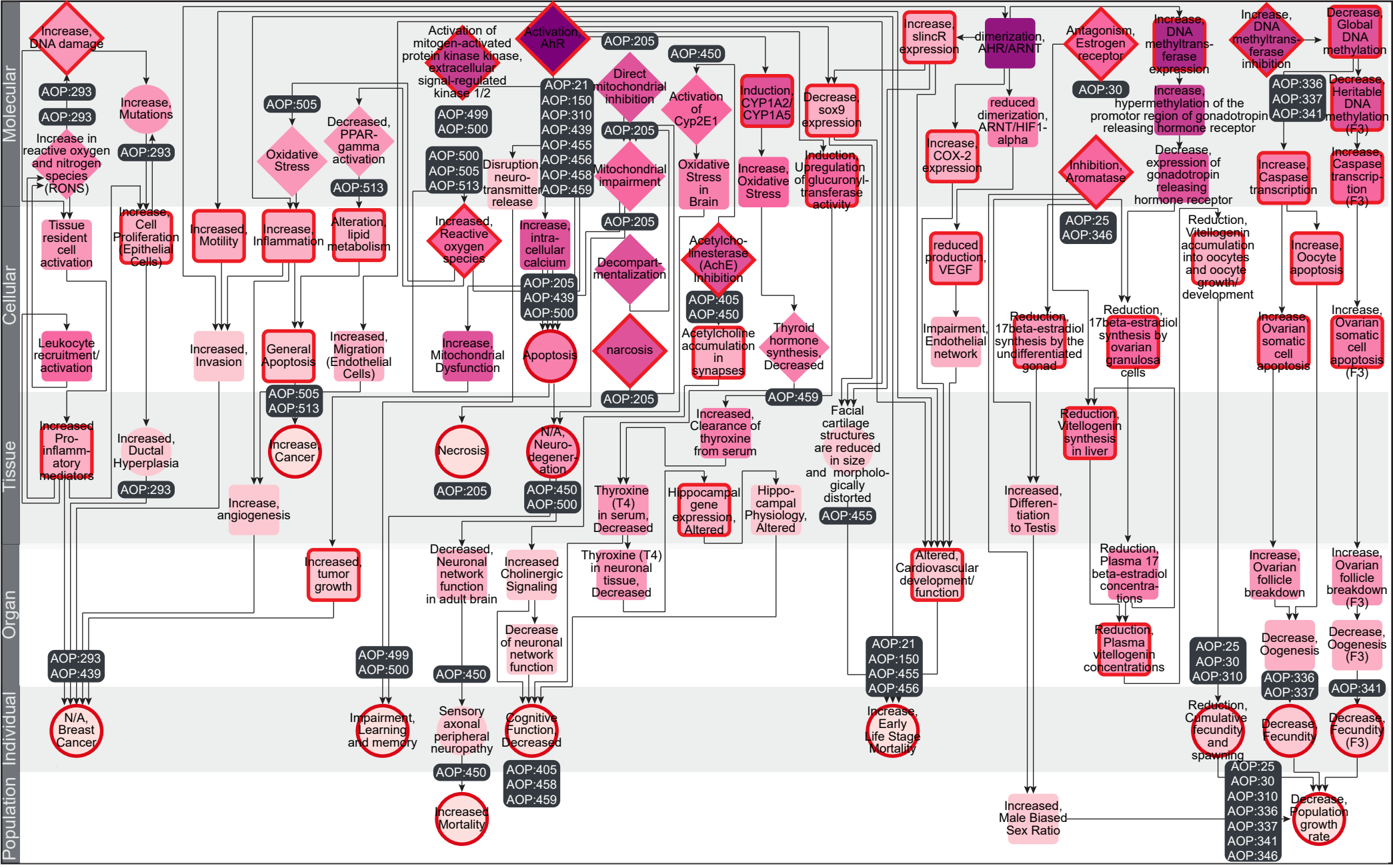
Molecular
Cellular
Tissue
Organ
Individual
Population
Increase, DNA damage
AOP:293
AOP:293
Increase in reactive oxygen and nitrogen species (RONS)
Increase, Mutations
AOP:293
Activation of mitogen-activated protein kinase kinase, extracellular signal-regulated kinase 1/2
AOP:499
AOP:500
Activation, AhR
AOP:21
AOP:150
AOP:310
AOP:439
AOP:455
AOP:456
AOP:458
AOP:459
AOP:205
Direct mitochondrial inhibition
AOP:205
Mitochondrial impairment
AOP:205
AOP:450
Activation of Cyp2E1
Oxidative Stress in Brain
Induction, CYP1A2/ CYP1A5
Increase, Oxidative Stress
Decrease, sox9 expression
Induction, Upregulation of glucuronyl-transferase activity
Increase, slincR expression
dimerization, AHR/ARNT
reduced dimerization, ARNT/HIF1-alpha
Increase, COX-2 expression
Antagonism, Estrogen receptor
AOP:30
Increase, DNA methyltrans-ferase expression
Increase, hypermethylation of the promotor region of gonadotropin releasing hormone receptor
Decrease, expression of gonadotropin releasing hormone receptor
Inhibition, Aromatase
AOP:25
AOP:346
Increase, DNA methyltrans-ferase inhibition
Decrease, Global DNA methylation
AOP:336
AOP:337
AOP:341
Decrease, Heritable DNA methylation (F3)
Increase, Caspase transcription
Increase, Caspase transcription (F3)
AOP:505
Oxidative Stress
Decreased, PPAR-gamma activation
AOP:513
AOP:500
AOP:505
AOP:513
Disruption neuro-transmitter release
Tissue resident cell activation
Increase, Cell Proliferation (Epithelial Cells)
Increased, Motility
Increase, Inflammation
Alteration, lipid metabolism
Increased, Reactive oxygen species
Increase, intra-cellular calcium
AOP:205
AOP:439
AOP:500
Decompart-mentalization
Acetylcho-linesterase (AchE) Inhibition
AOP:405
AOP:450
Acetylcholine accumulation in synapses
Thyroid hormone synthesis, Decreased
AOP:459
reduced production, VEGF
Impairment, Endothelial network
Reduction, 17beta-estradiol synthesis by the undifferentiated gonad
Reduction, 17beta-estradiol synthesis by ovarian granulosa cells
Reduction, Vitellogenin accumulation into oocytes and oocyte growth/ development
Increase, Oocyte apoptosis
Increase, Ovarian somatic cell apoptosis
Increase, Ovarian somatic cell apoptosis (F3)
Leukocyte recruitment/ activation
Increased, Invasion
General Apoptosis
Increased, Migration (Endothelial Cells)
Increase, Mitochondrial Dysfunction
Apoptosis
narcosis
AOP:205
AOP:505
AOP:513
Increase, Cancer
Increased Pro-inflamm-atory mediators
Increased, Ductal Hyperplasia
AOP:293
Increase, angiogenesis
Necrosis
AOP:205
N/A, Neuro-degener-ation
AOP:450
AOP:500
Increased, Clearance of thyroxine from serum
Facial cartilage structures are reduced in size and morpholo-gically distorted
AOP:455
Thyroxine (T4) in serum, Decreased
Hippocampal gene expression, Altered
Hippo-campal Physiology, Altered
Reduction, Vitellogenin synthesis in liver
Increased, Differen-tiation to Testis
Increased, tumor growth
Decreased, Neuronal network function in adult brain
Increased Cholinergic Signaling
Thyroxine (T4) in neuronal tissue, Decreased
Decrease of neuronal network function
Altered, Cardiovascular development/ function
Reduction, Plasma 17 beta-estradiol concentra-tions
Reduction, Plasma vitellogenin concentrations
Increase, Ovarian follicle breakdown
Increase, Ovarian follicle breakdown (F3)
Decrease, Oogenesis
Decrease, Oogenesis (F3)
AOP:293
AOP:439
AOP:499
AOP:500
AOP:450
AOP:21
AOP:150
AOP:455
AOP:456
AOP:25
AOP:30
AOP:310
AOP:336
AOP:337
AOP:341
N/A, Breast Cancer
Impairment, Learning and memory
Sensory axonal peripheral neuropathy
Cognitive Function, Decreased
Increase, Early Life Stage Mortality
Reduction, Cumulative fecundity and spawning
Decrease, Fecundity
Decrease, Fecundity (F3)
AOP:450
AOP:405
AOP:458
AOP:459
Increased Mortality
Increased, Male Biased Sex Ratio
AOP:25
AOP:30
AOP:310
AOP:336
AOP:337
AOP:341
AOP:346
Decrease, Population growth rate
Molecular Initiating Event (MIE)
Key Event (KE)
Adverse Outcome (AO)
Key events associated with Benzo[a]pyrene
0
12
Eccentricity