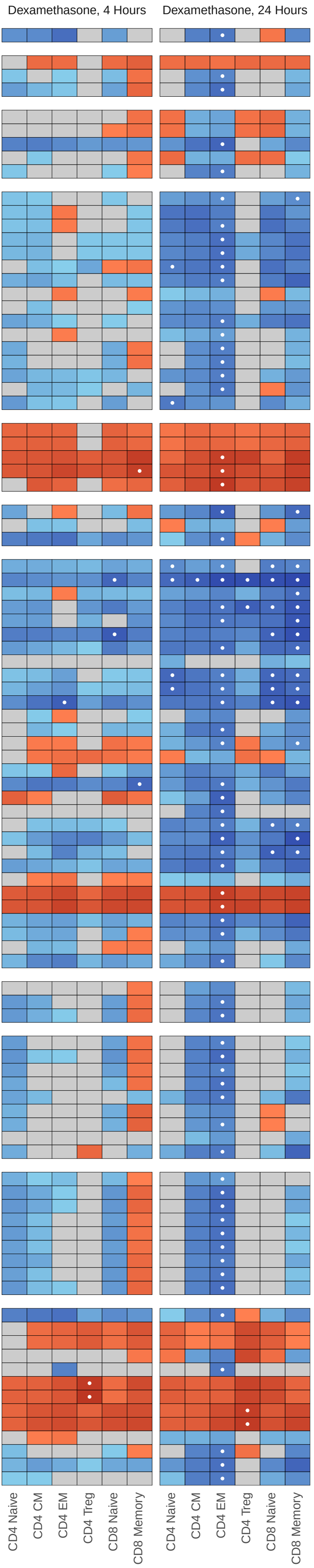

- Autophagy
  - Chaperone Mediated Autophagy
- Cellular responses to stimuli
  - Cellular responses to stress
    - Cellular response to starvation
      - Response of EIF2AK4 (GCN2) to amino acid deficiency
- Developmental Biology
  - Nervous system development
    - Axon guidance
      - NCAM signaling for neurite out−growth
      - Signaling by ROBO receptors
        - Regulation of expression of SLITs and ROBOs
- Disease
  - Diseases of signal transduction by growth factor receptors and second messengers
    - Signaling by FGFR in disease
      - Signaling by FGFR1 in disease
    - Signaling by KIT in disease
      - Signaling by phosphorylated juxtamembrane, extracellular and kinase domain KIT m
    - Signaling by PDGFR in disease
    - FLT3 signaling in disease
  - Infectious disease
    - Bacterial Infection Pathways
      - Infection with Mycobacterium tuberculosis
    - Viral Infection Pathways
      - Influenza Infection
        - Influenza Viral RNA Transcription and Replication
      - SARS−CoV Infections
        - Potential therapeutics for SARS
        - SARS−CoV−2 Infection
- Gene expression (Transcription)
  - RNA Polymerase II Transcription
    - Generic Transcription Pathway
      - Transcriptional Regulation by MECP2
        - MECP2 regulates neuronal receptors and channels
      - FOXO−mediated transcription
- Hemostasis
  - Cell surface interactions at the vascular wall
  - Platelet activation, signaling and aggregation
    - Platelet Aggregation (Plug Formation)
- Immune System
  - Adaptive Immune System
    - Immunoregulatory interactions between a Lymphoid and a non−Lymphoid cell
    - TCR signaling
      - Phosphorylation of CD3 and TCR zeta chains
      - Translocation of ZAP−70 to Immunological synapse
      - Generation of second messenger molecules
    - Costimulation by the CD28 family
    - Class I MHC mediated antigen processing & presentation
      - Antigen processing−Cross presentation
        - ER−Phagosome pathway
      - Antigen Presentation: Folding, assembly and peptide loading of class I MHC
    - Signaling by the B Cell Receptor (BCR)
      - Antigen activates B Cell Receptor (BCR) leading to generation of second messenge
  - Cytokine Signaling in Immune system
    - Signaling by Interleukins
      - Interleukin−2 family signaling
        - Interleukin−15 signaling
    - TNFR2 non−canonical NF−kB pathway
      - TNF receptor superfamily (TNFSF) members mediating non−canonical NF−kB pathway
    - Interferon Signaling
      - Interferon gamma signaling
      - Interferon alpha/beta signaling
    - Signaling by CSF1 (M−CSF) in myeloid cells
  - Innate Immune System
    - Nucleotide−binding domain, leucine rich repeat containing receptor (NLR) signali
      - Inflammasomes
    - DAP12 interactions
      - DAP12 signaling
    - Fc epsilon receptor (FCERI) signaling
      - FCERI mediated MAPK activation
- Metabolism
  - Metabolism of amino acids and derivatives
    - Selenoamino acid metabolism
      - Selenocysteine synthesis
- Metabolism of RNA
  - Nonsense−Mediated Decay (NMD)
    - Nonsense Mediated Decay (NMD) independent of the Exon Junction Complex (EJC)
    - Nonsense Mediated Decay (NMD) enhanced by the Exon Junction Complex (EJC)
  - rRNA processing
    - rRNA processing in the mitochondrion
    - rRNA processing in the nucleus and cytosol
      - Major pathway of rRNA processing in the nucleolus and cytosol
  - tRNA processing
    - tRNA processing in the mitochondrion
- Metabolism of proteins
  - Translation
    - Eukaryotic Translation Elongation
      - Peptide chain elongation
    - Eukaryotic Translation Initiation
      - L13a−mediated translational silencing of Ceruloplasmin expression
      - Cap−dependent Translation Initiation
        - Formation of a pool of free 40S subunits
        - GTP hydrolysis and joining of the 60S ribosomal subunit
    - Eukaryotic Translation Termination
- Signal Transduction
  - Integrin signaling
  - Signaling by GPCR
    - GPCR downstream signalling
      - G alpha (q) signalling events
        - Gastrin−CREB signalling pathway via PKC and MAPK
    - GPCR ligand binding
      - Class A/1 (Rhodopsin−like receptors)
  - Signaling by Nuclear Receptors
    - ESR−mediated signaling
  - Signaling by Receptor Tyrosine Kinases
    - Signaling by ERBB2
    - Signaling by SCF−KIT
    - Signaling by EGFR