

# InCrops June 29<sup>th</sup> 2009 - JIC Mission, Strategy & ISPs

**JIC Mission**

**JIC Strategy & ISPs**

**JIC Innovation Clusters**

**MET Innovation Clusters**

**TGAC**

**Commercialization**

*Jonathan Clarke*

# InCrops June 29<sup>th</sup> 2009 - JIC Mission, Strategy & ISPs

## JIC Mission

1. to carry out world leading fundamental and strategic research with special emphasis on:

1. yield and productivity,
2. environmental interactions
3. quality and valuable products

2. to train scientists

3. to make our findings available for the benefit of society: economic and social impact

*Jonathan Clarke*

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## JIC Strategy & Integrated Science Programmes (ISP)

Integrated powerhouses addressing strategic priorities

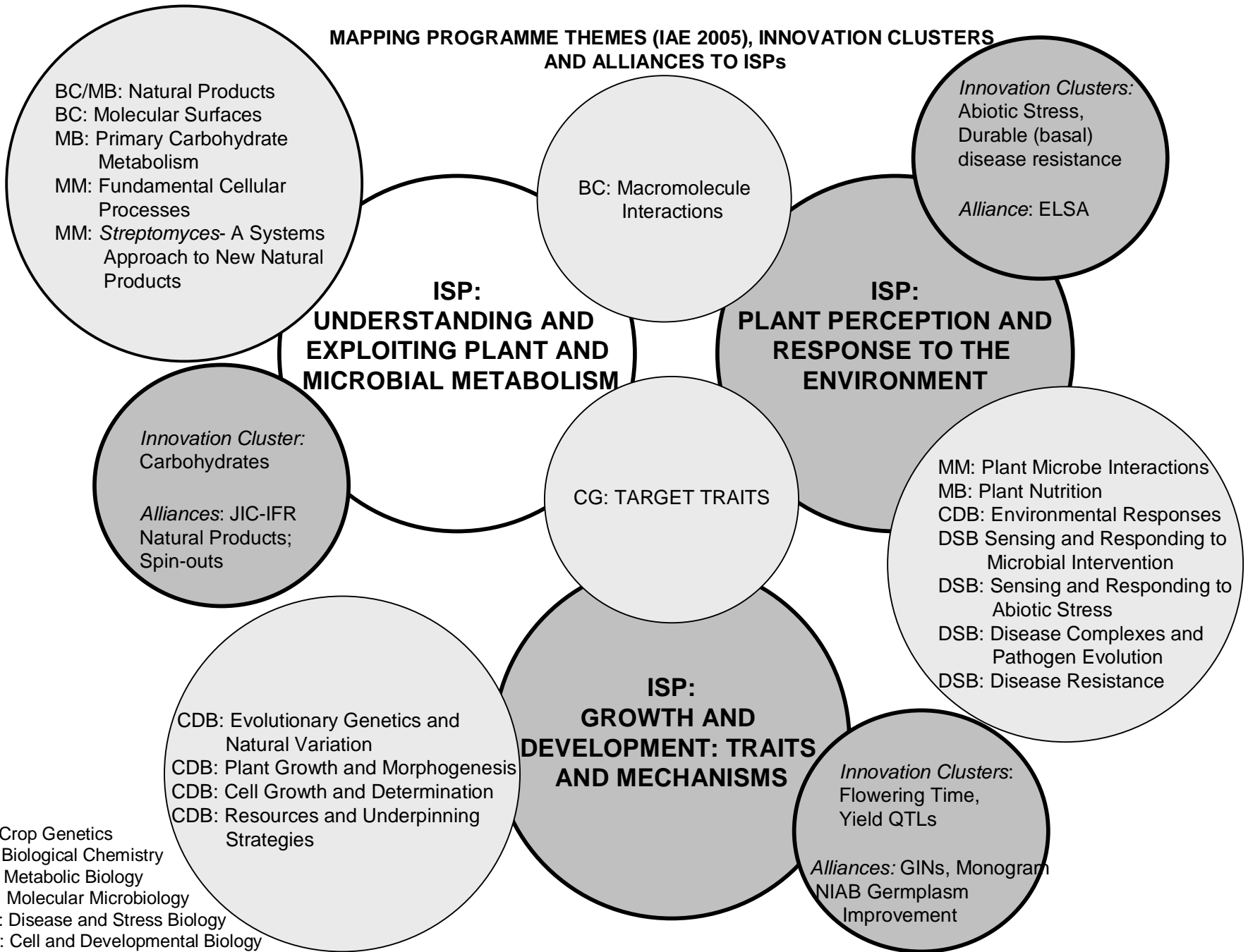
- | <u>How Plants &amp; Microbes:</u> | <u>ISP</u> | <u>Relevance</u>   |
|-----------------------------------|------------|--|
| • develop & grow                  | <b>DEV</b> | food security, bioenergy<br>(yield potential & productivity)   |
| • interact with the environment   | <b>ENV</b> | Living with Environmental Change<br>(reduce the Carbon footprint,<br>adapt to climate change<br>increase yield resilience,<br>minimise losses) |
| • produce useful products         | <b>MET</b> | healthy ageing (nutritious food),<br>Bioenergy, Green Innovation   |

# InCrops June 29<sup>th</sup> 2009 - JIC Innovation Clusters

## JIC Innovation Clusters

- DEV
  - Flowering Time & Yield QTL
  - Public Good Breeding
- ENV
  - Abiotic Stress
  - Durable (basal) disease resistance
  - Nutrition use efficiency
- MET
  - Primary Plant Metabolism
  - Plant derived natural products
  - Antibiotics / Anti-infectives
  - Biomolecular assembly / cellular processing

**MAPPING PROGRAMME THEMES (IAE 2005), INNOVATION CLUSTERS AND ALLIANCES TO ISPs**



CG: Crop Genetics  
 BC: Biological Chemistry  
 MB: Metabolic Biology  
 MM: Molecular Microbiology  
 DSB: Disease and Stress Biology  
 CDB: Cell and Developmental Biology

# InCrops June 29<sup>th</sup> 2009 - MET Innovation Clusters

## MET Innovation Clusters

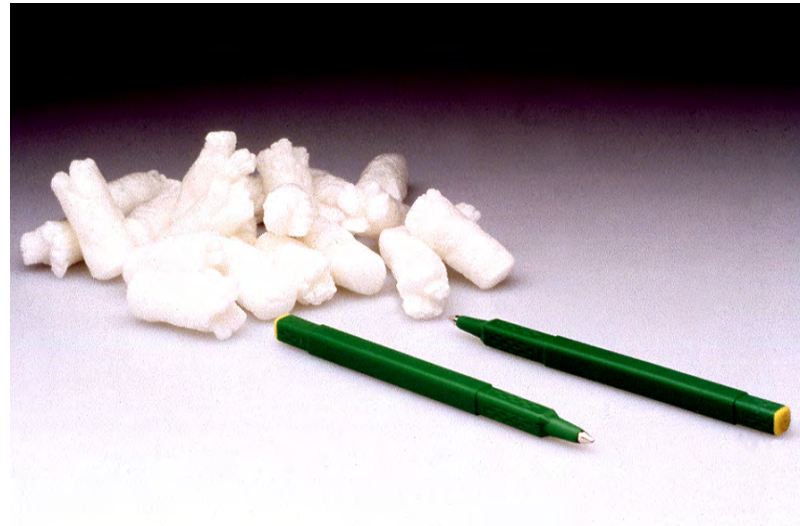
- MET
  - Primary Plant Metabolism
    - Starch, Sugars, Oils
  - Plant derived natural products
    - Crop traits, Nutrition, High value products
  - Antibiotics / Anti-infectives
    - Control of infectious disease
  - Biomolecular assembly
    - Plant virus based vectors, bionanoscience, glycobiology, biosensors
  - Cellular processing
    - Metabolism, regulation, cellular differentiation & transport

# InCrops June 29<sup>th</sup> 2009 - Novel Industrial Polymers

## Novel industrial Polymers

### Starch

- Food processing
- Biodegradable packaging
- Biodegradable polymers



# InCrops June 29<sup>th</sup> 2009 - Enhanced Nutrition & Health

## Crops for enhanced nutrition and health

### Anthocyanins

- Food colorants
- Anti-oxidants
- Anti-cancer agents



# InCrops June 29<sup>th</sup> 2009 - Enhanced Nutrition & Health

## Crops for enhanced nutrition and health

### Glucosinolates

- Anti-cancer agents

### Proof of principle 2004-2008

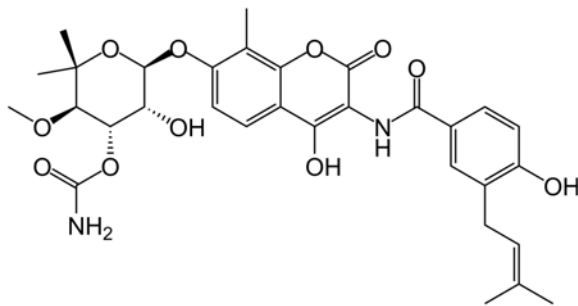
- Validation of methodology
- Novel mechanism of biological activity
- Diet X Genotype interactions



# InCrops June 29<sup>th</sup> 2009 - What can we contribute to?

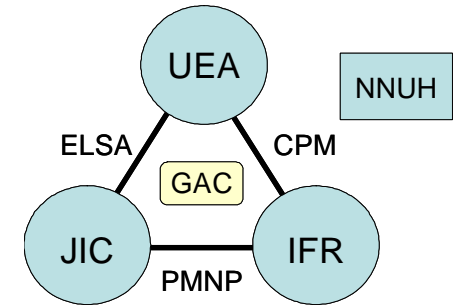
## Novel plant based products for:

- Raw materials for fuel/substrates for industry
- Dietary improvement
- Healthy ageing
- Anti-cancer products



## The Genome Analysis Centre

- Major Initiative by BBSRC for non-medical genomics
- Centre of excellence for *de-novo* genome sequencing of crops
- Centre of excellence for bioinformatic analysis of genomes



The Technology of GAC is at the Centre of the Bio/EnviroScience focus of the NRP.

- It will enable breakthrough science. It will be innovative.
- The commercialisation plan will generate new jobs and drive critical mass.

## Commercial Genomics

- *de-novo* genome sequencing of tropical crops
  - identification of gene targets for breeding
- genome wide SNP marker identification in un-sequenced genomes
  - marker assisted breeding in emerging crops

# InCrops June 29<sup>th</sup> 2009 - Commercialization



Chameleon Biosurfaces

