## Final model Biliary Cervix CNS\_Glioma CNS\_Medullo **Breast** 60 h.FGFR2\_BICC1 Urothelial.1 events S.SBS32 G.CNS\_PiloAstro.4 S.SBS30 S.SBS12 rmd.HeadAndNeck\_sigs.ID4 rmd.CNS\_Medullo Liver.1 .IDH1.monoa 40 SBS14 SBS84 SID2 load.indel 20 0 CNS\_PiloAstro Colorectum Gastric Gastrointestinal\_NET HeadAndNeck\_Other stinal NE 60 VUP\_[1e+06,1e+07) CNS\_PiloAstro.3 CNS\_PiloAstro.2 KIAA1549\_BRAF sigs.BS8 sigs.ID10 mut\_load.dbs chrom\_arm.loss.18q sigs.ID8 sigs.SBS5 rmd.Pancreas\_NET.1 1e+03,1e+04 s.SBS32 d.CNS\_PiloAstro.1 s.SBS87 s.SBS10 40 20 0 Kidney\_ClearCell HeadAndNeck\_SG Kidney\_Chromophobe Kidney\_Papillary Liver rmd.Kidney\_Chromophob 60 md.Kidney\_ClearCell. sigs.DBS9 chrom\_arm.gain.16q chrom\_arm.gain.16p sigs.1D11 Kidney\_Papillary. n.LIFR\_PLAG1 40 Feature importance (mean decrease in accuracy) 20 Lymphoid Lung\_NSC Lung\_SC Mesothelium Myeloid sigs.DBS4 mut\_load.snv sv.DEL\_[1e+04,1e+05) mut\_load.indel 60 BS16 |\_\_[1e+03,1e+04) |P\_[1e+04,1e+05) |BS2 B.NF2.biall |EL\_[1e+03,1e+04) |SBS21 elGLL5.deep\_del e.TNFRSF14.biall s.SBS8 e.NF2.deep\_del S.SBS6 S.SBS40 S.SBS16 e.BAP1.deep\_del SBS4 CNS\_PiloAstro.4 CNS\_Medullo.1 DBS2 SBS39 mut\_load.indel gene.SOCS1.biall gene.IGLL5.monoall ID14 CNS\_Glioma.1 rmd.Skin\_Other.1 gene.RB1.biall rmd.Lung\_NSC.1 40 e.IGLL5.bial load.dbs 3BS26 3BS89 3BS16 3BS18 ₽ Ovary Pancreas\_NET Prostate Sarcoma\_GIST **Pancreas** 60 e.CDKN2A.deep\_del APRSS2\_ERG m\_arm.loss.15q )EL\_[1e+04,1e+05) |ID11 omplex.n\_events .PTEN.deep\_del .D5 \_[1e+05,1e+06) rmd.Pancreas\_NET.1 Sarcoma\_GIST.1 KIT.monoall oad.indel 40 gene.CDKN2A.d gene.KRAS.biall ene.MEN1.biall SS12 ad.indel load.snv 20 0 Skin\_Melanoma Skin\_Other Sarcoma\_Leiomyo Sarcoma\_Lipo Sarcoma\_Other 60 nplex.largest\_cluste DK4.amp sv.DEL\_[1e+03,1e+04) sv.DEL\_[1e+04,1e+05) chrom\_arm.gain.6p LINEs Jon.CRTC1\_MAML2 coma\_Other.1 omplex.n\_events DBS2 Sarcoma\_Other. rmd.Sarcoma\_Lipo.1 NS\_Glioma.1 BS17 sigs.ID13 gene.SMO.monoall gender.gender CNS\_Glioma.1 DBS11 SBS12 SBS39 .SS18\_SSX1 nd.HeadAndNeck\_ gs.DBS1 CNS\_Glioma.1 rmd.Skin\_Other.1 40 load.dbs 20 0 15 5 15 10 10 Ö 0 Uterus Thyroid Urothelial 60 sv.DUP\_[1e+04,1e+05) [1e+05,1e+06) 40 sigs.DBS11 sigs.SBS16 sigs.SBS26 SBS16 20 0 15 15 10 5 15 10 Ö Ö 10 Rank



