



## SGI Corporate Overview

### ***Harnessing the power of genomics, solving global challenges***

**Synthetic Genomics, Inc.** (SGI), a privately held company founded in 2005, is developing and commercializing genomic-driven advances to sustainably meet the global demand for critical resources, beginning with energy, chemicals and high value agricultural products. The company's science could be applied towards the production of a range of products, from synthetically derived vaccines to prevent human diseases to efficient cost effective ways to produce clean drinking water. SGI is currently working in the three broad projects areas of Next Generation Fuels and Chemicals (alliance with ExxonMobil Research and Engineering Company to develop algal biofuels), Microbial-Enhanced Hydrocarbon Recovery (collaboration with BP), and Sustainable Agricultural Products (collaboration with Asiatic Centre for Genome Technology). Specifically SGI is:

- Designing metabolic pathways for the production of next generation fuels and biochemicals from a variety of feedstocks, including carbon dioxide, plant biomass and coal
- Developing new biological solutions to increase the production and/or recovery rates of subsurface hydrocarbons
- Developing high-yielding, more disease resistant and economic plant feedstocks that are supplemented with efficient and environmentally friendly microbes to replace chemical fertilizers and confer disease and stress resistance

### **Scientific and Business Leadership**

The scientific strength of SGI lies in the decades of pioneering scientific research by its world-renowned founders, J. Craig Venter, Ph.D., Nobel Laureate Hamilton O. Smith, M.D., and the stellar scientific and business teams they have assembled. The company's scientific teams include leading researchers in plant genomics, bioinformatics, genome engineering, molecular biology, biochemistry, climate change and energy policies. In addition to the strong in-house research efforts conducted at SGI, the company sponsors fundamental research at the J. Craig Venter Institute (JCVI), a not-for-profit organization with more than 400 scientists and staff working on a variety of genomic research and policy fronts.

### **Science of SGI**

From rapidly discovering genes and developing advances to sequence whole genomes, to making innovations in synthesizing and constructing whole chromosomes and genomes, Drs. Venter, Smith and their teams are trailblazers in the use and development of these disruptive technologies. Their ability to read and then write the genetic code led to the development of the emerging field of synthetic genomics in which genes, synthetic chromosomes and even whole genomes can be designed, synthesized and assembled from the basic chemical components of DNA. SGI is using genes as the new design components of the future to develop custom-designed modular cassettes that encode entire microbial metabolic pathways for large-scale commercial applications, including the efficient conversion of carbon dioxide, plant biomass, and coal into next generation biofuels and chemicals.



## Milestones

### November 2003

JCVI scientists made the first significant strides in developing a synthetic genome by assembling the 5,386 base pair genome of bacteriophage  $\Phi$  X174 (phi X).

### 2005

The major scientific breakthrough in synthesizing phi X was a proof of concept that gave the team assurance of the potential of this technology and encouragement to pursue this work in a commercial setting. SGI was then founded in the spring of 2005 by J. Craig Venter, Ph.D, Nobel Laureate Hamilton O. Smith, M.D., Juan Enriquez and David Kiernan, M.D., J.D.

### June 2007

SGI and BP formed a collaboration to develop and commercialize microbial-enhanced solutions to increase the conversion and recovery of subsurface hydrocarbons.

JCVI researchers developed genome transplantation methods and techniques used to change one bacterial species, *Mycoplasma capricolum*, into another, *Mycoplasma mycoides*.

### July 2007

SGI and the Asiatic Centre for Genome Technology formed a collaboration to develop more high-yielding and disease-resistant plant feedstocks. The partnership entails sequencing oil seed plants such as oil palm and Jatropha.

### January 2008

The JCVI created the first synthetic bacterial genome, *Mycoplasma genitalium* JCVI-1.0, representing the largest man-made DNA structure.

### May 2008

SGI and the Asiatic Centre for Genome Technology completed the first draft assembly and annotation of the oil palm genome. The organizations also announced making progress in sequencing and analyzing the jatropha genome.

### December 2008

The JCVI team made a significant advance in genome assembly in which they created the synthetic *M. genitalium* genome from 25 overlapping fragments in a one-step assembly using recombination in yeast. The team is currently working on experiments to install a fully synthetic bacterial chromosome into a recipient cell and "boot up" this synthetic chromosome.

### May 2009

Jatropha genome completed.

### July 2009

SGI and ExxonMobil Research and Engineering Company established a multi-year research and development strategic alliance focused on exploring the most efficient and cost effective ways to produce next generation biofuels using photosynthetic algae.

#### Management

**J. Craig Venter, Ph.D.**

*Board Chairman, Co-Founder, CEO*

**Hamilton O. Smith, M.D.**

*Co-Founder, Co-Chief Scientific Officer*

**Aristides A.N. Patrinos, Ph.D.**

*President*

**Chuck McBride**

*Chief Financial Officer*

**Fernanda Gandara**

*Vice President, Business Development*

**Paul Roessler, Ph.D.**

*Vice President, Renewable Fuels & Chemicals*

**Eric J. Mathur**

*Vice President, Agricultural Solutions*

**Toby Richardson, Ph.D.**

*Vice President, Bioinformatics*

**Thomas Ishoey**

*Vice President, Subsurface Hydrocarbons*

**Tina Jones**

*Vice President, Human Resources*

#### Scientific Advisory Board

**Clyde Hutchison, Ph.D.**

*Chairman, Scientific Advisory Board*

**Kenneth H. Nealson, Ph.D.**

*Member, Scientific Advisory Board*

**George Poste, Ph.D.**

*Member, Scientific Advisory Board*

#### Board of Directors

**Juan Enriquez**

*Co-Founder of SGI; Managing Director, Excel Medical Ventures*

**Steve Jurvetson**

*Managing Director of Draper Fisher Jurvetson*

**David Kiernan, M.D., J.D.**

*Co-Founder of SGI; Senior Litigation Partner at Williams & Connolly*

**Alfonso Romo**

*Chairman and CEO of Plenus*

**Barry Schuler**

*Chairman and CEO of Raydiance, Inc.; Managing Director of Draper Fisher Jurvetson Growth Fund*

**Hamilton O. Smith, M.D.**

*Co-Founder, Co-Chief Scientific Officer*

**J. Craig Venter, Ph.D.**

*Board Chairman, Co-Founder, CEO*

#### Board Observers

**Justin Adams**

*Head of Venturing - Alternative Energy, BP plc.*

**Derrick Khoo Sin Huat**

*CEO of ACGT Sdn. Bhd.*

#### Investors

*The company's largest investors include: BP plc; Biotechonomy LLC; Draper Fisher Jurvetson; Plenus, S.A. de C.V.; ACGT Sdn Bhd; and Meteor Group*