

# Analysis of MST-41 Anti-Fibrotic Therapy

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## Anti-fibrotic Therapy Data

### Background

- Intestinal Fibrosis leads to surgery in 70% of Crohn's disease
- Intestinal Myofibroblasts are stimulated to generate scar by:
  - injury/ wounding
  - matrix stiffness

### Background 2

- Matrix Stiffness Activates Myofibroblasts
- Activated Myofibroblasts Synthesize Stiff Matrix
- Positive Feedback Loop → **More Fibrosis**
  - This is Bad
    - \* It gets worse
      - It can get *even* worse

## Hypothesis and Aims

### Hypothesis

- Determine whether Anti-fibrotic drug can reverse fibrosis

### Aims

- Determine whether Colon Weight is reduced by AFD
- Determine whether Gene Expression of Collagen 1, TGFb, CTGF is reduced by AFD
- Determine whether Protein expression of Collagen 1, aSMA, FN is reduced by AFD

## Experimental Design

### Experimental Design 1

- Get mice
- Strep cleanout

## Experimental Design 2

1. Infect with Salmonella
2. Wait 8 days
3. Levo x 5 days in the water
4. Rest Day
5. Anti-fibrotic drug x 10 days
6. Image

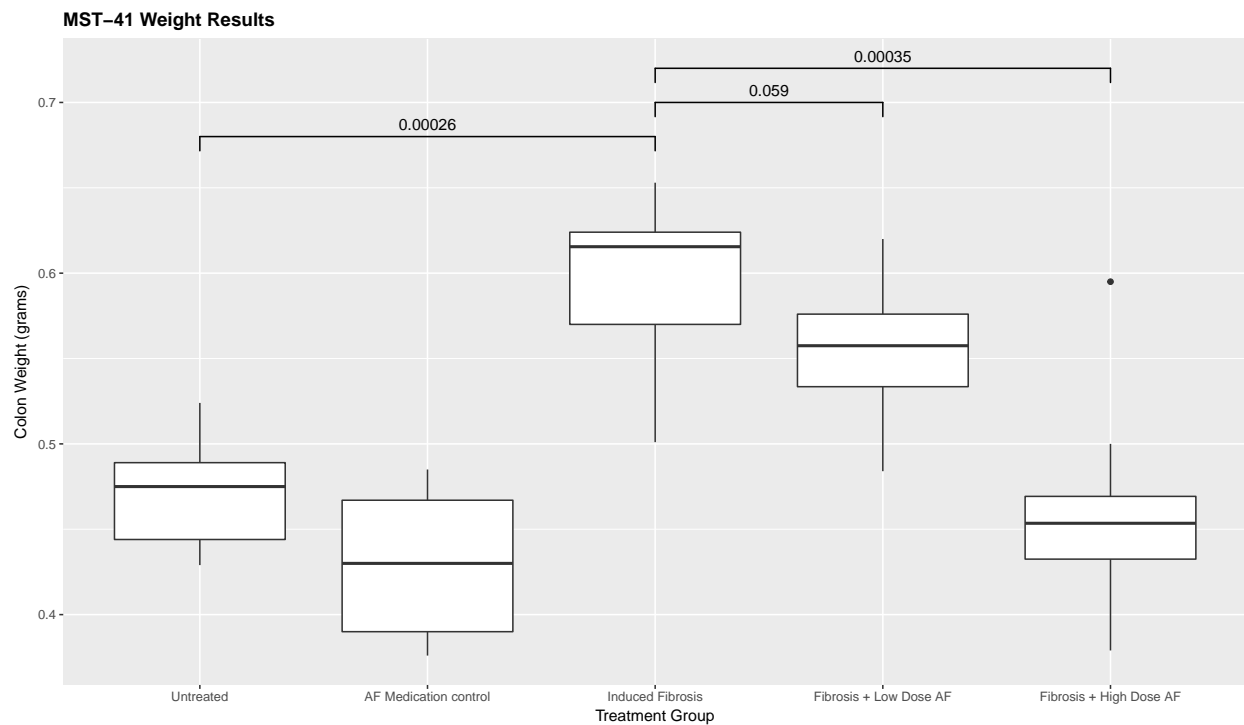
- Ultrasound + SWV + Strain
- Photoacoustic

7. Sac

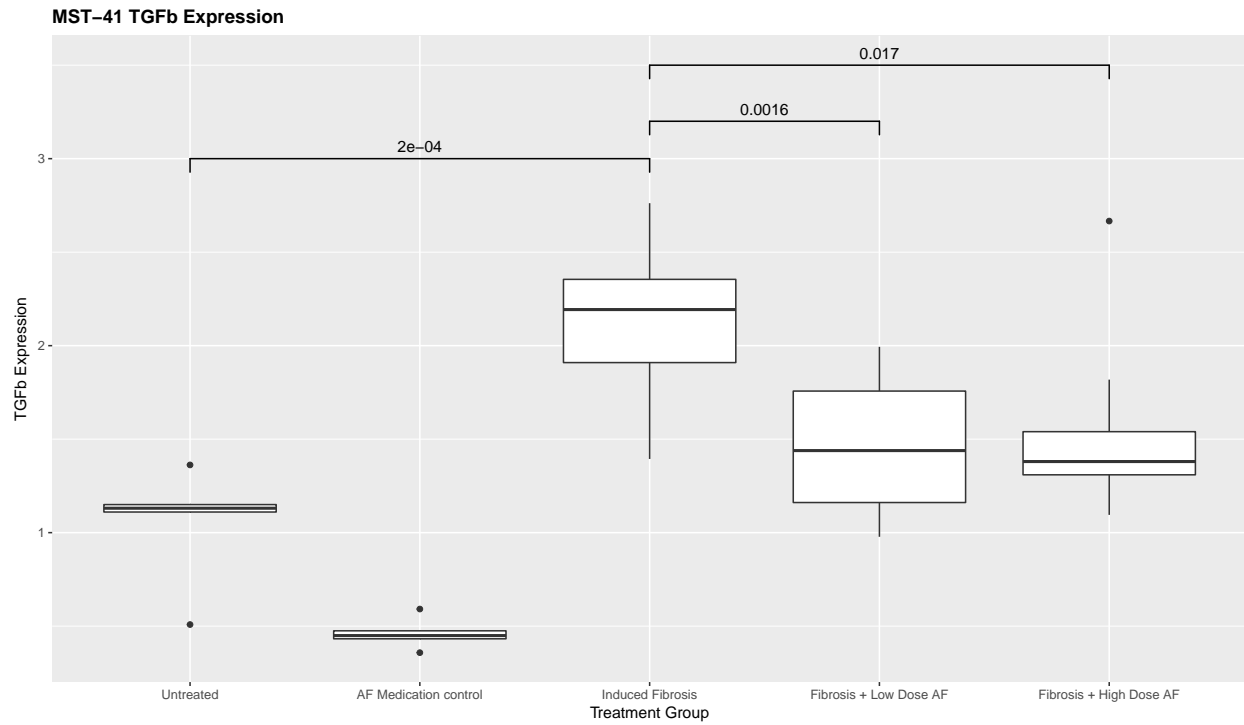
## Experimental Design Diagram

## Results

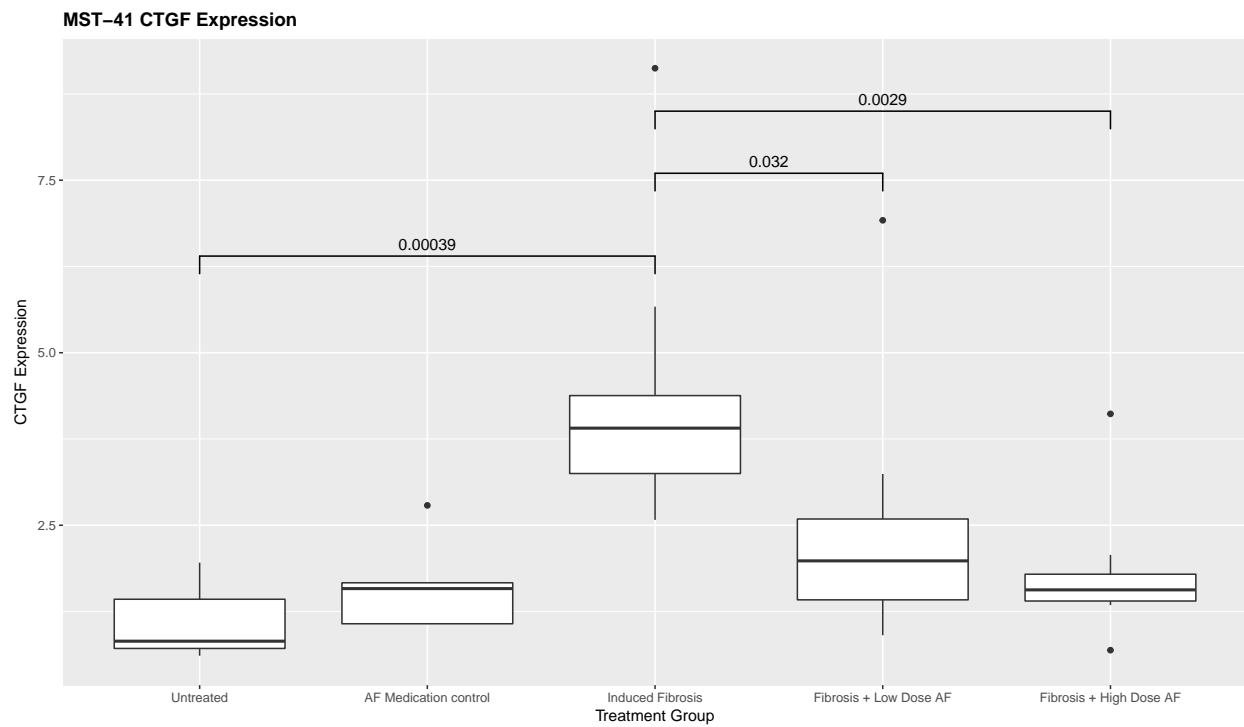
### Weight Result



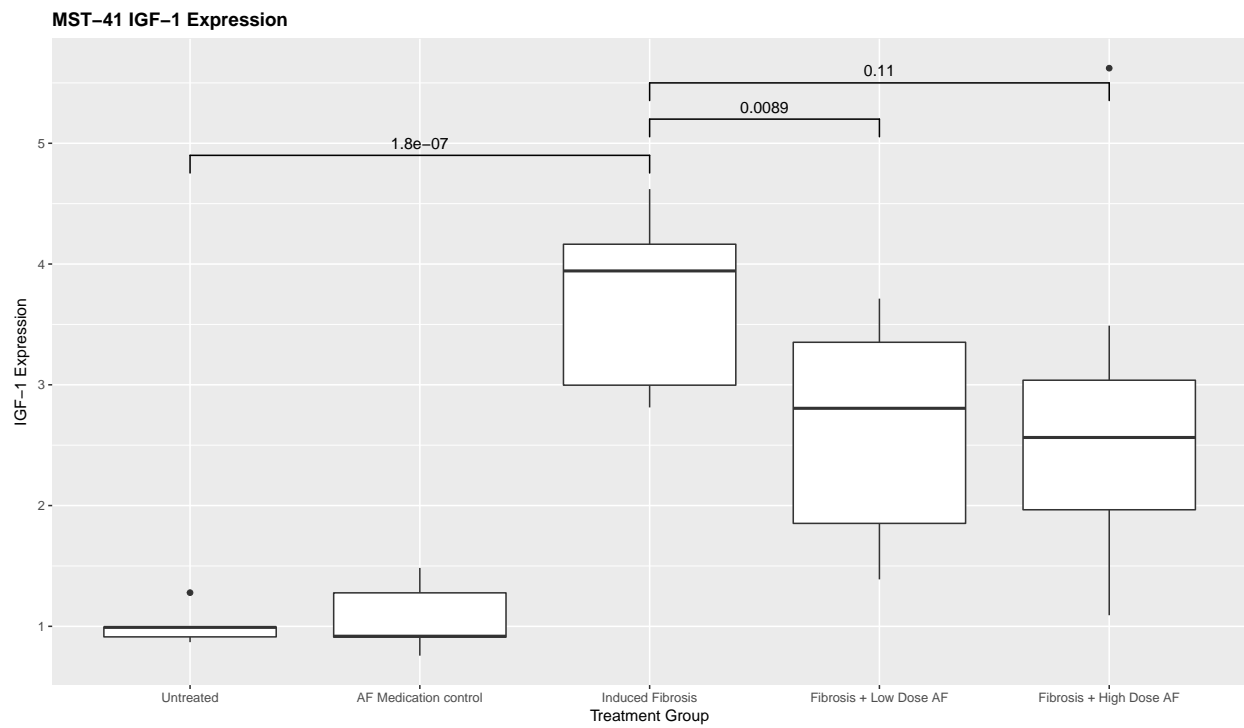
## TGFb Result



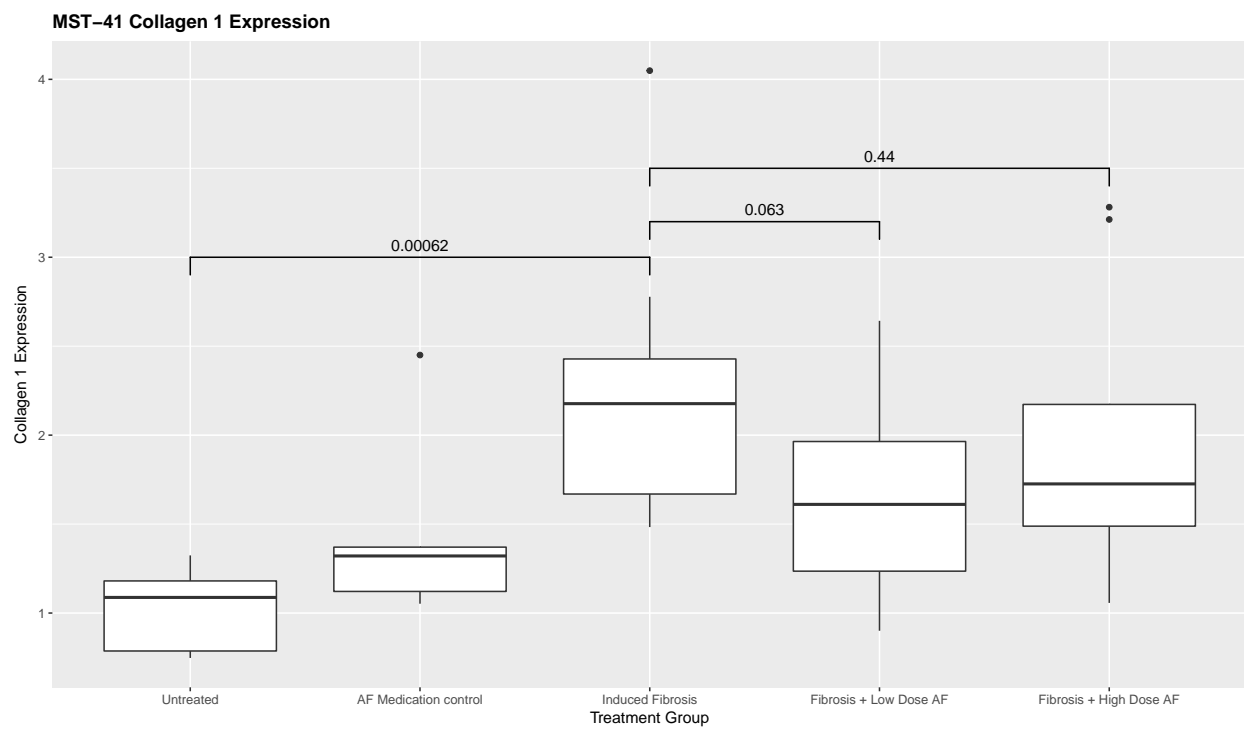
## CTGF Result



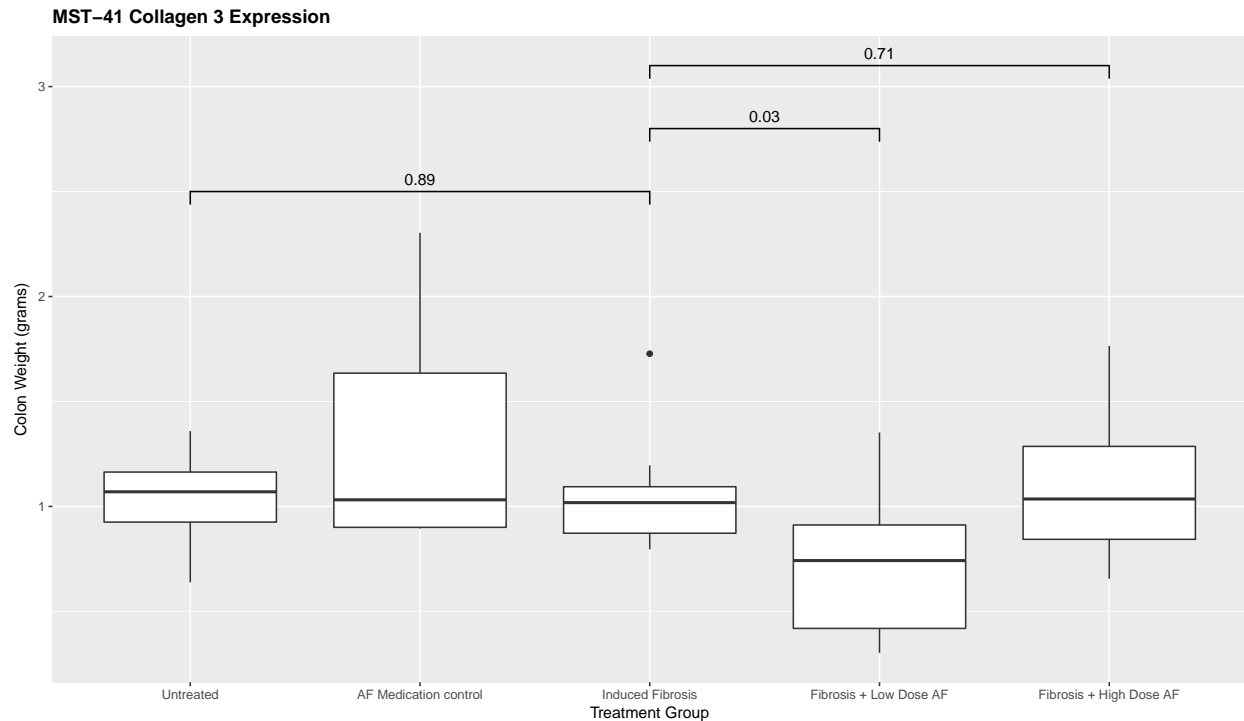
## IGF-1 Result



## Collagen 1 Result



## Collagen 3 Result



## Conclusions

### Conclusions

- Antifibrotic Drug Works in Human Intestinal Organoids
- Antifibrotic Drug Works in Salmonella Mouse Model
- Antifibrotic Drug Works in TNBS Rat Model
  - This is Amazing
    - \* Clinical Trials to Follow
      - Sure Hope the Ultrasound Works

## Examples of other stuff you can do with Rmd

### R Markdown

- This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, MS Word, and now **PowerPoint** documents. For more details on using R Markdown see
- When you click the *Knit* button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document.

## Block Quotes

A friend once said:

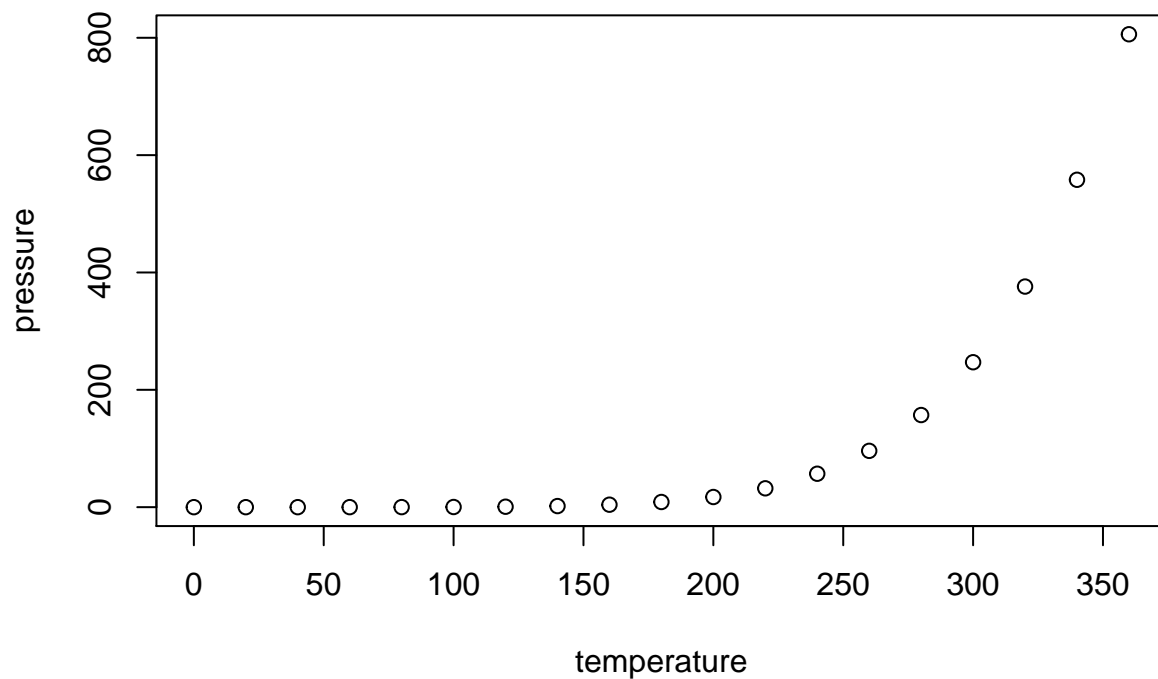
It's always better to give than to receive. Totes magotes, my friend, he said. I don't know why he said this.

You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   :  2.00
##  1st Qu.:12.0    1st Qu.: 26.00
##  Median :15.0    Median : 36.00
##  Mean   :15.4    Mean   : 42.98
##  3rd Qu.:19.0    3rd Qu.: 56.00
##  Max.   :25.0    Max.   :120.00
```

## Including Plots



## And Tables

Treatment Arm	Colon Weight (gm)
Control	17.2
S.typhi	23.7
S.typhi+ AFD	17.9

## Inline R code

Inline R Code

There were 50 cars studied

## R Code Chunks

```
summary(cars$dist)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      2.00   26.00   36.00   42.98   56.00  120.00
```

```
summary(cars$speed)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##       4.0   12.0   15.0   15.4   19.0   25.0
```

## Add Links

Links

Use a plain http address or add a link to a phrase:

## Miscellaneous

- Manual Line breaks,  
end line with 2 or more spaces  
Roses are red,  
Violets are blue.

superscript<sup>2</sup>

~~strikethrough~~

## Horizontal Line break

Horizontal Rule / Page Break

Three or more asterisks or dashes:

---

and continue

## Use of the echo parameter

- Note that the `echo = FALSE` parameter was added to the previous plotting code chunk to prevent printing of the R code that generated the plot.
- If you want to see the R code **and** the output, like in the previous summary table, then set the parameter to `echo=TRUE`