-0199) |
| 180 | Memantine HCl |
| 181 | PTC-209 |
| 182 | Trimebutine |
| 183 | CK-636 |
| 184 | SGL-1776 free base |
| 185 | AZD7545 |
| 186 | URB597 |
| 187 | GW0742 |
| 188 | TAK-875 |
| 189 | Pacritinib (SB1518) |

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| 190 | KX2-391 |
| 191 | PluriSIn #1 (NSC 14613) |
| 192 | Crenolanib (CP-868596) |
| 193 | Enzalutamide (MDV3100) |
| 194 | PFI-1 (PF-6405761) |
| 195 | Dapagliflozin |
| 196 | Maraviroc |
| 197 | Nebivolol |
| 198 | I-BET151 (GSK1210151A) |
| 199 | VX-809 (Lumacaftor) |
| 200 | Apoptosis Activator 2 |
| 201 | Naproxen |
| 202 | Bosentan Hydrate |
| 203 | Acadesine |
| 204 | E-64 |
| 205 | Captopril |
| 206 | Selumetinib (AZD6244) |
| 207 | Tolvaptan |
| 208 | PD184352 (CI-1040) |
| 209 | OSI-906 (Linsitinib) |
| 210 | Canagliflozin |
| 211 | CP-673451 |
| 212 | Sirtinol |
| 213 | Abitrexate (Methotrexate) |
| 214 | SAR131675 |
| 215 | Pralatrexate |
| 216 | BML-190 |
| 217 | TWS119 |
| 218 | IKK-16 (IKK Inhibitor VII) |
| 219 | Enalaprilat Dihydrate |
| 220 | Triamterene |
| 221 | Clemastine Fumarate |
| 222 | Fingolimod (FTY720) HCl |
| 223 | Amlodipine |
| 224 | PP2 |
| 225 | CHIR-124 |
| 226 | Temsirolimus (CCI-779, NSC 683864) |
| 227 | YO-01027 |
| 228 | Trichostatin A (TSA) |

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| 229 | PAC-1 |
| 230 | PHA-665752 |
| 231 | VE-822 |
| 232 | SB203580 |
| 233 | EPZ-6438 |
| 234 | KU-55933 (ATM Kinase Inhibitor) |
| 235 | CGK 733 |
| 236 | WZ4002 |
| 237 | WZ4003 |
| 238 | TAK-700 (Orteronel) |
| 239 | Loxistatin Acid (E-64C) |
| 240 | Zibotentan (ZD4054) |
| 241 | Pyrimethamine |
| 242 | RKI-1447 |
| 243 | UNC2250 |
| 244 | SMI-4a |
| 245 | SB415286 |
| 246 | PRT062607 (P505-15, BIIB057) HCl |
| 247 | Torcetrapib |
| 248 | MK-2206 2HCl |
| 249 | ML130 (Nodinitib-1) |
| 250 | PF-04217903 |
| 251 | GW441756 |
| 252 | Varespladib (LY315920) |
| 253 | ML161 |
| 254 | MK-2866 (GTx-024) |
| 255 | Ticagrelor |
| 256 | Letrozole |
| 257 | GW2580 |
| 258 | Zosuquidar (LY335979) 3HCl |
| 259 | KU-60019 |
| 260 | LY2228820 |
| 261 | MLN2238 |
| 262 | Org 27569 |
| 263 | Oxymetazoline HCl |
| 264 | DMXAA (Vadimezan) |
| 265 | Anacetrapib (MK-0859) |
| 266 | AM1241 |
| 267 | Embelin |

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| 268 | Toremifene Citrate |
| 269 | GSK2656157 |
| 270 | Felodipine |
| 271 | (+)-Bicuculline |
| 272 | Ticlopidine HCl |
| 273 | SANT-1 |
| 274 | Ispinesib (SB-715992) |
| 275 | BTZ043 Racemate |
| 276 | AZD7762 |
| 277 | AVL-292 |
| 278 | Pimobendan |
| 279 | DBeQ |
| 280 | Formoterol Hemifumarate |
| 281 | CNX-774 |
| 282 | Lovastatin |
| 283 | 4 μ 8C |
| 284 | Lafutidine |
| 285 | AZ191 |
| 286 | (-)-Parthenolide |
| 287 | JSH-23 |
| 288 | Pramipexole |
| 289 | RepSox |
| 290 | Bazedoxifene HCl |
| 291 | Golgicide A |
| 292 | LDE225 (NVP-LDE225,Erismodegib) |
| 293 | Ridaforolimus (Deforolimus, MK-8669) |
| 294 | LY2784544 |
| 295 | SNS-314 Mesylate |
| 296 | BGJ398 (NVP-BGJ398) |
| 297 | Irinotecan |
| 298 | OSI-420 |
| 299 | Dutasteride |
| 300 | Apigenin |
| 301 | Rigosertib (ON-01910) |
| 302 | Forskolin |
| 303 | Rolipram |
| 304 | Bupivacaine HCl |
| 305 | UNC669 |
| 306 | Tioxolone |

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| 307 | PF-4708671 |
| 308 | 5-hydroxymethyl Tolterodine (PNU 200577, 5-HMT, 5-HM) |
| 309 | XAV-939 |
| 310 | SB742457 |
| 311 | Cinacalcet HCl |
| 312 | Linagliptin |
| 313 | Etomidate |
| 314 | Entacapone |
| 315 | AG-14361 |
| 316 | Moclobemide (Ro 111163) |
| 317 | LY411575 |
| 318 | GDC-0152 |
| 319 | OC000459 |
| 320 | NLG919 |
| 321 | Levosulpiride |
| 322 | Imatinib (STI571) |
| 323 | DCC-2036 (Rebastinib) |
| 324 | XL335 |
| 325 | Nilvadipine |
| 326 | CHIR-98014 |
| 327 | GW4064 |
| 328 | PF-5274857 |
| 329 | GDC-0068 |
| 330 | JNJ-1661010 |
| 331 | VU 0364770 |
| 332 | U-104 |
| 333 | Daunorubicin HCl |
| 334 | PF-562271 |
| 335 | AZD3463 |
| 336 | IOX2 |
| 337 | IMD 0354 |
| 338 | CRT0044876 |
| 339 | TCID |
| 340 | LB42708 |
| 341 | Necrostatin-1 |
| 342 | Empagliflozin (BI 10773) |
| 343 | SU11274 |
| 344 | Bortezomib (PS-341) |
| 345 | YM155 (Sepantronium Bromide) |

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| 346 | Lenalidomide (CC-5013) |
| 347 | Ivacaftor (VX-770) |
| 348 | AUY922 (NVP-AUY922) |
| 349 | Agomelatine |
| 350 | 17-AAG (Tanespimycin) |
| 351 | SP600125 |
| 352 | CEP-18770 (Delanzomib) |
| 353 | Aprepitant |
| 354 | Fluvoxamine maleate |
| 355 | Oligomycin A |
| 356 | Ginkgolide A |
| 357 | Cryptotanshinone |
| 358 | ICG-001 |
| 359 | Stattic |
| 360 | SC144 |
| 361 | SRPIN340 |
| 362 | Trelagliptin |
| 363 | Panobinostat (LBH589) |
| 364 | VX-680 (Tozasertib, MK-0457) |
| 365 | GDC-0941 |
| 366 | OSU-03012 (AR-12) |
| 367 | GSK690693 |
| 368 | Everolimus (RAD001) |
| 369 | MK-8245 |
| 370 | Aniracetam |
| 371 | Doxazosin Mesylate |
| 372 | Ginkgolide B |
| 373 | Tosedostat (CHR2797) |
| 374 | Rebamipide |
| 375 | Rasagiline Mesylate |
| 376 | PD128907 HCl |
| 377 | Apatinib |
| 378 | ADX-47273 |
| 379 | AZ 3146 |
| 380 | VU 0357121 |
| 381 | (-)-MK 801 Maleate |
| 382 | Mirabegron |
| 383 | AP26113 |
| 384 | Birinapant |

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| 385 | AZD1981 |
| 386 | LDK378 |
| 387 | (S)-crizotinib |
| 388 | ZM 447439 |
| 389 | BX-912 |
| 390 | Tadalafil |
| 391 | Elvitegravir (GS-9137, JTK-303) |
| 392 | Fostamatinib (R788) |
| 393 | GSK J4 HCl |
| 394 | TCS 359 |
| 395 | Carvedilol |
| 396 | Naftopidil |
| 397 | ML133 HCl |
| 398 | T0070907 |
| 399 | Gliquidone |
| 400 | SC-514 |
| 401 | ZCL278 |
| 402 | Caffeic Acid Phenethyl Ester |
| 403 | VU 0364439 |
| 404 | SB431542 |
| 405 | Odanacatib (MK-0822) |
| 406 | Celecoxib |
| 407 | Etodolac |
| 408 | Isotretinoin |
| 409 | Stavudine (d4T) |
| 410 | VX-745 |
| 411 | GSK429286A |
| 412 | SB408124 |
| 413 | H 89 2HCl |
| 414 | Mubritinib (TAK 165) |
| 415 | BMS-378806 |
| 416 | Ki16198 |
| 417 | AZ20 |
| 418 | AMG-517 |
| 419 | NMS-873 |
| 420 | Sorafenib |
| 421 | NH125 |
| 422 | Sal003 |
| 423 | Tariquidar |

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| 424 | Lomeguatrib |
| 425 | BI 2536 |
| 426 | Imidapril HCl |
| 427 | GSK461364 |
| 428 | Gliclazide |
| 429 | Sotrastaurin |
| 430 | BI-D1870 |
| 431 | Go 6983 |
| 432 | MNS (3,4-Methylenedioxy- β -nitrostyrene, MDBN) |
| 433 | THZ1 |

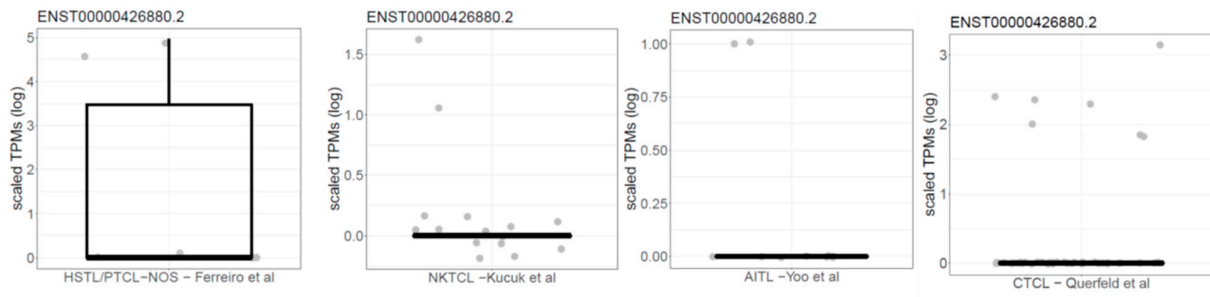


Figure S1. *H4R* mRNA expression (ENST00000426880.2 transcript variant 2, short isoform) in tumors of TCL patients. The transcriptional datasets of tumors from patients with AITL (accession number: SRP029591, n=10) [28], hepatosplenic TCL (HSTL)/PTCL-NOS (accession number: SRP039591, n=6) [30], NKTCL (accession number: SRP049695, n=15) [31], and CTCL (accession number: SRP139926, n=47) [32] were obtained from the NCBI Sequence Read Archive and analyzed as indicated in materials and methods. TPMs: transcripts per million.

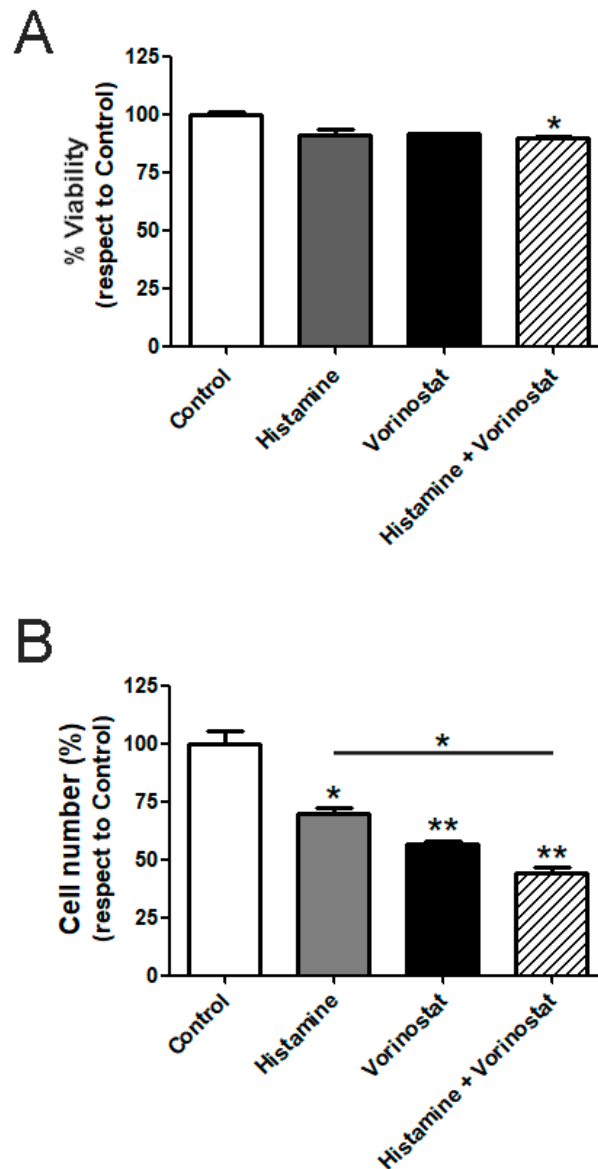


Figure S2: Effect of the combination of histamine and vorinostat on HuT78 cell viability and cell number. HuT78 cells were pre-incubated for 24 h in serum-free RPMI medium and then were left untreated (control) or were treated with histamine (10 μ M) and/or Vorinostat (1 μ M) for 48 h in complete medium, as indicated. A) Cell viability was evaluated by Cell Titer Blue Assay. B) The cell number was counted using a Neubauer chamber. Measurements were performed in triplicates for each condition and data are expressed as mean \pm SEM (n=3 independent experiments). * indicates $p < 0.05$, ** indicates $p < 0.01$ compared with Control.