



Business Overview

NIH says that over 60% of substance abuse is due to genetic factors...

Now, there is something you can do about it.

More Americans die from prescription pain medication abuse than all illegal drugs combined.



60-70% of addictions may be due to a genetic factor.

Our Mission

Our mission is to avoid, reduce, and eliminate substance abuse through proprietary laboratory testing. Salugen® Biosciences offers a solution to identify those genetic factors which account for 60% to 70% of addictions. This gives physicians the information they need to improve patient care and allows payers to contain costs.

Our Focus

Our initial focus is the costly and deadly abuse of prescription pain medications, which accounts for more than 3X the number of deaths in the United States than all illegal drugs combined.

Salugen enrolls physicians in a turn-key program to test patients at risk for narcotic dependence and tolerance, or those patients already displaying symptoms of abuse. Salugen testing occurs in a CLIA-certified laboratory. We deliver the results to the physician within one week and submit the bill and findings directly to the payer.

Identifying this major cause of narcotic treatment failure allows everyone to win - the patient, the physician and the payer.

Our Company

Founded in 2005, Salugen Biosciences has offices in San Diego, California and Columbia, Maryland. For more information, we invite you to visit our website at www.Salugen.com.

A Costly Problem

Though genetic factors play an influential role in substance abuse, gene testing is not a routine part of narcotic, pain management care. Because of this neglect, more than 3X as many people abuse prescription opioid medications in the United States than all other illegal drugs combined. The cost of this epidemic is nearly \$10Billion. Over 20% of the world's population has a chemical imbalance which limits their natural ability to feel reward and pleasure due to their genes.¹ These gene variations create an unnatural stress level, resulting in excess cravings and addictive behaviors.² These cravings are associated with the Top Three Leading Causes of Preventable Death.³



Salugen is the only laboratory to provide this solution.

Salugen's Testing Helps Contain Costs

Prescription opioid abuse is very costly to our society. Annually, it costs employers over \$4.6Billion, the healthcare system \$2.6Billion, and the criminal justice system \$1.4Billion.⁴

With a simple one-time test, physicians get important genetic information to help guide the use of prescription opioid medications and avoid the high costs of dependence and tolerance.

Early in the episode of care, physicians order Salugen testing on patients who have risk factors to avoid narcotic tolerance and dependence.

For patients not responding to low-dose narcotics or those requiring higher doses, physicians order Salugen testing for information to adjust and monitor treatment, contain cost, and resolve difficult cases.

¹ Comings DE et al. The dopamine D2 receptor locus as a modifying gene in neuropsychiatric disorders. *JAMA*. 1991 Oct 2;266(13):1793-800.

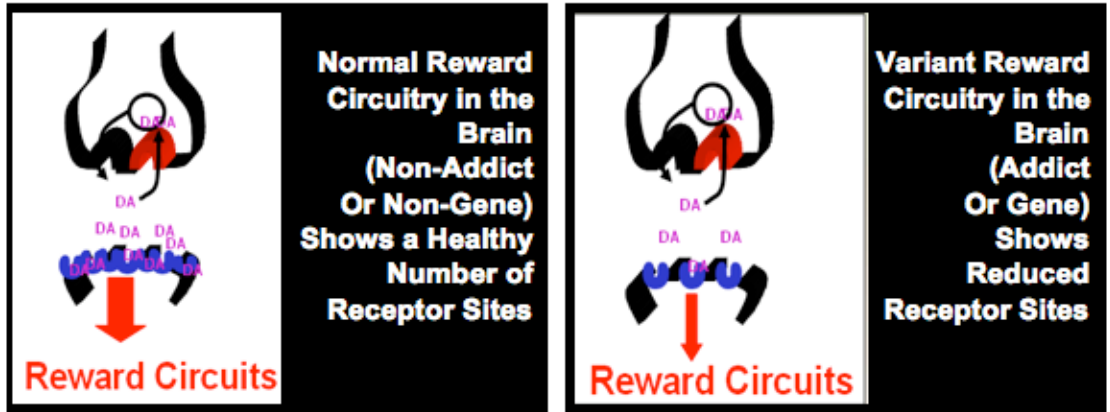
² Blum K, Sheridan PJ, Wood RC, Braverman ER, Chen TJ, Cull JG, Comings DE. The D2 dopamine receptor gene as a determinant of reward deficiency syndrome. *J R Soc Med*. 1996 Jul;89(7):396-400.

³ Mokdad, Ali H., Marks, James S. and Stroup Donna F. et. al. Actual Causes of Death in the United States, 2000. *JAMA*. 2004;291:1238-1245

⁴ Birnbaum HG et al. *Clin J Pain*. 2006;22:667-676.

Total cost of prescription opioid abuse in the United States was \$8.6 billion in 2001 and continues to grow today.⁴

74% of persons with this gene variation are likely to abuse narcotics, illegal drugs, alcohol, or other substances.²



The Salugen Solution

Identify the Genetic Factors and Treat Appropriately



Step 1 - Identify the Genetic Factors

The HAVEOS Genetics test is an evaluation of the genetic factors predisposing a patient to substance abuse. The Acute Care Test involves a 2-gene analysis, which is often ordered on patients at the first consideration of prescribing narcotic analgesic medication. The Chronic Care Test is a more in-depth analysis involving a total of 12 genes, which not only evaluates genes involved in common neurotransmitters such as dopamine and serotonin. In a published study of the HAVEOS Genetics test, researchers found a 74% positive predictive value, meaning that persons with these gene variations were 74% likely to have a reward deficiency disorder, such as drug dependence or tolerance, alcohol abuse, and sugar cravings.²

Step 2 - Treat Appropriately

If a patient is early in their treatment or naïve to narcotics, the treating physician should more closely monitor a genetically at-risk patient's narcotic usage with shorter prescriptions and regular urine drug testing. Otherwise, they can look to alternative analgesia to complement lower doses of narcotics. For those patients already on high-dose narcotics, the treating physician should look to reduce usage of those narcotics through effective detoxification programs.

Why Test Your Patients?

As a physician, you can get reliable information about your patient's predisposition to narcotic dependence and tolerance.

You will receive a detailed report that gives you the ability to direct proper treatment options for your patients.

Now...a physician can analyze 60% of the factors underlying narcotic abuse and dependence, insurers can contain spiraling costs, and patients can avoid or end the burden of substance dependence.



State of the Art Therapeutic Decisions

ACOEM Guidelines Support Genetic Testing

ACOEM Guidelines support genetic testing "when it is clear that the genetic trait directly affects job performance, when the trait being screened for predisposes a worker to a significant, consistent adverse outcome following an otherwise acceptable workplace exposure."

Additionally, the Federal Genetic Information Non-Discrimination Act (GINA) protects the employee from having genetic information used in employment decisions, such as hiring, firing, and promotions.

This regulatory framework allows for this testing to be implemented..

Payers reimburse for Salugen Testing

Each clinic approved to offer Salugen testing becomes an Affiliated Salugen Clinic (ASC) of the Salugen Medical Group, a division of Salugen Biosciences. The Salugen Medical Group coordinates the third-party billing for the testing. The testing is currently reimbursed by many workers compensation insurance companies, including: Gallagher Bassett, Liberty Mutual, State Compensation Insurance Fund (SCIF) of California, Zurich American, ESIS, ACE USA, Travelers, Corvel, Intercare, and others.

90% of all patients in United States pain clinics are taking opioid analgesics.



Key Points About the Salugen System:

- Contain Costs. Improve Outcomes.
- Clinically-proven gene test is pain-free, needle-free, and blood-free with the sample collected in the physician's office using a cheek swab.
- Turn-key system for a physician's office to get reimbursed for services rendered in sample collection and report review
- Testing performed in a CLIA-approved laboratory licensed in all 50 states
- Turn around time (TAT) - 7 to 10 business days

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