

THE REAL TRUTH ABOUT NON ANIMAL ALTERNATIVES!
(yes there's this much yet teachers lie and say animal testing is the only way)



***In Vitro*: Any Process or reaction that takes place in an artificially created environment outside of a living organism. Stem cells in petri dishes, *in silico* computer programs, synthetic biology, etc.**

Painful experimentation on innocent animals is cruel torture AND scientific fraud! Vivisection is so ancient that there are now cutting-edge technologies available to use instead of killing animals. It's endorsed by a bunch of old schoolers who refuse to let science change and grow. "It's the only way to cure disease, its how we've always done it" is not science. We think it's because they're truly addicted to blood and torture, but hey you can decide for yourselves when they lie and say there's no alternatives. What if you knew that there are very high tech solutions that let science progress without hurting a single innocent being? **What would you think of those who also knew this but continued to teach vivisection??** Very cool non-animal biotech alternatives are becoming available. Let your path to better our world be good and right. Start now to get in on cutting-edge knowledge...and salaries!

-Innovative biotechnology firm Hurel has developed a 3-D *in vitro* (test tube) human "liver" that scientists can use to study the breakdown of chemicals in the human body. This technology effectively mimics human organs and can be used to test cosmetics, drugs, and chemicals

-VaxDesign's groundbreaking Modular IMMune In vitro Construct (MIMIC) system uses human cells to create a working dime-sized human immune system for testing the safety and effectiveness of HIV/AIDS vaccines

- Researchers with the National Cancer Institute, the U.S military, private companies, and universities across the country have shown that MatTek's *in vitro* 3-D human skin tissue equivalent is an excellent substitute for animals when it comes to conducting burn research and cosmetics testing and doing research related to radiation exposure and chemical weapons attacks, etc.



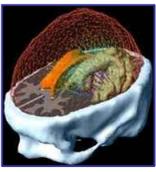
Using Stem cells not animals to discover new disease-curing medicine

Harvard Stem Cell Institute, Vistagen Therapeutics, AstraZeneca, Cellartis, Cellular Dynamics International, Geron –plus many more.

Stem cells may turn out to be a promising alternative to animal testing. Embryonic stem cells also hold promise on the front end of drug discovery. Disease genes are inserted into embryonic stem cells, which are then induced to differentiate into human disease tissues that can be used to screen for drugs. Some drugs have harmful effects in certain ethnic subpopulations, which could never be predicted by conventional techniques because there are no animal models of race.

Enter embryonic stem cells. They can grow and differentiate in a petri dish into the variety of cells that build a human organ. The idea is to take an embryonic stem cell and, in a petri dish, tell it to become the neuron. You are watching normal development, not in a person but in a petri dish. And then in the next dish, the researchers will create an embryonic stem cell line using the genes from a Parkinson's patient and watch that cell become a dopaminergic neuron, the kind that shows that disease's degenerative symptoms. You compare the first dish to the second, and you ask where the second cell line screws up. Then you screen for drugs that can slow the process. In an ideal future case, you would then be able to prevent it.

Negotiation Is Over.net



In Silico:

This is one way to study the human body by way of a computer and imaging. No animals needed! Modeling can be used to look at the inside of the body and how it moves, what it's made of. Simulation is kind of like a video game where you play in a battle field. You can see the pathway and effects on the body's systems when a new drug is introduced, see how a disease progresses much faster than waiting an experiment on an animal and many other applications. You can study to achieve your goals in many fields without cutting open an animal! Or you can take your interests in biology, microbiology, or computational biology and couple them with creating new and exciting software! Young people have already done this and now we have the Tox21 robot and an organ on a silicon chip to study. The opportunities to live and work in a world free of animal experimentation are waiting for you!! Check out the following advances and companies that use in silico technology:

www.edu-technology.com/healthscience.html

Our anatomy and physiology software can greatly assist those studying to become doctors, surgeons, nurses, chiropractors, physical therapists, occupational therapists, orthopedics, podiatrists and other areas of health care workers. We have dissectible 3D human anatomy software from top vendors such as Primal Software and ADAM Software.

www.oxfordjournals.org

A digital anatomy construction (DANCER) program was developed for gene expression data. DANCER can be used to reconstruct anatomical images from in situ hybridization images, microarray or other gene expression data.

In 2007 researchers developed an *in silico* model of tuberculosis to aid in drug discovery with a prime benefit cited as being faster than real time simulated growth rates allowing phenomena of interest to be observed in minutes rather than months.

Generation of histo-anatomically representative models of the individual heart. Explorative modeling has proven to be a viable approach for the development of new hypotheses and has aided the prediction of previously undiscovered mechanisms.

<http://www.mfbioscience.com/> (must see)

The World's Leading Stereology and Neuron Reconstruction Software: AutoNeuron, AutoSpine, 3-D Neuron Reconstructions, etc.

http://lifebiosystems.com/pdf/life_20110415_BioInform.pdf

Life Biosystems Developing in Silico Toolkit for Personalizing Cancer Therapy.

<http://www.insilicobiology.jp/en/solution/cloning-in-silico>

in silico Molecular Cloning (IMC) software package

www.insilico-biotechnology.com

Insilico designs novel- and optimizes existing microbial production processes by building computational models of living cells. Insilico sets new standards in systems biology as a leading solution provider to the Life Sciences industries. Insilico predicts and optimizes biotechnological processes for the food, agro, and healthcare industries. Insilico collaborates with companies such as Bayer Technology Services, Boehringer Ingelheim, Degussa, DSM, and international research institutes.

<http://www.iscb.org/>

Welcome to the ISCB Student Council, the student organization of the International Society for Computational Biology

The Student Council website is a resource for the global computational biology student community and we offer many features that allow you to get in touch with your peers and to find out about events and initiatives for computational biology students - no matter where in the world you are. Check out our page on companies. If you have questions or comments don't hesitate to contact us.



Nanotechnology

The expanding toolbox of ways to re-engineer microbes -- and even construct new ones -- has opened up extraordinary possibilities for biomedical discovery and environmental engineering. But it also carries potential dangers. If biologists are indeed on the threshold of synthesizing new life forms, the scope for abuse or inadvertent disaster could be huge. What steps can be taken to ensure that a rogue organization, or even a state-sponsored bioweapons program, does not use the technology to synthesize a dangerous microbe?

<http://www.technologyreview.com/biomedicine/23567/?a=f>

Scientists have so far created microbes that can produce drugs and biofuels, and interest among industrial chemical makers is growing. Synthetic biology may impact people's lives sooner than they think. Work has begun with the National Institutes of Health to make the synthetic components of every flu vaccine ever sequenced, so that researchers could whip up a flu vaccine seed candidate within 24 hours.

- Work with the oil company Exxon Mobil to develop cells that can capture carbon dioxide and produce bio-crude for refineries. Such cells would need extensive reengineering before commercialization and that means jobs.

- An equally promising result of synthetic biology comes from putting power in the hands of DIY garage biologists, who tinker with digital designs of DNA sequences outside of research institutions, universities or major companies. That has cultivated a sense of creative investigation and entrepreneurship that may help drive innovation.



Synthetic Biology:

Agilent's, UC Berkeley Synthetic Biology Institute, Intrexon Corporation, Evolva Biotech, Codexis, Ginkgo BioWorks, LifeTech, BioLOGIC, Synbio Corporation

Synthetic biology is interpreted as the engineering-driven building of increasingly complex biological entities for novel applications. This is seriously cool science! You could help defend us by studying how they make bioweapons. You could study nanotechnology for everything from curing cancer to finding an energy sources from algae you create! You can create skin, tissue and cells for all industries to buy for research instead of imprisoning captured animals. The world's largest oil, agricultural, and pharmaceutical companies are already pouring hundreds of millions of dollars into synthetic biology research!

<http://ginkgobioworks.com>

Ginkgo BioWorks engineers new organisms to solve challenges across a range of industries from fuels to pharmaceutical production. Our biological engineers make use of an in-house pipeline of synthetic biology technologies to design, build, and test new organisms.

MatTek.com (so cool, must see)

MatTek Corporation is a global industry leader in tissue engineering. The company produces ready-to-use, normal (non-transformed), human cell-derived, fully differentiated, 3-D, organotypic in vitro tissue. The elimination of needless animal suffering is just one of the many benefits.

EpiAirway Tissues - Application Examples

Inhaled Drug Delivery * Asthma/COPD Research * Respiratory Infection * Tobacco Smoke/Nano-particle Toxicology * Inhalation Toxicology/Genotoxicology * Respiratory Allergy/Immunology * High Throughput Screening (HTS).

EpiDermFT Tissues - Application Examples

Comparison: EpiDermFT vs. EpiDerm * Toxicology & Drug Development * Wound Healing * Skin Cancer * Photodamage * Photoaging * Anti-Aging * Radiation Damage * Blistering Skin Diseases * Genetic Damage.

EpiOcular Tissues - Application Examples

Ocular Irritation Determination * "Sub-Draize" Mild, Milder, Mildest Ocular Irritation Testing * Draize Score Determination for Surfactants and Surfactant-based Products (Cosmetics, Consumer Products, etc.)...

EpiVaginal Tissues - Application Examples

Microbicide Toxicity/Efficacy * Feminine Hygiene/Contraceptive Product Irritation * HIV-1 Infection * Sexually Transmitted Disease (STD) Infection * Vaginal Drug Delivery * Innate Immunity * Cell Adhesion