

Genopsys, Inc.

Protein Optimization Systems

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health



National Institutes of Health Commercialization Assistance Program
(NIH-CAP)

Company Profile

Industry Sector: Genetic Engineering - Proteomics

Company Overview: Genopsys is a genetic engineering company operating in the proteomics field of directed molecular evolution. The company's patented technology supports development of unique proteins ("therapeutic enablers") that link clinical diagnostics and therapeutics. Twenty first century biotech advances in drug therapy have created a demand for similarly sophisticated molecular tools to identify patients appropriate for such therapy and to monitor the effects of treatment. Examples of such therapeutic enablers currently under development at Genopsys are proteins that identify key sites on cancer cells that are necessary for effective therapy and proteins that continuously monitor blood glucose during a therapeutic process in hospital ICU's called "tight glycemic control". Each product targets a US market of at least \$500 million with potential global expansion.

Target Market(s): Near term: Biopharmaceuticals, Medical Diagnostics. Long term: Biofuels, Agriculture.

Management

Management Team:

Larimore Cummins, M.D., CEO. After clinical practice in gastroenterology, Dr. Cummins has served in a variety of management roles in small and large, private and publicly traded companies and has served as CEO for three successful early-phase med-tech startups in the fields of information technology and medical devices.

Eric Lietz, Ph.D., Founder, Director Genopsys patents are based on Dr. Lietz's inventive research. He has directed R&D efforts at the company since its inception.

Shauna Levinson, Laboratory Manager, Ms. Levinson has extensive experience in academic and industry settings.

Board of Directors:

Eric Lietz, Ph.D., Santa Cruz, California
Ralph Hodek, Ph.D., Houghton, Michigan
Joe Schmoke, Boca Raton, Florida

Key Value Drivers

Technology: Genopsys patents describe two proprietary methods of introducing diversity in the directed molecular evolution cycle. These methods produce libraries of mutants which are then screened to identify legacy and new protein function. idsPCR™. Mutations are introduced into a gene using random primers during PCR. This method identifies areas in proteins that will accommodate large-segment mutations. SCRAM™. Mutations are introduced by random primers that are attached to sequences which bind to the mutation target site identified by idsPCR. These methods may also be combined with traditional cloning techniques to incorporate additional protein functions such as antigen binding and side chains that may be used for attachment of chemotherapeutic toxins and fluorescent dyes.

Competitive Advantage: Genopsys technology is both patented and generally applicable. Methods that act directly on DNA are generally applicable to a variety of biotech solutions and thus capable of bringing value to a broad range of industries.

Plan & Strategy: Seeking investor and initial strategic partner.

*Technology funded by NIH-SBIR and being commercialized under the NIH-CAP.

Product Pipeline

- **Herca** – This product is a beta lactamase enzyme to which has been added a cancer marked binding site directed at the Her2 antigen of some breast cancers. The presence of this antigen enables therapy by advanced biopharmaceuticals such as Genentech's Herceptin. Development Stage: Mutation sites identified, and insertion of binding site begun. Prototype molecule anticipated Q3'08.
- **Vecar** – This product is a beta lactamase enzyme with binding affinity for the VEGF angiogenesis factor of colon and lung carcinoma, the target of therapeutic agents such as Genentech's Avastin. Stage: Same as Her2-based product.
- **Glupro** – This product is a glucose binding protein that fluoresces to a varying degree depending on the presence of glucose. It is derived by reengineering glucose oxidase. This modified protein is designed to serve as the glucose sensing component of a continuous in vivo monitor that will, in the short term enable "Tight Glycemic Control" in ICU's and in the long term become part of an artificial pancreas. Stage: Protein identification and gene sequence design.