Interaction of Nanoparticles with Cells of the Airway Epithelial Barrier: A Study with Cell Culture Models

Barbara Rothen-Rutishauser
Institute of Anatomy, University Bern

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Epithelial airway wall – *in vitro* system

- Macrophage
- Dendritic cell
- Epithelial cell
- Basal membrane
- Particles

Epithelial cell monolayer

Macrophage

Dendritic cell

Insert

P. Gehr
Triple cell co-culture:

Polystyrol particles

- F-Actin
- CD14

- F-Actin
- CD86

1 µm

0.2 µm

0.078 µm
25 nm Gold particles

30nm Titanium dioxide particles
Determination of TNF-α in the supernatants

**size**

**material**
Aerosol exposure

Cell culture at air-liquid interface
1µm Particles
F-Actin
CD86
Conclusions:

Particles $\leq 1\mu m$ are found within all three cell types more in macrophages and dendritic cells.

TNF-\(\alpha\) release is dependent on size and material.

The cellular interplay can be studied with the triple cell co-culture system.
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