ESTROGEN SIGNALING PATHWAY Ovarian steroidogenesis Nuclear-initiated steroid signaling E2 DNA **P**O Memb rane-initiated steroid signaling ER /+p -F2 K04246 DNA **►**O K04632 K08550.. Gα K04379... K08523 (Pro-) DNA **►**O cAMP K08523 MAPK signaling pathway (Cardiomyocyte, neuron) Cell survival GABAergic synapse GABA (Proopiomelanocortin neuron) Increase of neuronal firing Target genes: Cell cycle regulators Pro-apoptotic proteins Cell adhesion molecules K04215 βEnd Components of the membrane DNA and cytoplasmic signaling cascade ÇO. ER DAG ► mER IP3 Ca²⁺ Memb rane-initiated steroid signaling Calcium signaling pathway PI3K-Akt signaling pathway →(Cardiomyocyte) Cell survīval SNO E2 ○**©**≟ DNA (Vascular smooth muscle) Relaxation V ascular smooth muscle contraction DNA **►O** K02833... 04915 2/6/15 (c) Kanehisa Laboratories