

Genzyme Pharmaceuticals

COMPONENTS AND TECHNOLOGIES FOR LIPOSOMES

While liposomes have been investigated for many years and commercial products exist today in the marketplace, the research and development of liposomes used in novel drug delivery is ever expanding in the pharmaceutical industry. Genzyme Pharmaceuticals, a division of Genzyme Corporation, provides an integrated resource of products, services and technologies tailored to customer needs in the area of liposomal drug delivery.

LIPID PRODUCTS

Genzyme Pharmaceuticals is a world leader in the production of high-performance lipids used as key functional components for liposomes. These products are readily available from our extensive lipids product list:

- > Phospholipids, such as PC's (phosphatidylcholines) and PG's (phosphatidylglycerols)
- > Cationic lipids, such as DODMA, DOTAP
- > Helper lipids, such as DPyPE
- > PEG'ylated lipids to provide "stealth" like properties to liposomes, and PE's (ethanolamines) such as MPEG2000 DSPE

CUSTOM MANUFACTURING SERVICES

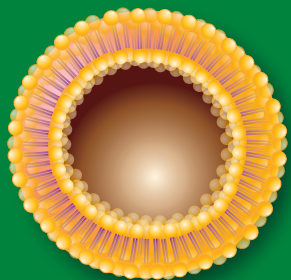
Genzyme Pharmaceuticals provides custom manufacturing of proprietary drug delivery materials. Many of these products are being used in the formulation of liposomes for both liposome formation and targeting. Examples are:

- > Peptides
- > Transfection Polymers
- > Proprietary lipids and cationic lipids
- > Carbohydrates

ANALYTICAL AND REGULATORY SERVICES

Our Swiss facility maintains an independent Quality Assurance group and Quality Control laboratories fully integrated with the Genzyme Corporate Quality system. These labs are staffed with highly trained technicians and outfitted with state-of-the-art equipment, ensuring seamless support in critical development areas such as:

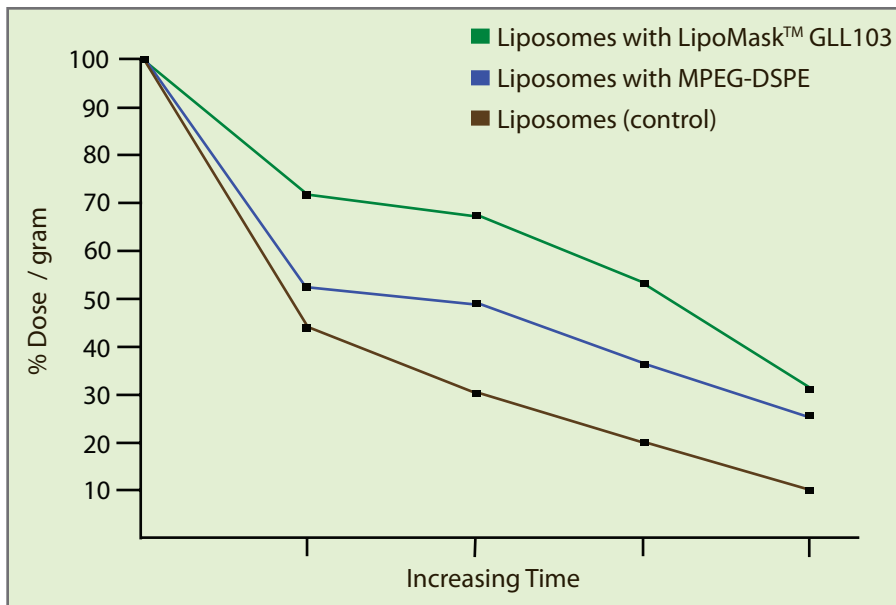
- > Analytical development and validation
- > Cleaning validation and stability studies
- > Supplier evaluation and qualification
- > GMP and manufacturing documentation



PROPRIETARY LIPOSOME TECHNOLOGY

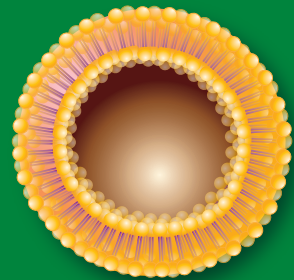
Genzyme Pharmaceuticals' proprietary drug delivery technology, LipoMask™, is comprised of novel synthetic molecules which, when used in conjunction with other particle-forming lipids, form liposomes or nanoparticles that increase the circulation half life of active drugs encapsulated inside the liposome. This provides passive targeting of therapeutic agents while also allowing for further modification of the liposome with targeting ligands for more specific use. This technology is available for customers to evaluate under a modified material transfer agreement for a fee. Customers are encouraged to develop IP for their proprietary drugs using this technology, which can subsequently then be licensed for further development.

Proof of Use Comparable Blood Circulation Times In-Vivo



FORMULATION DEVELOPMENT

While Genzyme itself does not have formulation development services, we offer the benefit of a strategic relationship with SurModics Pharmaceuticals. SurModics is available for contract formulation development and sterile fill-finish operations to support clients' clinical studies. Our customers are strongly urged to work simultaneously and confidentially with Genzyme Pharmaceuticals and Surmodics Pharmaceuticals to maximize development efficiencies around materials and formulations.



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