

Thermogen, Inc.

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ThermoGen, Inc. is an international supplier of stable enzyme biocatalysts and biotransformation processes for pharmaceutical, agrochemical, specialty chemical and pharmaceutical intermediate markets. The Company was founded in 1988 by Dr. David Demirjian (President) and Dr. Malcolm Casadaban (University of Chicago) based on the concept of creating stable enzymes for industrial applications.

ThermoGen has received SBIR support from the **National Institutes of Health (NIGMS, NIDDK, NCI, NHLBI)**, the National Science Foundation, and the Department of the Army to pioneer technologies that are now key in the industry. The firm prospects for enzymes and uses accelerated evolution to enhance them. Custom enzyme discovery and implementation tools include proprietary enzyme libraries and gene banks, biocatalyst engineering and evolution systems (such as ThermoGenetic stabilization and ThermoFusion systems), and methods for rapid enzyme/mutant screening and process optimization. Patents have been allowed for ThermoGen's esterase collection, directed evolution systems and *Thermus* expression system.

The fine chemicals industry is now reaping the results of highly directed research efforts in biocatalysis. ThermoGen is a "trailblazer" (Chemical Engineering, July 1998) in biotransformation development; biocatalyst discovery, and has established new methods of screening enzymes and evolving proteins. These diverse catalysts are stable and effective.

ThermoGen was formed with funding support from the SBIR program. Today the Company has leveraged this investment and successfully commercialized the technology in several industries. Growth is expected to continue in chemical applications (such as fine and pharmaceutical intermediates) and commodity enzyme markets (such as food, Ag, and textile enzymes). Of key importance, the field of chiral drugs has undergone fundamental change. The most telling change is the maturity of a whole generation of single-isomer chiral drugs coming off patent. ThermoGen is a leading innovator in enzyme technology for chiral compounds with its ThermoCat® enzymes and screening kits for esterases and alcohol dehydrogenases. ThermoGen sees rapid discovery and accelerated evolution of industrial enzymes changing the way business will be conducted in the future. ThermoGen has reduced the time required to develop a complex biocatalyst from two years to six months with new improvements imminent.

National Institutes of Health Awards

Thermophilic Enzymes Accessed Via *Thermus* Genome

(CA 81578)

In Vivo Protein Engineering System

(CA 62646)

Thermus Expression System

(GM 52228)

Thermophilic Gene Transfer System	(GM 43039)
Transposon based tools for Thermophilic Organisms	(GM 46600)
Thermostable Enzymes Via Thermus Genome Sequencing	(HG 01671)
Thermostable Esterases and Lipases	(HL 57773)
Hyperbilirubinemia Treatment with Cloned Thermo-Enzymes	(HD 26225)