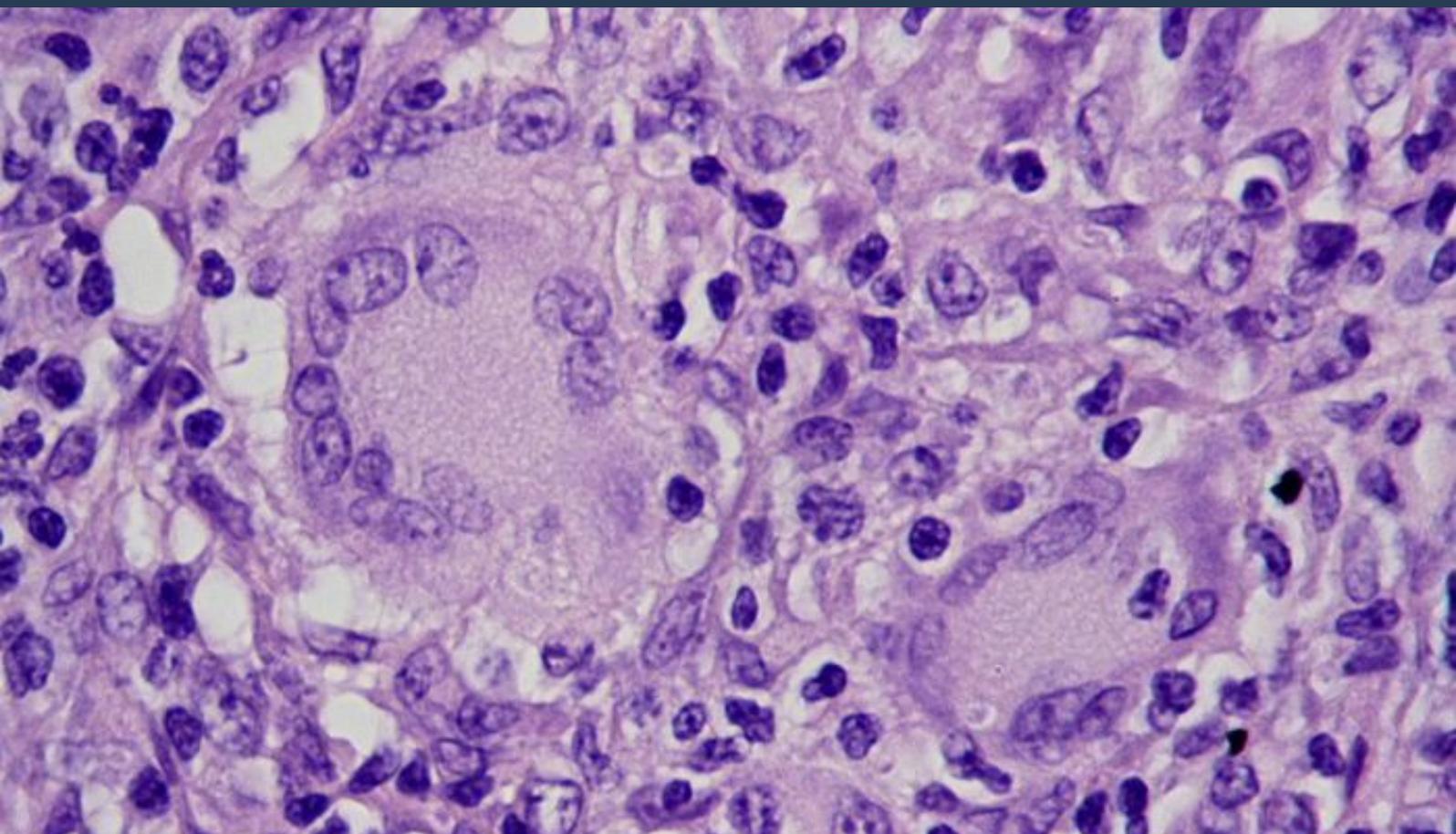


# Drug Delivery to the Intestinal Lymphatic System

A prodrug formulation to improve drug delivery to the intestinal lymphatic system



*Please note, header image is purely illustrative. Source: Patho, Wikimedia, CC BY-SA 3.0*

## IP Status

Know-how based, No patent

## Seeking

Development partner, Commercial partner, Licensing, Seeking investment

## About **University of Nottingham**

The University of Nottingham produces world-changing research by focussing on the problems and challenges that affect societies and people on a wide scale. More than 80% of Nottingham research is ranked in the highest categories 'world-leading' or 'internationally excellent'.

# Background

The intestinal lymphatic system is the central organ for the immune system as it accommodates more than half of the body's lymphocytes. Therefore, it offers a merit as a physiological compartment with enormous potential in improving treatment of immune system related diseases such as autoimmune diseases, lymphatic system-associated cancers, human immunodeficiency virus (HIV) infections and cancer metastasis. However, only a very limited proportion of a drug can usually be distributed from the systemic circulation into the lymphatic system. Consequently, in order to achieve sufficient concentrations of the drugs in the affected lymph nodes, the required levels in the systemic circulation will be very high and associated with significant side effects. Accordingly, there is an unmet need for targeted increased delivery of therapeutic agents to the intestinal lymphatics.

## Tech Overview

A long list of prodrugs were synthesised that would be expected to increase the efficiency of delivery of drugs to the intestinal lymphatic system, prodrugs that were engineered to be stable in the gastrointestinal tract while being very unstable in the lymphatic system. From this list a candidate providing the maximal desired enhancements was identified.

## Benefits

The technology is a novel method of delivering drugs to the intestinal lymphatic system, when the active drug molecule does not have right physicochemical properties. The advancement through employing the activated prodrug approach has been demonstrated to deliver a 17-fold increase of the active drug delivered to the mesenteric lymph nodes when compared to the drug alone. This enables a therapeutic dose to reach the lymphatic system after administration of a tolerable oral dose.

## Applications

This technology has potential applications in improving or re-purposing drugs that have utility in diseases of the lymphatic system. Diseases that enhanced targeting the lymphatic system provides access to the target tissues, in turn increasing efficacy. Diseases such as autoimmune diseases, lymphatic system-associated cancers, human immunodeficiency virus (HIV) infections and cancer metastasis.

## Opportunity

Commercial or development partners or potential licensees are being sought.