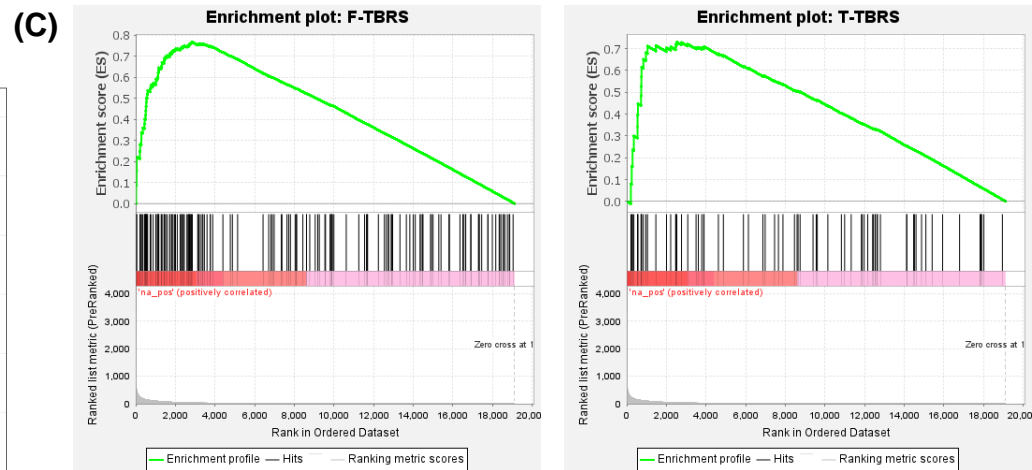
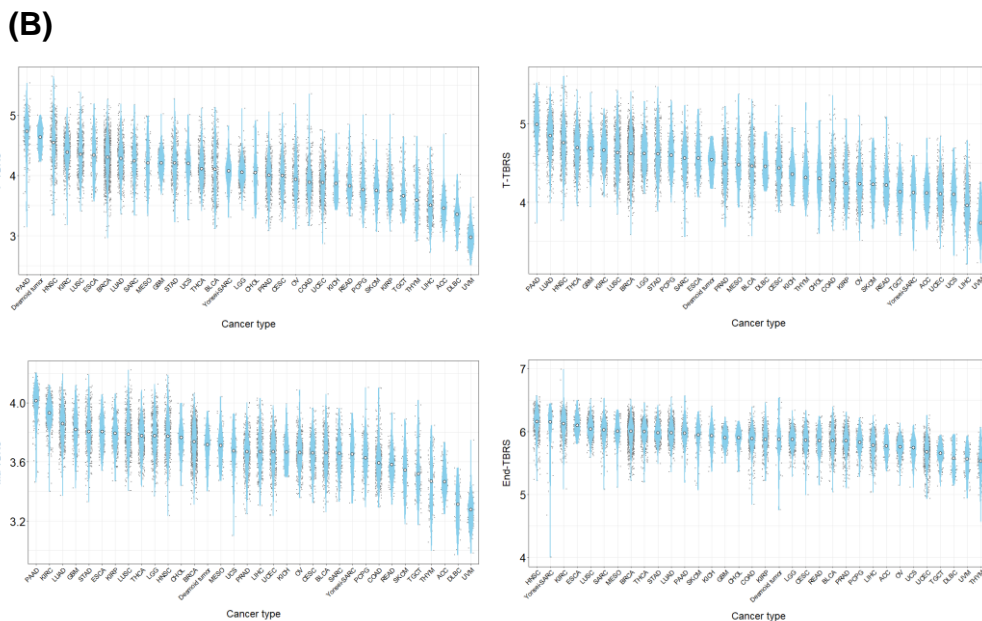
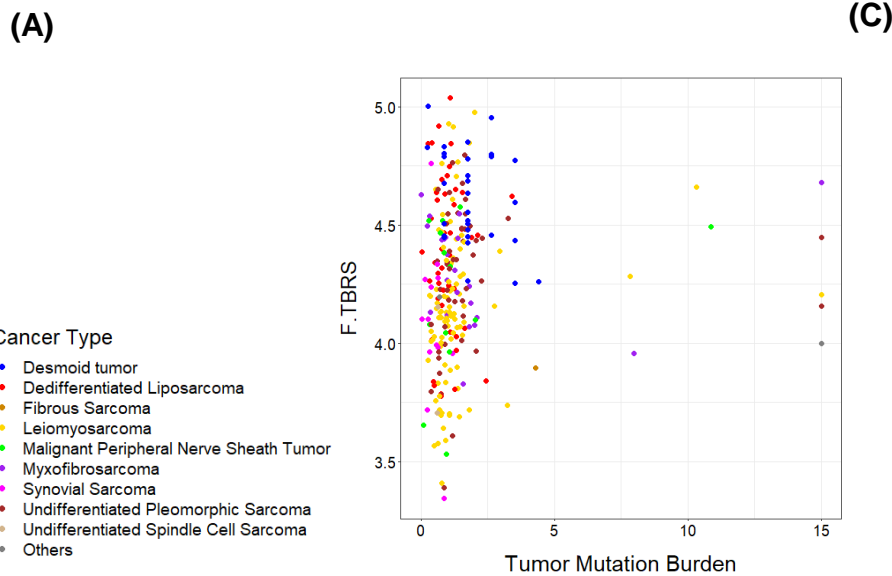
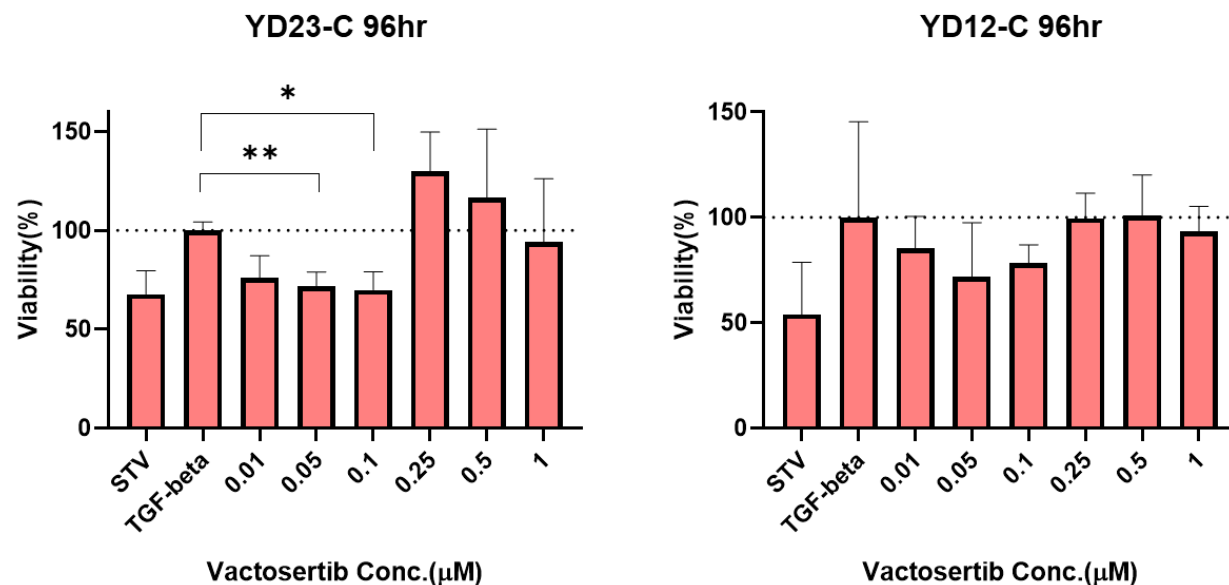


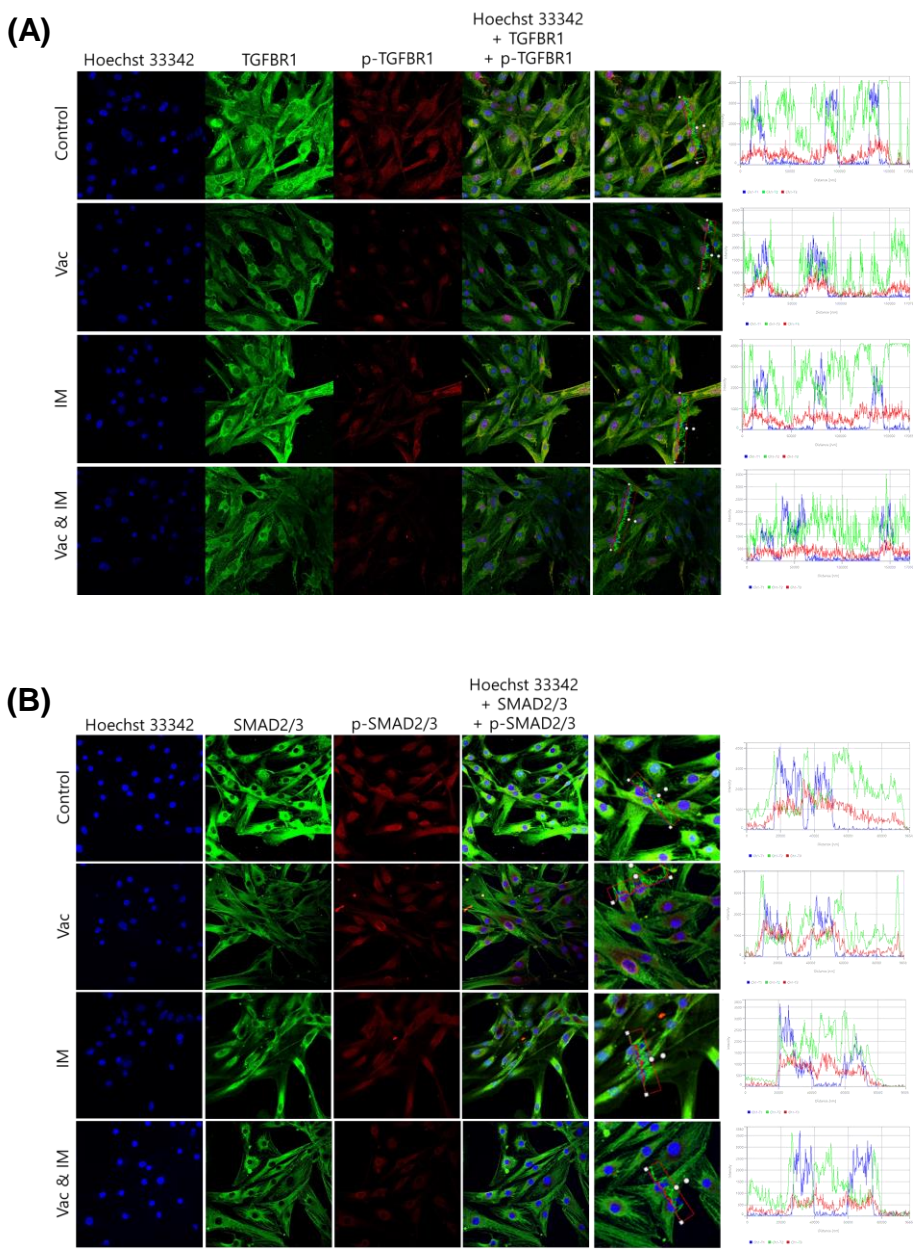
**Figure S1.** CONSORT diagram



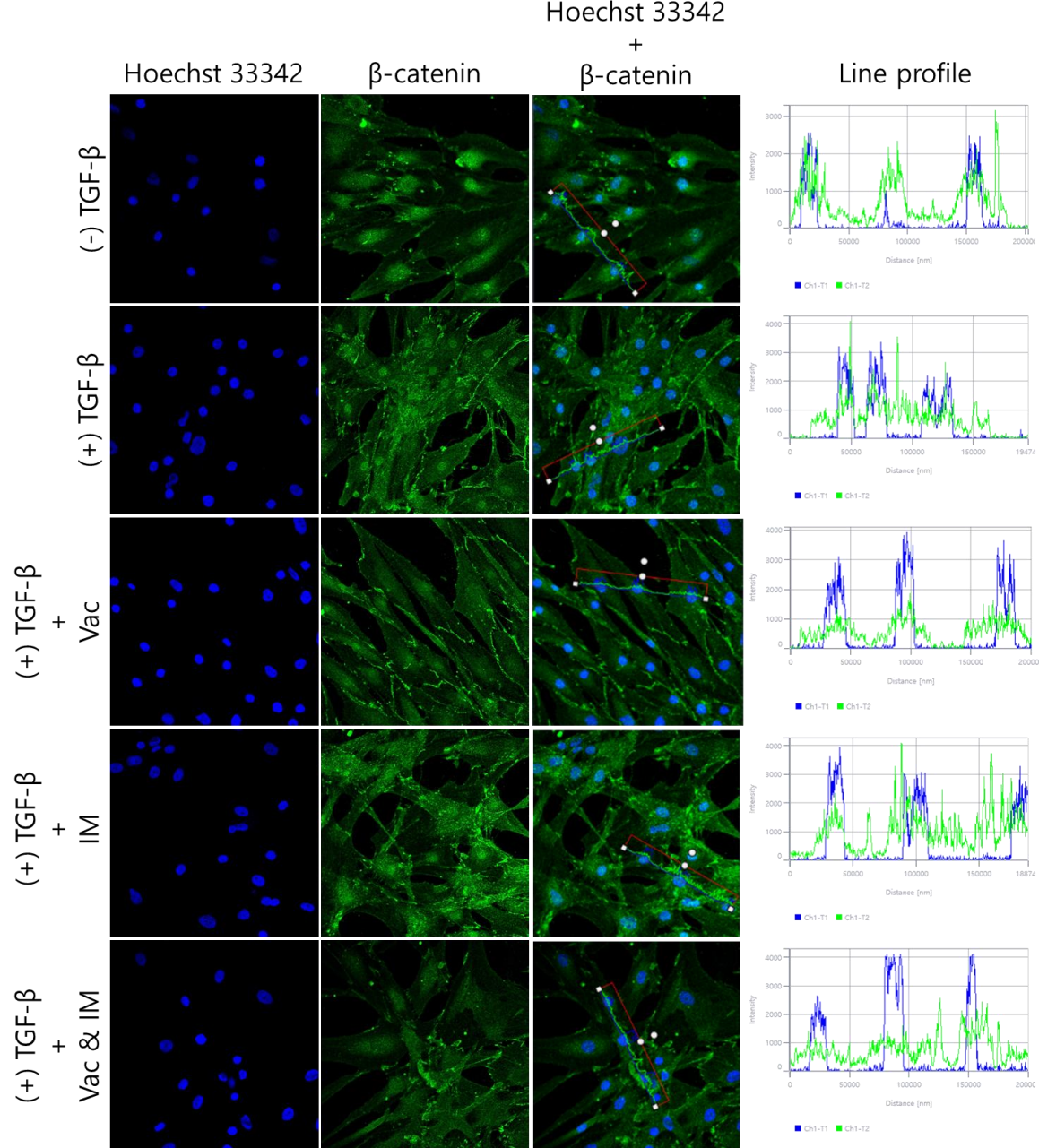
**Figure S2. genomic analysis.** (A) Boxplots showing TMBs according to cancer type (B) Violin plots showing TBRS scores according to cancer types including TCGA data. Yonsei-SARC indicates sarcoma other than desmoid tumor from this study. Abbreviations: ACC, adrenocortical carcinoma; BLCA, bladder urothelial carcinoma; BRCA, breast invasive carcinoma; CESC, cervical squamous cell carcinoma; CHOL, cholangiocarcinoma; COAD, colon adenocarcinoma; DLBC, diffuse large B cell lymphoma; ESCA, esophageal carcinoma; GBM, glioblastoma multiforme; HNSC, head and neck squamous cell carcinoma; KICH, kidney chromophobe carcinoma; KIRC, Kidney renal clear cell carcinoma; KIRP, kidney renal papillary cell carcinoma; LGG, low grade glioma; LIHC, liver hepatocellular carcinoma; LUAD, lung adenocarcinoma; LUSC, lung squamous cell carcinoma; MESO, mesothelioma; OV, ovarian serous cystadenocarcinoma; PAAD, pancreatic adenocarcinoma; PCPG, pheochromocytoma and paraganglioma; PRAD, prostate adenocarcinoma; READ, rectal adenocarcinoma; SARC, sarcoma; SKCM, skin cutaneous melanoma; STAD, stomach adenocarcinoma; TGCT, testicular germ cell tumor; THCA, thyroid carcinoma; THYM, thymoma; UCS, uterine carcinosarcoma; UCEC, uterine corpus endometrial carcinoma; UVM, uveal melanoma (C) The plots of enrichment score: F-TBRS and T-TBRS.



**Figure S3.** Results of viability test with vactosertib monotherapy in 48hr and 96hr. TGF-beta works as both a tumor suppressor and a tumor promoter. We performed the drug screen for monotherapy of TGF-beta inhibitor (vactosertib) and selected the specific concentration that appeared to have the tumor suppressor effect. And we selected 0.1  $\mu$ M. Because inhibition of abnormal growth by TGF-beta stimulation in 96hr vactosertib monotherapy was stable in both of PDDs (STV; before TGF-beta stimulation, TGF-beta; TGF-beta 1ng/mL stimulation, all vactosertib treatment was together with TGF-beta).



**Figure S4.** Fluorescence confocal microscopy images and line profiles of YD23-C for TGFBR1 signaling (A) and SMAD2/3 signaling (B).



**Figure S5.** Fluorescence confocal microscopy images and line profiles of YD23-C cells for beta-catenin.