# Alveolar Macrophage Immunometabolism study

Published: 07-10-2020 Last updated: 09-04-2024

We aim to analyze AMs of healthy volunteers using an integrative approach. Combining functional and phenotypical analyses with -omics based techniques can discover relationships across several cellular modalities, hereby providing an integrative...

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Ancillary infectious topics
Study type	Observational invasive

# Summary

#### ID

NL-OMON54141

**Source** ToetsingOnline

Brief title AMINO study

# Condition

- Ancillary infectious topics
- Respiratory tract infections

#### Synonym

lung inflammation, pneumonia

**Research involving** Human

## **Sponsors and support**

Primary sponsor: Academisch Medisch Centrum Source(s) of monetary or material Support: Ministerie van OC&W

## Intervention

Keyword: Alveolar macrophage, Immunometabolism

### **Outcome measures**

#### **Primary outcome**

Analysis of immunometabolic pathways in alveolar macrophages of healthy

volunteers using an integrative approach (in vitro analysis of the inflammatory

and metabolic response to various stimuli and modulators).

#### Secondary outcome

- 1. Composition and diversity of the lung microbiome from BAL-fluid.
- 2. In vivo visualization of the healthy alveolar compartment and airway wall

layers using biopsies, Optical Cohorence Tomography (OCT) and Confocal Laser

Endomicroscopy (CLE).

# **Study description**

#### **Background summary**

Alveolar macrophages (AMs) are phagocytes that reside on the surface of the lower respiratory tract, where they represent an initial line of leukocytic antimicrobial defense. AMs showcase an extreme plasticity in immunological functions, which is warranted by their localisation. AMs have the capability to transition from anti-inflammatory housekeeping cells into central nodes of immune activity during lung injury and infection. These functions are relatively well described, however the immunometabolism behind this plasticity remains enigmatic. Which metabolic changes facilitate this adaptive potential is unknown. Can we define specific immunometabolic pathways that drive these unique characteristics, also comparing this to blood-derived macrophages? We will also investigate the direct microenvironment in which the AMs reside. We aim to measure the composition of the lung microbiome, present in the microenvironment, from remaining BAL fluid. Finally we will utilize lung biopsies, Polarization Sensitive (PS-) Optical Cohorence Tomography (OCT) and Confocal Laser Endomicroscopy to in vivo visualize the healthy alveolar compartment and airway wall layers, being the direct boundaries of the

microenvironment.

#### **Study objective**

We aim to analyze AMs of healthy volunteers using an integrative approach. Combining functional and phenotypical analyses with -omics based techniques can discover relationships across several cellular modalities, hereby providing an integrative representation of the cell state. This study also aims to investigate the composition and diversity of the lung microbiome in a healthy state. Futhermore, the goal is to visualize the healthy alveolar compartment and airway wall layers using (PS-) OCT and CLE and to compare the performance of the current PS-OCT system with an upgraded version.

#### Study design

Observational study in healthy volunteers via bronchoscopy.

#### Study burden and risks

Participants might experience discomfort from the bronchoscopy and venapuncture. We deem the possible gain of knowledge to outweigh the burden and risks of this study. In depth understanding of the core mechanisms of AMs in a healthy state is key to understand the pathophysiology of lung disease. Participants will be thoroughly informed and financially compensated for their time, effort and possible discomfort. The intervention is a standardized procedure which is described in detail in this protocol. Extensive bronchoscopy experience, including BAL and OCT/CLE is available within the Amsterdam UMC. Bronchoscopy for the collection of bronchoalveolar lavage fluid, biopsies and OCT/CLE images is in general a safe routine and research procedure. Both adverse and serious adverse events resulting from this procedure are uncommon. The participants will be given written instructions in the form of an information leaflet on what to do in case of dyspnoea or fever. This same leaflet is normally given to patients undergoing routine bronchoscopy in the Amsterdam UMC.

# Contacts

#### **Public** Academisch Medisch Centrum

Meibergdreef 9 Amsterdam-Zuidoost 1105 AZ NL Scientific Academisch Medisch Centrum

Meibergdreef 9 Amsterdam-Zuidoost 1105 AZ NL

# **Trial sites**

## **Listed location countries**

Netherlands

# **Eligibility criteria**

Age Adults (18-64 years)

## **Inclusion criteria**

- Healthy individual between 18 and 60 years of age
- Non-smoker or ex-smoker (>2 years)
- BMI 17-30 kg.m2

# **Exclusion criteria**

- History of respiratory diseases
- History of bleeding disorder
- Using anti-inflammatory and/or anticoagulant medication

# Study design

## Design

Study type:Observational invasiveMasking:Open (masking not used)Control:Uncontrolled

Primary purpose:

Basic science

## Recruitment

NL	
Recruitment status:	Recruiting
Start date (anticipated):	09-06-2021
Enrollment:	20
Туре:	Actual

# **Ethics review**

Approved WMO	
Date:	07-10-2020
Application type:	First submission
Review commission:	METC Amsterdam UMC
Approved WMO Date:	26-04-2021
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	28-04-2023
Application type:	Amendment
Review commission:	MEC Academisch Medisch Centrum (Amsterdam)
	Kamer G4-214
	Postbus 22660
	1100 DD Amsterdam
	020 566 7389
	mecamc@amsterdamumc.nl

# **Study registrations**

# Followed up by the following (possibly more current) registration

No registrations found.

## Other (possibly less up-to-date) registrations in this register

No registrations found.

## In other registers

**Register** CCMO **ID** NL73679.018.20