**Translational Article Review**

Objectives/Introduction

* Clearly identified the gap and the importance of their research in that gap
* Things were clearly explained so that someone without a lot of background in this field could easily understand
* One thing that could be improved could be a little more detail regarding the objectives, they mentioned them but didn’t thoroughly explain the details.

Methodology

* The study design included male testing only and they justified this because of hormones could be a confounding variable but that doesn’t make the most sense as most patients are female
* The didn’t include other dietary variables
* The were very objective with the measures but could have included more subjective markers of physical fitness
* Could have included the increased quality of life as a consideration between the human and rat studies
* There was no mention in the methods regarding the appendix experiments which come up in the results section
* It was very difficult to know the sample size for each experiment, you had to go through each figure legend and determine the numbers figure by figure
* Fundamental problem is that they used male rats and then compared to results in female patients; why not start with female rats from the beginning if you know that was the end goal to compare to female patients
* Confounding Variable: something that influences both your intervention as well as your outcome
  + To deal with confounding variables you can either remove it completely from your study or you can include it and stratify your results accordingly (test in both male and female rats)
* The genetic rat model has been engineered to represent a human undergoing heart failure

Results

* Good logical flow going section by section and is easy to follow from one experiment to another; makes is convincing that they have done all the work as they transition from drug treatment, to exercise, to exercise plus caloric restriction.
* The figures got dense and sometimes hard to follow. Lots of bar graph that make it hard to understand what they are trying to communicate. Volcano plot was very hard to understand and didn’t convey the message to the reader easily.
* This paper has multiple experiments that they are bringing to together for the purpose of being translational
  + The first set of results is the use of the pharmacological drugs that they use to determine if that can show the desired result in cardiac function; they know these drugs don’t work in patients, but they want to show why in the rat model
  + The second set of results is the use of interventions that they would use in humans such as exercise and they demonstrate that it kind of helps but not totally for these kinds of patients
  + The third and final set of results is their introduction of the positive results using caloric restriction and exercise. It goes beyond the exercise, and they diet to the molecular levels to try to determine a mechanism for what is affecting the grow of the muscle cells

Discussions/Conclusions

* Overall, the discussion provided some valid conclusions and that they made an effort to contextualize their results by comparing to different approaches and comparing to existing literature
* They included an in-depth section regarding the limitations of study; acknowledged that this cannot be directly/immediately compared to humans
* Concerns regarding the translatability of the study due to the sex difference between the rats and the patient population when 55% of patients are female
* Overall, it was relatively well done; they did a lot of explanations in the results section, so the discussion is quite brief
* The conclusions section itself was very short; one sentence which was also very broad
* Stated that based on their findings caloric restriction is a valid method to help heart failure but that statement isn’t entirely correct as more work needs to be done before this information could be used to conduct a clinical trial
  + This paper is trying to highlight that drugs are not the answer which is not the canonical way as most papers show a drug and then it gets pushed into clinical trials by big pharma; that is why this paper is making these big bold statements because there are also political atmosphere surrounding science and treatment development
* More temporal experiments need to be conducted as this was a shorter 4-week study and the effects outside of this timeframe are unknown
* Some details were taken for granted such as the effects of caloric restriction as that is something that isn’t recommend for older women who are more prone to fractures, etc.

Final Thoughts

* The study is much more in-depth and a lot more work was done compared to others; could very likely have been a bunch a different research groups coming together to publish together and get into a higher impact journal

Presentation Feedback

* You want to make sure you are being clear when you are speaking try to avoid mumbling, project your voice
* You want to make sure you are including detail on your boards; it is okay to state your opinion but make sure you are supporting your opinion with a point or information
* Enjoyable that it is a class discussion because some points and information may not be super clear so it is really great to get another perspective which can help in understanding