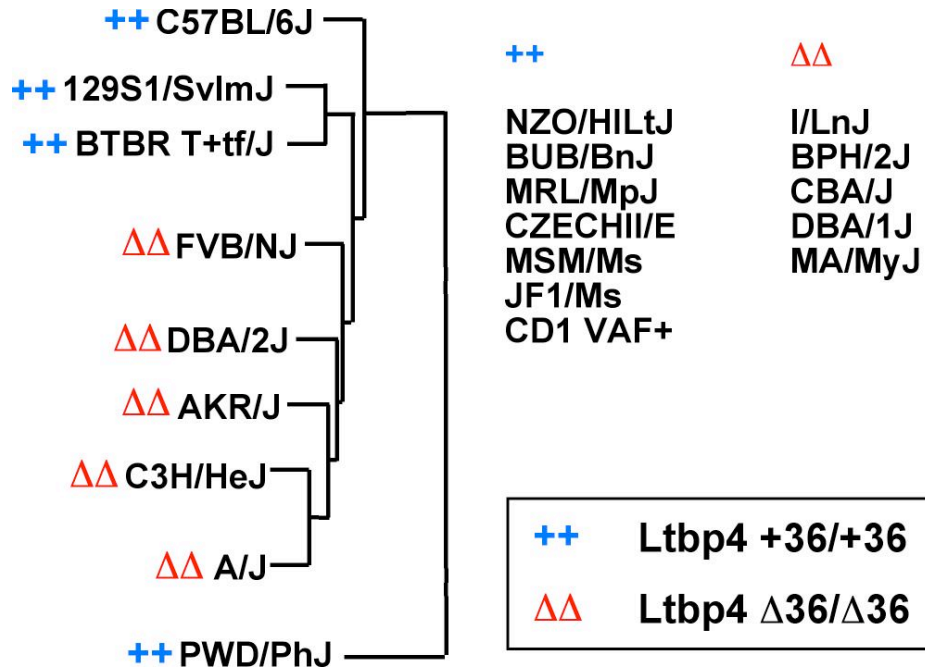


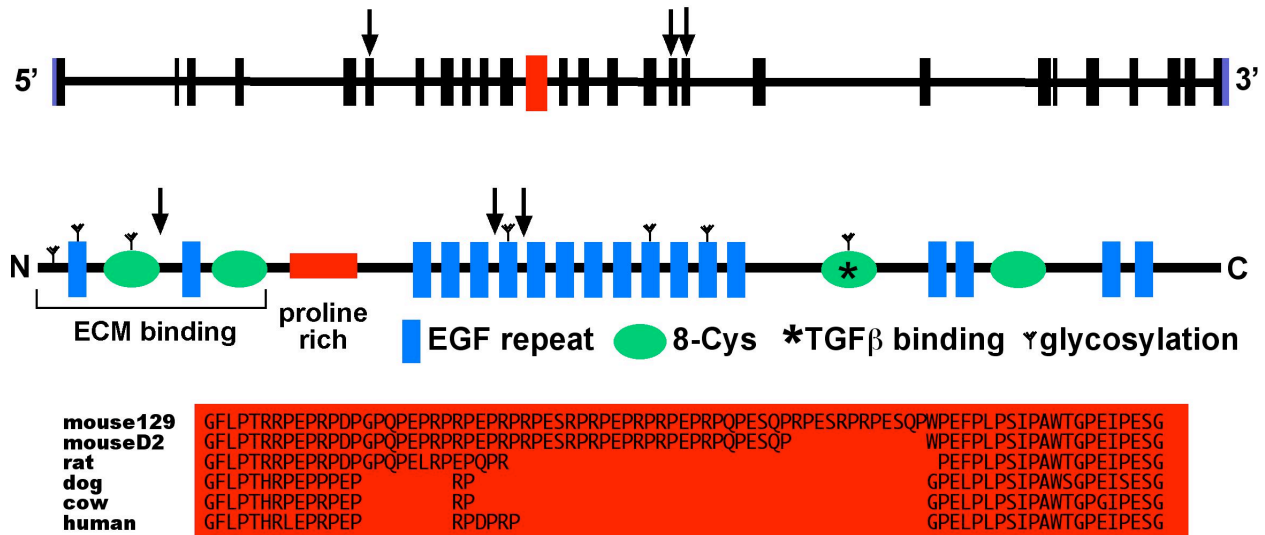
## Supplemental Information

### Supplemental Figure 1



Supplemental Fig. 1. Multiple murine strains were tested for the presence of the *Ltbp4*<sup>+36/+36</sup> deletion. The relationship between mouse strains was derived from data where over 8 X 10<sup>6</sup> SNPs were compared among strains (31). The *Ltbp4* insertion/deletion allele was found within a subset of common mouse strains. The *Ltbp4* genotype, with respect to the Δ36 allele, is listed for other strains that were not included in study of Frazer *et al.*

Supplemental Figure 2



Supplemental Fig. 2. Comparison of the proline rich region of LTBP4 in multiple species. Along the top is the gene structure for *LTBP4*. Exon 12 (red) encodes the proline rich region (red) and in the red box at the bottom. In larger mammals such as humans and dogs, the proline rich region is comparatively smaller than in mice. The box represents the entire exon. The arrows indicate positioning of three protein coding, nonsynonymous SNPs that were associated with improved exercise phenotypes in patients with lung disease. These SNPs showed highly significant correlation with improved maximum work, elevated exercise capacity, and a greater six minute walk distance (34) consistent with a role for LTBP4 in mediating muscle function.

**Supplemental Table 1. Nonsynonymous SNPs between D2 and 129.**

<b>Genes</b>	<b>SNPs</b>
Immunity related GTPase family	P147L
Glycogen synthase kinase	P72L
	H89Y
	H91R
CEA related cell adhesion molecule 2	S170R
	T99A
Cytochrome P450 family 2 subfamily 4	S128R
	T132A
	E466A
Cyp2a21-ps	P15S
AarF domain containing kinase	R288C
Ltp4	I1630V
Periaxin	H68R
	K438T
Mitogen activated protein kinase kinase kinase	M672L
Interleukin 28A	N187S
Ryanodine receptor 1	Q2028R
Ras guanyl releasing protein 4	E467G
Proteosome 26s subunit	N44S
Zinc finger protein 30	Q92R
	K118E
	Y142F
	K154R
	N230S
Zinc finger protein 27	S816L
	K121M
Zinc finger protein 568	A18V
	T27S
	R237C

Shown are the 29 nonsynonymous SNPs between the 129S1/SvINJ and DBA/2J strains for the region spanning 25.28 MB to 30.80 MB (Build 37, Mouse Phenome, <http://phenome.jax.org/pub/cgi/phenome/mpdcgi?rtn=strains/>). An additional 17 nonsynonymous SNPs in unknown or hypothetical proteins have not been included. There is a nonsynonymous SNP in the ryanodine receptor of interest, however, this SNP differs between C57Bl6/J and 129SvJ and there is no phenotypic difference in the muscle pathology between these two strains carrying the *Sgcg null* allele (7).