US FDA's Orphan Drug Benefits
Excorp Medical Bioartificial Liver System

The US FDA, after review of the Bioartificial Liver System developed by Excorp Medical, Inc., has determined that our system utilizing xenogeneic hepatocytes maintained in a hollow fiber bioreactor cartridge qualifies for orphan drug designation.

Benefits Include:

Seven Years' Exclusive Licensing. Congress has allowed the FDA to enter into a legal form of restraint of trade with Orphan-Drug Designation for seven years. The attached letter from the FDA is a legal document, which is very precisely worded. Orphan-Drug Designation is more defendable than a patent, because competing products cannot even appear in the marketplace without FDA approval, thereby avoiding the protracted and expensive legal battles defending a patent after a competitor has established a market presence.
Reference: http://www.fda.gov/orphan/webview.ppt

Types of Cells Covered. This is very broad, because it covers any non-human cell line, regardless of the source, such as:

1. hepatocytes harvested from an animal as we are currently doing,
2. cells harvested from a genetically engineered animal,
3. cells grown in a laboratory.

Patient's Indication for Treatment. This is very broad, covering any type of disease, which leads a patient to an hepatic coma deteriorating beyond Parson's Grade 2. Clearly, liver cancer is different from alcoholic cirrhosis, but both can lead to liver failure. This Orphan-Drug Designation may cover any and all disease entities, which lead to acute liver failure.

Technology Covered. The claim approved is worded broadly, covering any type of hollow fiber bioreactor cartridge, regardless of type of cartridge, the size of the cartridge or number of cartridges utilized. Virtually all of the potential competitors for bioartificial liver systems utilize a hollow fiber bioreactor cartridge.

FDA Advocate. An on-going dialog is required by the Orphan-Drug Designation between Excorp Medical, the Office of Orphan Products Development, and the Licensing body within the FDA. The following is a quotation from the FDA Orphan Products Internet site:

*"The **goal** of the Office of Orphan Products Development Grant Program is to encourage clinical development of products for use in rare diseases or conditions." "This program is essentially involved in the identification of orphan products and the facilitation of their development."*
Reference: http://www.fda.gov/orphan/grants/index.htm

Having this interaction with another division within the FDA, whose sole reason for existence is to encourage product development, is very encouraging for achieving fast-track FDA approval.

"Fast Track" Designation. The following is FDA's description of "Fast Track" designation:

"The benefits of Fast Track include scheduled meetings to seek FDA input into development plans, the option of submitting a New Drug Application in sections rather than all components simultaneously, and the option of requesting evaluation of studies using surrogate endpoints. The Fast Track designation is intended for the combination of a product and a claim that addresses an unmet medical need…" Reference: http://www.accessdata.fda.gov/scripts/cder/onctools/accel.cfm

Research and Development Funding. An application has been submitted to FDA's Office of Orphan Products for research and development funding, primarily directed to the clinical trials. The Orphan Products Division's stated objectives are:

"To fund clinical research that will accelerate or assist in the (FDA) approval…" and,
"To fund studies leading to publications concerning product safety and efficacy in peer-reviewed journals." Reference: http://www.fda.gov/orphan/webview.ppt

Tax Incentive. In addition to the R&D funding the Orphan Products Designation comes with a designated tax credit for the costs of clinical research:

"*50% of qualified clinical testing expense"*, with a "*20-year (tax credit) carry forward provision."* Reference: http://www.fda.gov/orphan/taxcred.htm