

SCALE UP OF ULTRA- SMALL GLYCAN COATED GOLD NANOPARTICLES



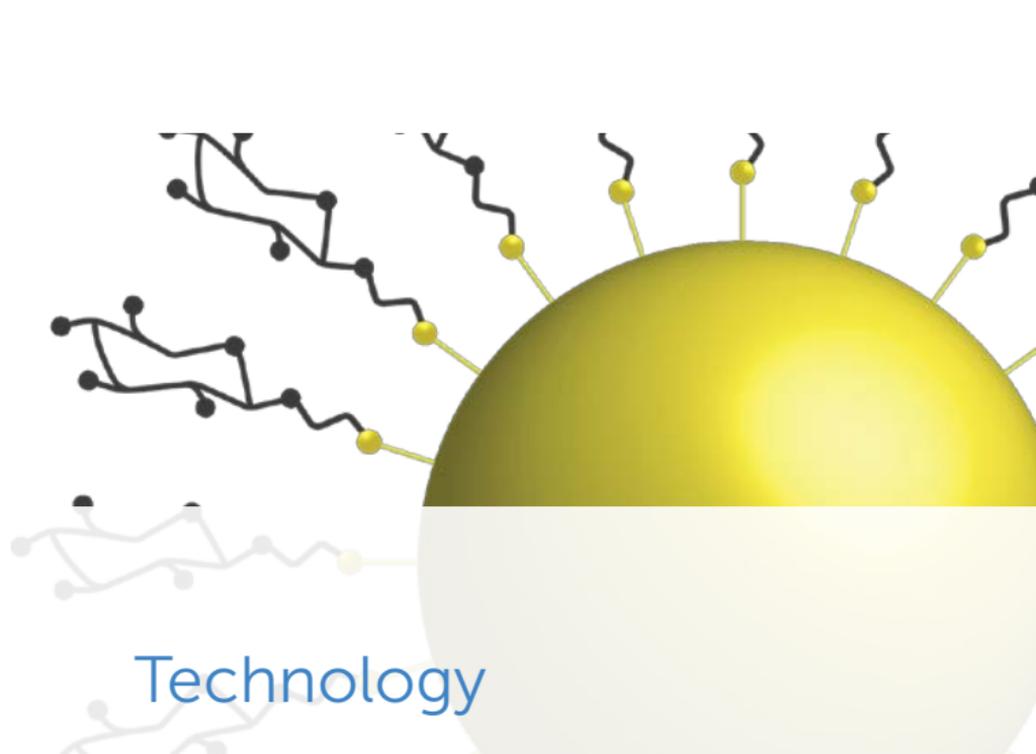
nanofabricating



NANOFACTURING will design and build pilot and large scale manufacturing lines for the production of nanopharmaceuticals. The project will focus on the scale up of glycan-coated gold nanoparticles, the latest generation of nanomedicines.

A number of nanopharmaceutical formulations have been shown to hold considerable potential for enabling more effective and less toxic therapeutic interventions. However, progress to date in translating these initiatives to commercial success has been limited.

Nanofacturing aims to address the bottlenecks in the delivery of these medicines to the market.



Technology

Nanomanufacturing's core technology relates to glycan-coated gold nanoparticles.

Gold nanoparticles comprise of a core of gold metal atoms surrounded by a layer of glycans (sugars) to which various ligands can be attached.

The small size of Gold nanoparticles creates several critical qualities for GNP-based drugs:

- 1 They are able to pass through normal pore sizes in blood vessels and circulate via interstitial flow to normal and diseased organs, therefore allowing delivery to a large number of disease sites
- 2 GNP's are quickly cleared from the body by excretion in the urine without the need for metabolism thereby increasing the elimination of the product



Nanopharmaceutical Manufacture

There are a number of stages in the manufacturing process of nanopharmaceuticals, each of which presents its own individual challenges.

These challenges require complex solutions when scaling up the manufacturing process to meet the volume requirements and GMP compliance of a marketed drug.

Nanofabricating proposes to address these fundamental parts of the manufacturing supply chain:

- The supply of ligands
- Pilot scale gold nanopharmaceutical batch manufacture
- Nanopharmaceutical characterisation and industrial scale up

This will create a platform system for pilot, mid- and large-scale manufacture in the EU.



Transbuccal Insulin

Midatech's most advanced research programme is focused on applying gold nanoparticle technology to develop a method of needle-free delivery of insulin for the treatment of diabetes.

Midatech has co-developed a self-dissolving, oral, postage stamp-sized strip containing nanoparticle conjugated insulin. This strip is placed on the inside of the cheek and the insulin is absorbed directly into the bloodstream via the mucous membrane of the cheek.

The technology developed through Nanofabricating has the potential for applications in the following therapeutic areas:

- Endocrine e.g. Diabetes
- Central Nervous System e.g. Alzheimer's
- Antiviral e.g. Dengue
- Oncology e.g. Ovarian Cancer

Partners



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