

# Title: Indole-based Fluorescence Probe for Cell Organelle-Lipid Droplets (LDs)

## Technology USP

- ❑ Newly designed fluorescence probe of staining live cells for bio-imaging, including novel fluorescent cell labelling dye for Lipid droplet imaging and analysis in real-time/Live samples.
- ❑ Optimal for capturing Live cell Lipid droplet status in wash-free conditions both in vitro and in vivo.
- ❑ The developed probe is easy to synthesize, which lowers the cost of available dyes in the market to stain lipid droplets.

## Background

The existing fluorescence probes for staining Lipid droplets suffers with fluorescence crosstalk and permeability in live/fixed cells is the main issue

## Scientific merit

Indole based fluorescence probe enables the following features to monitor LD in live cell:

- ❑ High Selectivity
- ❑ Cell membrane permeability in Live and fixed condition
- ❑ High S/N ratio
- ❑ Low Fluorescence cross talk

## Societal Relevance

In order to monitor the Lipid droplets in Live/ Fixed cells in various cancer/non-cancer cells, and deep tissues via confocal imaging the LipiK510 can be widely used.

## Market size/Commercial Potential

Hospital, laboratories, the pharmaceutical industry and medical research, vaccine and drug development and disease diagnosis, flow cytometry uses dyes to detect or measure the characteristics of cells or tissues.

## TRL

Current Technology Readiness Level (TRL): 5

## USP of technology

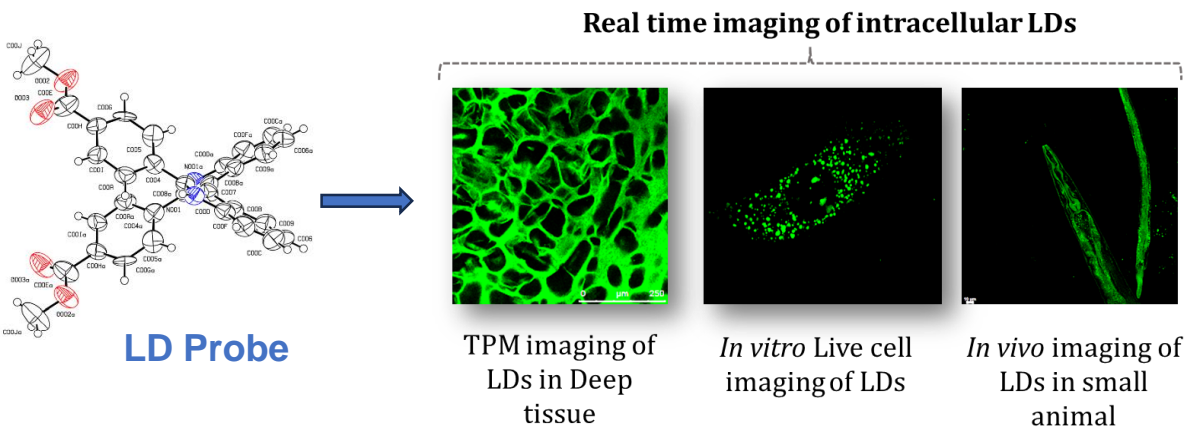
There are few fluorescence dye probes available for LDs: BODIPY 493/503 and Nile red are the most widely used commercial probes for LDs fluorescence imaging, but their imaging performance is often unsatisfactory due to the small Stokes shift and poor specificity, respectively.

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## overseas market penetration

Fluorescent dyes are in growing demand in academics Biopharmaceutical, Hospital and Commercial Laboratories, etc and the market is expected to grow (CAGR 2023-2030). The global Fluorescent Dye market was valued at US\$ 909.8 million in 2023 and is anticipated to reach US\$ 1231.1 million by 2030, Asia Pacific is Expected to Grow the fastest during the forecast period.

## High Resolution image of the technology prototype



## Number of samples tested/validated

Cancer cells (hepatocellular, lung, neuroblastoma etc.), Normal cells (human kidney cells), and tissue of the liver in balb c mice and small animal like *c. elegans*

## Cost of Sampling

INR approx. 10,000/- per 100gm of LipiK510

Studies conducted for getting regulatory approval NIL

Any other information relevant for evaluating the technology

NIL

## Patent Details

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Details of PIs, funding agency and third party, if involved in development

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