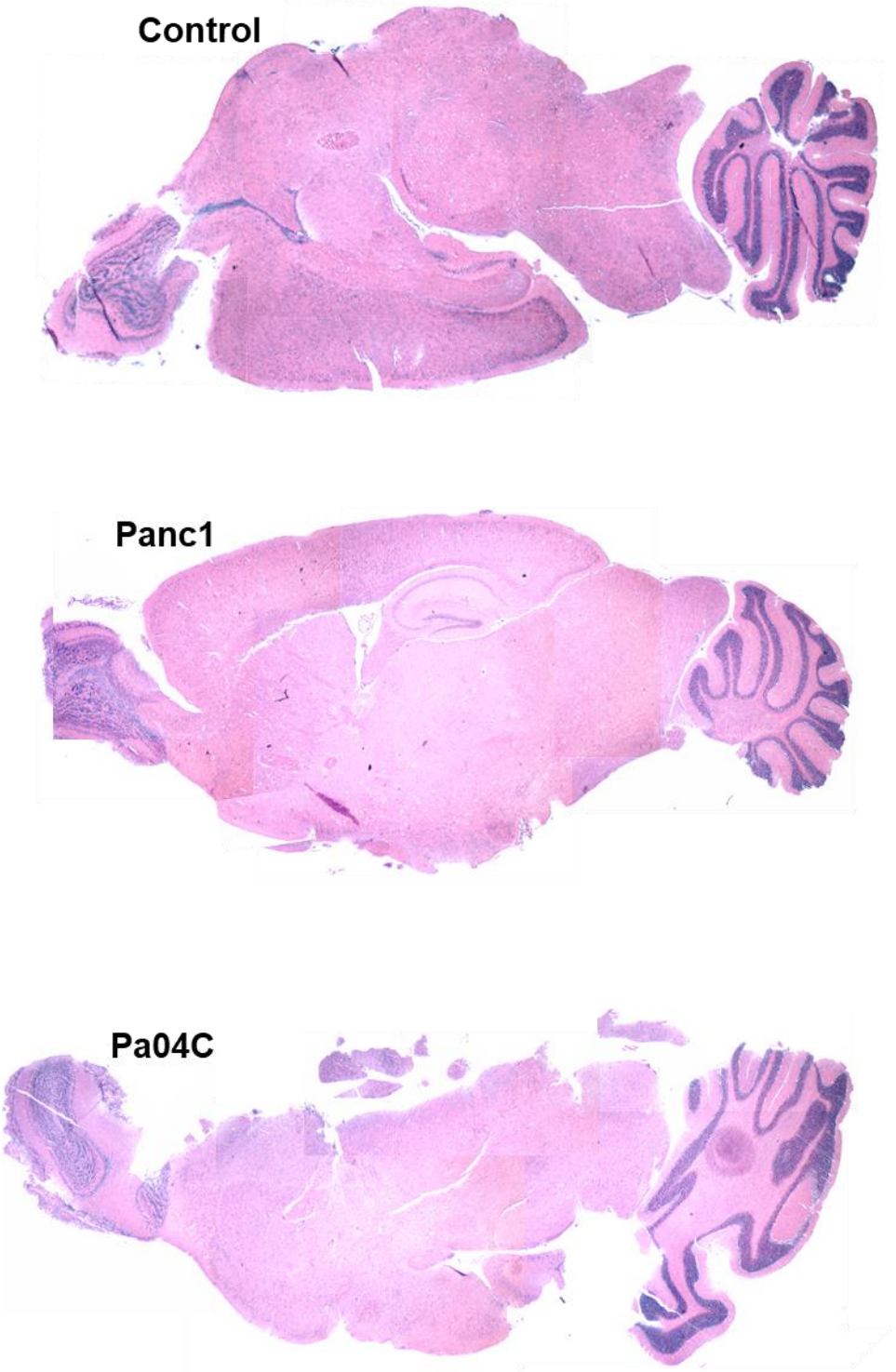
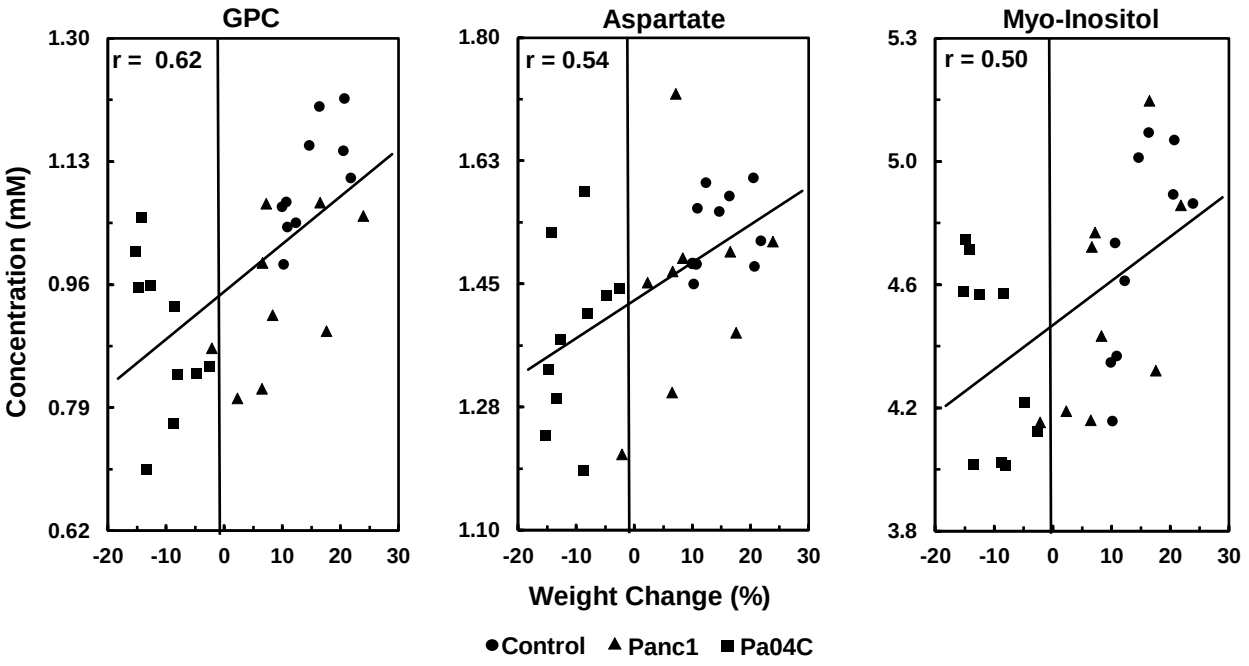
Supplemental Figure 1



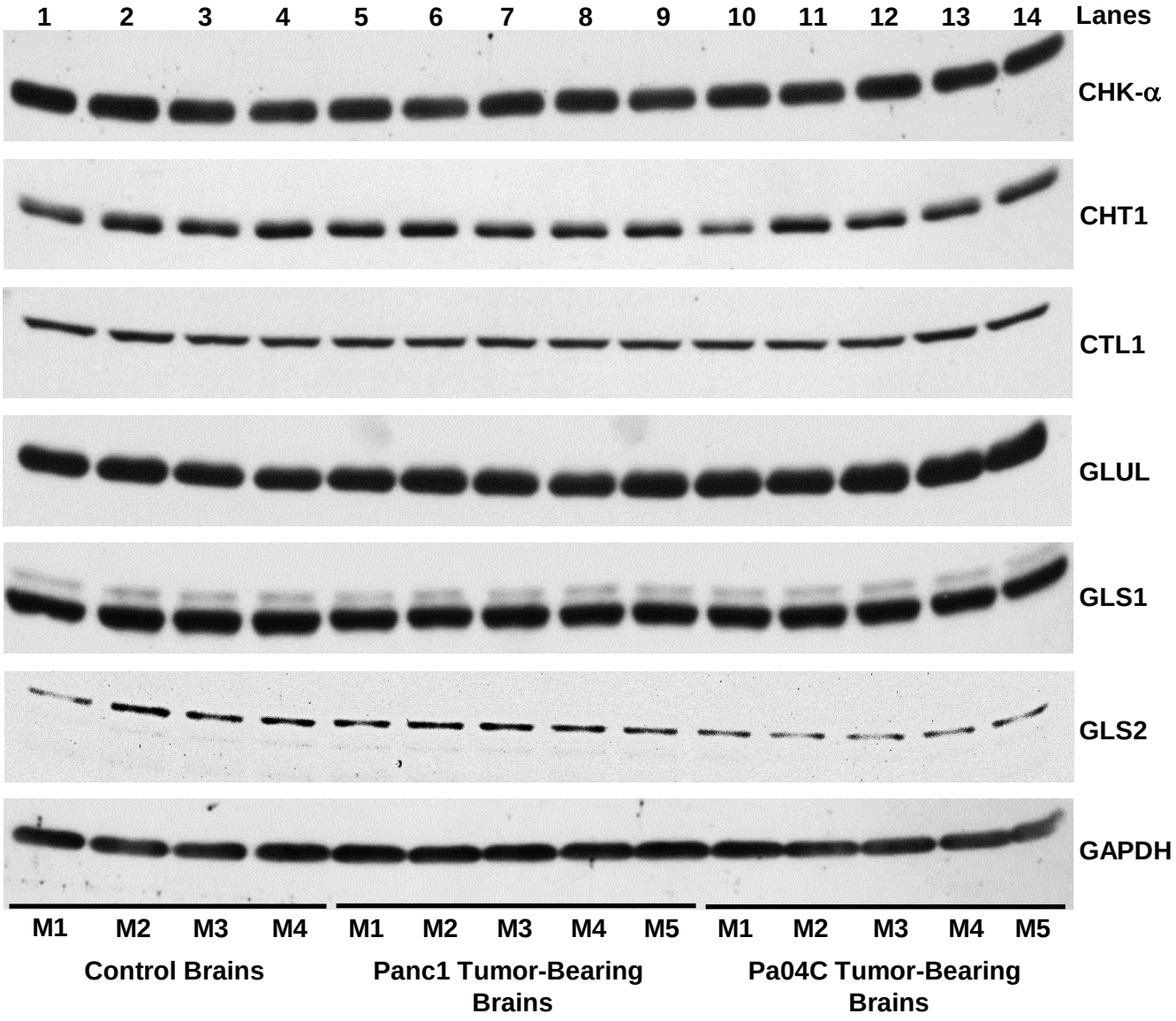
Supplemental Figure 1. Representative H & E staining of sagittal sections of whole brains from control, Panc1 tumor-bearing weight gaining, & Pa04C tumor-bearing weight losing (cachetic) mice. No evidence of metastatic brain lesions was observed in tumor-bearing animals.

Supplemental Figure 2



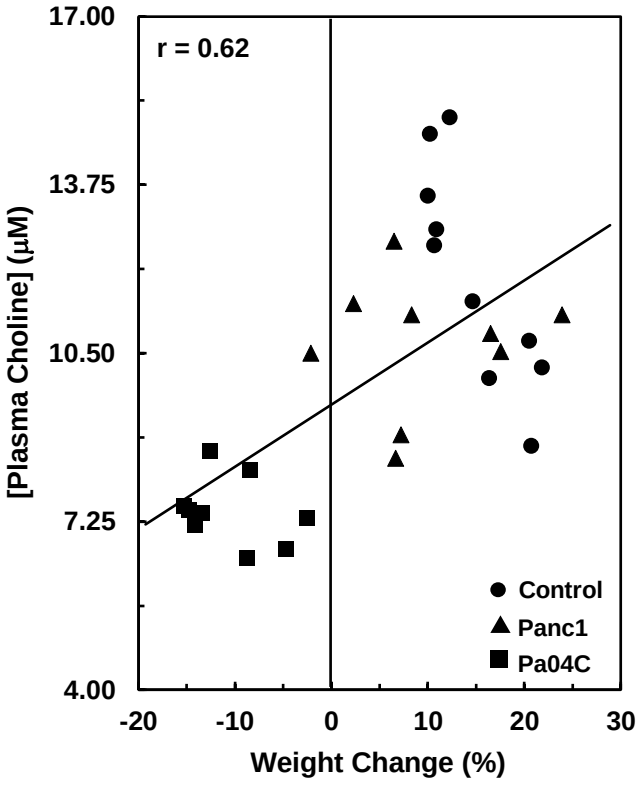
Supplemental Figure 2. Linear regression analyses with Pearson correlation coefficients (r) for concentrations of glycerol-phosphocholine (GPC; $p = 0.0004$), aspartate ($p = 0.003$), and myo-inositol ($p = 0.005$) in relation to percent weight change of mice in the Control, Panc1, and Pa04C groups.

Supplemental Figure 3



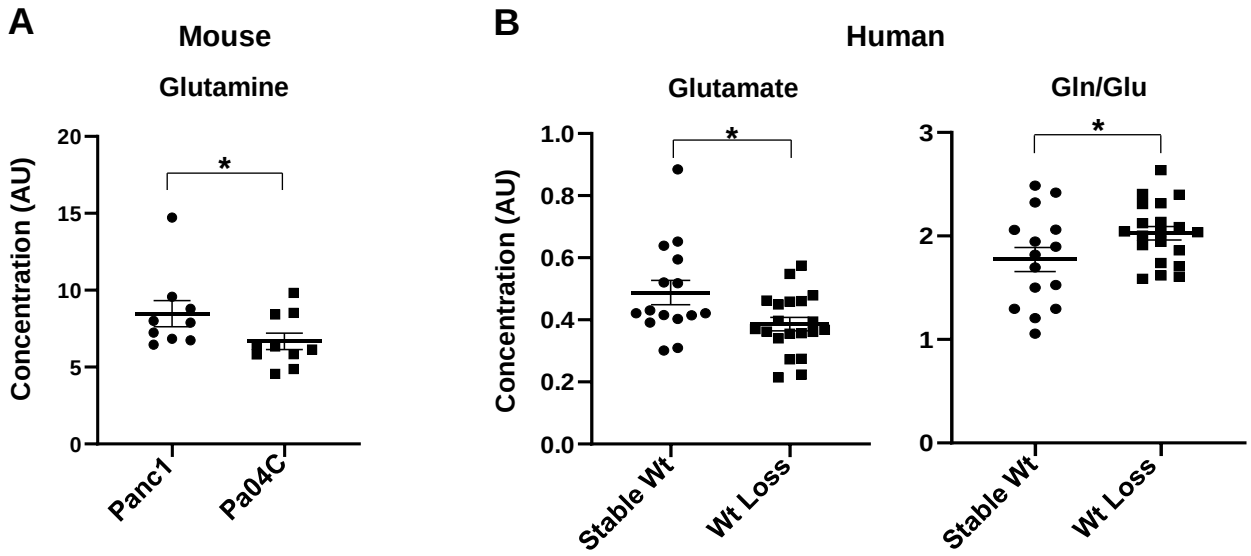
Supplemental Figure 3. Immunoblot analyses of selected enzymes and transporters involved with choline and glutamine metabolism in mouse brain samples. Proteins scored for were: Choline Kinase-α (CHK-α), Choline Transporter-1 (CHT1), Choline Transporter-like-1 (CTL1), Glutamine Synthetase (GLUL), Glutaminase-1 (GLS1), and Glutaminase-2 (GLS2). GAPDH was used as a loading control. Proteins were isolated from normal Control mouse brains (lanes1-4), non-cachectic Panc1 tumor-bearing mouse brains (lanes 5-9), and cachectic Pa04C tumor-bearing mouse brains (lanes 10-14).

Supplemental Figure 4



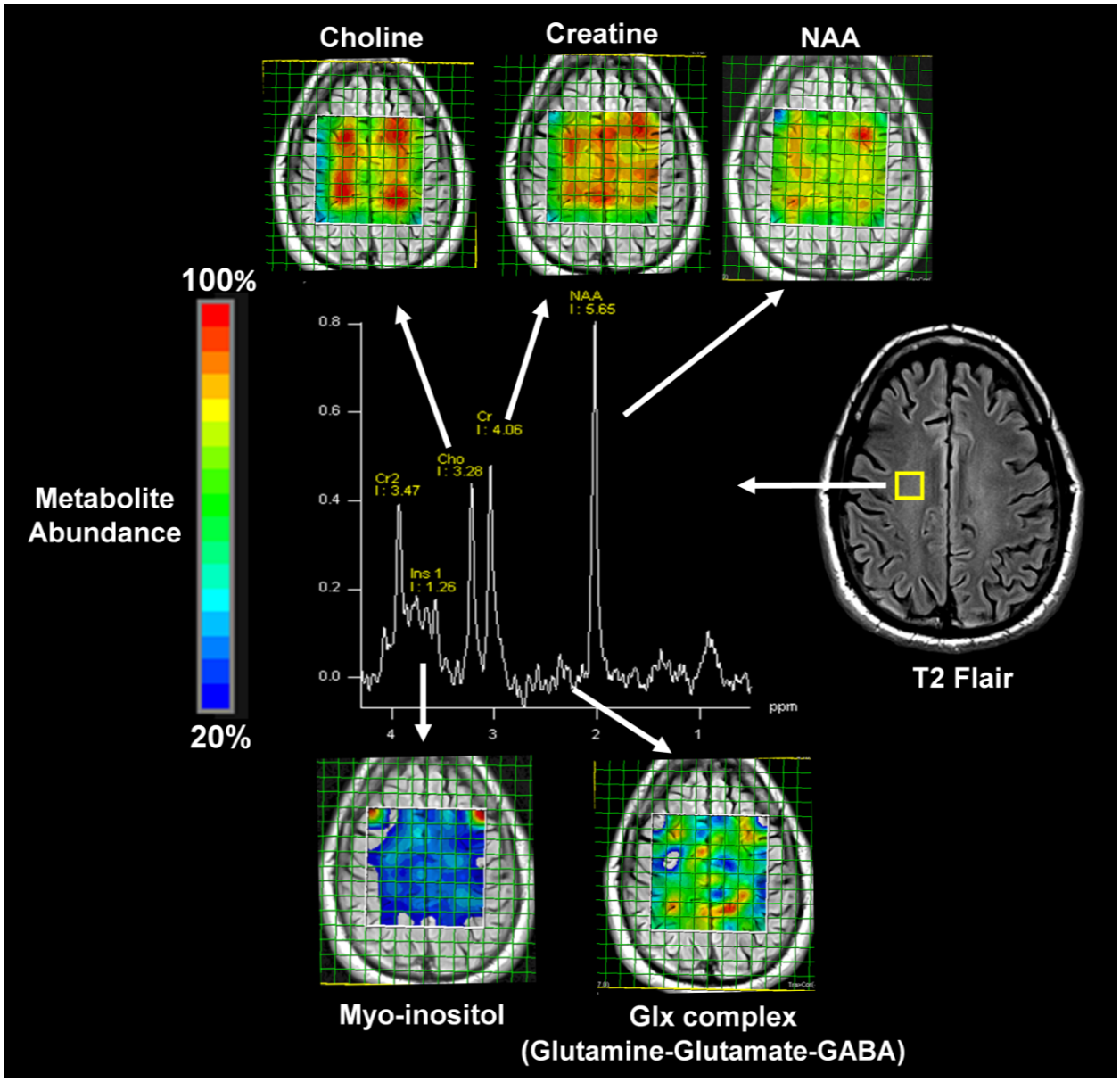
Supplemental Figure 4. A linear regression analysis between plasma choline concentrations and percent weight change (p = 0.0005).

Supplemental Figure 5



Supplemental Figure 5. (A) Glutamine in mouse plasma from Panc1 tumor bearing mice with no weight loss and from Pa04C tumor bearing mice with weight loss. Significant concentration differences were observed between the two groups. (B) Glutamate (left) and the glutamine/glutamate (Gln/Glu) ratio (right) in human plasma from PDAC patients with stable weight or with weight loss. The significant decrease of glutamate contributed to a significant increase of Gln/Glu in PDAC patients with weight loss. * $p < 0.05$.

Supplemental Figure 6



Supplemental Figure 6. Representative proton MR spectroscopic imaging (MRSI) using a short TE (20ms) in a healthy control subject. The MRSI grids are positioned over the mid-brain (centrium semiovale) in deep white matter. The quantitative MRSI provides a distinct resolution of metabolites: N-acetylaspartate (NAA-2.02 ppm), creatine (Cr--3.0 ppm), choline (Cho-3.2 ppm), myo-inositol (Ins-3.5-4.0 ppm), and the "GIx" amino acids glutamate (Glu) and glutamine (Gln). The metabolite image values are listed as a percentage of the maximum metabolite intensity.