

ROLE OF THE MESENCHYMAL STEM CELLS IN THE AIRWAY REMODELING IN ASTHMA.

Author: Eva Leceaga Gatzambide Biologia UAB

Tutor: Nerea Gatzelumendi Corcoles

INTRODUCTION

DEFINITION

Asthma is a chronic inflammatory disease of the airways resulting in variable airflow obstruction, airway hyperresponsiveness (AHR) and airway remodeling. It causes recurrent attacks of breathlessness, wheezing, chest tightness and cough particularly at night or in early morning which vary in severity and frequency from person to person.

PATHOPHYSIOLOGY

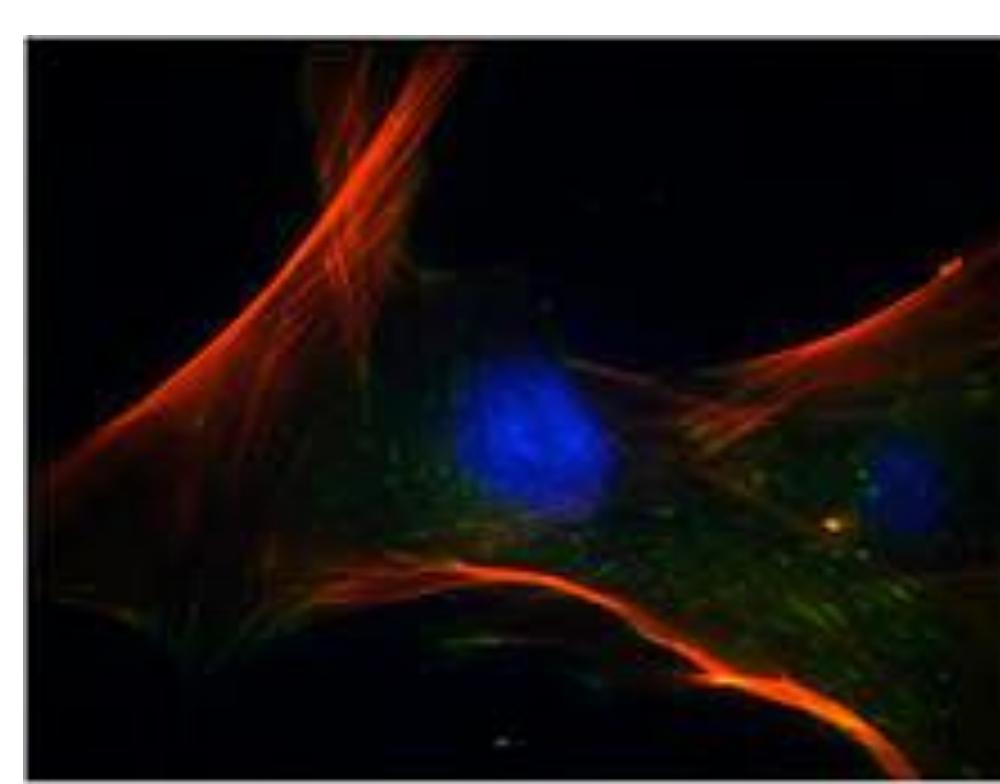
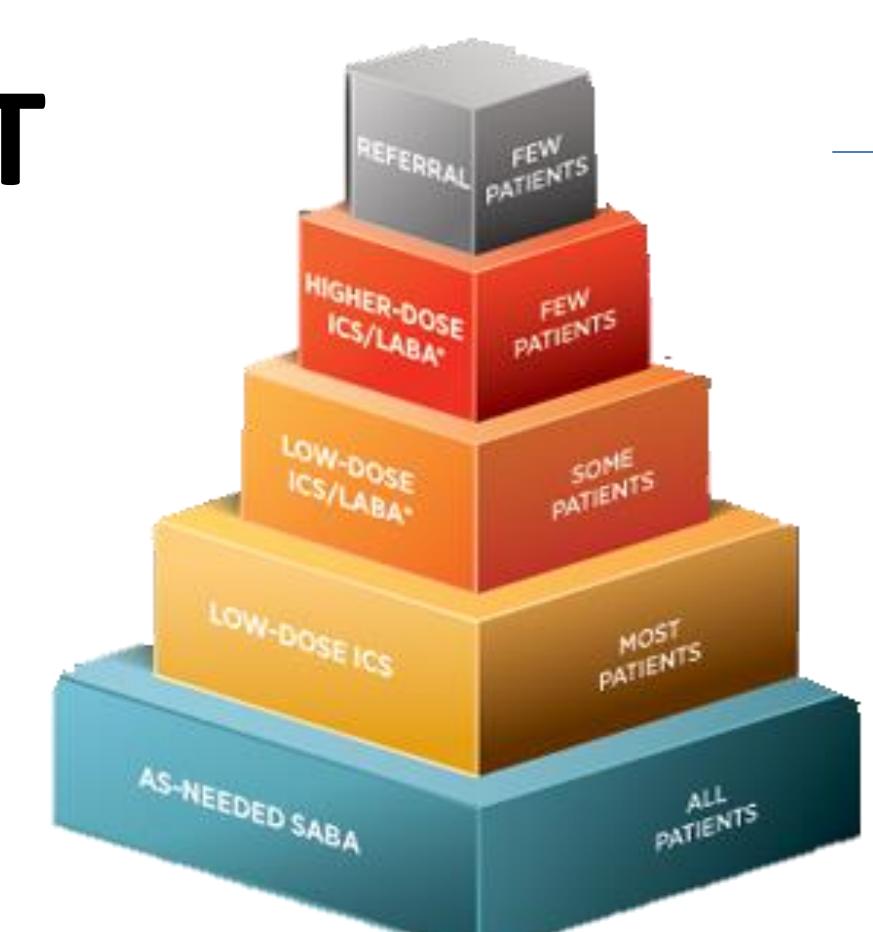
Asthma pathophysiology



235.000.000 million people suffer from asthma

10% don't have an effective treatment

TREATMENT



Mesenchymal stem cells, for their antiinflammatory and immunoregulatory function, could be effective as a treatment in all kind of asthma

HYPOTHESIS

In an in vitro model of asthma induced by CD4+, the human MSCs derived from adipose tissue could reduce the remodeling of smooth muscle cells.

OBJECTIVES

To analyze by in vitro model, the effect of the MSCs in the remodeling of the smooth muscle of airway cells induced by TCD4+ and determine if such an effect depends on the direct contact between cells or of soluble factors released by the MSCs.

MATERIAL AND METHODS

CELL LINES AND ELL CULTURE

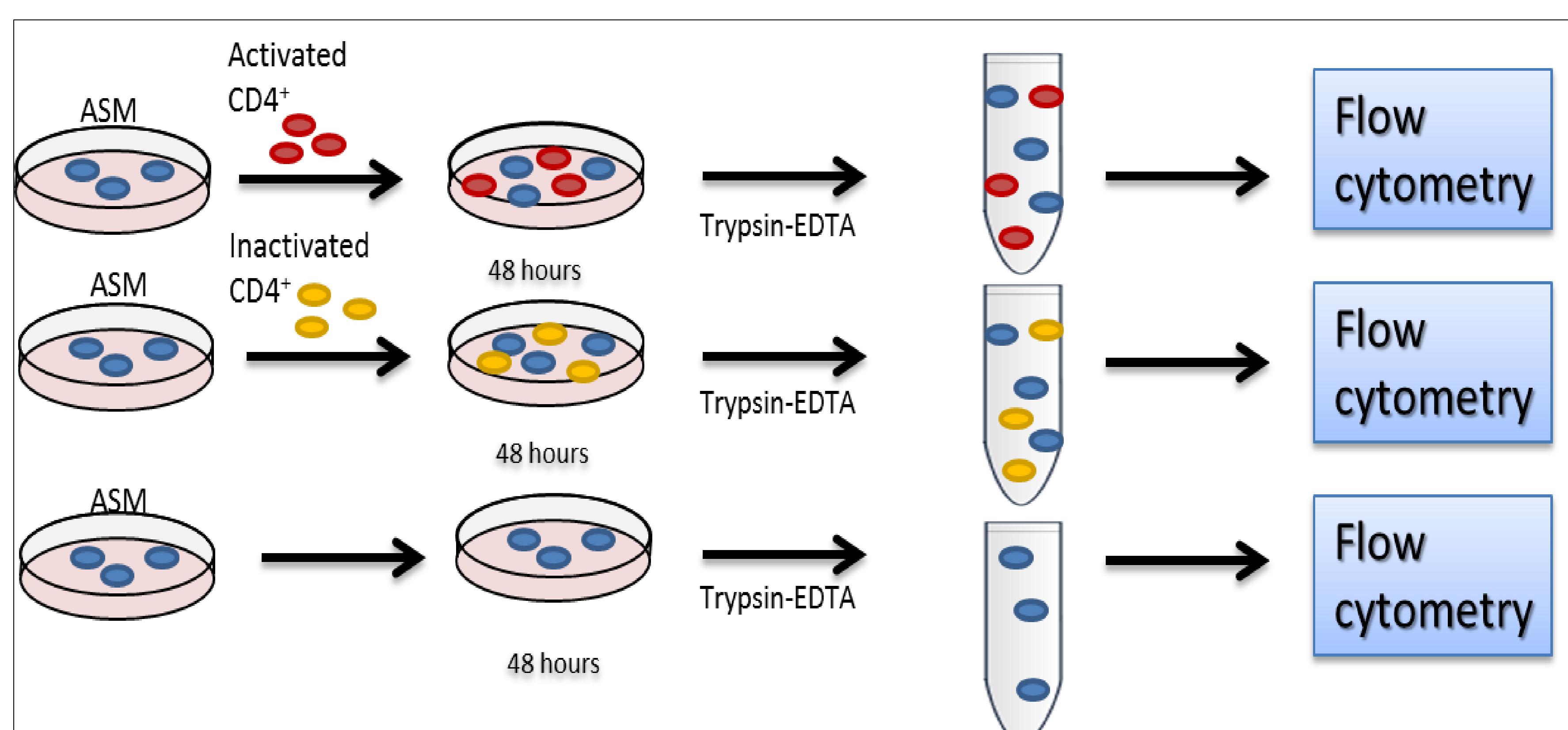
CELL LINES
ASM
MSC

HUMAN BLOOD
PRIMARY CULTURE:

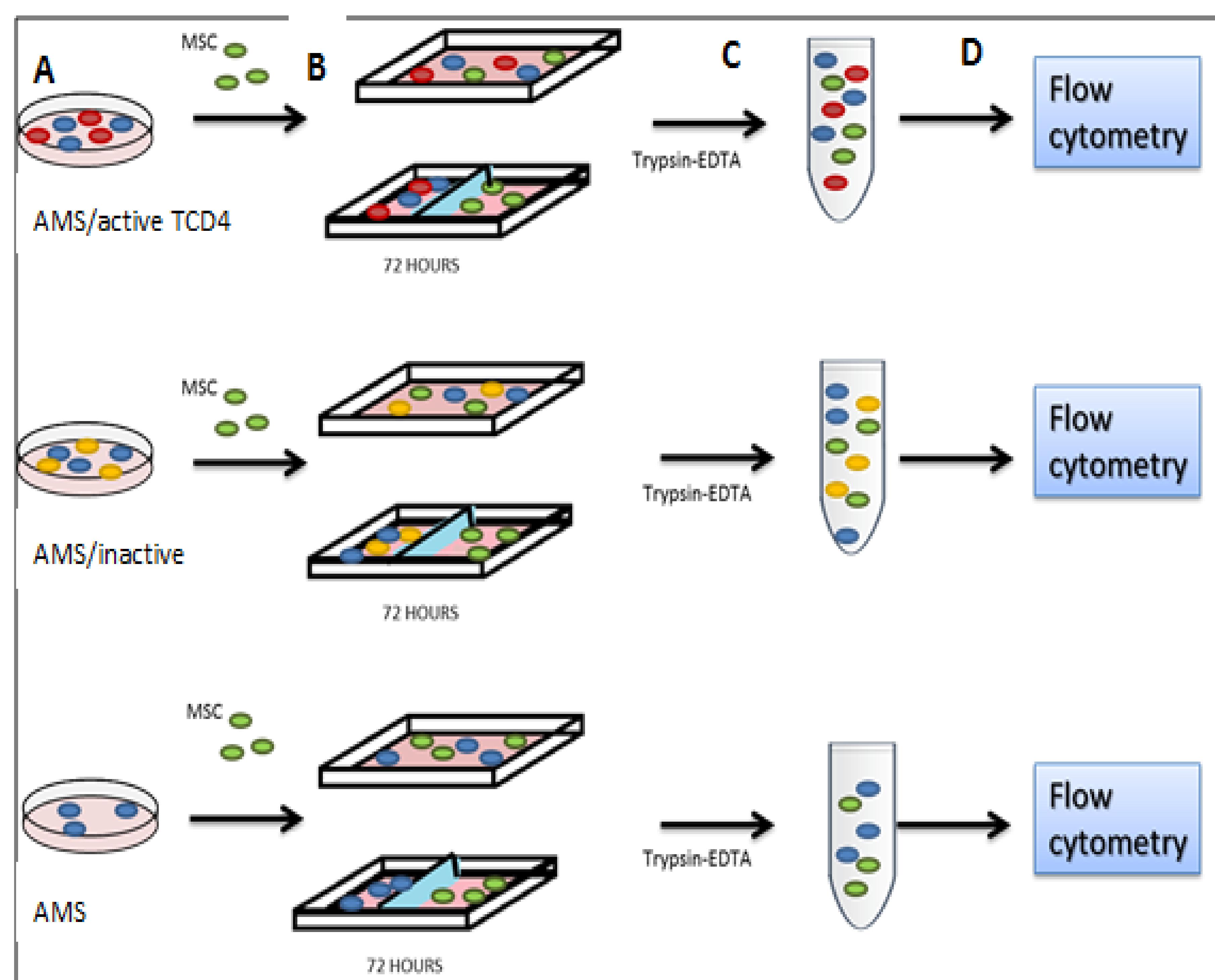
INACTIVATED TCD4

ACTIVATE TCD4 (OVA)

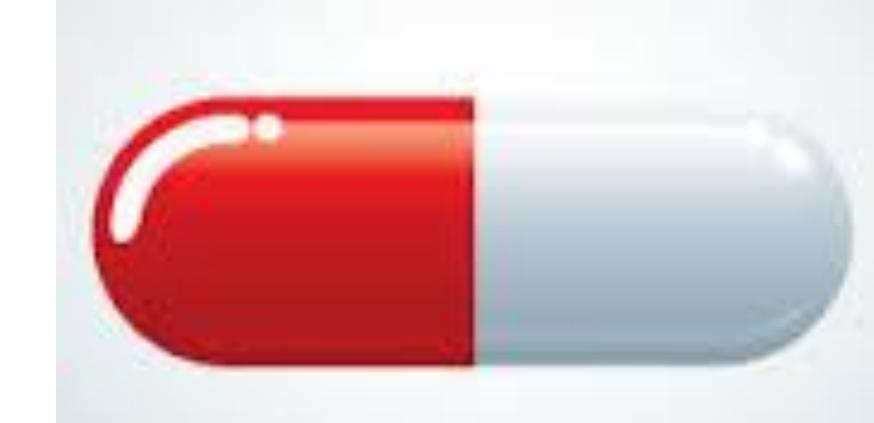
OBJECTIVE 1: ASM/TCD4 CO-CULTURE



OBJECTIVE 2: ASM/TCD4/MSC CO-CULTURE



FUTURE EXPECTATIONS



REFERENCES

Moore WC, et.al. (2010); Carole Ober et.al. (2011); Bateman ED et.al. (2008); Okayama Y, et.al. (2007); Gordon BR, (2008); Masoli M, et.al. (2004); WHO (2013); Global initiative asthma (2014); Boulet L-P (2009); Ulrik CS, et.al. (1999); Ramos-Barbón D, et.al (2010); Barnes PJ (2008); Polito AJ, et.al. (1998); Reuter S, et.al. (2010); Okayama Y, et.al. (2009); Steinke JW, et.al. (2001); Rael EL, et.al. (2011); Greenfeder S, et.al. (2001); Matsuzawa S, et.al. (2003); Shinagawa K, et.al. (2003); Borja G, et.al. (2013); Nemeth K, et.al. (2010); Bonfield TL, et.al. (2010); Srour N. (2014); Pabst R (2003); Kang XQ, et.al. (2006); Le Blanc K, et.al. (2005); Carl A. Gregory, et.al. (2005); Baksh D, et.al. (2004); Figueroa FE, et.al. (2012); ATCC (2012); ATCC (2015); Lomonte B (2009); Ramos-Barbón D, et.al. (2005);