

## BIOTECH Research Program Highlights and Areas for Collaboration

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### Research Highlights

#### A. Commercializable technologies

##### 1. Registered/Licensed Technologies/Processes

###### VCO and VCO by-products

- virgin coconut oil (VCO or VCNO) is produced from fresh coconut meat (non-copra) without heat and chemical
- does not pass through RBD processes
- does not contain aflatoxins and poly aromatic hydrocarbons (PAHs) which are carcinogenic
- retains vitamin content, especially Vitamin E, an antioxidant
- rich in lauric acid, an acid naturally found in mothers milk that helps develop and strengthen the immune system of newborn babies
- contains medium chain fatty acids that are easily digested by the body and converted to energy



### Research Highlights



- BIO-N for corn and for rice**
- Reduces nitrogen-fertilizer input
  - Enhances yield of rice and corn
  - Enhances shoot growth and root development

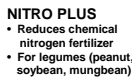
#### MYKOVAM

- Improves soil properties
- Promotes absorption of nutrients
- Used for agricultural crops, forest and fruit trees



#### MYCOGROE

- Enhances uptake of water and nutrients
- Reduces incidence of root infections
- For pines, eucalyptus, dipterocarps



#### NITRO PLUS

- Reduces chemical nitrogen fertilizer
- For legumes (peanut, soybean, mungbean)



### Research Highlights



#### Animal vaccines (HS, IC and FC)

- Hemorrhagic Septicemia (BIO-HS) B vaccine used to immunize young cows and carabaos

#### Essential oils

- Volatile or ethereal oils that are either secreted or excreted as odiferous by-products of the plants (Ortiz, 1988)
- Found in specialized secretory structures known as glandular hairs, modified parenchymal cells, oil tubes or ducts of the different parts of a plant



### Research Highlights

#### 2. Under technology transfer phase

- Protein enriched animal feed

#### 3. For sale or contractual distribution

- Tissue cultured plants



### Research Highlights

#### B. Soon-to-be licensed technologies/processes

##### 1. Biofertilizers

- Brown Magic
- Mycorrhizal Root Inoculants
- Bio-Groe
- BIO-N for vegetable





## Research Highlights

**B. Soon-to-be licensed technologies/processes**

**2. Microbial inoculants for composting and biofertilizers**

- Bio-Quick
- Bio-Fix






## Research Highlights

**B. Soon-to-be licensed technologies/processes**

**3. Microbial enzymes**

- $\alpha$ -amylases
- Glucoamylase
- Proteases (acid, neutral and alkaline)
- Pectinases
- Cellulases
- Xylanases
- Lipases
- Microbial Rennet

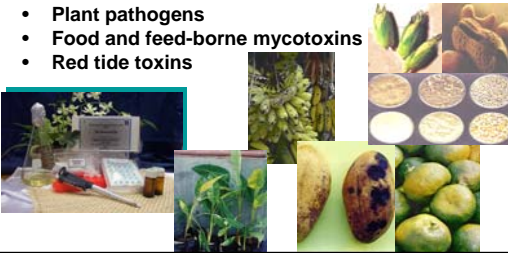




## Research Highlights

**C. Mature Technologies**

**1. ELISA-based diagnostic kits/services**

- Plant pathogens
- Food and feed-borne mycotoxins
- Red tide toxins

## Research Highlights

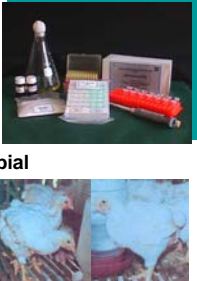

**C. Mature Technologies**

**2. DNA based diagnostic kits/services for food, feed and water-borne pathogens**

- *Salmonella* spp.

**3. Veterinary antibiotics/antimicrobials**

- Tylosin
- Beta-monoglycerides

## Research Highlights

**D. Novelty/Specialty Products**

- Exopolysaccharides
- Microbial degreasers
- High ethanol yielding yeasts/bacteria
- Medicinal/health care products (banaba, sandalwood oil, aloe vera)
- DNA based detection kits for *Staphylococcus aureus* and *Escherichia coli* 0157
- Microbial insecticides (NPV)

Regenerated plantlets for callus production



Callus formation from leaf midvein sections of banana leaves

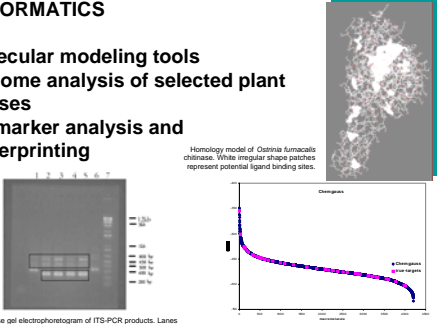
EPS (a) ready to be dried and b) powdered.



## Research Highlights

**E. BIOINFORMATICS**


- Molecular modeling tools
- Genome analysis of selected plant viruses
- Biomarker analysis and fingerprinting



Agarose gel electrophoresis of ITS-PCR products. Lanes 1-5: Amplifiers for *Zymomonas* strains 1832, 1229, 1231 and *Zymomonas mobilis* 1009 and 1003 respectively. Lane 6: control. Lane 7: 1kb plus ladder.

Homology model of *Ostreia furnacalis* chitinase. White irregular shape patches represent potential ligand binding sites.

Ranking of streptavidin targets in the Sc-PDB database using the Chengauss scoring function



### Areas for Collaboration

- A. Intellectual property management
  - Drafting, filing and monitoring
- B. Product/technology development and testing
  - Efficacy trials/feed testing
  - Toxicity assays
- C. Product/technology marketing
  - Technology valuation
  - Market positioning
  - Packaging and advertising



### Areas for Collaboration

- D. Impact assessment
  - Economic impact
  - Socio-economic benefits
  - Short and long term impact
- E. Bioinformatics
  - Database construction, management and data mining



BIOTECH

Thank you  
very much!!!

