

REPORT ON ACTIVITIES UNDERTAKEN WITH SEVENTH FRAMEWORK SEED FUNDING

E J Morris

The Department of Science and Technology kindly provided seed funding to cover expenses incurred in my visit to France to attend the EU-SA dialogue on Knowledge Based Bio-Economy Partnerships for Sustainable Development on 12th March 2007. This dialogue formed part of the BioVision World Life Sciences Forum, from 11-15th March 2007.

Report on EU-SA dialogue meeting

This meeting was organized as a side event of the BioVision meeting, and was well attended by most South Africans present at the meeting, as well as by some key figures from the European Commission. The meeting was co-chaired by Dr Christian Patermann, Director of Biotechnology Agriculture and Food Research in the European Commission, and Mr Daan du Toit from DST.

At the request of DST I gave a presentation on South Africa's National Biotechnology Strategy, focusing primarily on the Food, Agriculture and Biotechnology domain. I also highlighted South Africa's successful participation in a number of EU 6th Framework projects with relevance to this area. A copy of the presentation is attached to this report. Dr Antonio Llobell of Plantbio gave a presentation on the implementation of the National Biotechnology Strategy, and explained the various instruments such as the BRICs, National Bioinformatics Network etc.

Following the presentations, I acted as a panellist in a round table discussion. During this session, it was agreed that there was an excellent opportunity for South Africa and Europe to build closer ties.

Prior to the dialogue meeting, Daan du Toit kindly hosted a dinner with Line Matthiesson-Guyader, of the Biotechnology, Agriculture and Food Directorate in the European Commission DG Research. This provided an ideal opportunity to further our acquaintance following her attendance of the Bio2Biz meeting in South Africa in 2006.

It is probable that the meeting will result in the development of Specific International Cooperation Actions in the area of Food Agriculture and Biotechnology. This will open up significant opportunities for future collaboration.

BioVision meeting

The theme of the BioVision meeting was "The Contribution of Life Sciences to the Millennium Development Goals". Accordingly the meeting was attended by a number of prominent international players with a role to play in addressing these important goals, namely:

Goal 1: Eradicate extreme poverty and hunger

Goal 2: Achieve universal primary education

Goal 3: Promote gender equality and empower women

- Goal 4: Reduce child mortality
- Goal 5: Improve maternal health
- Goal 6: Combat HIV/AIDS, malaria and other diseases
- Goal 7: Ensure environmental sustainability
- Goal 8: Develop a global partnership for development

The organization of the meeting provided significant opportunities for discussion forums as well as actual lectures. There was considerable debate on a variety of issues, including

- the appropriateness of biofuels for the developing world
- the role of GM technology in agriculture in the developing world
- strategies to address malnutrition in developing countries
- health system weaknesses in developing countries
- IP protection and its relevance or otherwise for the developing world
- the need for society to drive the research agenda

In addition, a range of Nobel prize winning scientists attended the meeting, and had an opportunity to briefly highlight the significance of their work.

A number of useful contacts were made at the meeting. Business cards are attached to this report.

Some specific contacts where intended follow-up actions were identified are highlighted below:

Dr Klaus Ammann, University of Delft

Dr Ammann is on the board of the Gates Foundation funded project on African Biofortified Sorghum. In discussions he expressed interest in running a biosafety workshop in South Africa when he attends the next board meeting in South Africa in May. As a follow-up action, DEAT has expressed interest in hosting such a workshop and email discussions are in progress to finalize arrangements.

Prof Magdy Madkour, Ain Shams University, Egypt

Prof Madkour was interested in following up on SA-Egypt bilateral opportunities, particularly in cooperating on genomics technologies where Egypt has some equipment and expertise. He suggested that joint engagement in EU 7th Framework projects might be one way to further this interaction.

Dr Yves Champey, Drugs for Neglected Disease Initiative, Switzerland

The DNDI has experience in registering a new antimalarial drug therapy. The South African Malaria Initiative could benefit from this experience, and Dr Champey agreed that although the DNDI is now focusing on other diseases rather than malaria, they would be willing to share their experiences with SAMI as appropriate.

Dr Johan Rockström, Executive Director, Stockholm Environment Institute

The SEI is planning a small workshop in South Africa in April to discuss a new initiative on "Towards a bio-resource economy- A competence platform and network for developing visions and strategies for bio-resources based economic growth in Sub-Saharan Africa". The workshop to plan this project will be held in Pretoria at the office of the African

Centre for Gene Technologies, and will involve scientists from the CSIR and the University of Pretoria amongst others.

Natalie Dakers, Robert Sindelar, Genome BC, Canada

The possibility of collaboration between the African Centre for Gene Technologies and Genome BC was discussed. The Canadians agreed to follow up on this when they returned home.

Kurt Wuthrich, ETH Zurich.

Dr Wuthrich is a Nobel prize winner for his work on the identification of protein 3D structures using NMR techniques. This has opened up significant opportunities for structure-based drug design. Dr Wuthrich was approached regarding potential collaboration on the design of anti-malarial drugs. Although the conversation was brief, he confirmed his willingness to consider further interaction.

Mohammed Sessay, UNEP

Dr Sessay is based in the UNEP offices in Nairobi, and works closely with the biosafety team there. We discussed the potential for follow-up interaction, particularly because the person previously in charge of UNEP/GEF capacity building activities in Nairobi (Charles Gbedemah) has left, and it is necessary to rebuild the linkages. Mohammed Sessay will put me in touch with the new team.



South Africa's National Biotechnology Strategy

Prof Jane Morris
Seventh Framework Programme
National Contact Point:
Food, Agriculture and Biotechnology
(Alternate)



South Africa's National R&D Strategy

The three operational objectives of the strategy are:

- ***Achieving mastery of technological change in our economy and society (Innovation)***
- ***Investment in South Africa's Science, Engineering and Technology Base (Human Capital and Transformation)***
- ***Strengthening the government S&T system and private sector participation (Alignment and Delivery)***



The case for a Biotechnology Strategy

“South Africa has a solid history of engagement with traditional biotechnology. It has produced one of the largest brewing companies in the world, makes wines that compare with the best, has developed many new animal breeds and plant varieties, some of which are used commercially all over the world, and has competitive industries in the manufacturing of dairy products such as cheese, yoghurt, maas, baker's yeast and other fermentation products”

However, South Africa has failed to extract value from the more recent advances in biotechnology, particularly over the last 25 years with the emergence of genetics and genomic sciences.”



Some Comparative Advantages

Strong export industry

- Especially fruit
- Shelf-life extension – packaging, coatings etc.
- GM technology, allied to good biosafety protocols

Biodiversity - novel foods and novel genes

- Indigenous Knowledge Systems e.g. traditional foods and medicines
- Source of genetic material



Biotechnology – the main focal areas

- Plant biotechnology
 - Nutritional enhancement
 - Vaccines in plants
 - Drought and disease tolerance, increased production
- Animal health biotechnology - vaccines
- Environmental and mining
- Industrial biotechnology
- Human health biotechnology – drugs and vaccines (malaria, HIV, TB)



Biotechnology in support of South African Agriculture

- A dual economy; need to provide support to a well-developed commercial sector and a subsistence-oriented sector in rural areas
- Primary production is 2.6% of GDP
- 9% of the employment in the formal sector
- Agri-industry is 15% of GDP
- Agricultural exports are about 8% (15% from deciduous fruit) of total SA exports

Agricultural Research Activities

- Agricultural engineering, soil, climate and water
- Plant crops and products - fruit, grapes, grain, vegetables, ornamental plants and industrial crops
- Plant protection
- Animal Improvement
- Veterinary and animal health and nutrition
(Onderstepoort Veterinary Institute - top veterinary institute in Africa; produces animal vaccines and diagnostics)



Food Research Activities

- **Cereal expertise - especially key cereals for Africa**
- **Logistics and cold chain technology**
- **Packaging - strong export link**
- **Shelf-life extension**
- **Value addition to waste**
- **Rural community initiatives e.g. value addition to indigenous foods**
- **Nutrition**
- **Food safety (mycotoxins, GMOs etc)**
- **Food microbiology**
- **Bench, lab and scale-up facilities in food, chemicals and fermentation**



The Biotechnology Strategy:

A nationally integrated, and globally competitive, plan for delivery:

BIOTECHNOLOGY PLATFORMS
BIOTECH GOODS AND SERVICES
BIOTECH COMPANIES



Key Biotechnology Issues and Challenges

- Institutional arrangements
- Human resource considerations
- Funding of research and development
- Commercialising biotechnology
- Policy and legal instruments
- Ethics
- Public understanding of biotechnology

Operationalizing a Biotechnology Strategy

How can South Africa become competitive in the global biotechnology arena – while maintaining national biotech relevance?

Approach:

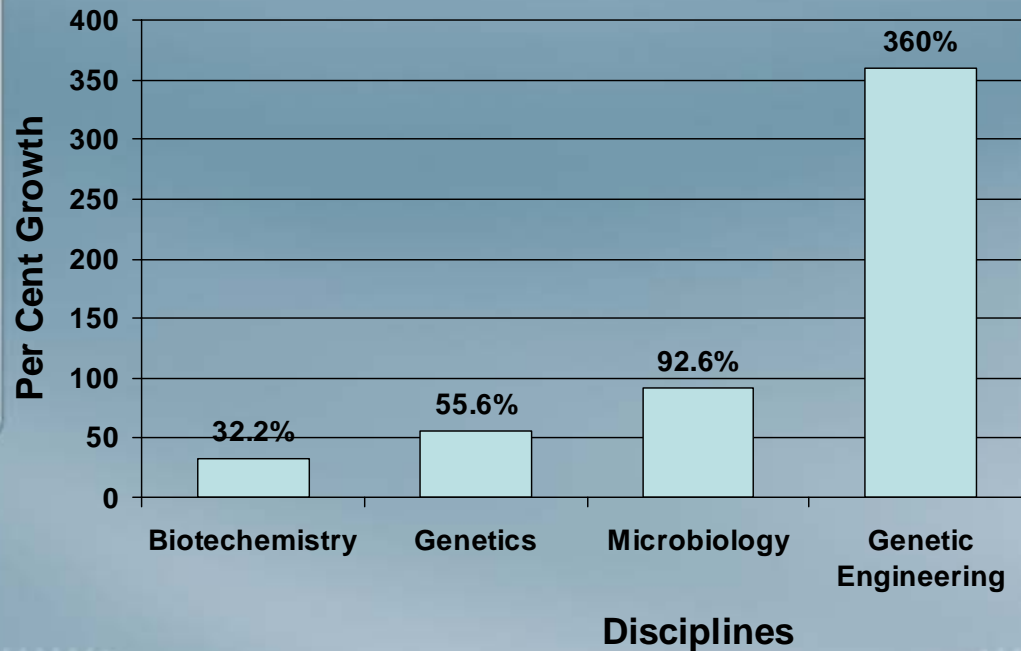
Regional strategies that inform a powerful, focused, logical National Strategy.

Strategic destination, targets & milestones, tools & activities.

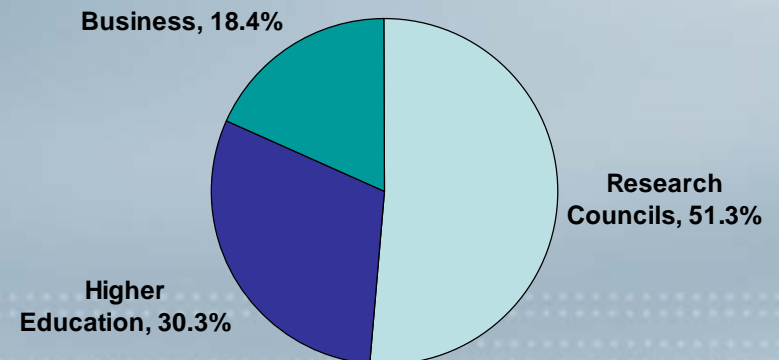
National approach to some key platform activities.

South Africa's National Biotechnology Strategy

Growth in R&D Expenditure of Biotechnology related disciplines in SA – 2002-2004



Performers of Biotechnology and related fields according to funds spent



South Africa's National Biotechnology Strategy

South Africa has:

- **Biosafety Legislation (GMO Act of 1997; National Environmental Management Act of 2004)**
- **14 Academic Universities**
- **5 Technical Universities**
- **7 Science Councils**
- **An unrivalled biodiversity**
- **Excellent infrastructure**
- **A leadership role in Africa**





South Africa's Role in Regional African Developments

Four NEPAD Bioscience Hubs identified:

- North Africa Biosciences Network (NAB, based at the National Research Centre in Egypt)
- Biosciences Eastern and Central Africa Network (BECA, based at ILRI in Kenya)
- West Africa Biosciences Network (WAB, based at ISRA in Senegal)
- Southern Africa Biosciences Network (SANBio, based at the CSIR in South Africa)



Successes in FP6 Food quality and safety

- **Safe Foods (IP)** - Food safety through risk analysis
- **EU-SOL (IP)** - High quality solanaceous crops
- **REPRO (STREP)** - Value addition to waste from the food industry
- **PARASOL (STREP)** - Control of nematodes in ruminants
- **EAGLES Food Forum (SSA)** - Network between EU and developing countries (DCs) to consider food safety
- **Food-N-Co (SSA)** - Theme 5 NCP cooperation between EU and Developing Countries



Future Perspectives

Activity 1: Sustainable Biodiversity

- Use of modern “omics” techniques to add value to genetic diversity - 26 000 indigenous plants, microbial and animal resources
- Harnessing drought and disease tolerance in African indigenous crops
- Animal health and vaccines



Future Perspectives

Activity 2: Fork to Farm

- Traceability and monitoring (local and export market)
- International standards (e.g. HACCP) in food industry
- Innovative food processing
- Nutrition - South Africa is developing the diseases of the West, plus other major problem areas such as HIV/AIDS



Future Perspectives

Activity 3: Non-food Products

- Forestry - a major industry in South Africa
- Biofuels - increasing interest
- Value addition to waste



South Africa's National Biotechnology Strategy

Thank you!

Further information:

<http://www.esastap.org.za>

<http://www.dst.gov.za>

Capgemini Consulting

André-Benoit de Jaegere
Directeur Innovation & Développement

Cœur Défense - Tour A - La Défense 4
110, esplanade du Général de Gaulle
92931 Paris - La Défense cedex - France
Tél.: +33 (0)1 49 67 56 90 - Port: +33 (0)6 89 95 95 59
Fax: +33 (0)1 49 67 39 28
ab.dj@capgemini.com
www.fr.capgemini.com



DNDi

Drugs for Neglected Diseases *initiative*

Dr Yves Champey
Président du Conseil d'Administration

1 Place St Gervais - CH-1201 Genève - Suisse
Tel./Fax: +33 (0)1 45 35 39 47
Mobile: +33 (0)6 03 02 31 96 - ychampey@dndi.org
www.dndi.org



Johan VANHEMELRIJCK
Secretary General

Avenue de l'Armée 6 • 1040 Brussels • Belgium
Tel. (+32-2) 735 03 13 Fax: (+32-2) 735 49 60
Mobile +32 475 306 257
www.europabio.org • j.vanhemelrijck@europabio.org



Dr. Christian PATERMANN
Directeur
Biotechnologies, agriculture et alimentation

Commission européenne
Direction générale de la recherche

Courrier: Commission européenne - Bur.: SDME 08/62 - 1049 Bruxelles - Belgique
Adresse: Square de Meeûs 8, 1050 Bruxelles
Tél.: + 32-2-295.18.15 - Fax: + 32-2-299.18.72 - E-mail: chris.patermann@ec.europa.eu

Jonathan R. Latham (PhD)

The Bioscience Resource Project

PO Box 66
Ledbury
HR8 9AE
United Kingdom

jrlatham@bioscienceresource.org
Phone: + 44 (0) 1531 670313
www.bioscienceresource.org

DNDi

Drugs for Neglected Diseases *initiative*

Cécile BRIDEL
Communication Officer

1 Place St Gervais - 1201 Genève - Suisse
Tél: +41 (0)22 906 92 30/61 - Fax: +41 (0)22 906 92 31
cbridel@dndi.org
www.dndi.org

euromedica

executive search in healthcare

Theo de Roij DVM PhD
Senior Consultant

Pegasuslaan 5, 1831 Diegem, Belgium.
T +32 (0)2 709 2950
F +32 (0)2 709 2222
M +32 (0) 477 595564
E theoderoij@euromedica.com
W euromedica.com



Nathalie MOLL
Executive Director
Green Biotechnology Europe

Avenue de l'Armée 6 • 1040 Brussels • Belgium
Tel: (+32-2) 735 03 13 • Fax: (+32-2) 735 49 60
Direct: (+32-2) 739 11 85 • Mobile: (+32) 473 884 578
www.europabio.org • n.moll@europabio.org



Dr. Alfredo AGUILAR ROMANILLOS
Head of Unit
Biotechnologies

European Commission
Directorate-General for Research

Mail: European Commission - Office: SDME 08/42 - 1049 Brussels - Belgium
Address: Square de Meeûs/De Meeûs Square 8, 1050 Bruxelles/Brussel
Tel.: + 32-2-296.14.81 - Fax: + 32-2-299.18.60 - E-mail: alfredo.aguilar-romanillos@ec.europa.eu

4, RUE PRÉSIDENT CARNOT
69002 LYON - FRANCE
TÉL : 33 (0)4 78 92 74 60
FAX : 33 (0)4 78 92 70 29
E-MAIL : guy.barriolade@fslse.org

syngenta

Caspar Ridley
Head of
Public and Government Affairs

Syngenta International AG
Schwarzwaldallee 215
CH-4058 Basel
Switzerland
Tel. +41 61 323 58 50
Fax +41 61 323 53 31
www.syngenta.com

caspar.ridley@syngenta.com



INSTITUT DES SCIENCES DU VIVANT

Dr Jean-Pierre DECOR
Managing Director

C/o Fondation Mérieux - 17, rue Bourgelat - 69002 Lyon - France
Tél : +33 (0)4 72 40 79 66 - Fax : +33 (0)4 72 40 79 67
Portable : +33 (0)6 79 83 30 63 - e-mail : decor.isv@wanadoo.fr

 **SEI** STOCKHOLM
ENVIRONMENT
INSTITUTE

Johan Rockström, Ph.D.
Executive Director
Assoc. Professor

Tel: +46 (0)8 412 14 04
E-mail: johan.rockstrom@sei.se

Stockholm Environment Institute
Box 2142, SE-103 14 Stockholm, Sweden
Visiting address: Lilla Nygatan 1
Tel: +46 (0)8 412 14 00
Fax: +46 (0)8 723 03 48
www.sei.se



CENTRE FOR DRUG RESEARCH
AND DEVELOPMENT

Natalie E. Dakers
President and CEO
DDI Drug Development Inc.

364-2259 Lower Mall, UBC
Vancouver, BC, Canada V6T 1Z4
t. 604.221.7750 ext. 102
f. 604.221.7753

ndakers@cdrd.ca
www.cdrd.ca

THE UNIVERSITY OF BRITISH COLUMBIA



**FACULTY OF
PHARMACEUTICAL
SCIENCES**

2146 East Mall
Vancouver, BC
Canada V6T 1Z3
Tel: 604/822-0360
604/822-2343
Fax: 604/822-3035
e-mail:
sindelar@interchange.ubc.ca

ROBERT D. SINDELAR, PH.D.
PROFESSOR AND DEAN



Dr Mark H.B. Radford
Chief Executive Officer

<i>Tel:</i>	61-7- 3025 3217	Symbiosis Group Ltd
<i>Fax:</i>	61-7- 3025 3300	Level 2, 147 Coronation Dve
<i>Mob:</i>	0412 824 300	PO Box 1192, Milton BC
<i>Email:</i>	mark.radford@symbiosisgroup.com.au	Milton QLD 4064

www.symbiosisgroup.com.au

Ain Shams University
FACULTY OF AGRICULTURE

Prof. Dr. **Magdy A. Madkour**
Arid Lands Agricultural Research Institute
(ALARI)

P.O.Box: 68, Hadayek Shobra, 11241 Cairo, Egypt.
Mobile: (+2) 010 5381119
Tel.: (+2) 444 1386 Fax: (+2) 444 6852
E-Mail: magdy.madkour@blballex.org
madkour.magdy@gmail.com





Jacques Coetzee
Managing Director

Building U6
Pinelands Office Park
Ardeer Road
Modderfontein
South Africa

Cell +27 82 334 2098 PO Box 39843
Tel +27 11 605 9120 Faerie Glen
Fax +27 11 605 2943 Pretoria
jcoetzee@originsa.co.za 0043
www.originsa.co.za South Africa



Antonio Llobell PhD
COO

PlantBio Trust
PostNet Suite 201, P/Bag X6, Cascades, 3202
Suite 38, Hayfields Mall, 28 Blackburrow Road,
Hayfields, Pietermaritzburg, 3201, KZN, South Africa
Tel: +27 (0) 33 846 1984 • Fax: +27 (0) 33 846 1990/1983
Cell: +27 (0) 72 731 3243 • antonio@plantbio.co.za www.plantbio.org.za

Rapid Medical Diagnostics

CK 2002/064368/23



Dr. Neels van Rooyen
Director

PO Box 347 Derdepoort Park Pretoria 0035 South Africa
Tel: +27 (0)82 529 8404 Fax: +27 (0)86 672 7213
Tel Ampath: +27 (0)12 427 1800 E-mail: neelsvan@lafrika.com



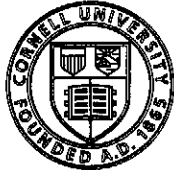
AVESTHAGEN

ANIL (VP, BD)

+91 9886004456

anilam@avesthagen.com

Discoverer, 9th Floor T: +91 80 2841 1665
International Tech Park F: +91 80 2841 8780
Whitefield Road
Bangalore 560 066
INDIA



Norman T. Uphoff
*Professor of Government and
International Agriculture*

Cornell University

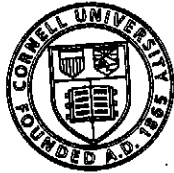
*Director of Graduate Studies
Field of International Development*

*Associate Core Faculty
Cornell Institute for Public Affairs*

Home: 16 Cedar Lane
Ithaca, New York 14850

t. 607.257.6660

normanuphoff@hotmail.com



Norman T. Uphoff
*Program Leader
Sustainable Rice Intensification*

Cornell University

*Cornell International Institute
for Food, Agriculture and
Development*

33a Warren Hall
Ithaca, New York 14853-7801
t. 607.255.1902 f. 607.255.1005
ntu1@cornell.edu
<http://cifad.cornell.edu/sri>