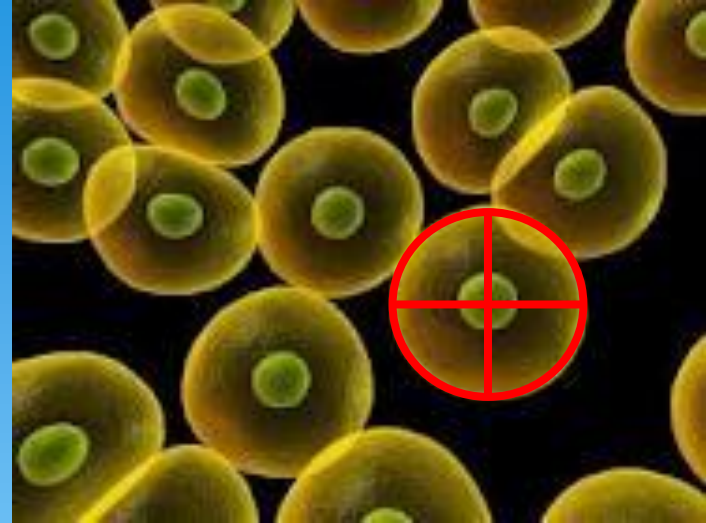


From Medicine
to
Medical Device



Charles Hou Ph.D.

Visiting Scholar, Stanford-Taiwan Biomedical program

Center for Cardiovascular Technology

Stanford University Medical Center

2012.5.22

Personal Background

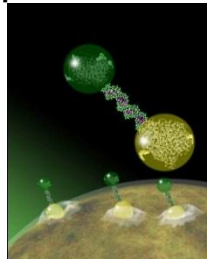
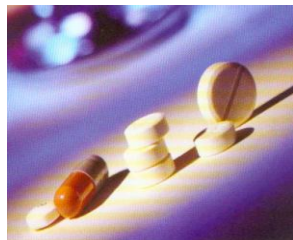


* Experience

- * 2000 PhD in molecular biology from *National Defense Medical Center*
- * 2002 Postdoc in cancer mechanism from *Academia Sinica*
- * 2003-present researcher in *Industrial Technology Research Institute (ITRI)*
- * 2011~present *STB fellow in National Applied Research Laboratories (NARL)*

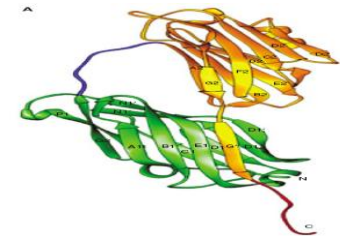
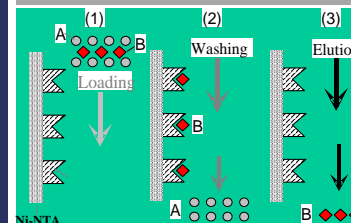
New drug development

- Liver cancer drug
- Cell model evaluation
- Process development



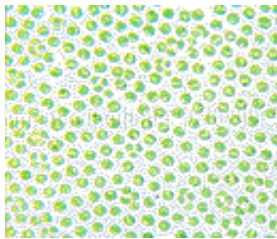
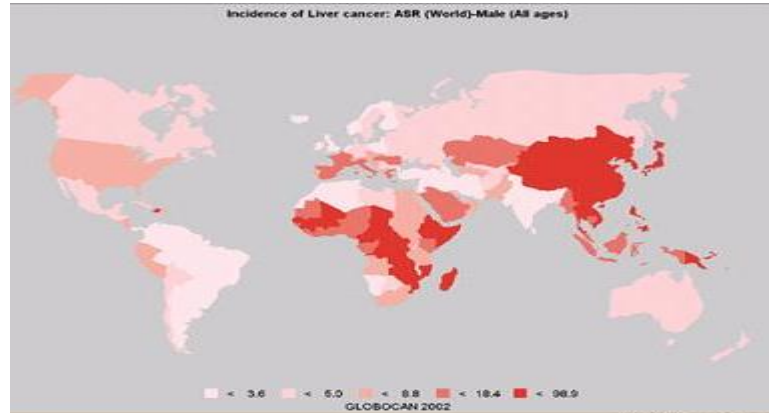
Protein drug development

- Protein kinases
- Protein expression
- Affinity purification



Anti cancer drug development

* Hepatocellular carcinoma (HCC)



Green algae



Antrodia comphorata



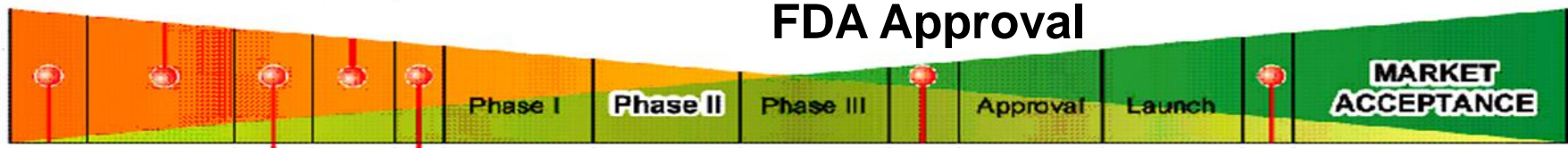
Anoectohilus formosanus



Cordyceps sinensis

Risk

Revenue



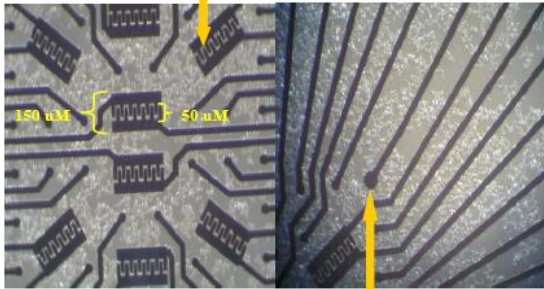
R & D

FDA Approval

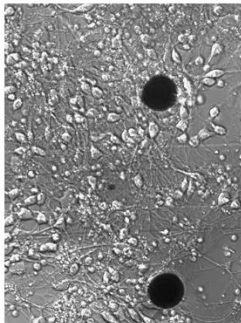
MARKET ACCEPTANCE

Cell growth can be affected by Microcurrent

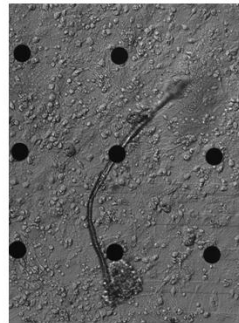
Oxidation-reduction reaction current recording



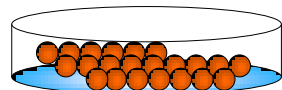
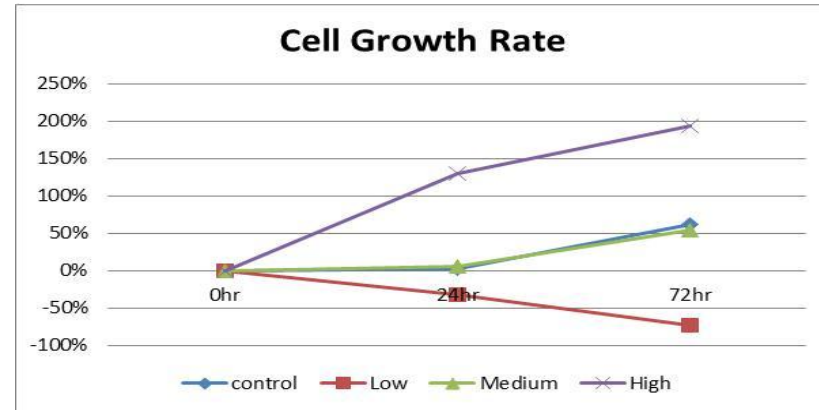
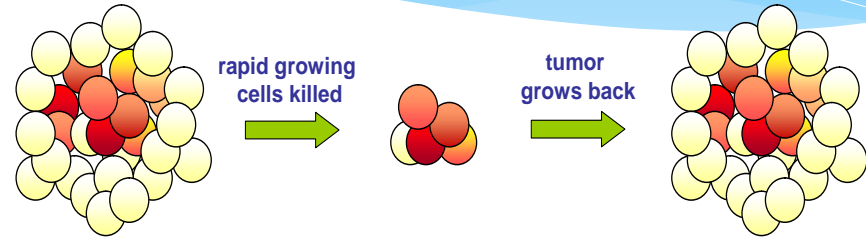
Bio-signal record and electric stimulation



(A)



(B)



In vitro



Animal test

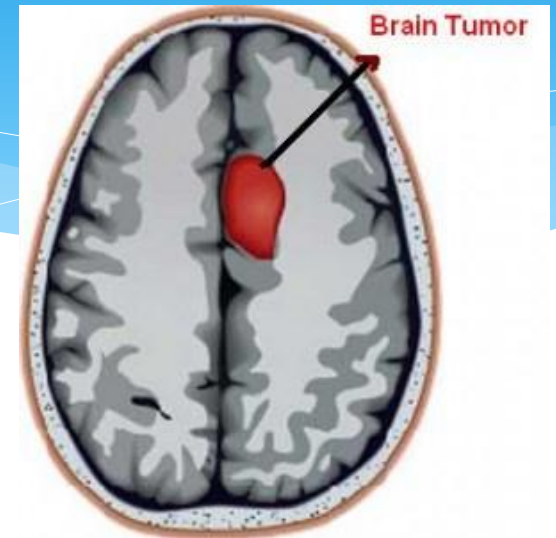


Clinical Trial

Microucurrent clinical application

* Glioblastoma multiforme (GBM)

- * the most aggressive and common type of primary brain cancer
- * GBM are extremely resistant to the standard cancer treatments such as chemotherapy.
- * The average survival time is **15 months**



* Tumor Treatment Field (TTF)

- * The overall survival rate was over **300%** longer than the historical controls.

novocure

Indication	Region	Phase I	Phase II	Phase III	Approved
Recurrent GBM Monotherapy	US	█	█	█	█
	EU	█	█	█	█
Newly Diagnosed GBM Combination with chemo	US	█	█	█	Phase III enrolling
	EU	█	█	█	█
Lung Cancer Combination with chemo	US	█	█	█	Phase III in Preparation
	EU	█	█	█	█

