

Equal Partnership: case studies from BIOTEC

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OUTLINES

- 1. Thai Biodiversity;**
- 2. Thailand and ABS regulation;**
- 3. BIOTEC: the introduction;**
- 4. ABS case studies at BIOTEC**
- 5. Conclusion**

Biodiversity for bioresources

Thailand accounts for ca. 7-10 % of the world's species richness

Chiang Rai
Phlu Kaeng Waterfall

***Chiang Mai:**
Fang Hot-spring

Tak
Mae Kasa Hot-spring
Umphang Wildlife Sanctuary

***Kamphaeng Phet:**
Khlong Lan National Park

***Ratchaburi**
Bo Khlueng Hot-spring

***Surat Thani**
*Nakhon Si Thammarat:
Namtok Si Khit National Park

***Phatthalung**
Khao Pu - Khao Ya National Park

***Trang**
Khao Ban That Wildlife Sanctuary

***Narathiwat:** Hala Bala Wildlife Sanctuary

***Loei**
Phu Suan Sai National Park

***Chaiyaphum**
Phu Khiao Wildlife Sanctuary

***Nakhon Ratchasima**
'Khao Yai National Park

Seed and Leaf-litter Fungi

Marine and Mangrove Fungi

Freshwater Fungi

Basidiomycota

Cintractia amazonia

Deflexula subsimplex (P. Henn.)

Favolacthia thwaitesii (Berk. & Br.)

Physalactia tropica

Ramaria cyanoccephala (Beck & Curt.)

Overview of Thai ABS rules and regulations

1999

Enactment of

- Thai PVPA Act

-The Protection and Enhancement of Thai Traditional Medicinal Wisdom Act

2004

Ratifying the CBD

2011

Enactment of

- The National Committee on Conservation Sustainable Use of Biodiversity's Regulation on Criteria and Methods for ABS from the Use of BR (Thai ABS Regulation)

2012

Signing the NP

-Under consideration and preparation of ratifying;
-More of ABS Rules and Regulation??

BIOTEC at a glance

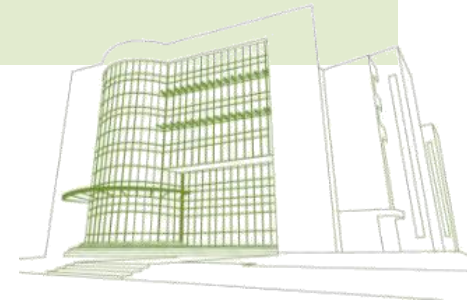
Status: Established in 1983
A member of the National Science and Technology Development Agency .
NSTDA is a quasi-government agency, affiliated to Ministry of Science and Technology

Location: Headquarter at Thailand Science Park, 30 kilometers north of Bangkok

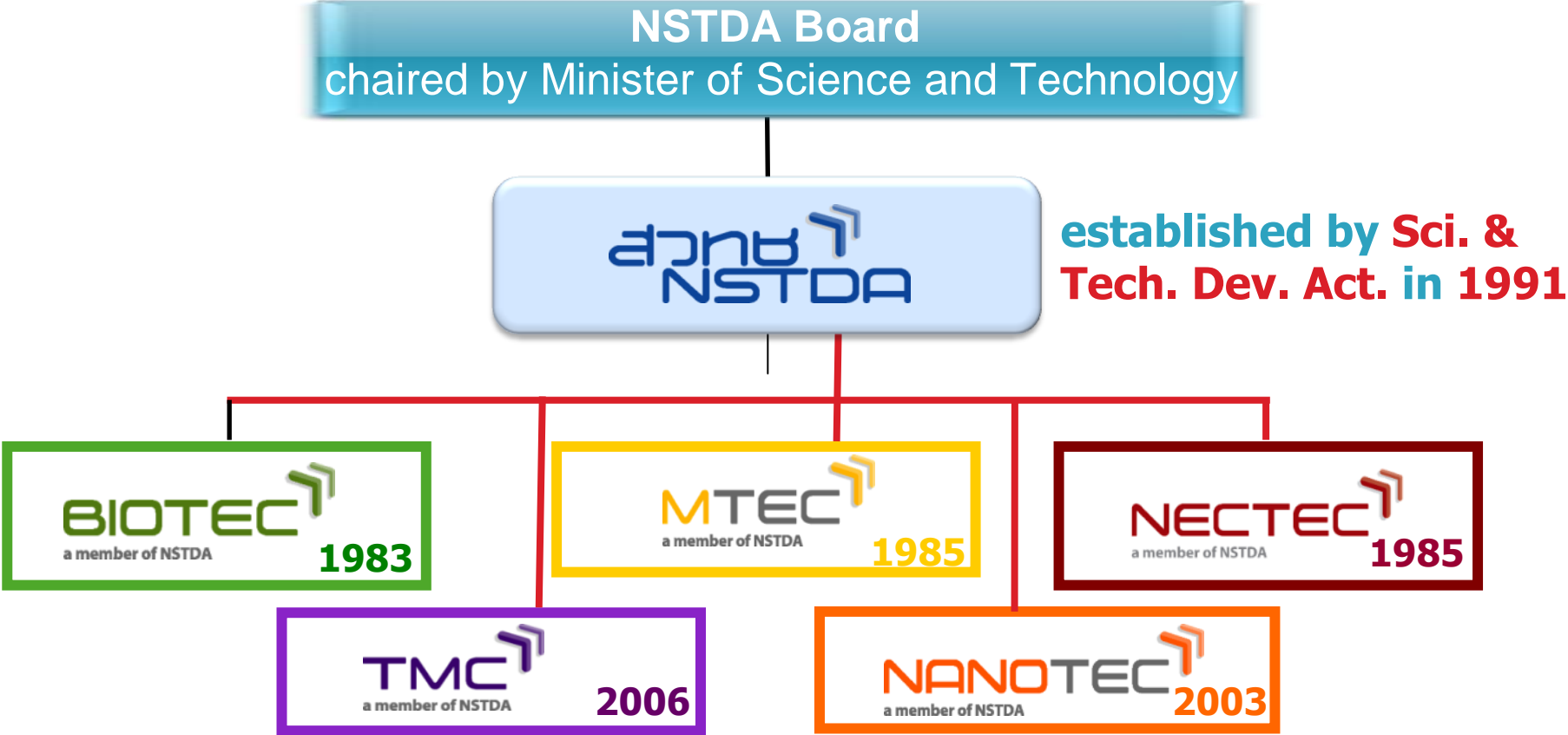
Personnel: 570 (470 research and scientific staff and approx. 170 Ph.Ds)

Budget: Approx 20 million USD (from government and revenue from service provision and commercialization)

5 Research Units at Thailand Science Park & 10 Satellite Labs at various universities and government agencies



NSTDA Organization



- NSTDA** : National Science and Technology Development Agency
- BIOTEC** : National Center for Genetic Engineering and Biotechnology
- MTEC** : National Metal and Materials Technology Center
- NECTEC** : National Electronics and Computer Technology Center
- NANOTECH** : National Nanotechnology Center
- TMC** : Technology Management Center

Core Functions

RDE

(Conduct research on basic science, platform technology, applied science)

TT

(Technology transfer to industry and public sector)

Infrastructure

Develop and maintain (support the establishment and maintenance of specialized units at universities, conduct policy research, support and subsidize service labs and maintain public databases)

HRD

(Provide scholarships, organize training, support the establishment of new graduate program in universities)

Support Functions

- Create public relations and provide science awareness
- Seek and maintain international relations

Cordyceps sp.







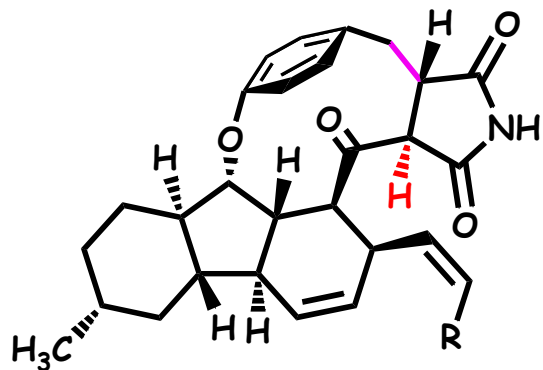
***Hirsutella nivea* on hopper**

BCC 2594, collected from Homoptera
leaf-hopper, Khao Yai National Park,

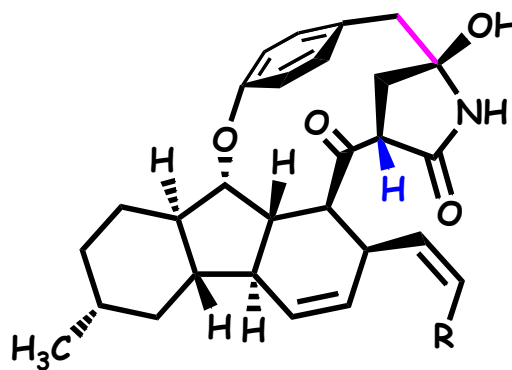
Hirsutella nivea BCC 2594
(MeOH extract of mycelia)

BIOTEC

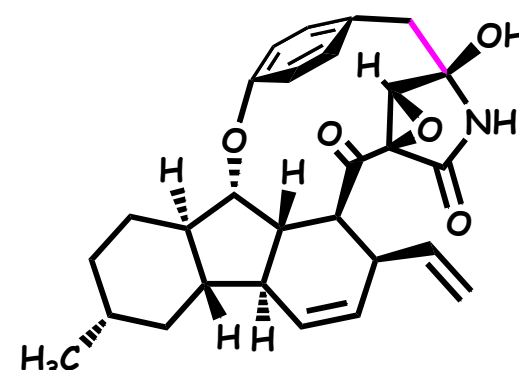
Hirsutellones A-E



1 : R = H (A)
4 : R = CH₃ (D)



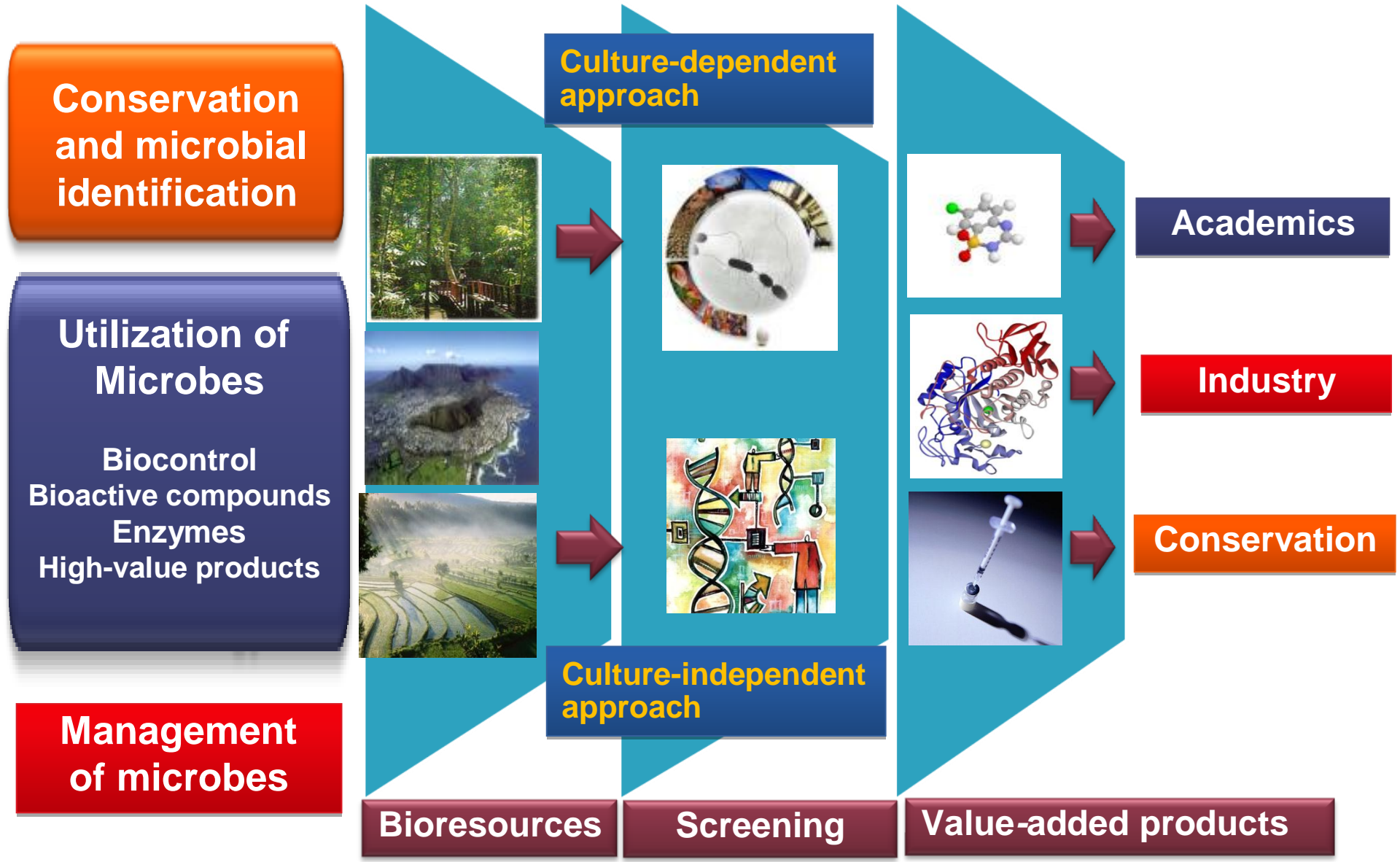
2 : R = H (B)
5 : R = CH₃ (E)



3 (C)

Compound	Anti-TB MIC; $\mu\text{g/mL}$	Cytotoxicity vero; IC ₅₀ $\mu\text{g/mL}$
1	0.78	>50
2	0.78	>50
3	0.78	12
4	3.13	not tested

Research at Bioresources Technology Unit, BIOTEC



BIOTEC-NOVARTIS

Objective: to find potential use of microorganisms and natural compounds as sources of potential new medicines.

3 Phases of collaboration:

- 1st: 2005-2008
- 2nd: 2008-2011
- 3rd : 2011-2014

The contributions

BIOTEC

- Diversity of microbes in Thailand;
- Expertise in knowledge of microorganisms, i.e. collection, identification, preservation, isolation and elucidation of pure natural compound;

NOVARTIS

- Technology transfer via training (internship, experts, and seminar);
- Consultant

The achievement

BIOTEC

- Capacity building via technology transfer (able to automate and improve its extraction and chemical screening system, actenomyces expert);
- Enable BIOTEC to accumulate more strains;
- Able to set different research directions.

NOVARTIS

- Diversity of compounds (7,200 microbial isolates and 115 pure compounds have been evaluated against a battery of drug targets).

ABS mechanisms

- **Equal partnership** (based on complementary expertise of both parties)
- **Agreement:** negotiation (based on the concept of Mutually Agreed Terms)

Conclusion: Factors for the success of equal partnership

- **Organisation's vision and policy;**
- **Expertise of organisation;**
- **Trust between involved parties;**
- **Simple ABS rules and regulation (Mutually agreed terms)**

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Thank you very much