ADAMTSL2 – ECM protein well known to be involved in heart failure – increased in fibroblasts in heart failure and thought to inhibit pro-fibrotic TGFb signaling. Other ADAMTS ECM proteins also play roles in heart failure

ADRB1 - This is the B1 receptor. Very interesting, since we don’t BB in HFpEF. ADRB1 is lower in patients with earlier relapses, though I think norepi levels increase in HFpEF.

ASB10 – a ubiquitin E3 ligase. Don’t know too much about this (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8594701/>)

BMP6 – Part of TGFb superfamily. In our data, most expressed by endothelial cells, and higher in heart failure. There are several studies linking heart failure with higher levels (<https://pubmed.ncbi.nlm.nih.gov/27592865/>). Knockdown results in more fibrosis.

CA4 – a carbonic anhydrase. Interestingly, I might have expected levels to be higher in worse heart failure, but it’s the opposite in our data. Seems discordant with (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3570296/>).

CCND1 – cylcin D1, clearly plays a role in cardiac hypertrophy

CFH – complement factor H, may play a role in complement inhibition in atherogenesis – polymorphisms are associated with ischemic disease. Some studies suggest connection with heart failure, but others don’t

DNAJB9 – ER stress gene; more involved in kidney function. I found one study implicating the role in post-infarct angiogenesis (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10276151/>)

ECI1 – involved in beta oxidation

EGFLAM – why is this gene also called pikachurin. It is also called agrin-like; expressed highly in pericytes in cardiomyopathy

ETV1 – plays a role in electrical signaling in the heart (<https://pubmed.ncbi.nlm.nih.gov/33225722/>), though interestingly it is decreased in pressure overload models

ETV5 – regulates fatty acid metabolism

HADHB – part of the mitochondrial trifunctional protein, which plays a role in beta-oxidation. Mutations are associated with cardiomyopathy. Levels in our study are low, as are levels of ECI1, which I think might be consistent with a more glycolytic phenotype.

ID4 – I know more about this gene in heart development; not sure of its role in adult disease

KATNAL1 – involved in microtubule severing

L3HYPDH – some proline dehydratase

LINC01186 – mediator of TGFb signaling, cell cycle inhibitor, regulates EMT

LRRC14B – may play some role in dilated cardiomyopathy (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9387871/>)

MAP3K14 – honestly I haven’t found much cardiac role except for in this paper in post-MI (<https://www.nature.com/articles/s41392-022-01055-2>)

MAPK4 – classic mitogenic activated protein kinase with numerous known roles in cancer; a bit atypical involvement in the heart

METRNL – secreted neurotrophic factor; multiple studies have suggested it protects against cardiac hypertrophy and heart failure (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7923691/>); possibly a cardiac biomarker in heart failure

MICALL2 – I haven’t found anything interesting about this gene

MTMR11 – microtubularin related protein; this family has been implicated in cardiac disease but I don’t see too much for this particular member (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10961392/>); I did find it in this study (<https://www.ahajournals.org/doi/full/10.1161/ATVBAHA.115.306725>)

NPR3 – natriuretic peptide receptor

NREP – a neuronal regeneration gene, but also involved in TGFb signaling; I don’t see too much about its cardiac role though

NUDT16 – something about DNA damage protection

PC – pyruvate carboxylase; obviously plays role in cardiac metabolics

PHLPP2 – upregulated by hypoxia in cardiomyocytes (<https://www.sciencedirect.com/science/article/abs/pii/S0009279719312013>); part of damage response

PRUNE2 – maybe implicated in cardiac energetics (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3669334/>); otherwise involved in cancer

SCYL2 – involved in ER vesicle transport; haven’t found any link to the heart, and it seems pretty ubiquitously expressed across cell-types in our data

SRCIN1 – SRC kinase inhibitor; again, no real clear cardiac role

STXBP6 - cahderin-binding protein involved in cell-cell adhesion; only found it mentioned in one cardiac study post MI <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5863072/>

VANGL2 – oh gosh I studied this gene in grad school for its in migration of SHF cells. Interacts with WNT signaling. I didn’t know it had a clear role in adult disease.