Metabolic Connectome Construction

5 MRSI Volumes
[NAA,Cr,GLX,Cho,Ins]

Anatomical T1w

a1 **a2**

b1 **b2**

Chimera volume parcellation
(n parcels)

Metabolic profile at parcel i
(z-score)

$$\mathbf{z}_i = \begin{pmatrix} \overline{\text{tNAA}} \\ \overline{\text{tCr}} \\ \overline{\text{Glx}} \\ \overline{\text{Cho}} \\ \overline{\text{Ins}} \end{pmatrix}_i$$

Metabolic profile at parcel j
(z-score)

$$\begin{pmatrix} \overline{\text{tNAA}} \\ \overline{\text{tCr}} \\ \overline{\text{Glx}} \\ \overline{\text{Cho}} \\ \overline{\text{Ins}} \end{pmatrix}_j = \mathbf{z}_j$$

c

Pairwise correlation between
regional metabolic profiles

Within-subject metabolic
similarity matrix

parcel j
parcel i
$\text{corr}(\mathbf{z_i}, \mathbf{z_j})$

d

parcel k
parcel i
$\text{corr}(\mathbf{z_i}, \mathbf{z_k})$

RH
LH } Cortex

RH
LH } Subcortex

Cerebellum

-1   -0.5   0   0.5   1
Correlation Strength