

Mesenchymal Stem Cells Improves Survival In a Mice Model of Severe Pneumococcal Pneumonia

Restrepo MI^{1,2}, [Reyes LF^{1,4}](#), Hinojosa CA¹, Hunt DA³, Rordriguez A⁵, Johnson R³, Soni N¹, Anzueto A², Peters JI¹, Moyer MP³, Orihuela CJ¹

1: University of Texas Health Science Center at San Antonio, United States, 2: South Texas Veterans Health Care System (STVHCS), United States, 3: INCELL Corporation, United States, 4: Universidad de La Sabana, Colombia, 5: Hospital Joan XXIII, Spain



Disclosure – Conflict of Interest

-Nothing to disclose

-No conflicts of interest related to this presentation

-No relationship with tobacco industry

Community Acquired pneumonia

Is the **#1** infectious disease killer in the world

Responsible for more than **3.4 million** deaths per year

accounts for **10 million** hospital visits

1.1 million hospitalizations

Up to **22%** require **ICU** admission

Is a serious **public health problem**

Community Acquired pneumonia

Streptococcus pneumoniae is isolated in up to **40%** of CAP cases

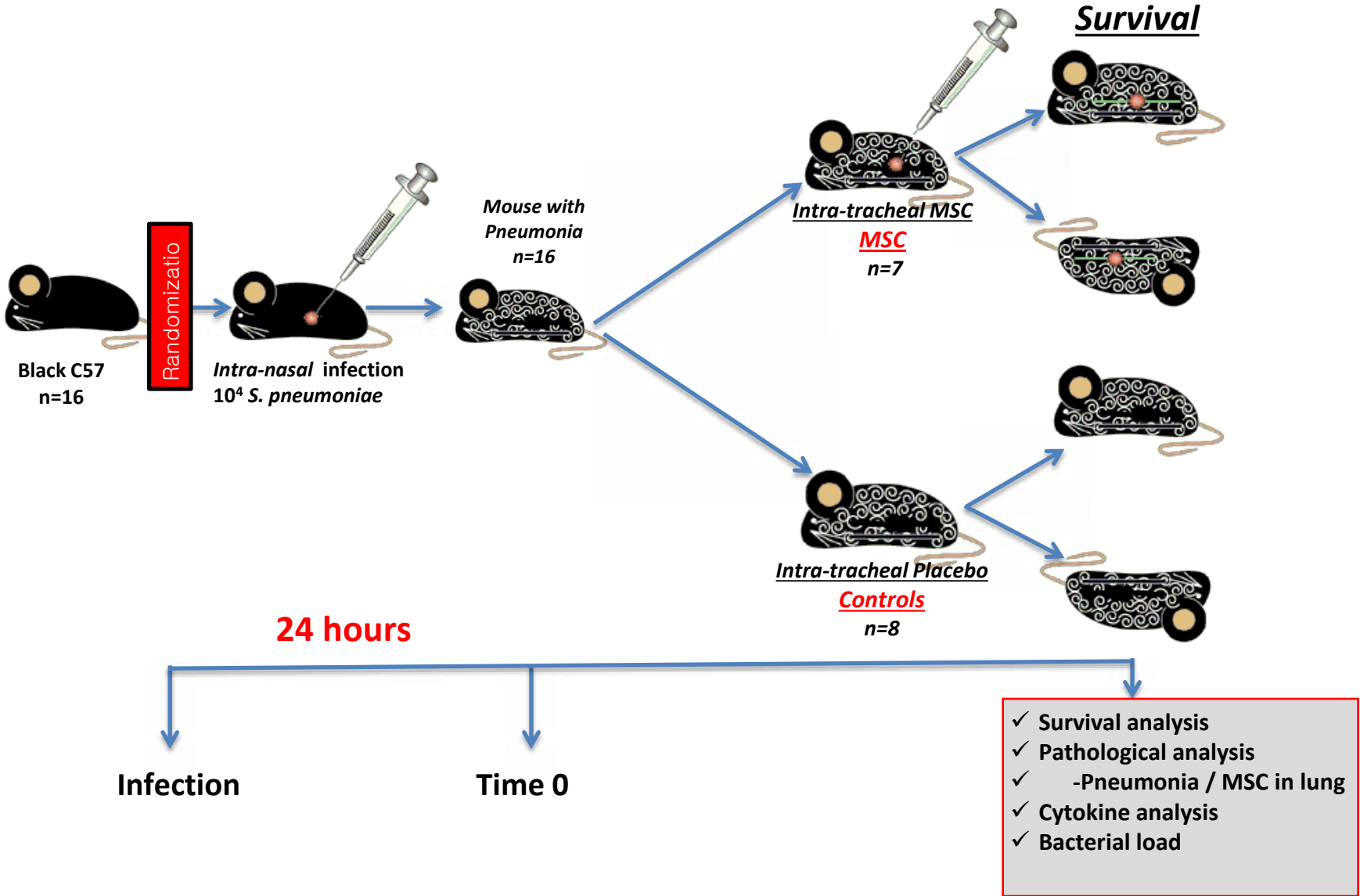
Severe inflammatory response during CAP leads to worse clinical outcomes

Pharmacological intervention targeting modulate inflammation during CAP **have shown contradictory results**

Therapy with human **MSCs** have shown to be effective modulating inflammation and inhibiting bacterial growth

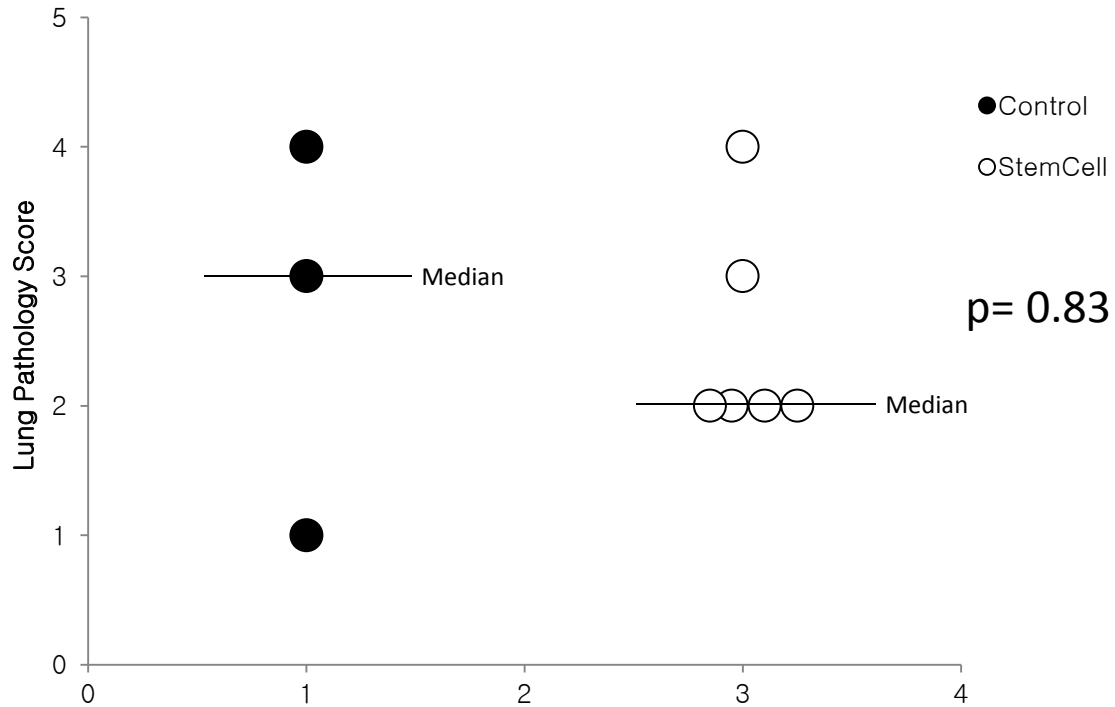
Limited data are available regarding the impact of MSCs in **pneumococcal pneumonia**

Methods

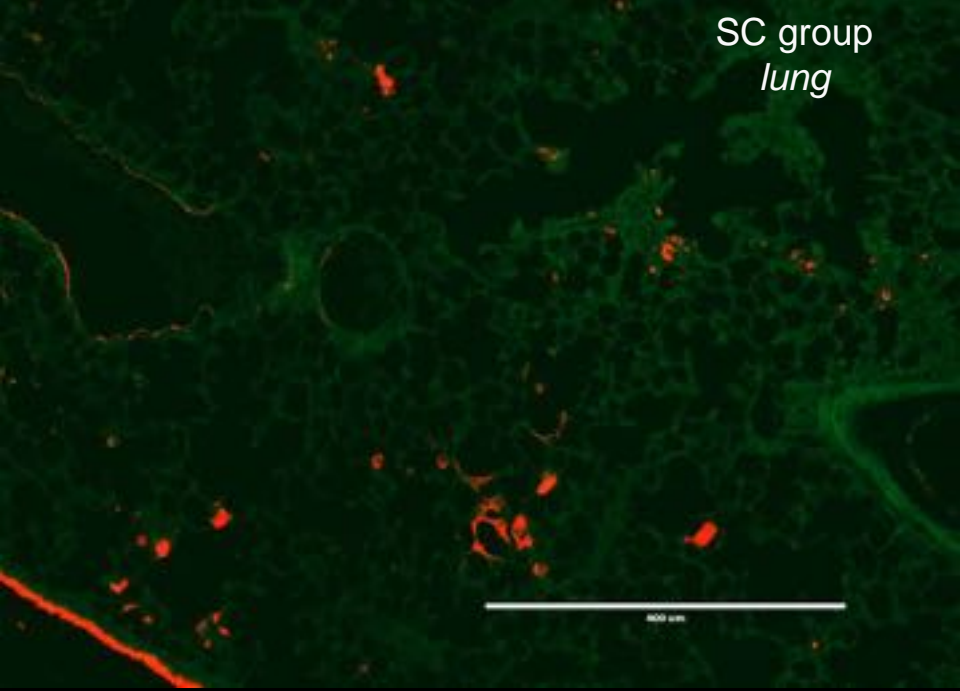


Results

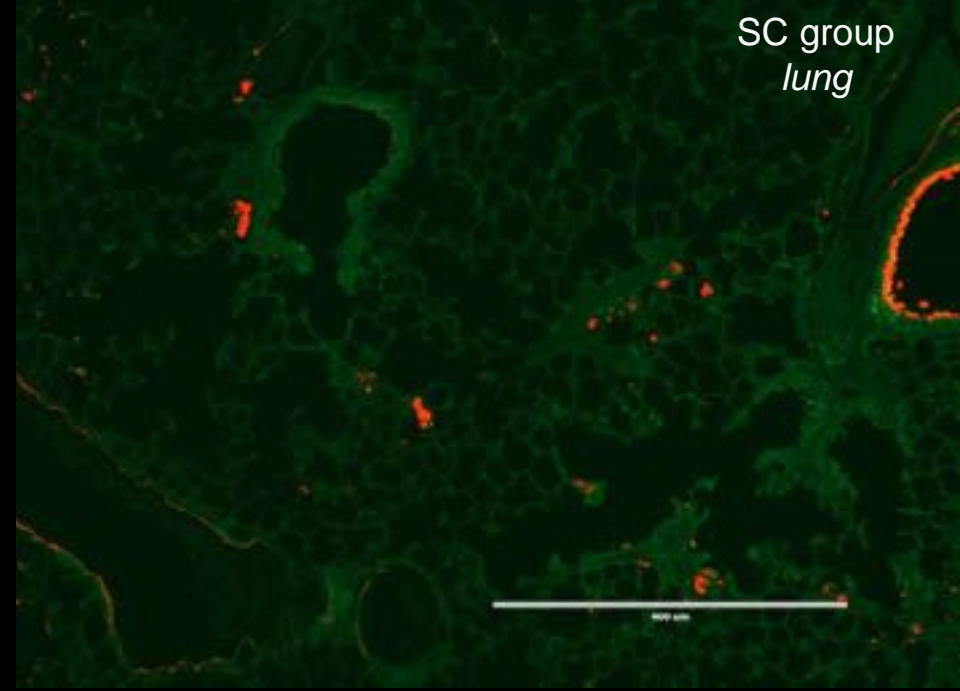
Pathology Score



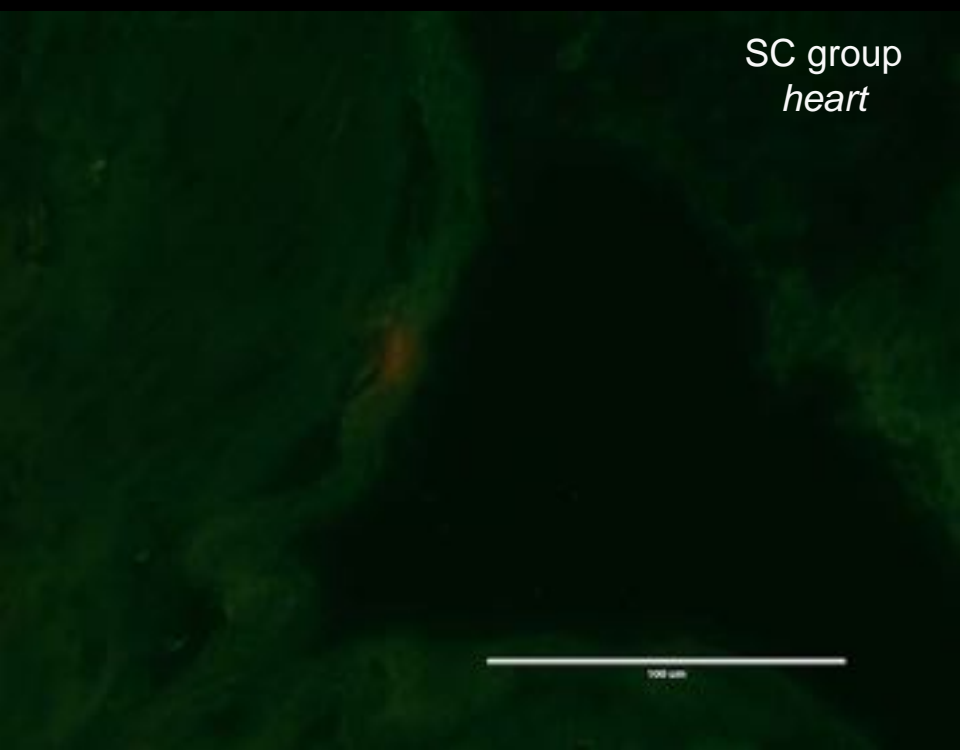
SC group
lung



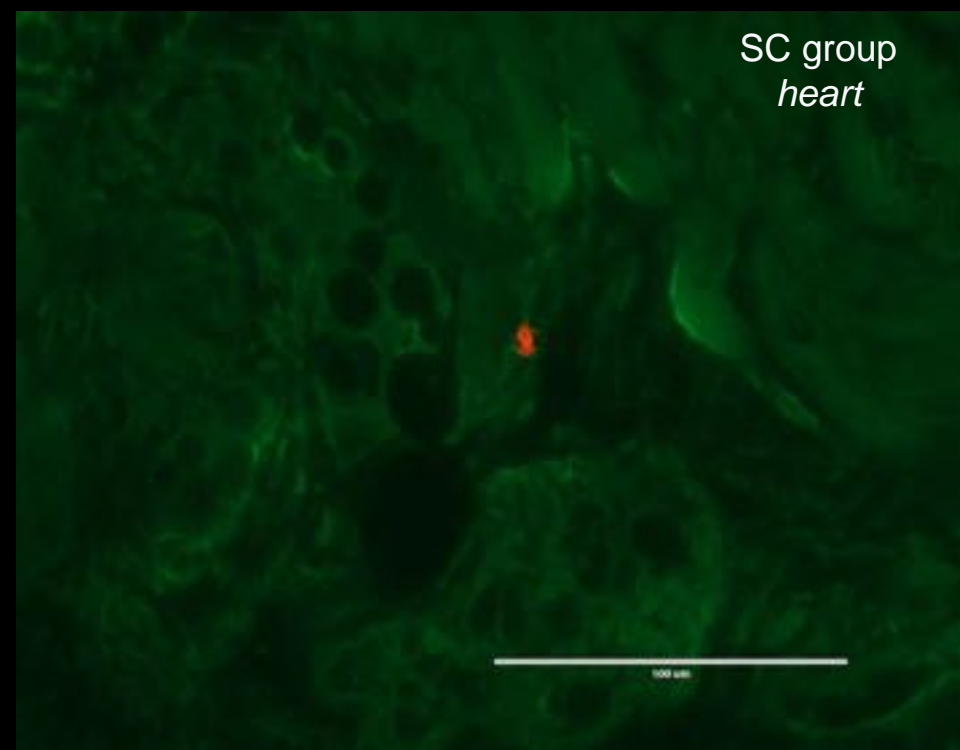
SC group
lung

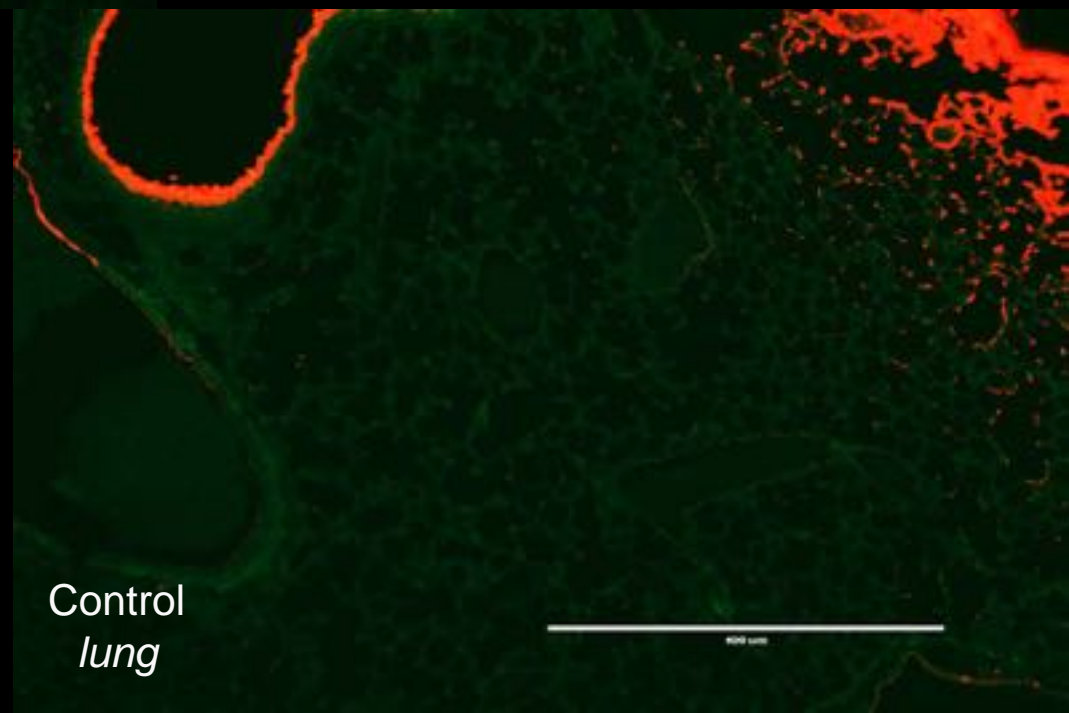
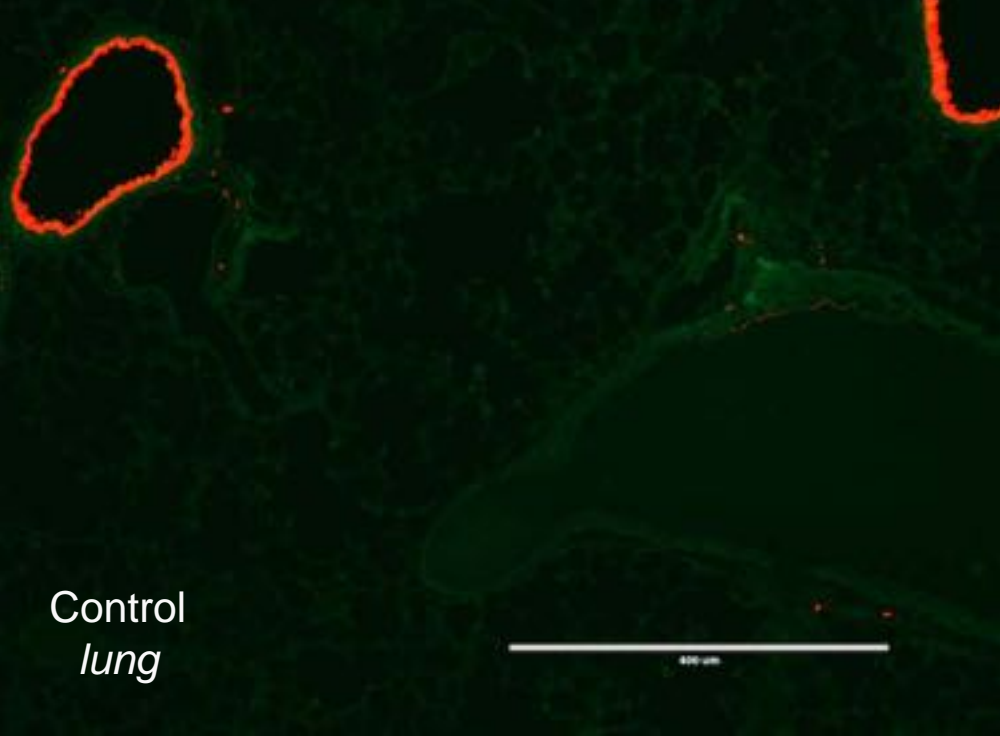


SC group
heart



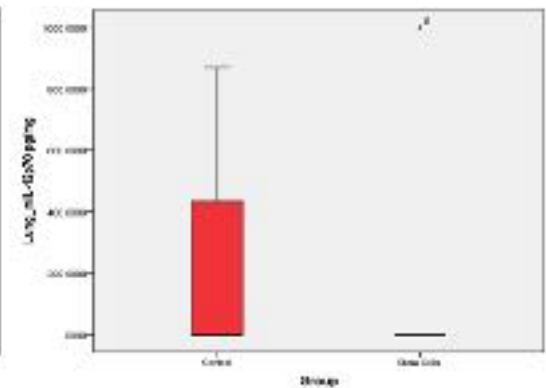
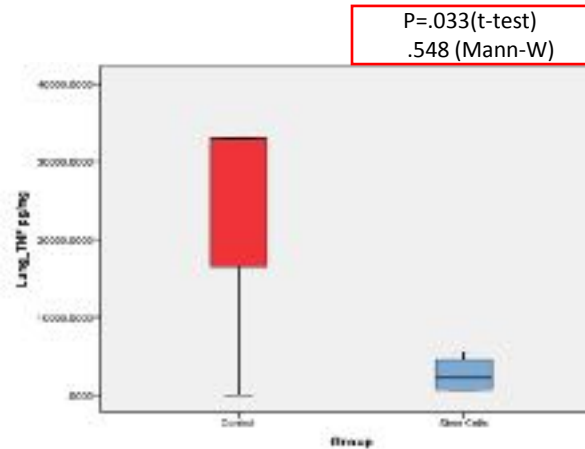
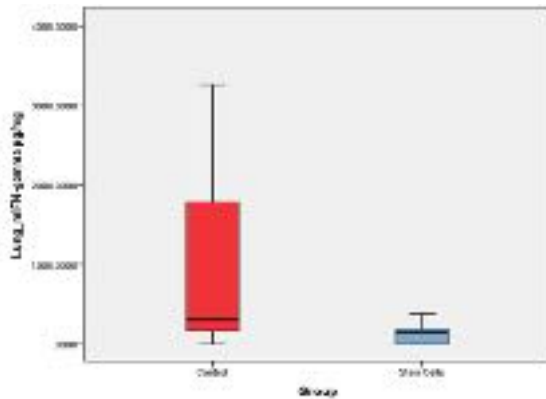
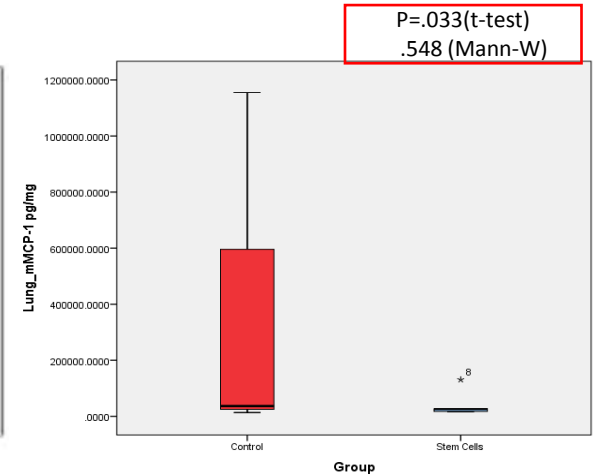
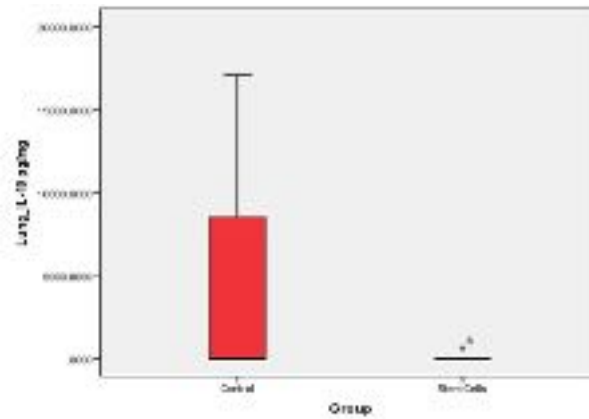
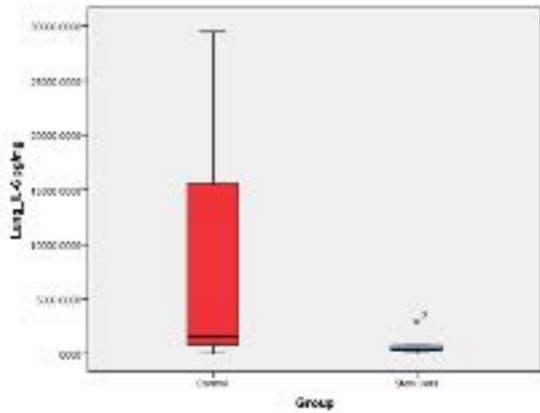
SC group
heart





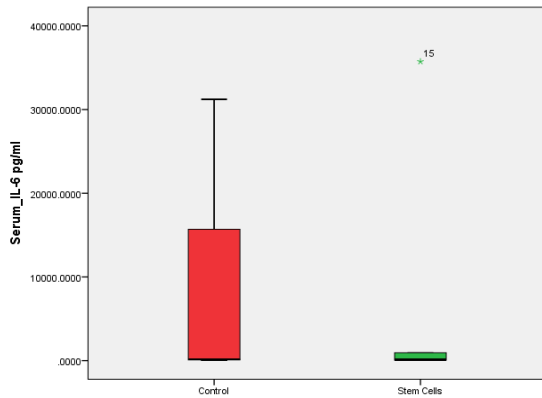
Results

Cytokines (lung)

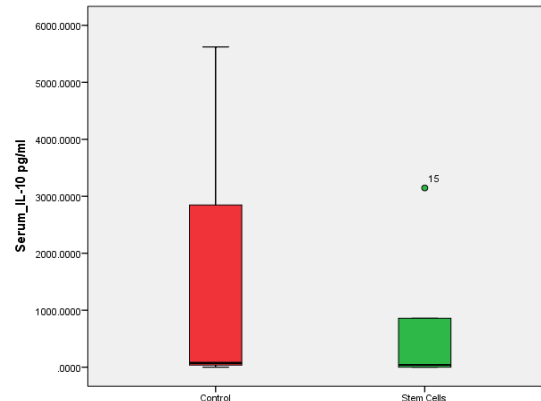


Results

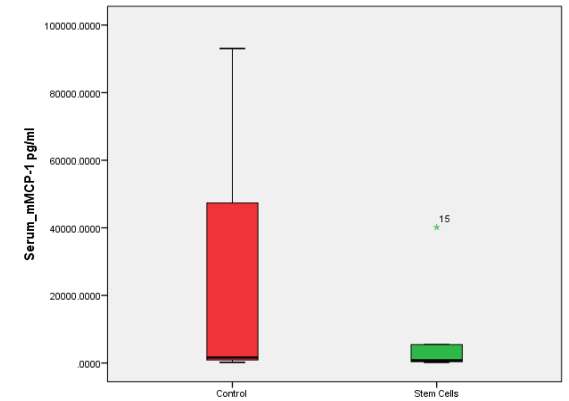
Cytokines (serum)



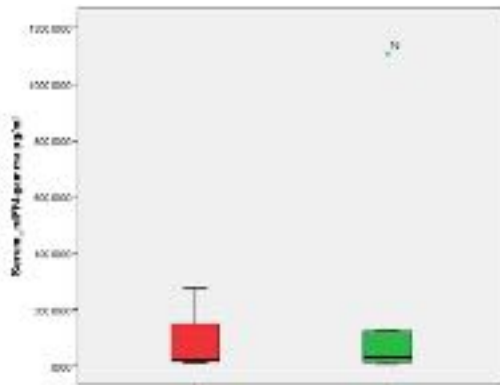
Group P=.708 (t-test)
1 (Mann-W)



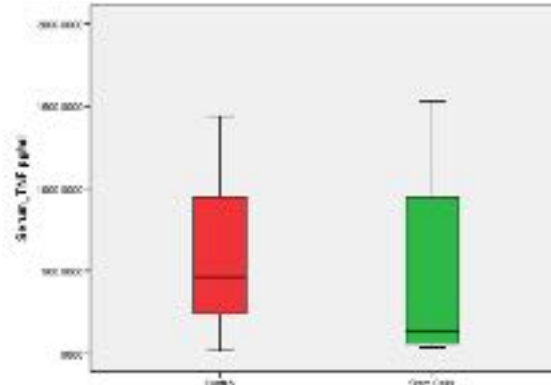
Group P=.423 (t-test)
.714 (Mann-W)



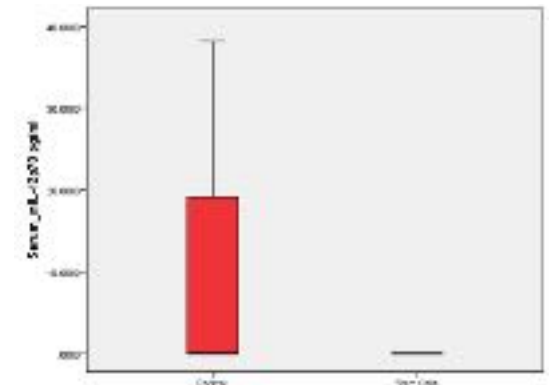
Group P=.322 (t-test)
.905 (Mann-W)



Group P=.680 (t-test)
1 (Mann-W)



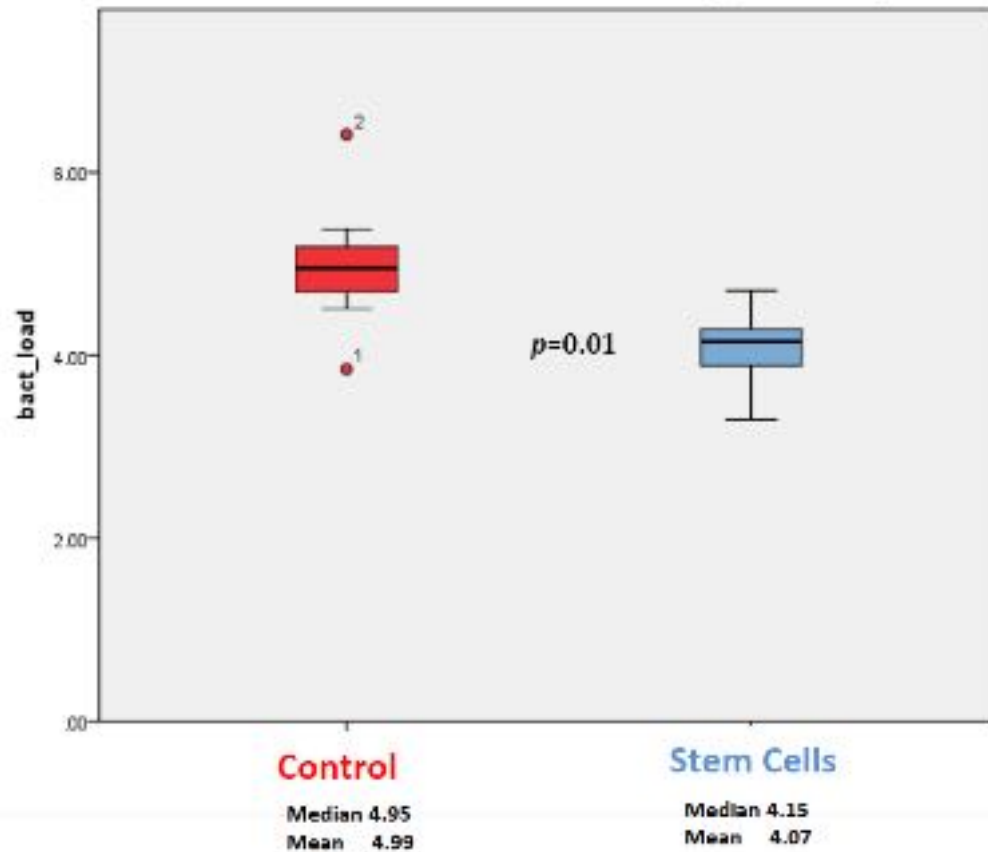
Group P=.730(t-test)
1 (Mann-W)



Group P=.170(t-test)
.548 (Mann-W)

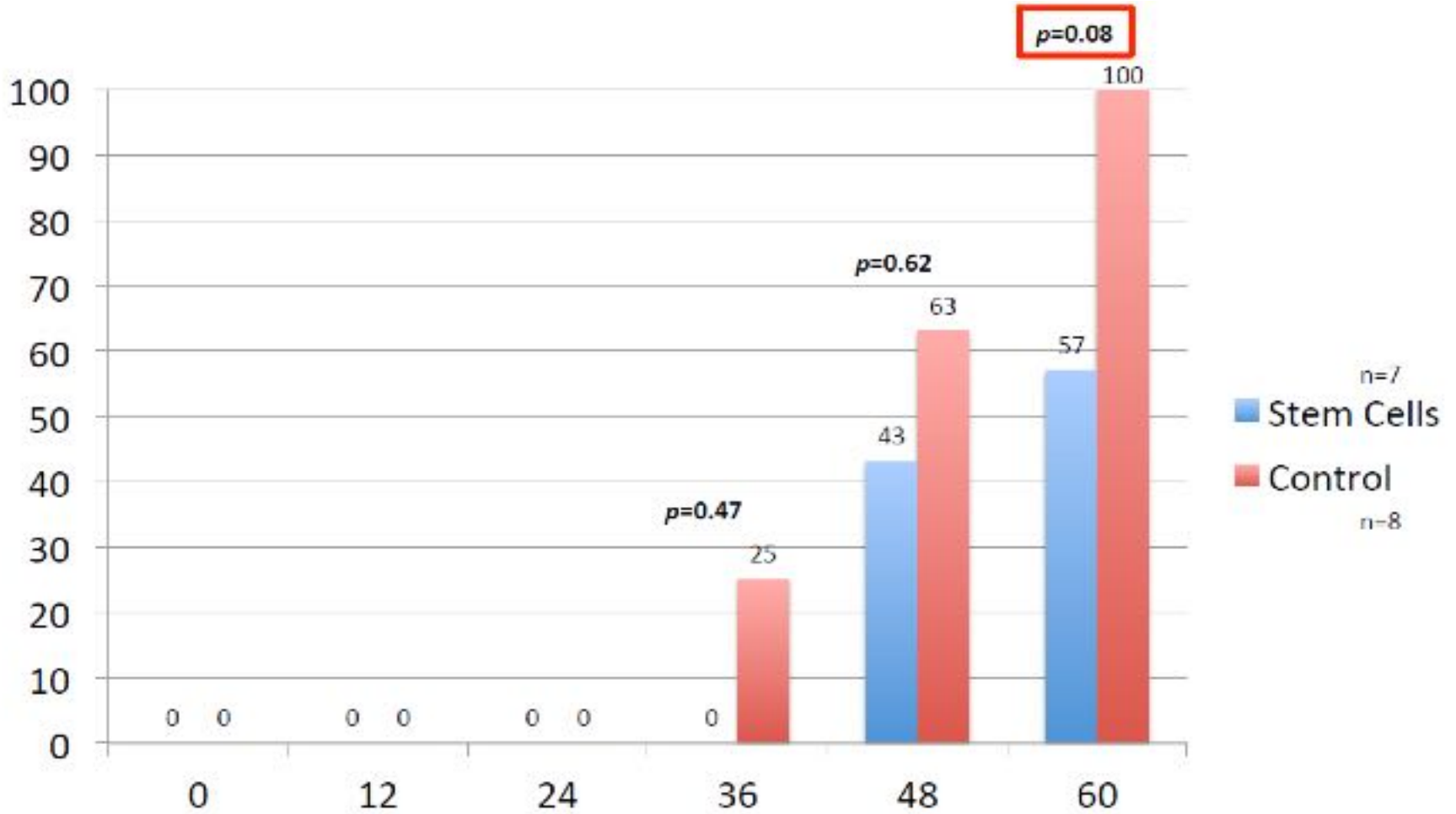
Results

Bacterial Load at 12 hours post treatment



Results

Survival



Conclusions

Intratracheally administration of MSCs appears to be an effective alternative to administer MSCs

There is a tendency towards **higher survival** among mice treated with MSCs during severe pneumococcal pneumonia

This effect should be confirmed in **other species** before consider its use in humans

Research Team

Marcos I. Restrepo

Carlos J. Orihuela

Cecilia Hinojosa

Ryan Gilley

Alejandro Rodriguez

Nilam Soni

Antonio Anzueto

Jay Peters

Stephanie Levine

Mary Pat Moyer

Dirk Hunt

Robbie Johnson

Lynn Miller

Lu Ann Kirk

Thank you!!!

Questions?

restrepom@uthscsa.edu

reyesL4@uthscsa.edu