397 pain genes (of 580) map to 901 unique Mouse Orthologs [Entrez ids] 399 pain genes (of 580) map 10136 unique mouse to 775 unique Human ortholg [Entrez ids] Orthologs [Entrez ids] 8969 unique human 6538 unique CGID's have ortholog [Entrez ids] ortholog information 6489 unique CGID's have 8945 Tranformant **Human Orthologs Information ID** have Mouse Ortholog Information 8977 Transformant ID have **Human Ortholog Information** 16052 Unique Tranformant IDs **48 KEGG** HUMAN are Combined significant **399 PAIN** @ **90**% human and Mapped to hits probability 209 HUMAN mouse c2 1183 KEGG gene sets. unique pathways 192 HUMAN Grouped **Binding** Orthologs into 33 **Partners 398** gene Mapped to Found functional setsare **1892** Broad have significant C2 Gene Sets categories **HUMAN** @ 99% Ortholog probability Mapped to 146 580 PAIN hits + 377 Drosophila KEGG **Binding Partners** V **Pathways** Combined 417 gene significant setsare significant **KEGG** 397 **PAIN** @99% pathways Mapped to probability hits from **1892** Broad 1307 C2 Gene Sets drosophila, unique MOUSE 192 human and Binding Orthologs mouse to Mapped to 202 57 KEGG Found **Partners** generate **MOUSE KEGG** are have Pain pathways significant MOUSE @ 90% "Systems" Ortholog probability map MOUSE

Figure S1