

# Preadipocyte Effects on Fibroblast Proliferation: Exploring Implications for Asthma

## Lab Research

Maryam Alabdullah, Sohaib Darwish, Nour Jalaeddine and Saba Al Heialy

### Background:

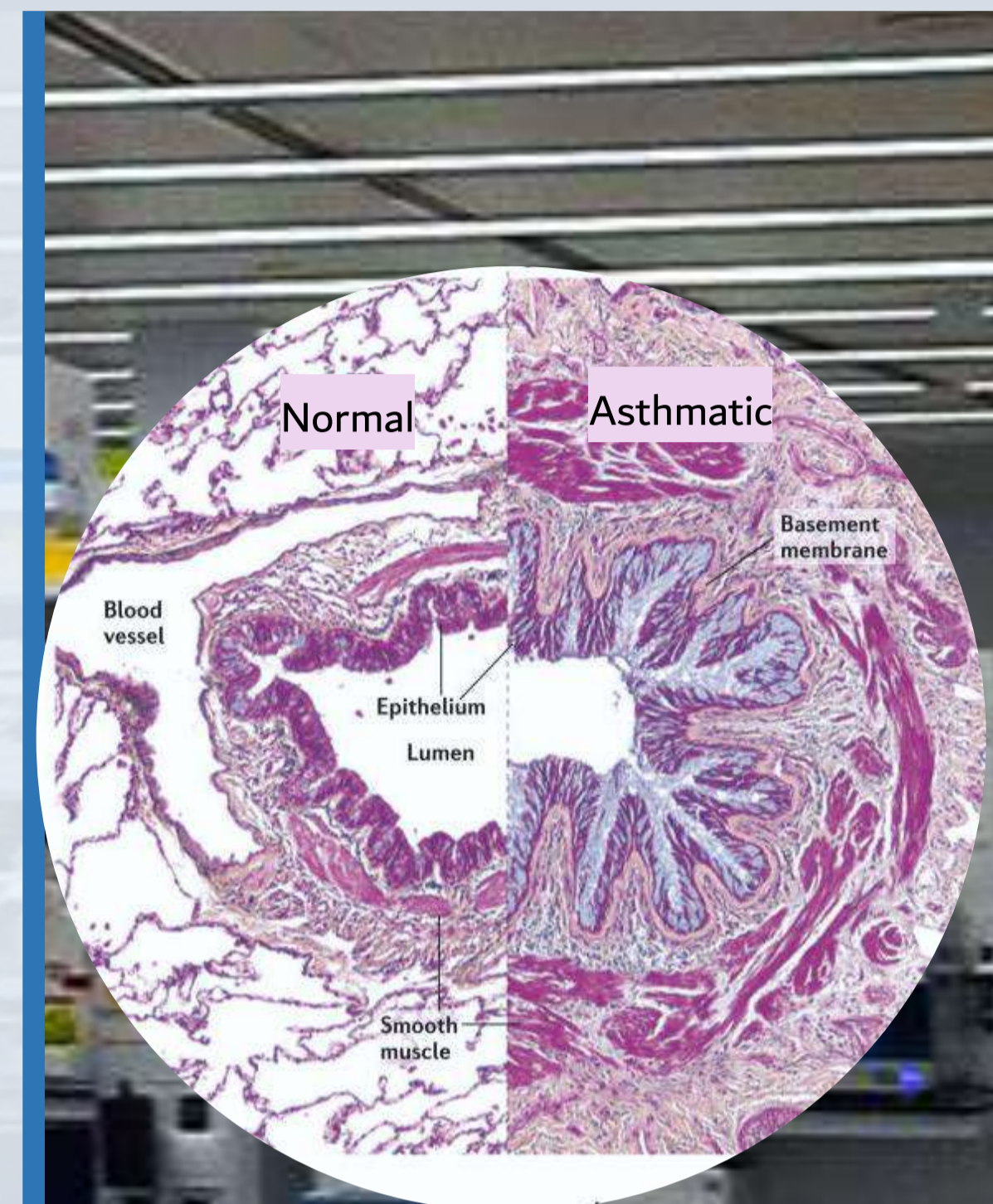
- Studies indicate that obesity exacerbates asthma severity
- Adipocytes have recently been found in the lungs
- It's unclear if obese adipocyte impact on fibrosis in asthma begins as early as preadipocyte stage.

### Objective:

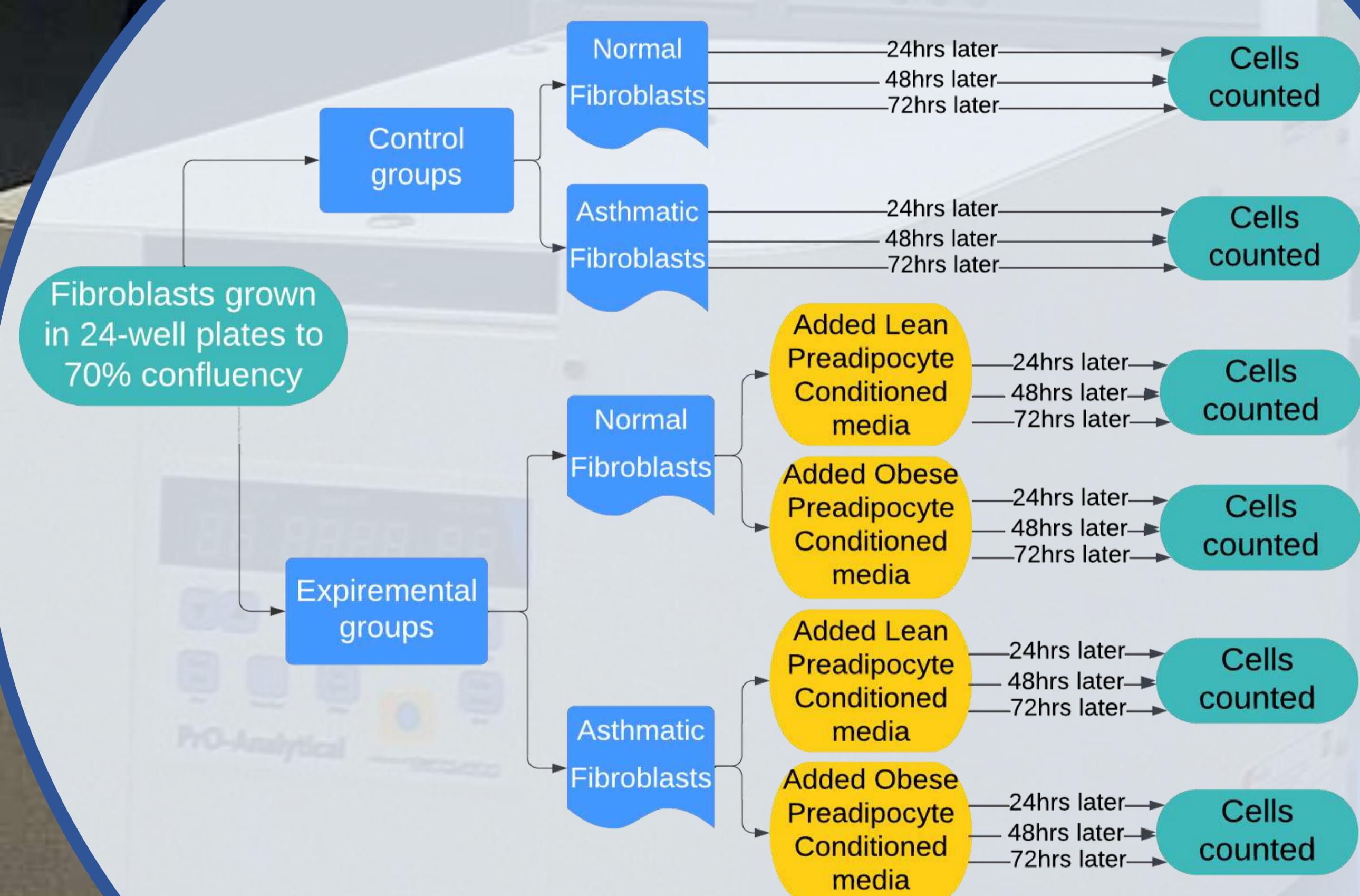
Investigate the influence of preadipocytes conditioned media on fibroblast proliferation.

### Hypothesis:

We hypothesized that preadipocyte-conditioned media will increase fibroblast proliferation, with a more pronounced effect observed in asthmatic fibroblasts, especially when influenced by obese preadipocytes.



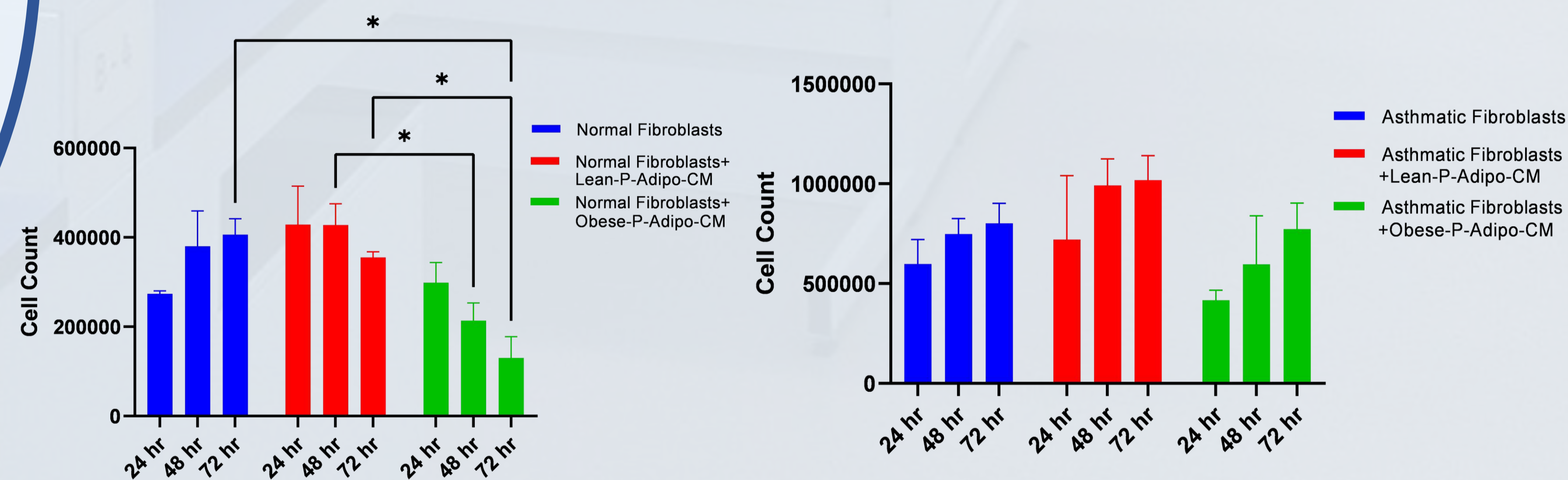
### Methods:



**Figure 1. Experimental design of the proliferation assay.** Cells were counted in duplicates during 24, 48, and 72 hour intervals (n=3)

### Results:

- Preadipocyte-conditioned media had an evident effect on fibroblast growth.
- Addition of lean preadipocyte-conditioned media yielded significantly higher fibroblast proliferation in normal fibroblasts.
- Obese preadipocyte-conditioned media reduced proliferation rate of normal fibroblasts.
- Results indicate the effect of pre-adipocytes on the structural cells, namely the fibroblasts, which requires further investigations.



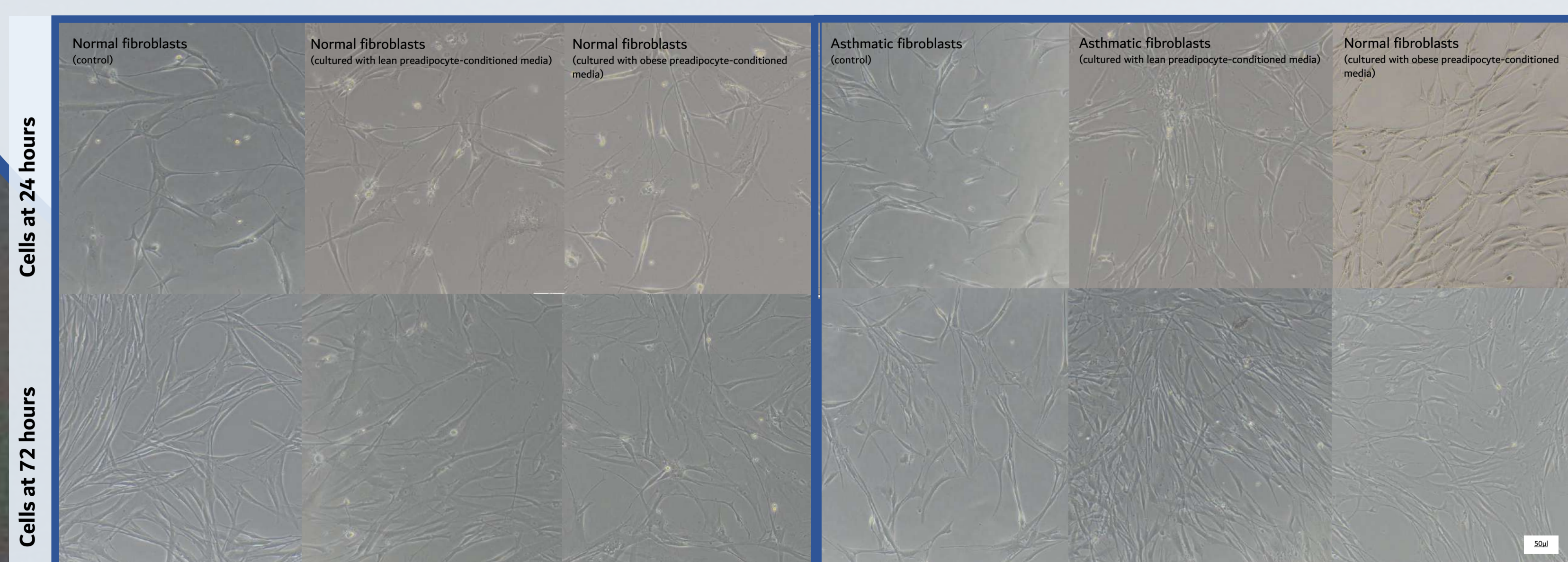
**Figure 2. Fibroblast cell count.** Normal (NF) and asthmatic (As F) fibroblast cells were counted at different time intervals and in different media solutions: control, lean and obese preadipocyte-conditioned media. Representative of n=2.

### Conclusion:

Data indicate that adipocyte affect on fibroblasts manifest as early as the preadipocyte stage. This data can shed light on the implication of obesity in the development of asthma pathogenesis.

### Skills Learnt:

- ✓ Cell Culture (Thawing, Splitting, Freezing)
- ✓ Cell Counting (Hemocytometer, Calculations)
- ✓ Microscopy
- ✓ RNA Extraction



**Figure 3 & 4. Normal and asthmatic fibroblast growth at different time intervals.** Shows difference in proliferation based on media used.