A. Training the neural network

Genes | True labels
Voxels
Mouse voxel data

Input | Hidden layers | Output

Untrained network

$L\left(\quad , \quad \right)$

True labels | Predicted labels

Objective function
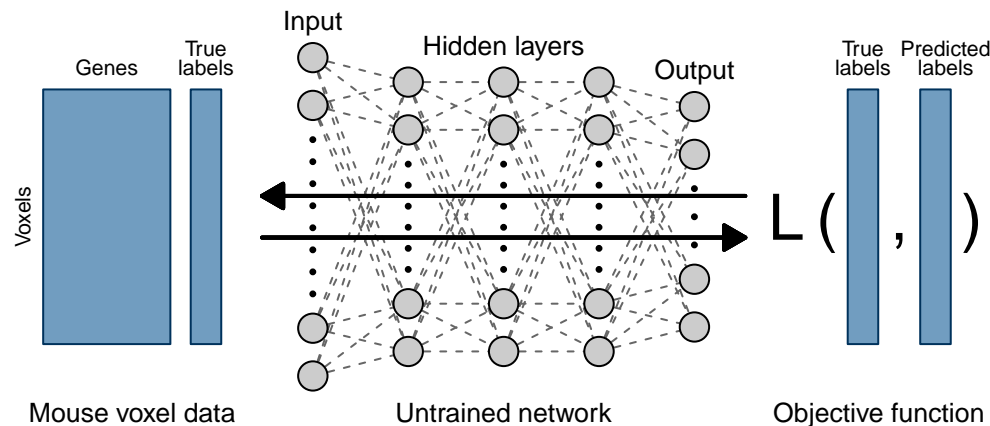
B. Transforming the gene expression matrices

Genes
Regions
Mouse data

Genes
Regions
Human data

Initial space

Input | Hidden layers | Output

Trained network

Hidden units
Regions

Hidden units
Regions
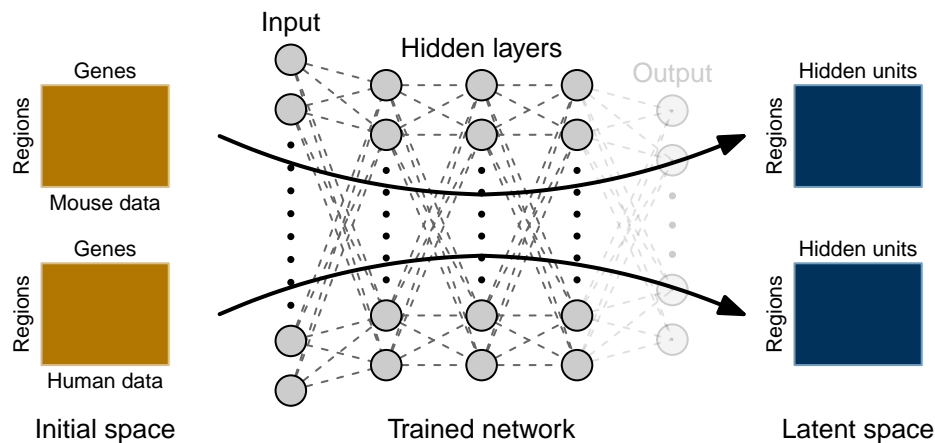
Latent space

C. Average latent space grey matter similarity

Mouse regions

CTXsp | OLF | HPF | Isocortex | CNU | MB | MY | CBN
| | | | IB | P | CBX |

Human regions: Cl, LL, FL, Ins, OL, PL, TL, Amg, BG, BF, DiE, MES, Pons, MY, CbCx, CbN

Correlation: −0.2 | 0 | 0.2 | 0.4 | 0.6 | 0.8 | 1