

IRNovate



IRNovate aims to address the immense global health challenge associated with liver disease through their groundbreaking solution of a new minimally invasive venous access biopsy device for the liver.

Overview

- IRNovate aims to address the immense global health challenge associated with liver disease.
- Liver biopsy currently faces limitations due to the significant risks associated with the two available biopsy methods.
- IRNovate has addressed these risks through their groundbreaking solution – the **Venous Access Biopsy Device (VABS)**.
- This single-use disposable device measures liver ‘blood pressure’ during the procedure and offers enhanced safety, higher patient acceptance, lower risk, faster recovery times and increased usage amongst other benefits.
- With its transformative potential, IRNovate’s VABS has the potential to profoundly alter the trajectory of liver disease.

Background of Liver Disease

- Liver disease is an increasingly prevalent health concern globally.
- The magnitude of liver diseases varies based on its specific condition such as fatty liver disease, viral hepatitis, metabolic syndrome, carcinogens and autoimmune liver diseases amongst others.
- The aftermath of liver disease could lead to cirrhosis, liver failure, liver cancer and even death.
- The Global Health Institute measured 1.25 million deaths in 2016 - a 27% increase since 2000.
- Liver biopsy is the gold standard for diagnosis and appropriate treatment. There are currently two methods of liver biopsy: Direct – Percutaneous Liver Biopsy (PLB) & Neck – Transjugular Liver Biopsy (TJLB).
- However, both of these existing methods have several limitations that lead to major complications such as bleeding, severe pain, puncturing visceral organs, lengthy recovery periods and even death in several instances.
- **IRNovate’s groundbreaking solution – the Venous Access Biopsy Device (VABS) – addresses these limitations.**

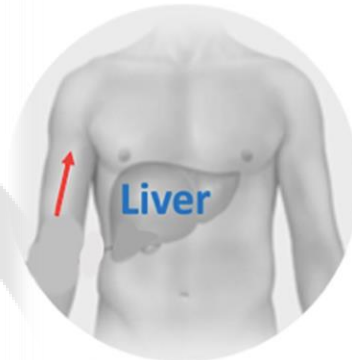
Team

- IRNovate is a spinout from the National University of Singapore (NUS) and is founded by Dr Kamarjit Singh Mangat.
- Dr Mangat has been Head of Interventional Radiology at National University Hospital (NUH) since November 2016 and also serves under Alexandra Hospital’s Diagnostic Imaging Services.
- From February 2004 to September 2014, Dr Mangat was a Consultant Hepatobiliary/Interventional Radiologist at the Queen Elizabeth University Hospital Birmingham, UK (QEHB) working with the Liver Unit.

- The Liver Unit at QEHB is one of the largest in the world hence a diverse and in-depth knowledge of all hepatopancreaticobiliary (HPB) problems was obtained.
- Dr Mangat’s main clinical interests and expertise lie in HPB intervention and imaging. He also has extensive experience of post-transplant liver intervention and of biliary procedures.
- Dr Mangat is also the inventor of the ‘Biliary Biopsy Forceps’.

The Venous Access Biopsy System

Arm method



- **Biopsy device** through a vein in the arm to take a liver tissue sample under X-ray imaging with a dye
- Also allows for measurement for liver blood pressure, which is useful for the doctor
- Recovery time:
 - Bed rest in hospital for 1 hours
 - No strenuous exercise for 28 hours
 - Total recovery time at home: up to 24 hours
- Risk of death: 1 in 2,500 people

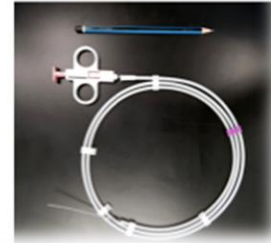


Image credit: <http://www.endosuite.com/videos/ven-fib-for-liver-biopsy-vs-conventional-methods>

- IRNovate’s balloon anchored biopsy device is patented, while their balloon-anchored flexible needle and catheter for biopsy and one needle biopsy device are patent pending.

Market Size

Projected Potential Market

- Sale price of each disposable patient use kit is greater than USD 1000.
- Based on conservative estimates, the potential market is approximately USD 500-700 million.
- Therefore, the total addressable market is potentially larger than USD 1.25-1.50 billion.

Target Market Potential for Non-Alcoholic Fatty Liver Disease (NAFLD)

- Non-alcoholic fatty liver disease (NAFLD) is one of the most common liver diseases worldwide, especially within Western countries, affecting nearly 25% to 30% of the general population.
- 30% of NAFLD patients will require liver biopsy to determine the cause and extent of the disease.
- The occurrence of non-alcoholic fatty liver disease (NAFLD) presents a total addressable market of 645 million.
- At a conservative estimate of 1%, the obtainable market penetration for IRNovate is 1.93 million.
- Assuming a device cost of \$850, the total market potential for IRNovate amounts to 1.64 billion.

Business Strategy

- HSA approval → Singapore Sales → Collect data → CE/FDA approval → Global sales
- HSA approval → Singapore Sales → Collect Data → CE/FDA approval → MNC partnership

Fundraising

- In its pre seed round, IRNovate was valued at \$10 million and has raised \$2 million thus far.
- IRNovate has received funding from I2start (\$250k), Kickstart (\$500k) and GAP (\$260k).
- Funds raised will be used for beta prototyping and trials for regulatory/legal requirements for FDA submission, along with manufacturing, distribution and sales.
- For its exit strategy, IRNovate plans to partner with a multinational corporation and/or proceed to manufacturing and sell in Singapore initially.

Impact



About Milltrust International

With its mantra of “Sustainable Prosperity”, Milltrust International Group is a global investment organisation making sustainable impact investments in the biggest themes of our generation: climate change, the demand for food and protein, the future of medical technology, and the rise of the developing world.

Over the past decade, Milltrust has assembled a highly experienced team of leading industry professionals focused exclusively on providing investment management expertise on both public and private markets.

Milltrust’s private investments consist of a plethora of science-backed early-stage disruptive companies in the space of climate impact, healthcare, and agriculture. By drawing on the experience of investment bankers, asset managers, healthcare professionals, and agronomists, our diversified assets have pioneered breakthrough technology in environmental management, medical diagnostics, and animal genetics and welfare with the aim of delivering sustainable solutions an ever-growing and increasingly ageing global population.

About The British Innovation Fund II

The British Innovation Fund II follows on from the success of The British Innovation Fund I, investing into high potential companies with a focus on agri-tech, the future of healthcare, climate impact, and alternative protein, where incontrovertible science is at the core of the commercial proposition.

More Information

Milltrust International UK

6 Stratton Street
London W1J 8LD
United Kingdom

+44 (0)20 8123 8316

info@milltrust.com

Milltrust International Singapore

77B Tras Steet
Singapore 079016
Singapore

+65 6225 3052

info@milltrust.com

Signatory of:



Disclaimer

For professional investors only. This document is strictly private and confidential and is meant as guidance and information only. It is issued by Milltrust International LLP which is authorised and regulated by the Financial Conduct Authority in the United Kingdom. Milltrust International LLP has its registered office at 5 Market Yard Mews, 194-204 Bermondsey Street, London, SE1 3TQ, United Kingdom and is a subsidiary of Milltrust International Group (Singapore) Pte Ltd. Milltrust Ventures Pte Ltd is a subsidiary of Milltrust International Group (Singapore) Pte. Ltd and is registered with the Monetary Authority of Singapore as a Venture Capital Fund Management Company (VCFM). The content in this document is for informational purposes only and does not constitute legal, tax, investment, financial, or other advice. Nothing contained in this document constitutes a solicitation, recommendation, endorsement, or offer by Milltrust International LLP or any of its affiliates to buy or sell any securities or other financial instruments. No such solicitation or offer is made in this or in any other jurisdiction in which such solicitation or offer would be unlawful under the securities laws of such jurisdiction. All content in this document is information of a general nature and does not address the circumstances of any particular individual or entity. Nothing in the document constitutes professional and/or financial advice, nor does any information on the document constitute a comprehensive or complete statement of the matters discussed or the law relating thereto. It should therefore not be used as the sole basis for any investment or other decision. The use of or access to this document or content by any person does not create a fiduciary relationship between such person and Milltrust International LLP. The sole responsibility of evaluating the merits and risks associated with the use of any information or other content on this document before making any decisions based on such information or other content rests with the user and their professional advisers. Notice to US investors: The shares of Milltrust International Managed Investments ICAV have not been registered under the 1933 Securities Act or under the 1940 Act; however, the company takes advantage of the 3(c)7 exemption and shares are available to 3(C)(1) US “qualified purchasers” and those qualifying under Reg D. Distribution activity in the US is undertaken by Silverleaf Partners LLC, a registered broker-dealer based in New York. Beyond providing initial capital for the companies we invest in, Milltrust may also leverage its extensive network to support our portfolio companies on a commercial basis with additional capital raises as they grow. Whether through introductions to potential investors, strategic partnerships, or other value-add services, we are committed to helping our portfolio companies succeed. Milltrust may receive compensation for services rendered to this company.