

**Supplementary Table 1:** Examples of signaling pathway module hierarchies in the SPP knowledgebase

Signaling Pathway Module				Bioactive small molecule (BSM)			
Category	Class	Family	Node	Ligand	Drug	Synthetic organic	Natural substance
Receptors	G protein-coupled	Adrenoreceptors	ADRB1	EPI	ISOPREN	-	-
	Catalytic	EGF receptors	EGFR	EGF	GEFIT	WZ002	-
	Nuclear	PPARs	PPARG	LINO	ROSI	GW544	
Enzymes	Deacetylases	Histone deacetylases	HDAC3		VORIN		BUTYR
		Kinases	Abl family kinases	ABL1	-	IMAT	ZINC498
	Cyclases	Adenylyl cyclases	ADCY3	-	-		FORSK
Transcription Factors	Basic leucine zipper Forkhead/winged helix	CREB-like factors	CREB1				
		FOXM	FOXM1		-		THSP
Co-nodes	Heat shock proteins	HSP 90 proteins	HSP90AA1				GEDUN