CREATIVE SCIENCE AND TECHNOLOGY FOR ECONOMIC DEVELOPMEMT: THE PARK-FOR-CREATIVITY

RAUL CUERO, PHD
Molecular Biotechnologist
Research Scientist-Inventor
Distinguished Professor
USA

Power is not in having knowledge, but in creating it

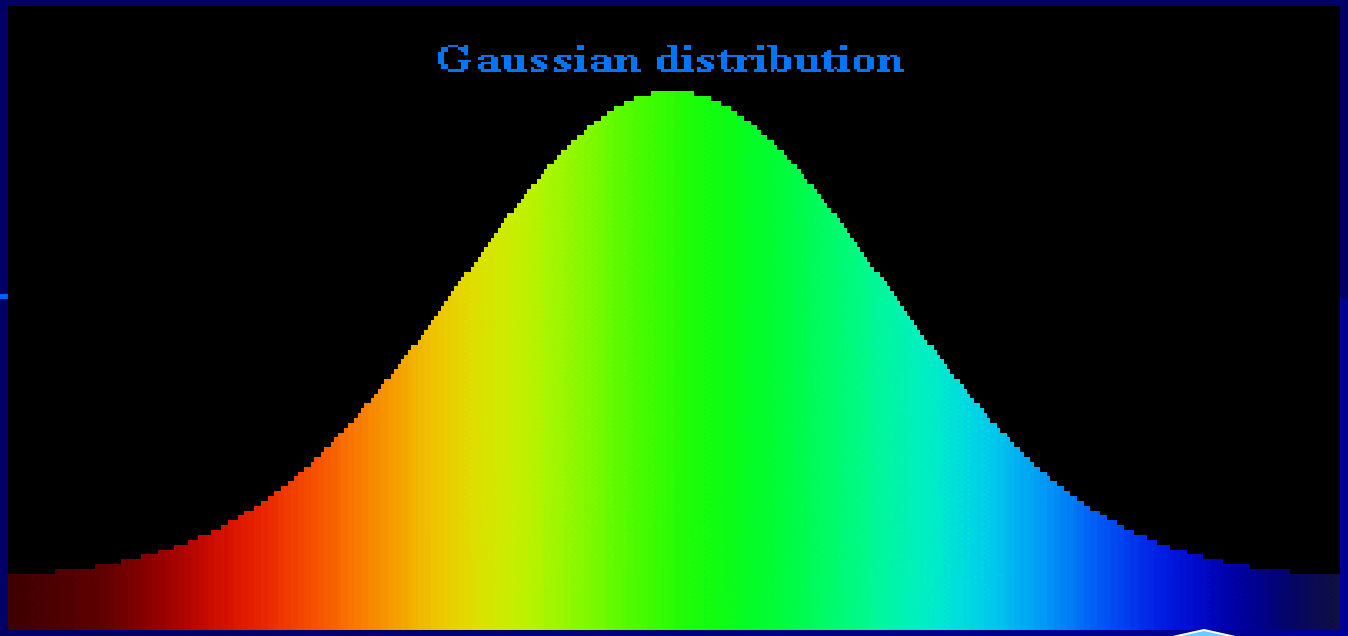
R. Cuero

- Societies are recognized by their history, but legitimized by their creativity (inventions / discoveries)

- ANDALUCIA WAS THE ONLY BRIGHT INTELLECTUAL SPOT IN EUROPE, DURING THE MEDIEVAL DARK AGE

LATINAMERICA AND CARIBBEAN HAVE THE WORLD'S YOUNGEST AND MOST DIVERSE POPULATION.

LATIN AMERICAN CHILDREN



1.8% OF THE WORLD'S POPULATION IN SCIENCE AND ENGINEERING (0.1% INVENTORS)

(WEST)

98%
WORLD'S POPULATION

0.2% OF THE WORLD'S POPULATION IN SCIENCE AND ENGINEERING (0.1% INVENTORS)

(EAST)

AFTER 1989

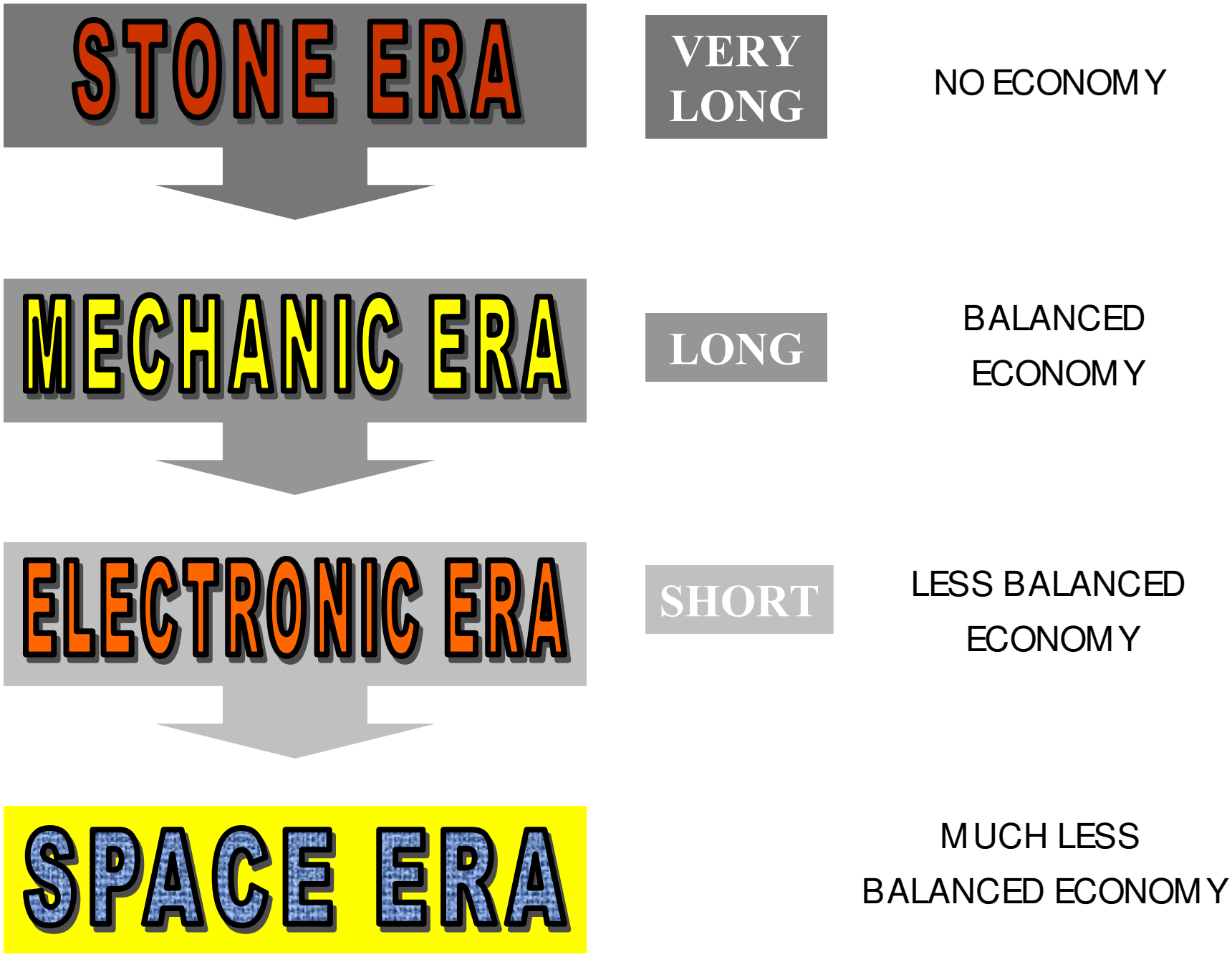
FROM : GEO- POLITICAL PROTECTED MARKETS

TO:GEO-TECHNOLOGICAL FREE MARKETS.

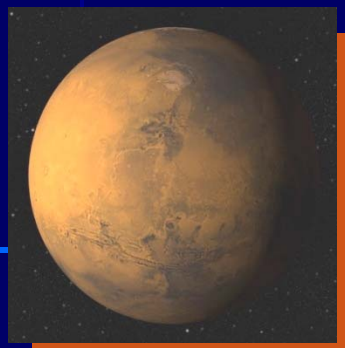
- THE FUTURE OF THE WORLD ECONOMY WILL BE ON PATENT RIGHTS, PROPRIETARY INTELLECTUAL RIGHT

Young Mind

Old Paradigm


STONE ERA
VERY LONG
NO ECONOMY
MECHANIC ERA
LONG
BALANCED ECONOMY
ELECTRONIC ERA
SHORT
LESS BALANCED ECONOMY
SPACE ERA
MUCH LESS BALANCED ECONOMY

- “The stone era ended, not because we ran out of stone, but because new technologies”



MICROBIAL BIOGENESIS IN FERROMAGNETIC REDUCED MARTIAN SIMULANT SOIL, UNDER UV LIGHT, USE OF ELECTROSENSORS: LIFE IS AN INTERFACE BETWEEN INORGANIC AND ORGANIC

R. CUERO[1], D. McKAY[2], M. RIBEIRO[1], C. CRUZ[1] AND T. GLEESON[3]

1/Prairie View A&M University, Member of the Texas A&M University System, CARC, PO BOX 685, Prairie View, Texas, 77446; 2/NASA-JSC-Houston, Astrobiology Center, Houston, Texas, 3/Canadian Molecular Research Services Inc., Ottawa, Ontario

Principle Authors' Email: olimpa@aol.com

2008 PATENT AND INNOVATION AWARDS TEXAS A&M UNIVERSITY. COLLEGE STATION -TEXAS

FROM LEFT TO RIGHT:
DR. G. DIEDRICH VICE CHANCELLOR,
DR. M. McKINNEY CHANCELLOR,
DR. RAUL CUERO SCIENTIST/INVENTOR HOLDING THE PATENTED INVENTION AWARD,
Mr. BLAKE PETTY PRESIDENT OF OFFCICE OF TECHNOLOGY COMMERCIALIZATION. FROM TEXAS A&M UNIVERSITY.

2008 PATENT AND INNOVATION AWARDS TEXAS A&M UNIVERSITY. COLLEGE STATION TEXAS

FACULTY/ SCIENTISTS RECEIVING THE TEXAS A&M UNIVERSITY SYSTEM INVENTION PATENTED AWARD.

DR. CUERO IN THE MIDDLE (SEE ARROW ABOVE)

National Aeronautics and
Space Administration

Certificate of Recognition

Presents this Certificate to:

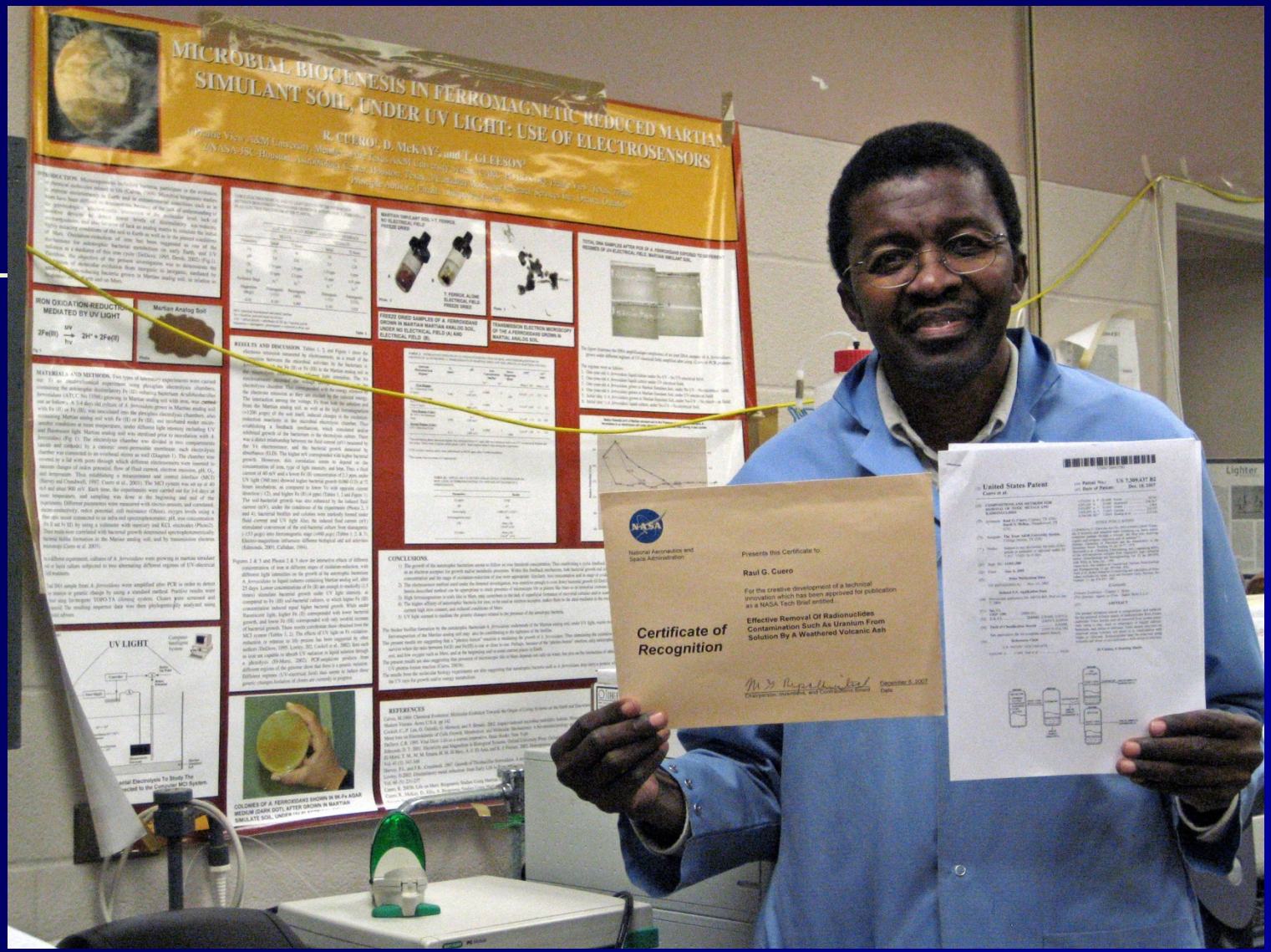
Raul G. Cuero

For the creative development of a technical innovation which has been approved for publication as a NASA Tech Brief entitled...

Effective Removal Of Radionuclides Contamination Such As Uranium From Solution By A Weathered Volcanic Ash

Chairperson, Inventions, and Contributions Board

December 5, 2007
Date



NASA ACKNOWLEDGEMENT OF CUERO'S INVENTION.

Houston Chronicle

www.houstonchronicle.com WEDNESDAY, MAY 19, 2004 Vol. 103 No. 219 50 Cents

Microbiologist sees Earth benefits in Mars soil

By LA MONICA EVERETT-HAYNES
Houston Chronicle

PRAIRIE VIEW — As the Martian rovers continue their search for more evidence of life-giving water, a Prairie View A&M University researcher is creating life using an artificial soil simulating that found on Mars.

For the past four years, Raul Cuero has used NASA's factory-made soil to breed microbes in his lab, much like 100 other scientific researchers in the nation — and seven others in Texas — have done since 1998.

And as Opportunity sits at Endurance, a 430-foot-wide crater on Mars, awaiting NASA's command to jump in, Cuero has moved forward in his discovery that Mars soil may lead to solutions that could rid Earth of toxins.

At least that's what the microbiologist hopes.

Cuero is trying to be the first to patent a set of techniques demonstrating how Martian soil can help Earth.

During his research of the artificial soil, Cuero, whose most recent patent was approved earlier this year, created an organic solution that prevents mold and bacteria from growing on vegetables. Using a $120,000 grant from NASA, he also developed a technique that, without using synthetic chemicals, can extract toxins from metals.

"This proves that not only is Mars' soil important to life, but it is important to be used to clean toxic materials on Earth."

Raul Cuero, Prairie View A&M University researcher

"This proves that not only is Mars' soil important to life, but it is important to be used to clean toxic materials on Earth," said Cuero, 55, who believes that actual Mars soil will be more effective than the manufactured soil. The artificial soil is 80 percent similar in composition to the Red Planet's grainy plains.

Cuero has high hopes for his inventions, and a long list of what he believes they could accomplish, including making copper, uranium and lead less hazardous. He also said they could give avocados and lettuce longer shelf lives. They could make drinking water zinc-free, he said, and, hopefully, cure some forms of cancer.

"Everything we do is for survival. The more you know, the more you discover things to do and, therefore, you are not limited," Cuero said. "(My inventions) can lead to changes in paradigms. The concepts of contamination can change."

During his research, Cuero also received grants from the North Atlantic Treaty Organization totaling $108,000 for similar studies. Cuero trained two Russian scientists this semester on ways to remove contaminants using his techniques. A follow-up session will soon take Cuero to Russia to assist the scientists in a project.

It's too early to know whether Cuero's experiments will pan out, said David S. McKay, chief scientist for astrobiology at NASA's Johnson Space Center. Without the actual Mars soil, scientists are not completely confident that it will have the same results found in Cuero's lab.

"We hope that we'll be able to send a real-bodied mission and send some soil back as soon as possible because we think that the scientific benefits of that would be really tremendous," said McKay, who worked with Cuero on the research.

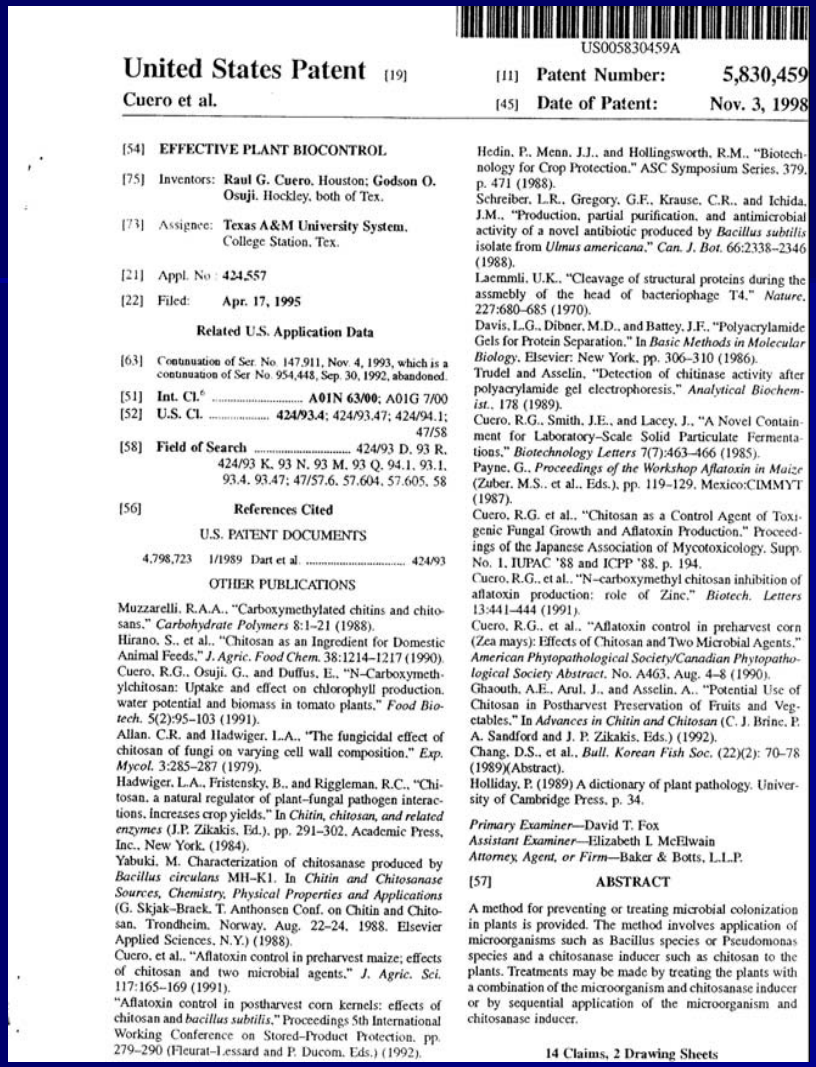
Two companies have approached Cuero with requests to license his discoveries for production. The Baltimore-based Omo Petroleum Company LLC has licensed Cuero's invention that helps to clean oil, producing a more environmentally safe product. Cuero would not identify the second company because no deal has been finalized.

"This can have a big impact on health, the environment and biotechnology," said Cuero, who didn't want to disclose the specifics of his research.

Instead, he spoke broadly of how Mars soil may be able to kill off contaminants.

Earth is seething with toxins because the planet is oxidized, Cuero said. Because Mars lacks oxygen and is mostly composed of iron, the planet can easily destroy pollutants, he said.

This process, called oxidation-reduction, was crucial in validating Cuero's findings. Cuero says that the future of Mars exploration, coupled with his inventions, will "bring on a social and economic renaissance."



US005830459A

United States Patent [19]

Cuero et al.

[11] Patent Number: 5,830,459

[45] Date of Patent: Nov. 3, 1998

[54] **EFFECTIVE PLANT BIOCONTROL**

[75] Inventors: **Raul G. Cuero**, Houston; **Godson O. Osuji**, Hockley, both of Tex.

[73] Assignee: **Texas A&M University System**, College Station, Tex.

[21] Appl. No.: **424,557**

[22] Filed: **Apr. 17, 1995**

Related U.S. Application Data

[63] Continuation of Ser. No. 147,911, Nov. 4, 1993, which is a continuation of Ser. No. 954,448, Sep. 30, 1992, abandoned.

[51] **Int. Cl.**[6] **A01N 63/00**; A01G 7/00

[52] **U.S. Cl.** **424/93.4**; 424/93.47; 424/94.1; 47/58

[58] **Field of Search** ..... 424/93 D, 93 R, 424/93 K, 93 N, 93 M, 93 Q, 94.1, 93.1, 93.4, 93.47; 47/57.6, 57.604, 57.605, 58

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Primary Examiner—David T. Fox
Assistant Examiner—Elizabeth L. McElwain
Attorney, Agent, or Firm—Baker & Botts, L.L.P.

[57] **ABSTRACT**

A method for preventing or treating microbial colonization in plants is provided. The method involves application of microorganisms such as Bacillus species or Pseudomonas species and a chitosanase inducer such as chitosan to the plants. Treatments may be made by treating the plants with a combination of the microorganism and chitosanase inducer or by sequential application of the microorganism and chitosanase inducer.

14 Claims, 2 Drawing Sheets

Cuero First US Invention Patent

Licensing Opportunity from Texas A&M University

TAMUS 1201: Biological Agents for Effective Control of Petroleum Hydrocarbons

Inventor: Dr. R. Cuero

TAMUS 1201 provides a versatile and cost-effective means of transforming higher molecular hydrocarbons to lower molecular hydrocarbons, and of reducing total hydrocarbon and sulfur concentrations in both soils and liquids

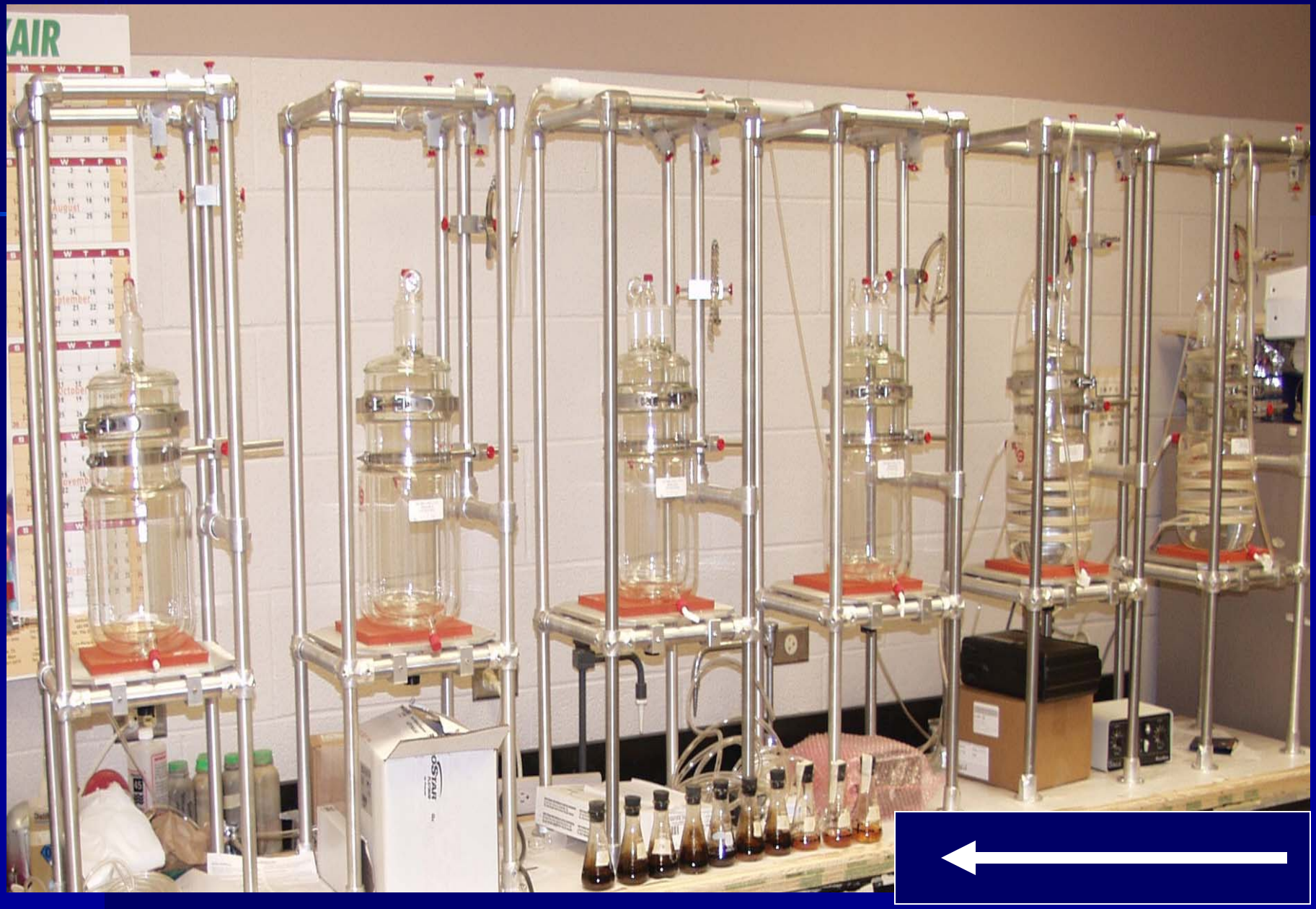
- Invention utilizes a combination of natural materials and biological agents to transform C_{13}-C_{35} hydrocarbons to C_6-C_{12} hydrocarbons
- These substances also function to simultaneously reduce total hydrocarbons and sulfur, while absorbing and recovering oil in both soil substrate and liquid medium
- Method uses low-cost, abundant and biodegradable natural agents with simple and inexpensive modes of application
- Treatment has very high reduction rate and high oil absorption capacity, and can be utilized in both diesel and gasoline, thus increasing the octane or combustion
- Current test results using crude oil show marked reduction of higher and lower hydrocarbons
- U.S. Patent Application pending
- Foreign protection feasible

For more information on this licensing opportunity, print and execute attached Nondisclosure Agreement and return to:

Blake Petty ▪ Technology Licensing Office ▪ The Texas A&M University System

3369 TAMU ▪ College Station, TX 77843-3369 ▪ Phone: (979) 847-8682 ▪ Fax: (979) 845-1402 ▪ Email: *blakepetty@tamu.edu*

For all other questions, simply reply to this email



Licensing Opportunity from Texas A&M University

TAMUS 1971: EFFECTIVE REMOVAL OF HAZARDOUS RADIONUCLIDES

Inventors: Drs. R Cuero and D. S. McKay (NASA)

TAMUS 1971 presents a composition of all-natural products effective in the isolation, stabilization and removal of hazardous radionuclides such as uranium (U)

- Invention utilizes a combination of low-cost, abundant natural materials and biological agents for efficient accumulation and absorption of radioactive pollutants
- Method can be easily applied directly on-site or as part of a water filtration system
- The TAMUS 1971 solution exhibits a number of competitive advantages:
  - Less expensive than physical removal efforts
  - Biodegradable, unlike chemical control methods
  - More effective than biological controls
  - Broadly applicable in contaminated waters, soils, sludge, etc.
- U.S. Patent Application pending
- Foreign protection feasible

For more information on this licensing opportunity, print and execute attached Nondisclosure Agreement and return to:
Blake Petty • Technology Licensing Office • The Texas A&M University System
3369 TAMU • College Station, TX 77843-3369 • Phone: (979) 847-8682 • Fax: (979) 845-1402 • Email: *blakepetty@tamu.edu*
For all other questions, simply reply to this email

Licensing Opportunity from Texas A&M University

TAMUS 931: Method for Increasing Levels of Beta-Carotene in Plants

Inventor: Dr. Raul G. Cuero

TAMUS 931 provides a method for utilizing a natural substance to increase plant production of antioxidant carotenoid compounds

- Describes process of applying a natural substance in liquid form to plants in order to :
  - Increase carotenoid and chlorophyll levels
  - Improve plant strength and longevity
- Method highly valuable to plant production operations and vitamin/mineral/animal feed producers
- Method effective for increasing carotene & chlorophyll in algae, and would be extremely valuable to algae growers involved in the extraction of alpha- and/or beta-carotene
- Substance has been shown to increase crop yield, plant growth and fruit size
- Substance is effective even at low dosage levels, and may also protect plants against mechanical and/or pest damage
- U.S. Patent Application pending
- Foreign protection feasible

For more information on this licensing opportunity, print and execute attached Nondisclosure Agreement and return to:

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3369 TAMU ▪ College Station, TX 77843-3369 ▪ Phone: (979) 847-8682 ▪ Fax: (979) 845-1402 ▪ Email: *blakepetty@tamu.edu*

For all other questions, simply reply to this email

NOVEL / VERSATILE : ANTIBACTERIAL AND ANTIFUNGAL

R. CUERO
2008 USA

NATURAL ANTI UV IRRADIATION

R. CUERO 2008

USA

CURRENT RESEARCH ON SYNTHETIC BIOLOGY (I).

- NATURAL SENSOR FOR METALS AND OIL.

  2008 USA

CURRENT RESEARCH ON SYNTHETIC BIOLOGY (II).

- NOVEL NATURAL PESTICIDE.
  PFC 2008 COLOMBIA
- NOVEL MOLECULAR SENSOR FOR DIABETES.
  PFC 2008 COLOMBIA

CURRENT RESEARCH ON SYNTHETIC BIOLOGY (III).

- NOVEL PROCESS FOR GLUCOSE PRODUCTION.

  PFC 2008 COLOMBIA.

- NATURAL FIBER SIMILAR TO GLASS.

  PFC 2008 COLOMBIA.

- The “ Immediate” Future of technology is on the fusion between biology and engineering
(Synthetic Biology)

New Paradigm of Science: Synthetic Biology

Impact on:

- Technology
- Economy

Harvard, MI, Berkeley and Prairie View (Cuero)

SynBERC Principal Investigators

Harvard University (Cambridge, MA)
George Church, Genetics

Massachusetts Institute of Technology (Cambridge, MA)
Drew Endy, Biological Engineering
Tom Knight, Computer Science and Artificial Intelligence Lab (CSAIL)
Kenneth Oye, Political Science
Kristala Jones Prather, Chemical Engineering
Randy Rettberg, Biological Engineering

Prairie View A&M University (Prairie View, TX)

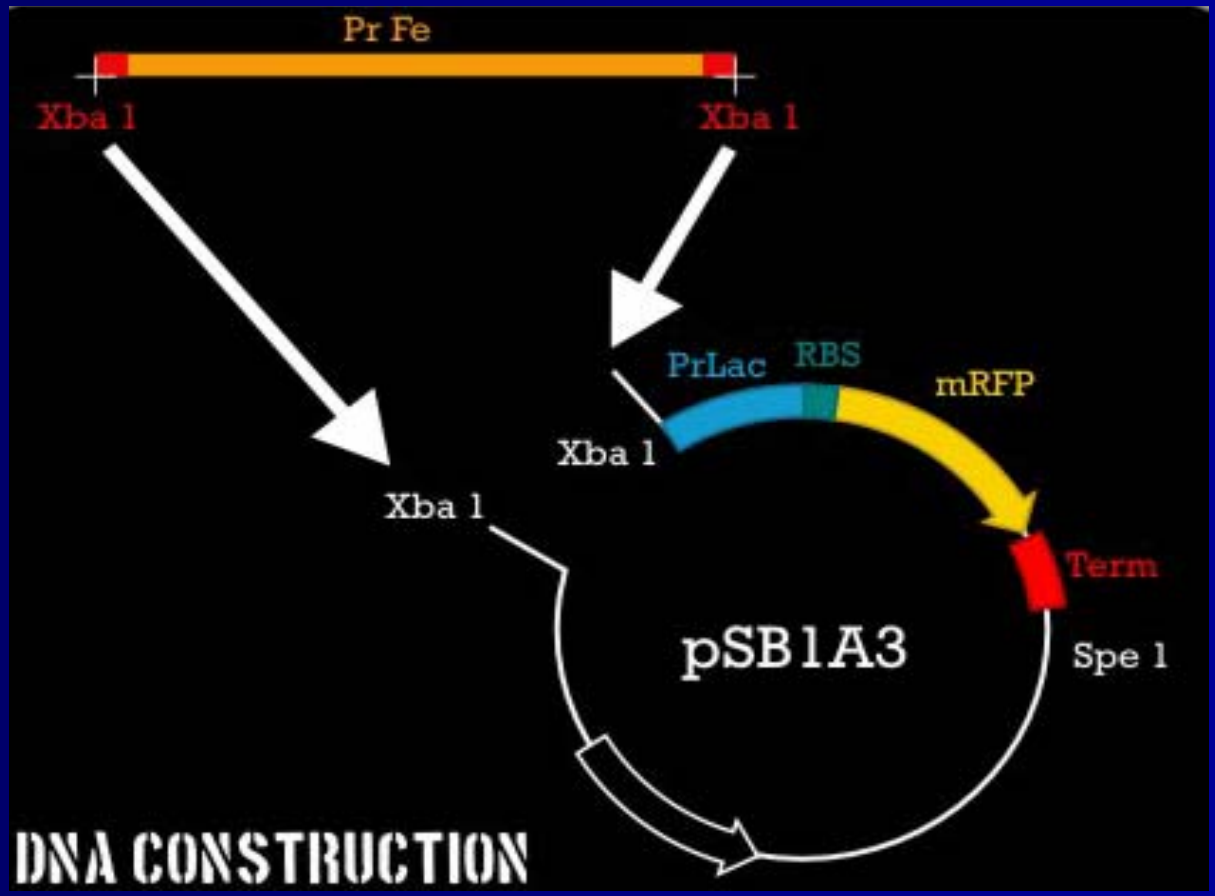
Raul Cuero, Microbial Biotechnology
Michael Gyamerah, Chemical Engineering

SynBERC Principal Investigators

University of California, Berkeley (CA)
Adam Arkin, Bioengineering
Carlos Bustamante, Physics/Molecular & Cell Biology/Chemistry
Jay Keasling (Director), Chemical Engineering/Bioengineering
Susan Marqusee, Molecular & Cell Biology
Paul Rabinow, Anthropology

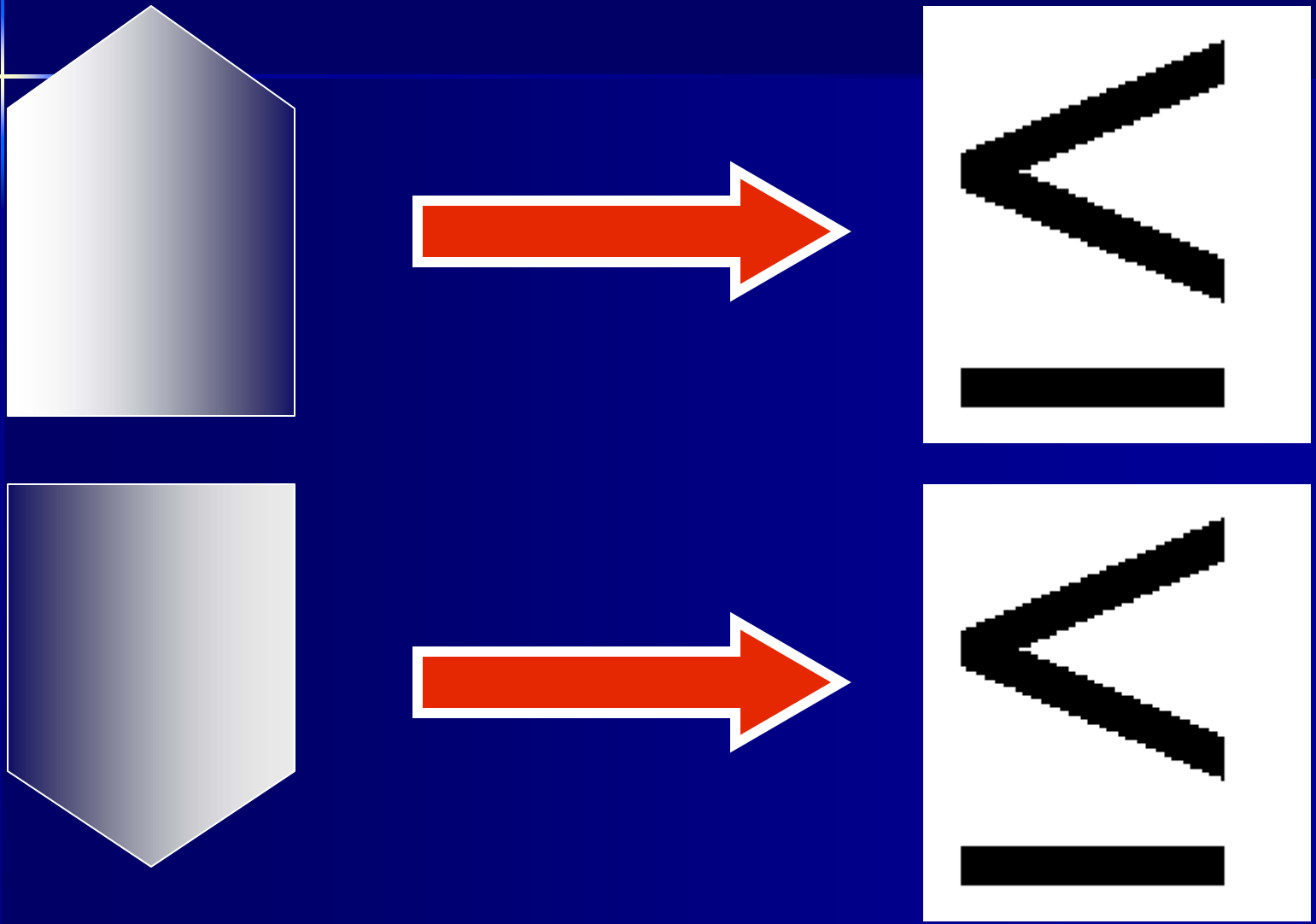
University of California, San Francisco (CA)
Wendell Lim (Deputy Director), Cellular & Molecular Pharmacology/ Biochemistry & Biophysics
Tanja Kortemme, Biopharmaceutical Sciences
Chris Voigt, Pharmaceutical Chemistry

A Genetically Constructed Device for Biosensing

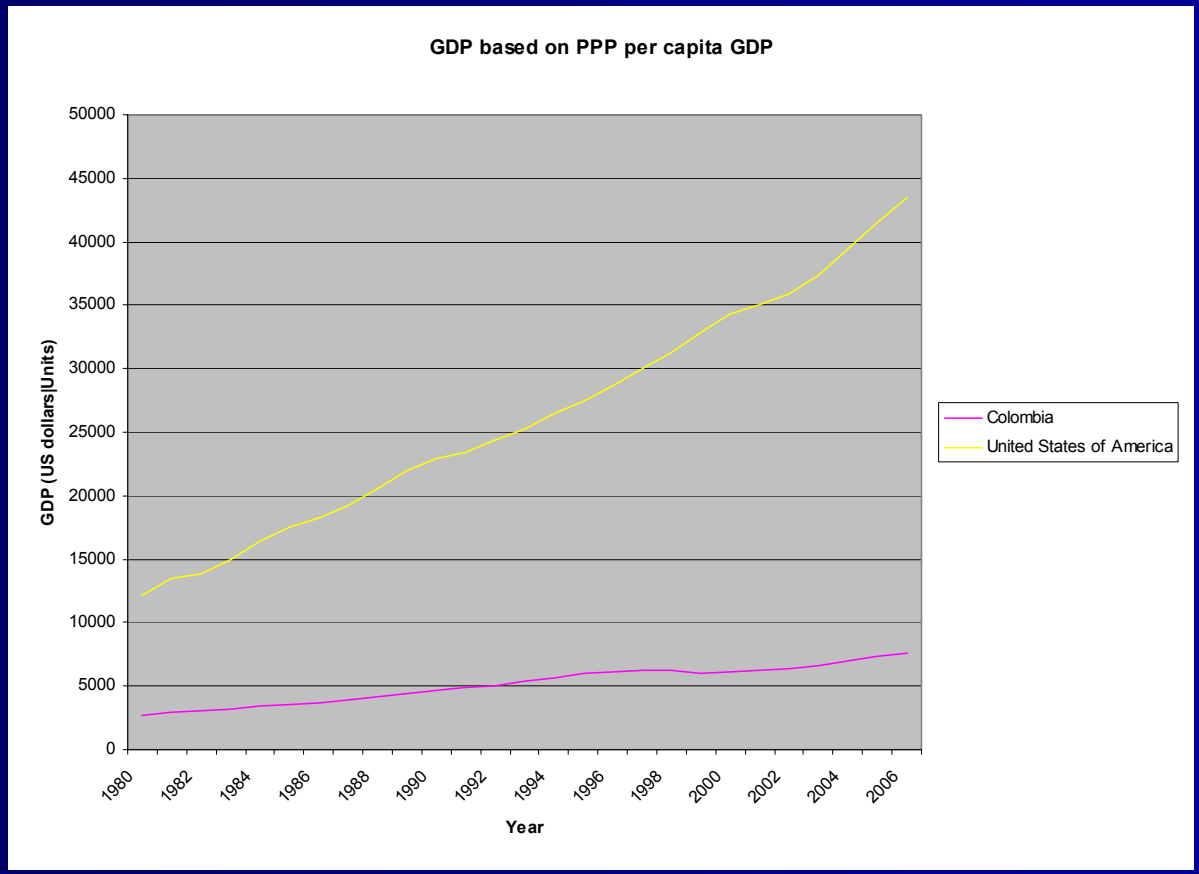


Industrialized Country's Economy

Latin American Economy



GPD BASED ON PPP PER CAPITA GDP USA vs. COLOMBIA



IT IS NOT ABOUT

(I T)

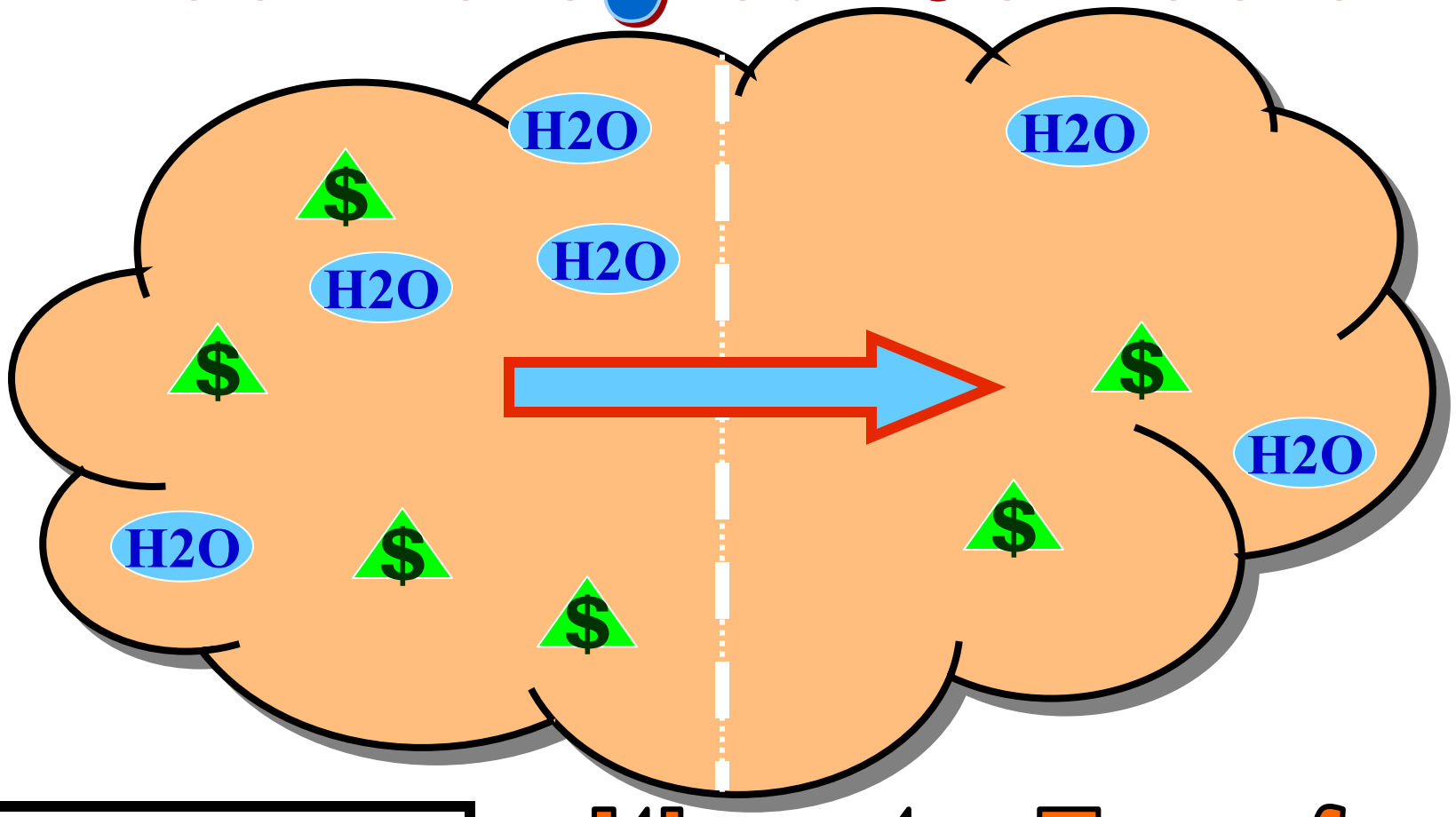
Information Technology

IT IS ABOUT

(I P)

INTELLECTUAL PROPERTY

Technological Osmosis

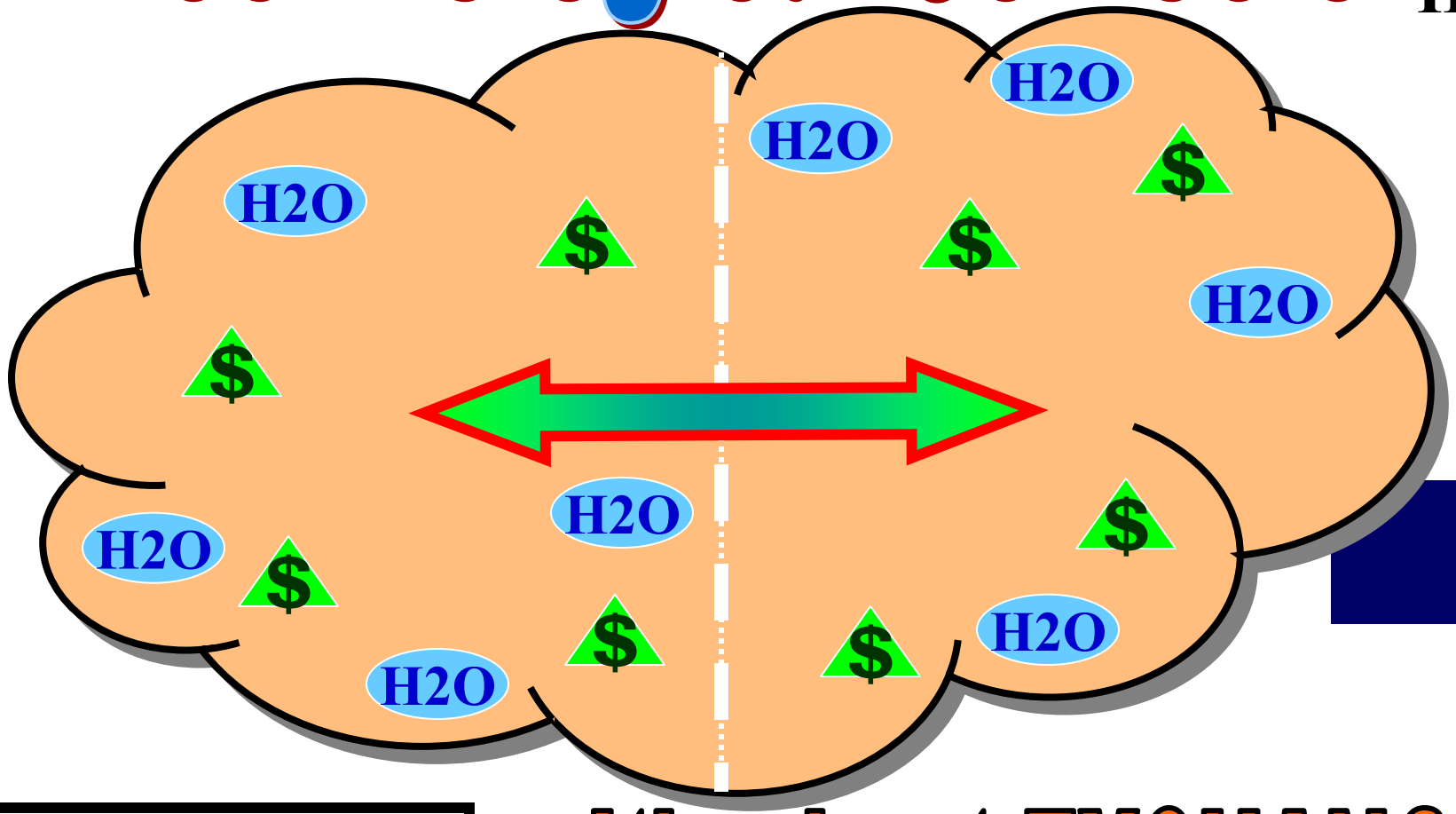


$ = Resources

H2O = Technology

It's not a Transfer...

Technological Osmosis II



It's about EXCHANGE

DOUBLE DREAM (TROUBLE)

EUROPEISM:

- ECONOMY BASED ON SCIENCE AND TECHNOLOGY, AND MANAGEMENT
- SECURITY

AMERICANISM:

- ECONOMY (CAPITALISM) BASED ON SCIENCE/TECHNOLOGY, FINANCE, VENTURE CAPITAL
- RISK

LATIN AMERICA ?

- SAFE TRADITION: SAVING,

  NO RISK. THEREFORE NO INNOVATION.

Perfection / Fatalism

DECREASED RISK → LOW CREATIVITY

Excellence

= PROCESS / CREATIVITY

IT IS NOT ABOUT TO BE CORRECTIVE, BUT IT IS ABOUT TO BE CREATIVE.

R. CUERO

DEVELOPING NATIONS DILEMMA

- TO BE OR TO HAVE
- ASSIMILATION OR INTEGRATION

DEVELOPED NATIONS

- CONCEIVE
- DO IMPLEMENTATION
- DO MARKETING

DEVELOPING NATIONS

- CONCEIVE, BUT .....
- DO NOT IMPLEMENT
- DO NOT MARKET

EDUCATION IN DEVELOPING NATIONS = INTENSIVE BUT NOT PRAGMATIC

INFORMATION STARTS IN THE LIBRARY/ CLASSROOM....

INVENTION STARTS IN THE FIELDS/GARAGES/ PATIOS /STREETS

Hometown – Buenaventura - Colombia

GENES AND CULTURE ARE NOT A DESTINY.

EDUCATIONAL MISCONCEPTIONS (I)

- EDUCATION AS ULTIMATE AIM RATHER THAN A MEAN
- EDUCATION FOR STATUS AND/OR AESTHETIC
- EDUCATION AS A SINGLE EVENT RATHER THAN A CULTURAL PROCESS

- TWO EQUALLY DANGEROUS PERSONS TO SOCIETY:

  - THOSE WHO HAVE MORE EDUCATION THAN INTELLIGENGE, AND

  - THOSE WHO HAVE MORE INTELLIGENCE THAN EDUCATION

How good are you really?


Big BANG... IT

ESTABLISH THE DIFFERENCES BETWEEN SIMILIARITIES

Form≡Function

Information = Theory

Knowledge → Application

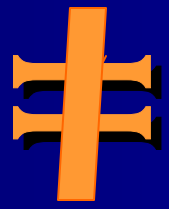
Discovery = New Knowledge

Creativity ↓

Human Progress

- CREATIVITY: INVENTION
- NON-OBVIOUS
- APPLICABLE

Resourcefulness



creativity

Creativity is a process and not a plan

R CUERO.

- "ANTICIPATION IS THE KEY FOR WINNING IN COMPETITION"

- "CREATIVITY IS ANTICIPATION: IT KEEPS US AHEAD OF THE CURVE"

VISION

≡

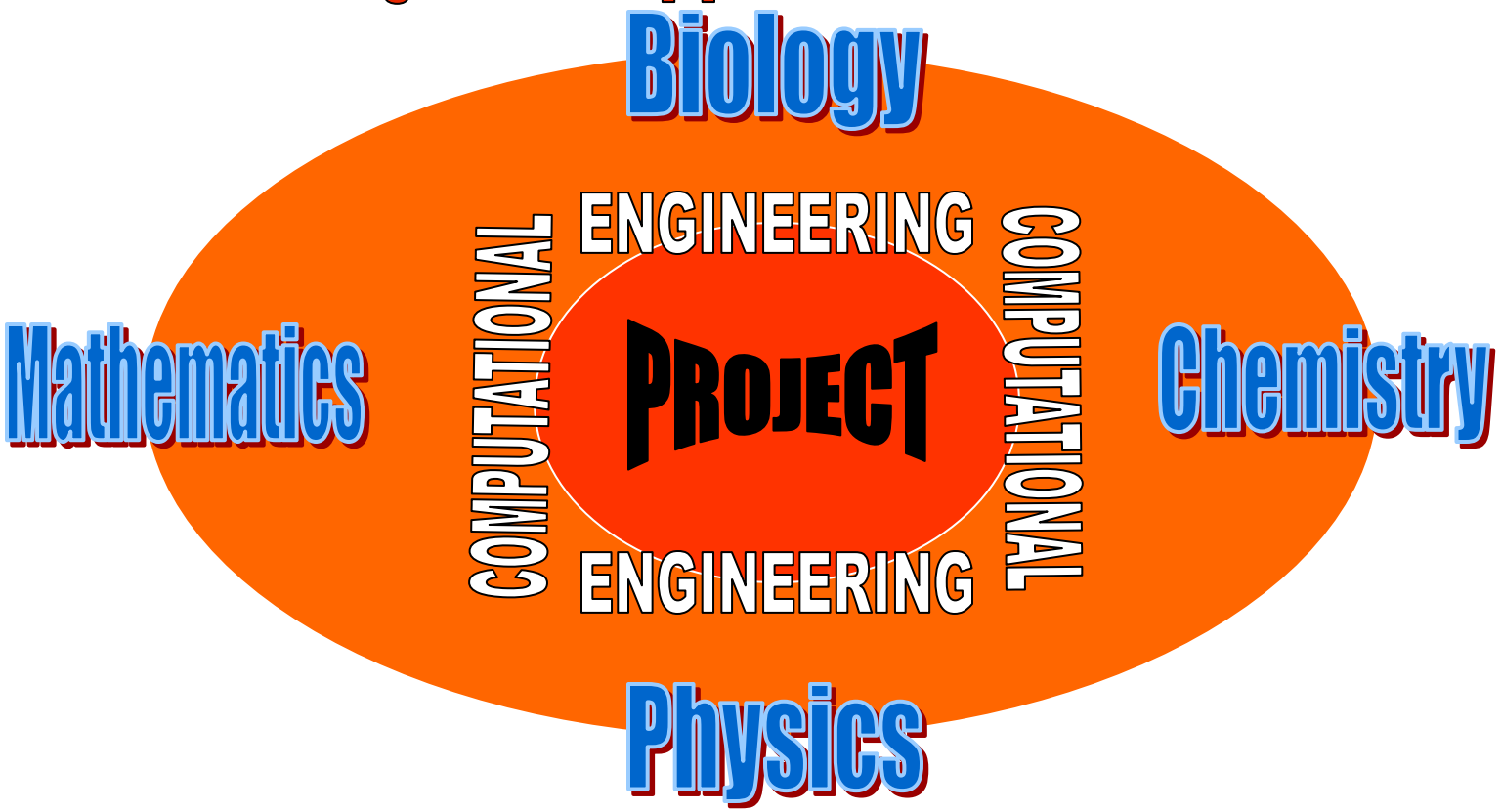
CREATIVITY

FROM:

Learning culture

TO: Creative culture

Effective Integrated Approach for Science Teaching



Conventional Approach for Science Teaching

Biology	Chemistry	Mathematics	Physics
↓	↓	↓	↓
Project	Project	Project	Project

RUSSEAU (FRANCE) II:

- EMPOWERMENT OF THE INDIVIDUAL

- POLICY OF "LAISSEZ FAIRE" FREE ENTERPRISE, INDUSTRY

Applied Sciences and Low/Medium Technology

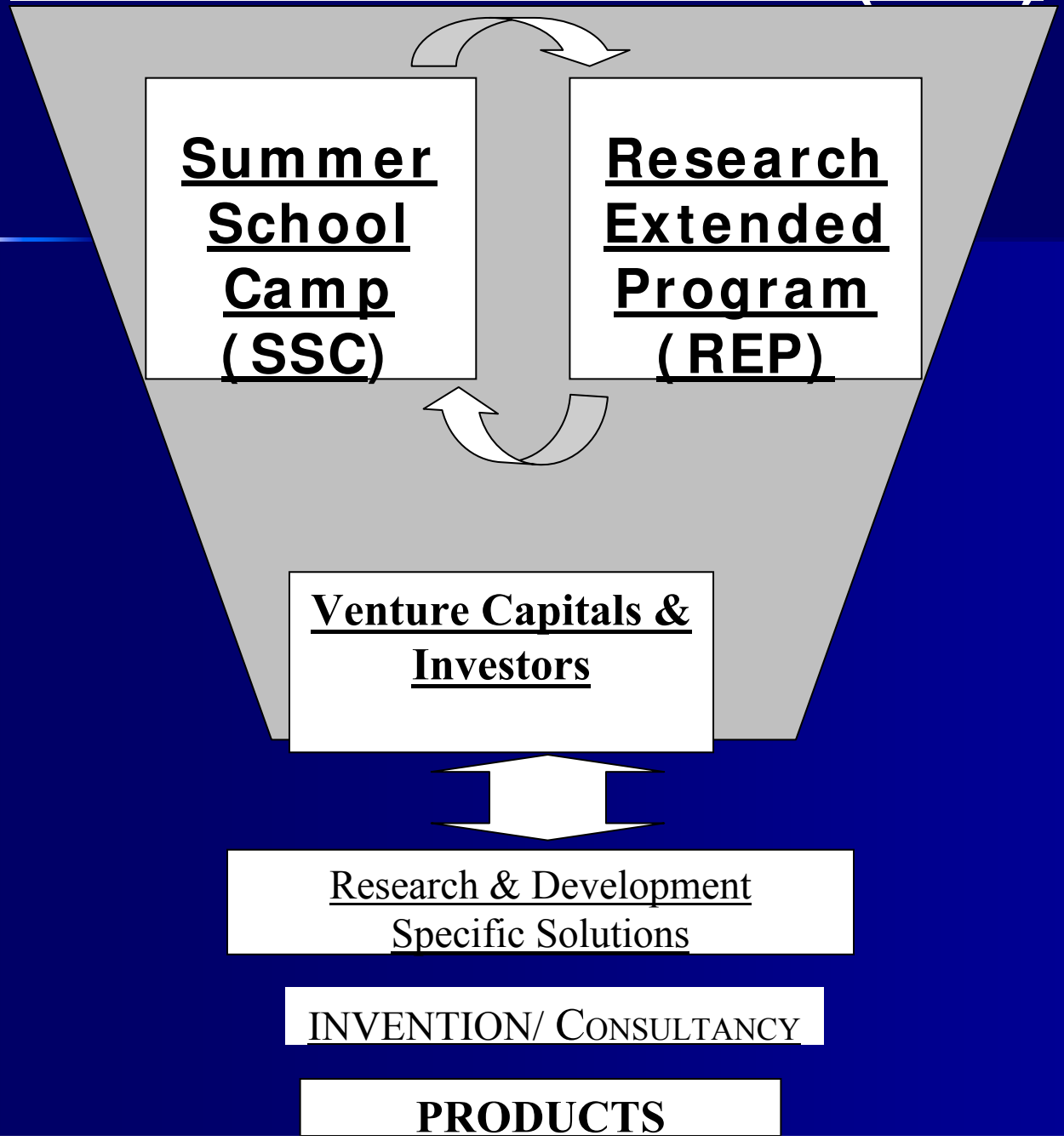
PROBLEM

Basic Sciences and Higher Technology

SOLUTION

Applied Sciences and Higher Technology

PARK-FOR-CREATIVITY(PFC)



PARK FOR CREATIVITY (PFC)

- What it is:

- **THIS IS NOT A RIGID STRUCTURAL INSTITUTION.**

INTERNATIONAL PFC KIT (II)

- THIS IS A CONTINUED INTELLECTUAL/SCIENTIFIC/ TECHNOLOGICAL FORUM, WHICH GATHERS YOUNG STUDENTS AND MENTORS FROM DIFFERENT CULTURES OF THE WORLD.

INTERNATIONAL PFC KIT OBJECTIVES (IV)

- Produce young inventors for:

  A) CREATING WORLD VALUE INVENTIONS.

  B) Industrial Research and development.

INTERNATIONAL PFC KIT OBJECTIVES (V)

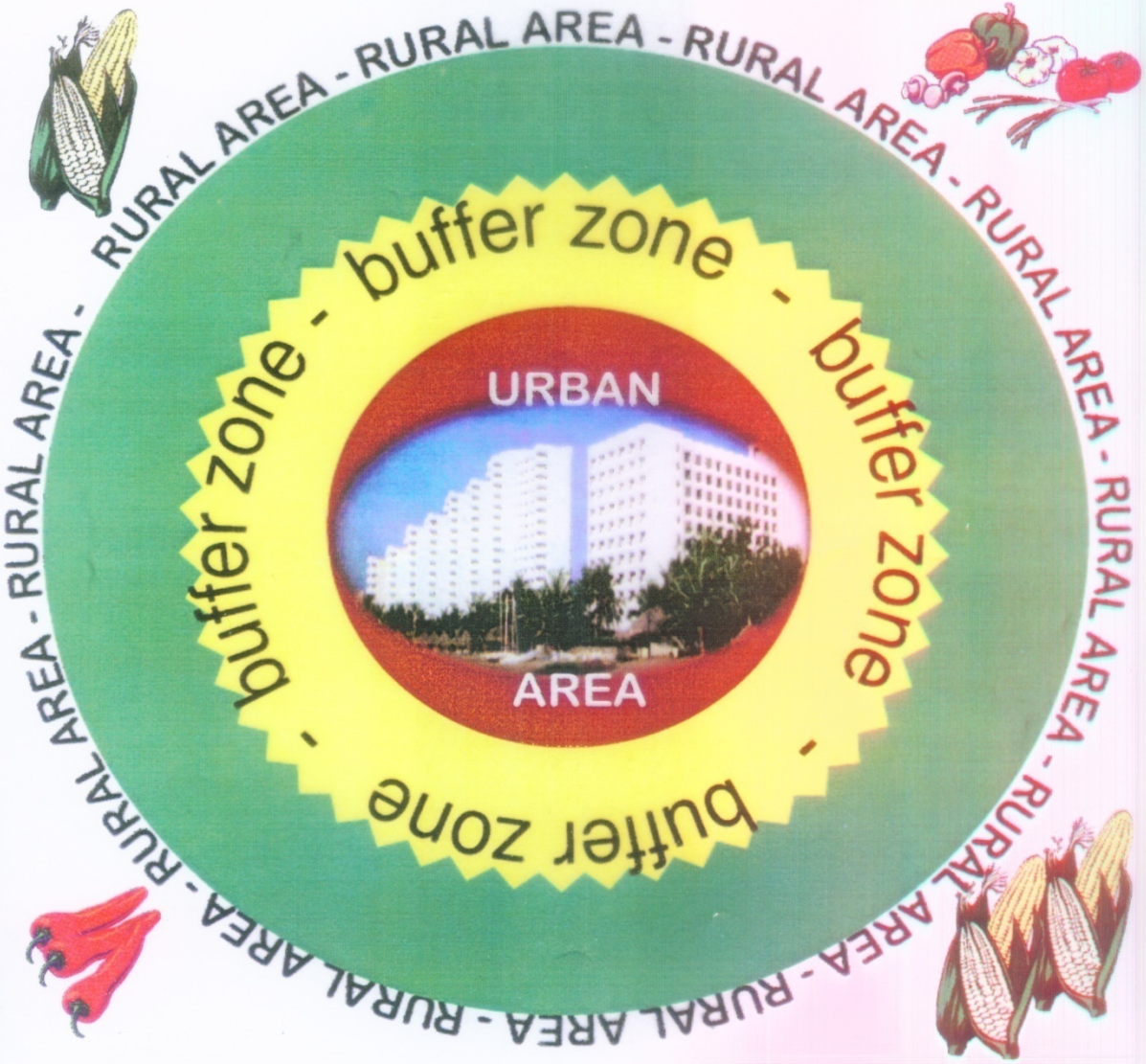
C) Creating new jobs and/or start-up companies

- D) ESTABLISH VENTURE CAPITAL, AND INTERNATIONAL MARKETING.

INTERNATIONAL PFC KIT OBJECTIVES (VI)

- E) PROVIDE SCIENTIFIC / TECHNOLOGICAL / EDUCATIONAL CONSULTANCY.

INTRA-STRUCTURE MODEL



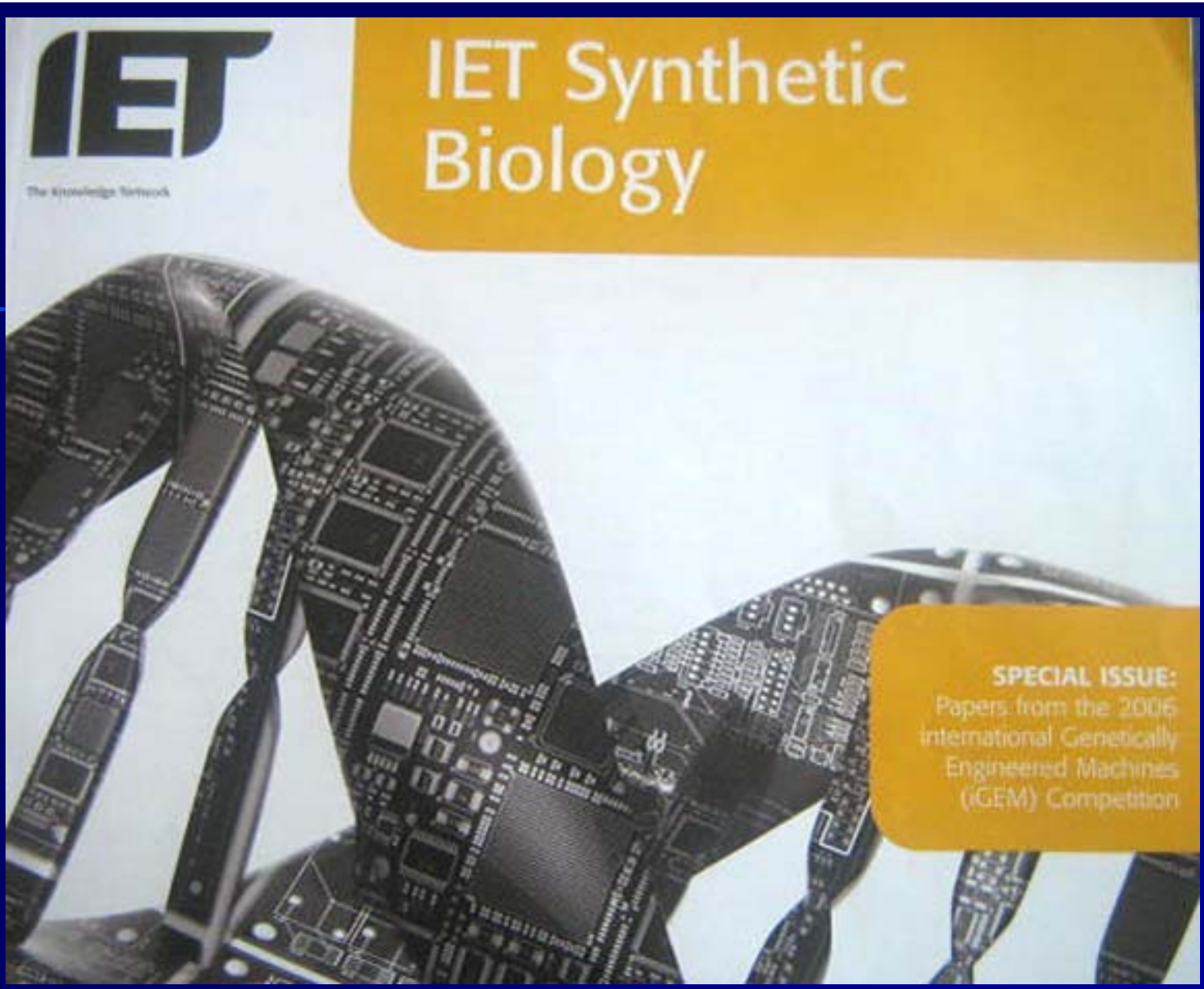
INTERNATIONAL PFC KIT OBJECTIVES (VI)

- TRAIN YOUNG STUDENTS FOR DEVELOPING THE CULTURE OF THE COMPETITION AT THE WORLD LEVEL.

Microbial Biosensor using BBa_J39011 device for iron detection under UV irradiation

Alex Quintero, Sandra García, Claudia Guevara, Carlos Rincón, Carolina Ospina, Pilar Guevara,

and Raúl Cuero (Research Supervisor)



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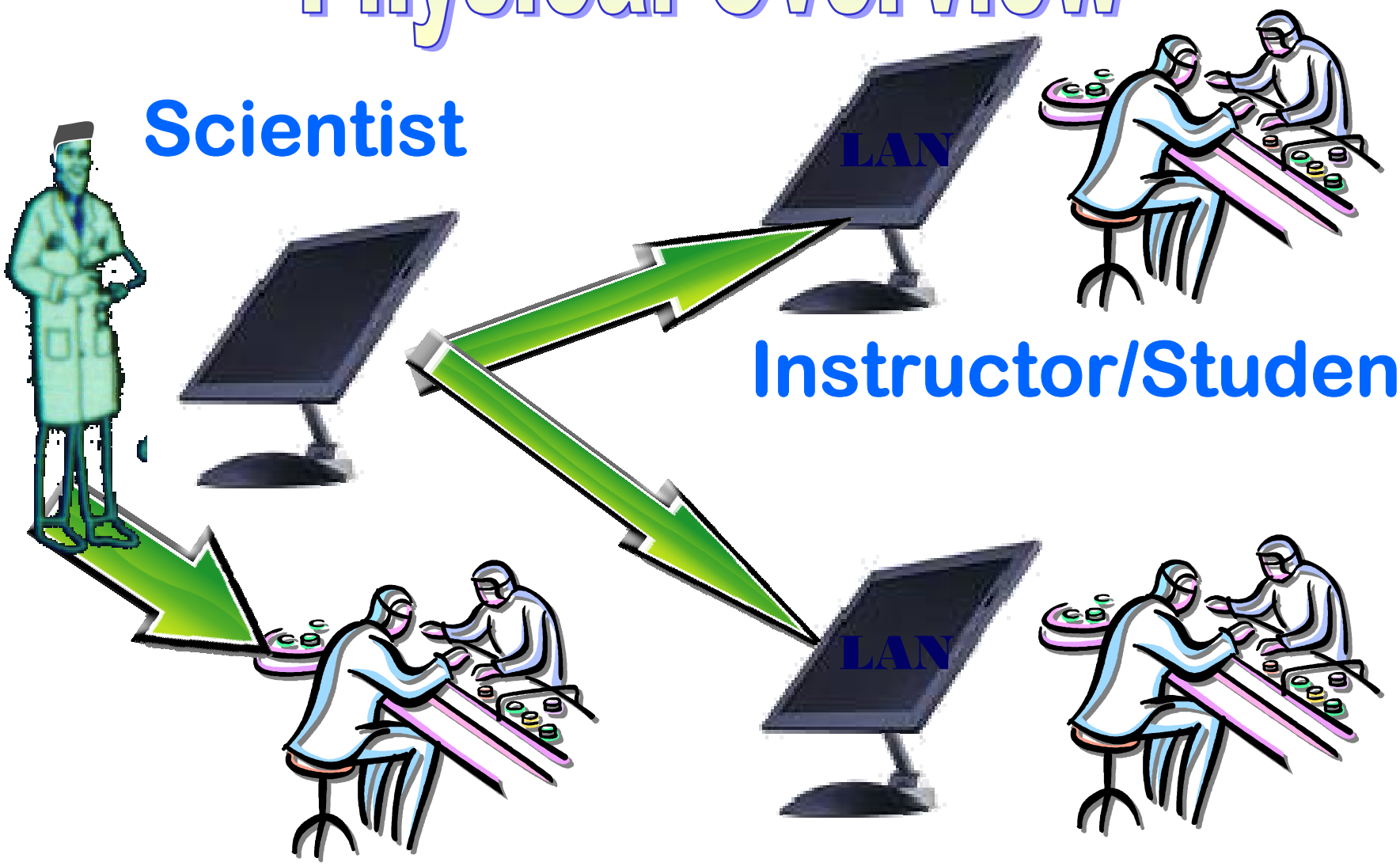
INTERNATIONAL PFC KIT OBJECTIVES (VIII)

- Provide a partnership between school teacher /professor in practicing science.

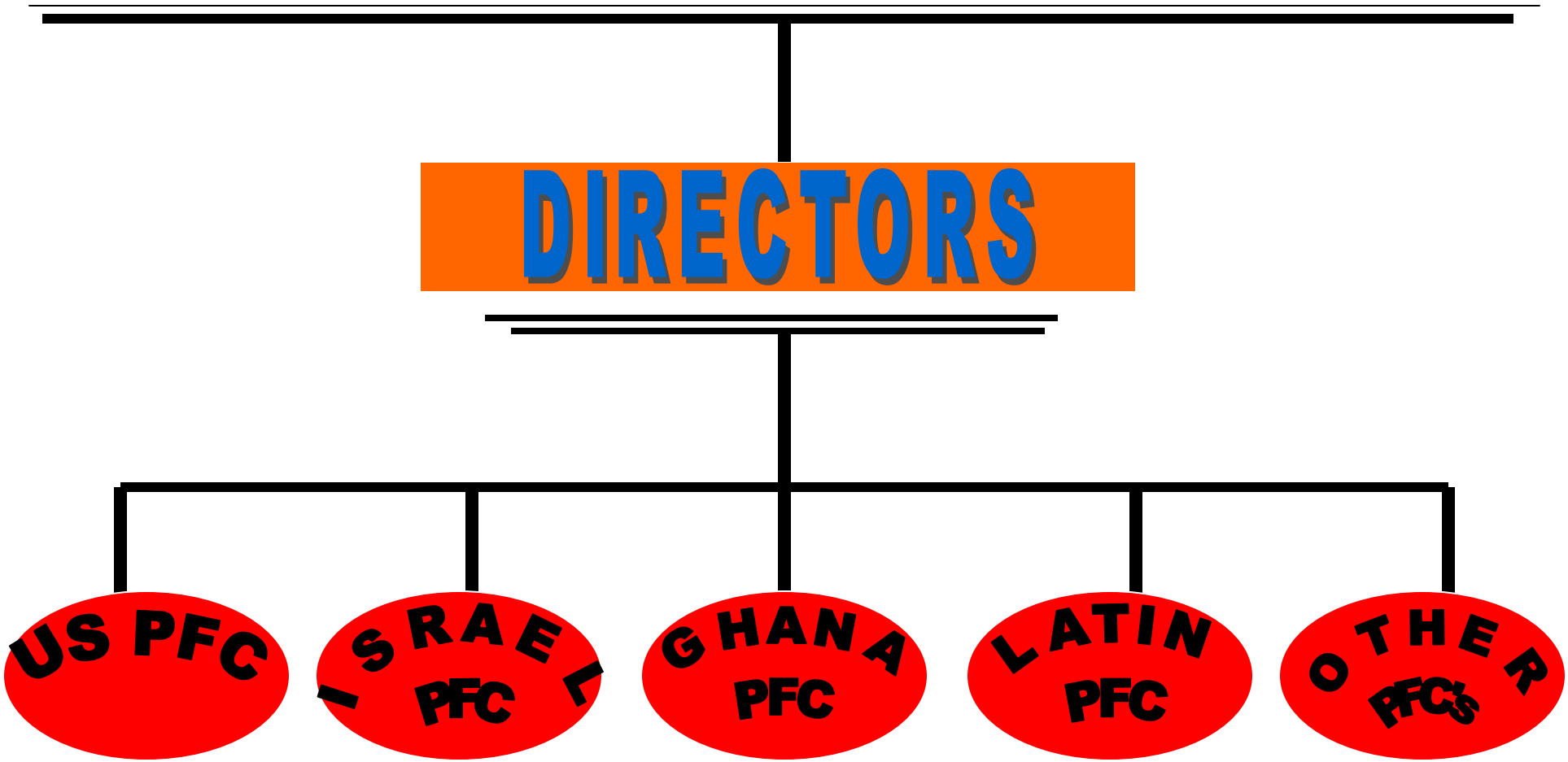
Physical Overview



WORLD GEOGRAPHIC LOCATIONS OF THE PFC

- USA
- ISRAEL
- LATIN AMERICA
- AFRICA
- OTHERS (TBA)

INTERNTIONAL BOARD FOR PARCS FOR CREATIVITY



The International PFC Interaction

UNITED STATES
CALIFORNIA / TEXAS

CARIBBEAN

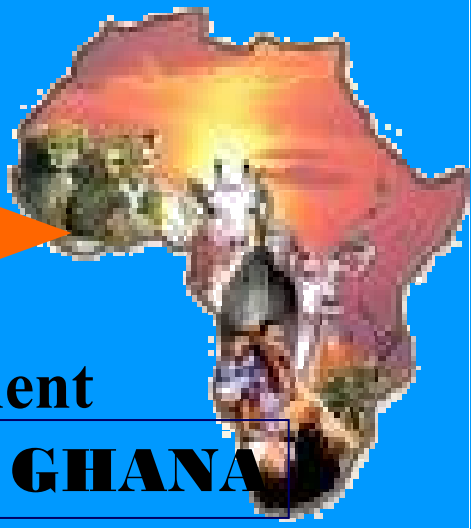
- Technology and Science Training.
- Marketing.

ISRAEL

Development Area

- Pharmaceutics.
- Nutritional Food.
- Cosmetics.
- Energy.

LATIN AMERICA



GHANA

- Natural / Human Resource Development
- Technology Transfer

PFC - Israel

From Dead Sea to Red Planet - Life on Mars...

THE PARC-FOR-CREATIVITY (PFC)

THE PARC-FOR-CREATIVITY (PFC), a non-profit educational organization, will soon be opened in Houston, USA.

OBJECTIVE: To Create Young Inventors for Self-Employment, Better Quality of Life, Improvement for their Economy, and/ or Sustain and Improve the Economy in USA.

STUDENTS: 9th, 10th, 11th and 12th Graders, and/ or College Freshmen and Sophomores
Mentors: Practicing Scientists and/ or Inventors

ACTIVITIES: During School Free Time Including Week Ends and Summer

LINKAGES: International Science Summer Camps in Different Countries

ביקור מנאס"א באורט "אבין"

במסגרת פרויקט שעורכים תלמידי אורט "אבין" עם מרכז נאס"א , הגיע לביקור בבית הספר פרופ' **ראול קוארו**, חוקר טכנולוגיה מולקולרית מארה"ב. הפגישה הייתה מרתקת ומרגשת. פרופ' ראול סייר בבית הספר בלוויית מנהלת התיכון, הגב' אילנה מאיו ומורים נוספים, ולאחר מכן נפגש עם התלמידים המשתתפים בפרויקט.

"מטרת המפגש הייתה פגישה עם התלמידים ותדרוכם לקראת הנסיעה לתחרות שתתקיים בנובמבר 2007 ביוסטון." סיפר ד"ר **שמעון בראל**, המלווה את התלמידים עם הפרויקט המיוחד. "תלמידי אבין יציגו בתחרות את המחקר שלהם על פיתוח חיידק, המסוגל לחיות בתנאים המדומים למאדים". הוסיף בראל.

התלמידים, שהיו מרותקים לדברי הפרופ' קוארו, שמעו מפיו על סקרנות מדעית ועל מחקר. הפרופ' הסביר להם שכבר בגיל התיכון אפשר להגיע להמצאות גדולות, כמו גליליאו גליליי שכבר בגיל 16 אימץ את מוחו בנושא יצירת העולם. "אתם הולכים בגיל 18 לצבא ורק אז לאוניברסיטה, אך לא רק סטודנטים יכולים לחקור. אפשר להתחיל כבר בתיכון" סיכם הפרופסור.

PFC - Israel

"A visit of a scientist who works with NASA at Ort Abin"

Prof. Raul Cuero a scientist from US is a researcher in the field of molecular biology and technology. The primary aim of Prof. Cuero's visit to Ort Abin high school was to meet with the students and to guide and prepare the IGEM project team for the competition at MIT in Boston. He also met with the principal Mrs. Ilana Maio and the teachers. The meeting with the students was very stimulating and motivating. Dr.Shimon Barel, the Israeli team mentor ,explains that the students are going to present a project which is coping with the possibility of designing and creating bacteria that could survive under the extreme conditions of Mars.

In his presentation to teachers and students Prof. Cuero explained the meaning of creativity and imagination in science based on his vision that young people even teenagers have the potential and ability to make an invention. In order to emphasize his words, Prof. Cuero gave the example of Galileo Galilee that since he was 16 years old he had been struggling with the biggest questions of our universe. After having discussed the importance of scientific curiosity, Prof. Cuero urged the students and said "don't wait until you finish your army service and/or the university studies and only then allow yourself to try and make an invention, start doing it now"

The students were very inspired by both the lecture and the lecturer.

ACTIVITIES PFC

- CONTINUED BRAIN STORMING BETWEEN STUDENTS AND MENTORS USING SKYPE: DISCUSSION OF SCIENTIFIC/ TECHNOLOGICAL PRINCIPLES TOWARD CONCEPTUALIZATION OF INVENTIONS.

Dr. Cuero's Method Cont.

USING CREATIVE SCIENTIFIC PROJECTS TO LIVE THE PROCESS

- **MENTORS MUST BE INVENTORS**

- **Project Related to Social Needs, Current Importance & Student's Perception**

- **Student/Instructor Writing Results Together Through**

IMPLEMENTATION PROGRAM SUMMER CAMP

- **STUDENT SELECTION**
- **INDUCTION**
- **FIELD TRIPS/LAB VISITS**
- **ENRICHMENT**
- **PHYSICAL LAWS**
- **CONCEPTUALIZATION => INVENTION PROJECTS**
- **INVENTION**

Summer School Camp: I

- The camp will include the following activities:
- 1) Academics/Enrichment: Classroom
- 2) Practical: Laboratory/Field Trips
- 3) implementation of invention projects.

INTERNATIONAL SUMMER CAMP MANIZALES- COLOMBIA NOV 2007

- **INTERNATIONAL SUMMER CAMP MANIZALES-COLOMBIA**

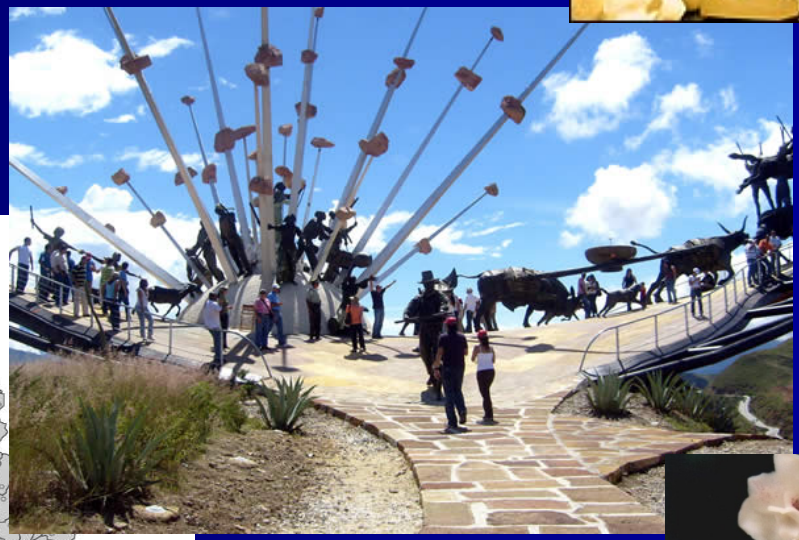
- NOV 2007

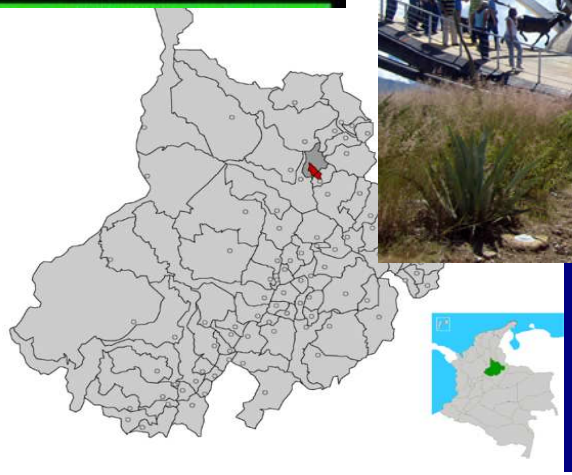
PFC STUDENTS INVENTIONS/RESEARCH

- FIBERS SIMILAR TO GLASS.
- ANTIBIOTICS FROM PLANTS.
- ORGANIC BATTERIES.
- MOLECULAR SENSOR FOR DIABETES.

NEXT SUMMER CAMP: ISRAEL NOVEMBER 2008

NEXT SUMMER CAMP
BUCARAMANGA – JULIO 2008





Es para la Industria Licorera de Caldas un orgullo pertenecer al Parque de la Creatividad. Estamos seguros que como industria, recibiremos los beneficios que representa el hecho de crear ciencia al lado de los mejores científicos del mundo en Biotecnología Sintética, hecho diferenciador de por si y que nos pone a soñar con procesos y productos altamente competitivos.

Manuel Alberto Soto Salazar.
Gerente General ILC
Septiembre 2007

Gracias al Parque de la Creatividad , organización presedida ´por el Dr. Raúl Cuero, la historia de Colombia ha empezado a cambiar, porque se ha iniciado un movimiento educativo con bases científicas, en el que el alumno aprende creando, dándole a la industria las verdaderas bases para competir en el contexto de las naciones desarrolladas del mundo.

El crear ciencia, es el motor de competitividad que mueve los mercados, esta no se detiene y avanza de tal forma que aquel que no se adhiere a esta practica, rápidamente queda obsoleto.

La incursión de este movimiento educativo en la industria, ha empezado a dar sus verdaderos frutos; ya se emprenden proyectos que antes parecían imposible y por consiguiente la productividad y el desarrollo de nuevos productos con un valor agregado inmenso se empiezan a dar, generando riqueza en un país que puede alcanzar sus niveles de competitividad no solo en el ámbito Latinoamericano sino en el mundo entero.

Dario Serna
Gerente General Técnico
Industria Licorea de Caldas

SynBERC
Synthetic Biology Engineering Research Center

QUARTERLY BULLETIN

SynBERC Partner in Profile: CasaLuker

CasaLuker was founded in 1906 in Colombia, and through the years has become one of the leading companies in the food industry in Latin America. Its business focus is in the production and commercialization of value-added food products, the distribution of mass consumer products and the operation of African palm oil plantations.
Its headquarters is based in Colombia, but CasaLuker has affiliate companies in Panama, Venezuela and Ecuador. International operations represent 30% of total revenues, where exports of cocoa based products to the United States, the European Union and Asia contribute the most.
CasaLuker recently joined the Park of Creativity, institution led by Dr. Raul Cuero PhD, whose goal is to generate scientific development in the countries where the parks are established.
In early 2008, CasaLuker joined the Syn-BERC Industry Alliance, becoming one of

the primary companies teaming up with this research center, to work together in projects to better nutritional aspects of cocoa using synthetic biology. Currently, CasaLuker is upgrading its lab facilities to support its research, invention, and development of synthetic biology.
CasaLuker can count on world-class talent to execute its scientific research and investigation, and its alliance with the Park of Creativity and SynBERC will permit it a significant improvement in its competitiveness while contributing to the social, economic, and technological development in Colombia.
Visit the company's website at

www.casaluker.com

SynBERC
Synthetic Biology Engineering Research Center

SynBERC Partner in Profile: Aguas de Manizales S.A. E.S.P.

Aguas de Manizales S.A. E.S.P. is a Colombian utility company with public majority shareholding, specialized in the operation of potable and waste water systems, including consulting on integrated management of water resources. Our company was founded in 1996, responsible for the operation of potable and waste water systems in Manizales city (Caldas) in the center of the coffee growing area of Colombia.

In Colombia, Aguas de Manizales S.A. E.S.P. is widely recognized thanks to the excellent quality of water taken from natural Andean cloud forests, which is distributed to the inhabitants of the city of Manizales, in addition to its technological development as reflected in their excellent technical, commercial and finance indicators.

Looking ahead, Aguas de Manizales S.A. E.S.P. is investing in research, invention and development through SynBERC and Park of Creativity, being aware that in addition to the generation of new knowledge as a new corporate culture and development generator,

it reinforces and builds local capabilities" said Alvaro Andres Franco, General Manager of Aguas de Manizales S.A. E.S.P. Among different projects under consideration is the development of water for human consumption without chemicals and incorporation of mineral ions from the mountains of Colombia using Synthetic Biology. This product is expected to supply European, American, Asian, and Middle East markets.

Visit the website (in Spanish only)
http://www.aguasdemanizales.com.co/Manizales_Aguas

U.S. SynBERC

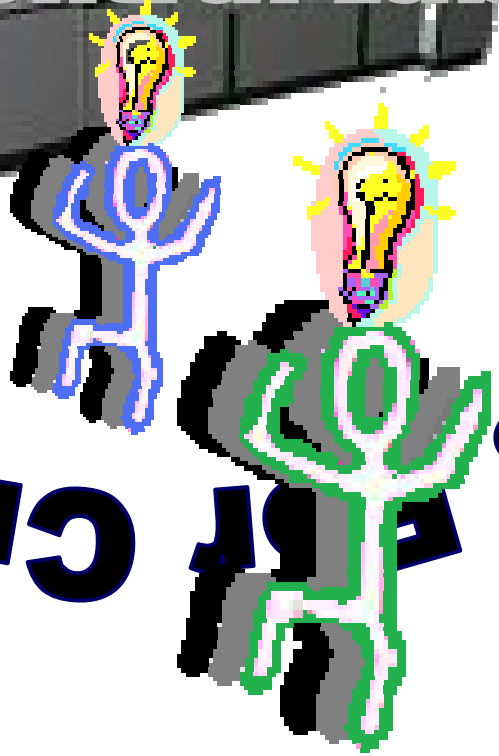
UC Berkeley, MIT, Harvard, PVA&MU

University Consortium

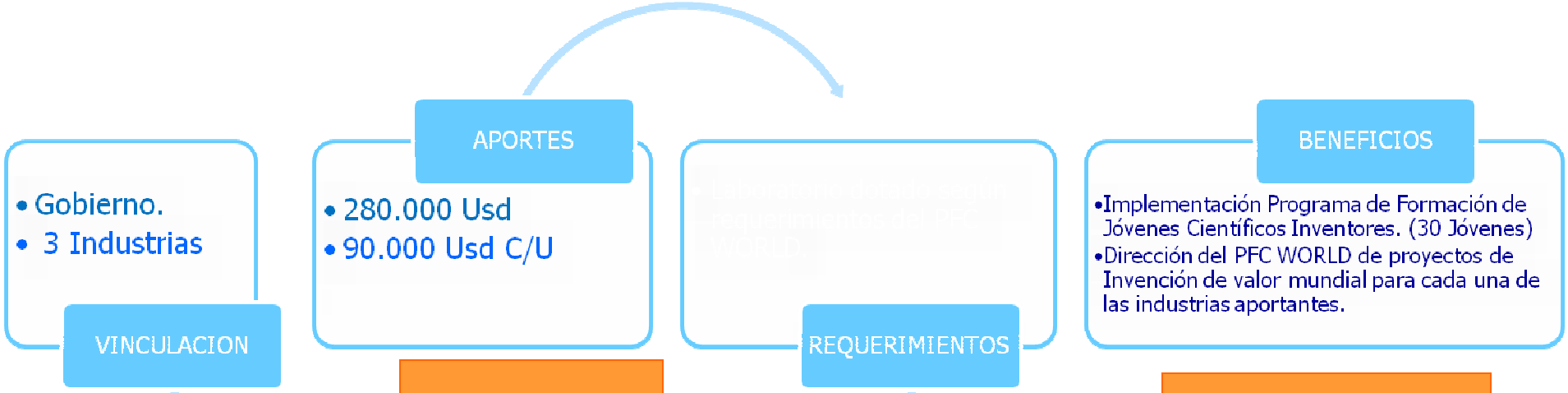
Venture Capital

$

Parcs For Creativity Parcs For Creativity



HOW TO SET UP A PFC



Participation

Government
Industry

Funding

$280,000 – 1 MILLION govt
$90,000 – each comp

Requirements

Central Laboratory According To International Standard Requirements
-Establish annual CAMP

Benefits

Formation of young inventors
• Provide young inventors for developing research in the industry
• To create start-up company

ADAPTABILITY IS THE KEY TO SURVIVE

- *DARWIN*

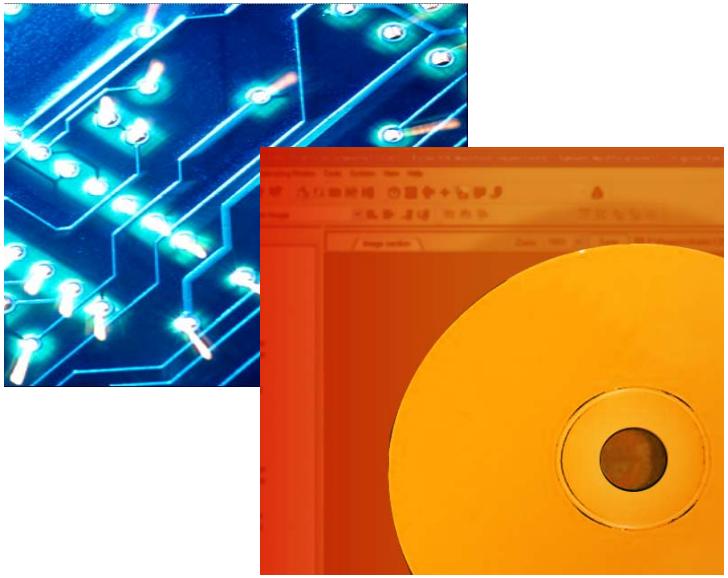
DO NOT COMPARE

YOURSELF WITH

OTHERS,

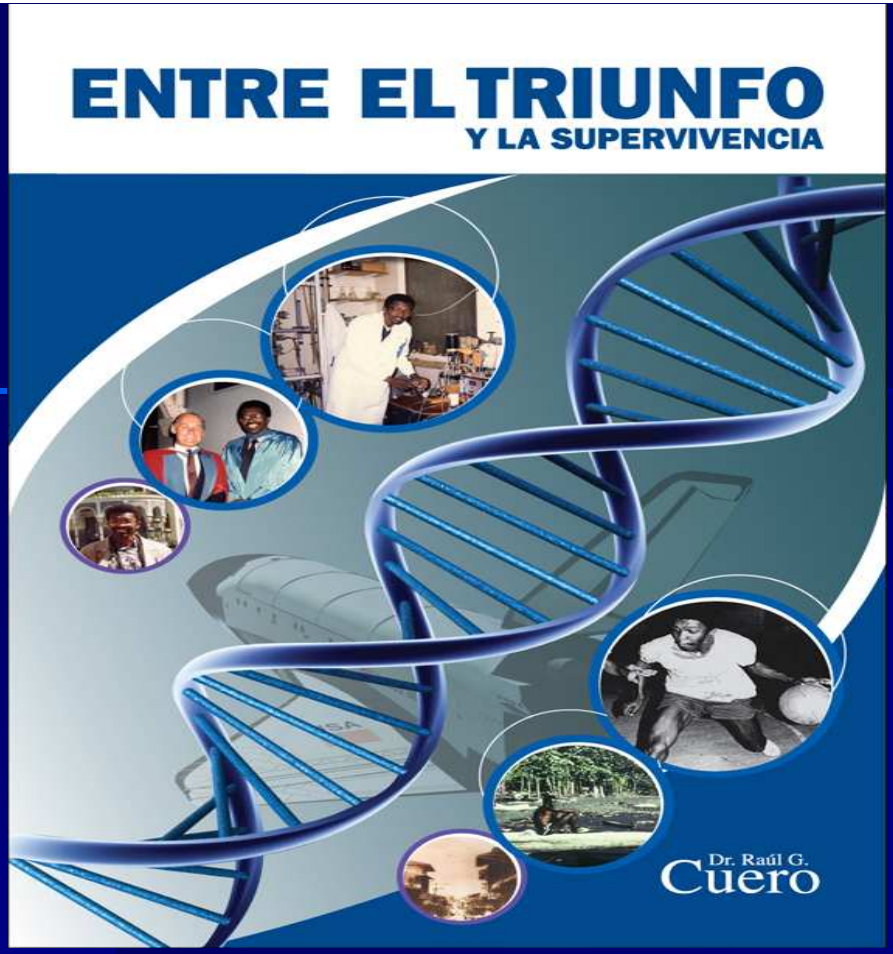
INTERACT WITH THEM

R. CUERO



IT IS NOT THE HARDWARE / SOFTWARE...

IT IS THE WETWARE



DR. RAUL CUERO.
WWW.RAULCUEROBIOTECH.COM
P.O. Box 685
Zip Code 77446
Prairie View, Texas.
E-mail: OLIMPA@AOL.COM