

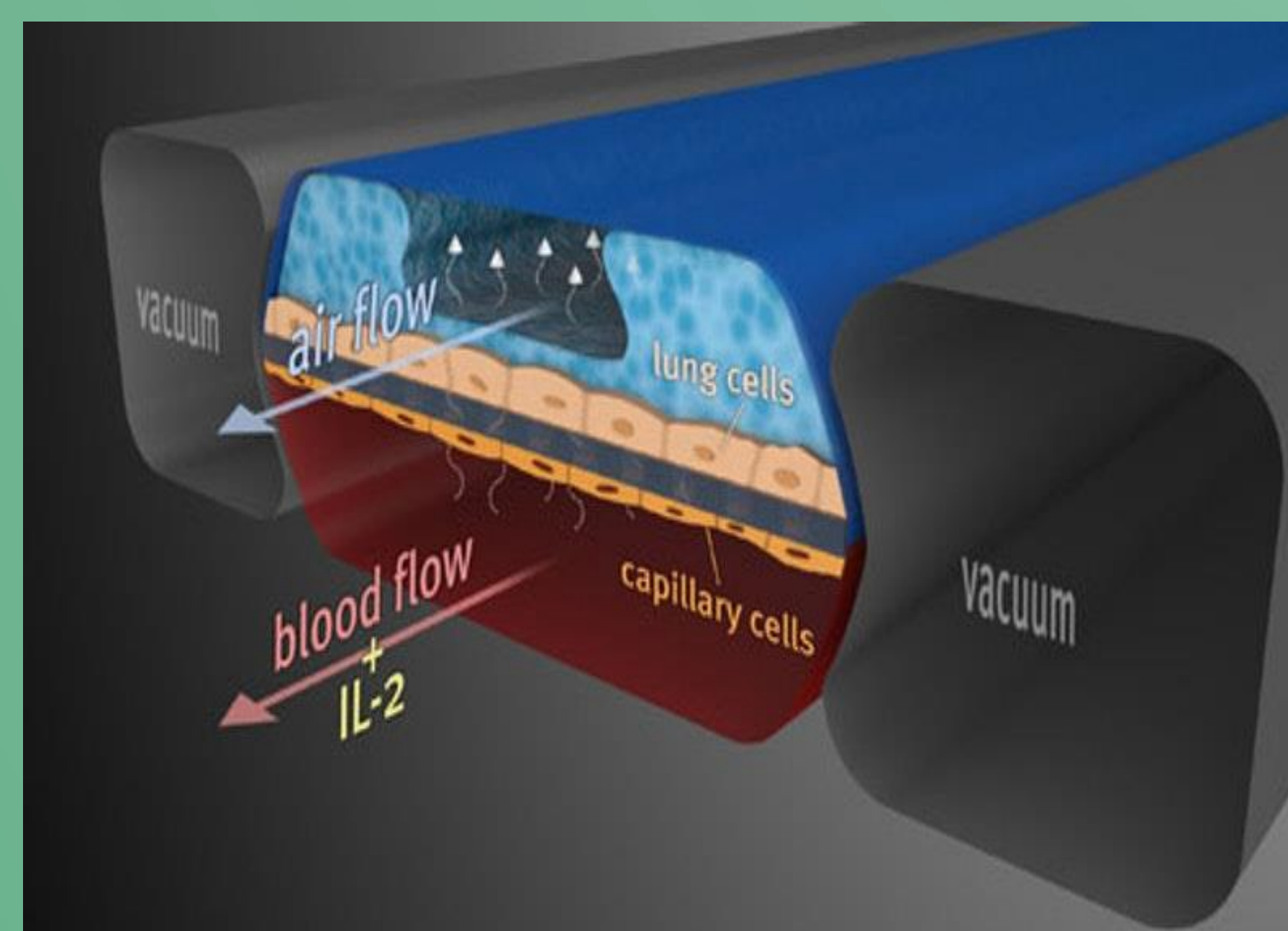
(COPD) DRUGS TESTED WITH ORGAN CHIPS: A REDUCTION IN ANIMAL TESTING

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Background

Preclinical drug testing, determines the degree of safety of the chemical and identifies potential side effects. While the use of live animals for experimentation has been the common method of testing, many alternatives are being developed, bringing a humane pathway to increased accuracy into the world of medical science. One of the most versatile is “Organ Chip.”

Organ Chip



INTERLEUKIN-2 (IL-2) IS INTRODUCED INTO THE CHIP, IF NECESSARY, TO STIMULATE THE PRODUCTION OF IMMUNE CELLS.

Experimentation

In 2015, Wyss Institute tested the effects of COPD medication on a lung chip lined the inflamed lung/alveolar tissue of a patient with COPD or asthma. Another chip, lined with tissue from a healthy patient, was prepared for comparison.

METHOD

- Flexible Polymer base
- Two hollow channels
- Porous membrane divider
- Line divider with fully matured, living human lung cells
- Mechanical applications to mimic smooth muscle contractions/breathing
- One channel exposed to air, the other housing a synthetic blood medium to maintain the cells.
- The chemical agent tested is administered, either as an inhalant into the air-exposed chamber, or as an oral medication, into the synthetic blood stream.

RESULTS

The findings indicate that:

- two drug compounds, each targeting a different part of the inflammatory pathway, suppressed the disease process in asthma- and COPD-cultured chips.
- A macrophage-activator was discovered when the tissues were introduced to a viral agent.

Conclusion:

With the accuracy, versatility, and added benefits in the convenience of testing via the Organ Chip, animal experimentation can be significantly reduced.

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