

## Sample Plate for a Microscope, an Interference Reflective Microscope System Comprising Such a Sample Plate and a Brightfield Microscope System Comprising Such a Sample Plate

Health & Wellness
Assistive Devices/Teaching Methods and Materials

# Opportunity

Cell adhesion dynamics and morphology are critical cellular responses to the surrounding microenvironment. However, existing techniques for imaging such phenomena typically require cell fixation, preventing the observation of live cell behavior in real time. Current practices such as scanning electron microscopy and immunofluorescence do not allow for the study of cells in their natural state. Although interference reflective microscopy allows live cells to be viewed, it is limited to viewing flattened surfaces or nano-roughened surfaces. These limitations are addressed by the invention's sample plate, which enables the observation of live cells in concave recesses. This will allow researchers to study cell adhesion dynamics and behavior in more physiologically relevant curved microtopographies, thereby advancing the field of cellular biology.

#### Technology

The technology features a specialized sample plate for a microscope that facilitates the observation of live cells in real time. Unlike conventional imaging techniques, which often require cell fixation, this sample plate incorporates a concave recess designed to house cells while maintaining their natural behavior. The design includes integrated lenses that enhance the imaging quality by focusing light accurately. This setup allows for the study of cell adhesion dynamics and morphology on curved surfaces, providing valuable insights into cells' responses to their environment. By enabling three-dimensional imaging of live cells, this innovation significantly advances research in cellular biology and tissue engineering.

#### Advantages

- Unlike traditional techniques that require cell fixation (e.g., scanning electron microscopy and immunofluorescence), this invention allows for the real-time observation of live cells, providing more accurate data on cellular behavior.
- The technology affords three-dimensional imaging. The sample plate's design enables imaging on curved surfaces, facilitating the study of cell dynamics in a more physiologically relevant context than the flat surfaces used in conventional methods.

Patent filed

**IP Status** 

Develop Concept

Proof

concept

**Build Value** 

- The size of the microscope's sample plate can be customised depending on the application and is suitable for any adherent cell type.
- The microscope's sample plate can be manufactured in a straightforward and cost-efficient manner and is suitable for mass production.

### Applications

- Researchers investigating cell adhesion dynamics
- Microscopists
- Biomedical researchers and engineers

