## Stress response Immune response ATH1 response to decreased oxygen levels cellular response to organic substance response to bacterium defense response to Gram-negative pacterium chromosome organization response to oxygen levels ATH2 de novo' protein folding response to external biotic stimulus immune system process cellular response to unfolded protein humoral immune response response to temperature stimulus response to abiotic stimulus defense response to Gram-positive bacterium cellular response to topologically incorrect protein chaperone-mediated protein folding defense response protein folding antimicrobial humoral response 'de novo' posttranslational protein folding response to biotic stimulus defense response to bacterium response to hypoxia immune response response to topologically incorrect protein defense response to other organism protein refolding response to other organism chaperone cofactor-dependent protein refolding antibacterial humoral response response to unfolded protein esponse to stress regulation of defense response group size enrichment score peptidoglycan recognition protein signaling pathway **-1** 0 100 150 **Metabolism Oogenesis** steroid metabolic process mitochondrial ATP synthesis coupled electron transport chorion-containing eggshell formation cellular hormone metabolic process ATH3 eggshell formation ATP synthesis coupled electron transport sterol metabolic process ecdysteroid metabolic process **4W** electron transport chain cellular ketone metabolic process organic acid catabolic process respiratory electron transport chain cellular respiration hormone metabolic process **Proteostasis** energy derivation by oxidation generation of precursor metabolites and energy of organic compounds carboxylic acid catabolic process protein metabolic process proteolysis nucleobase-containing small small molecule catabolic process ribosome biogenesis molecule metabolic process ATH4 small molecule metabolic process oxidation-reduction process lipid biosynthetic process Ageing transcriptional hallmarks - ATH (Frenk & Houseley, 2018) ATH1 ATH2 ATH3 ATH4 ATH5 ATH6 **4////** M

