

M. S. Swaminathan Research Foundation

Pro-nature, Pro-poor, Pro-women and Pro-livelihood orientation to Technology Development and Dissemination



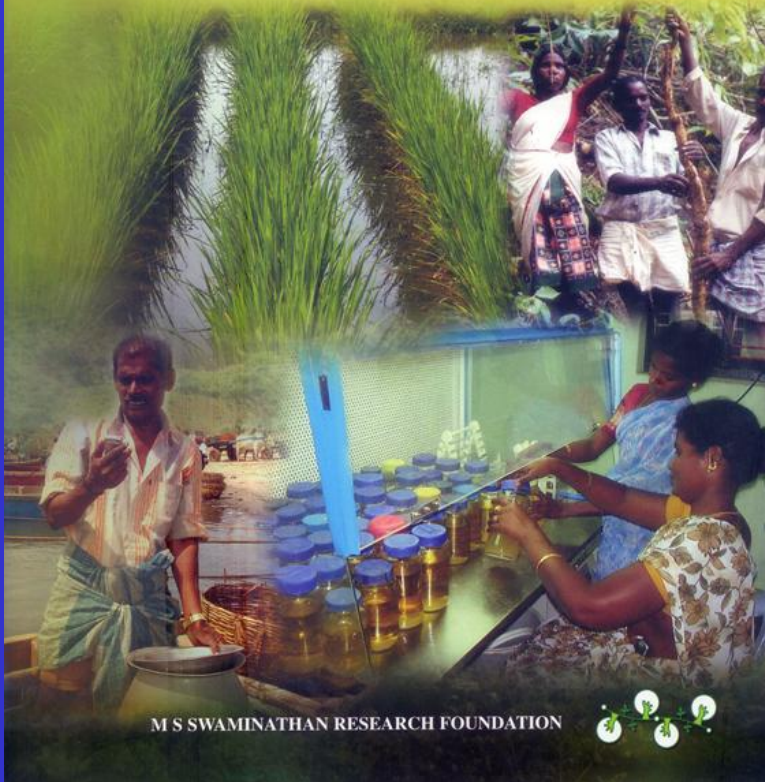
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A FRUITFUL JOURNEY

TWENTY YEARS OF MSSRF

An Adventure in
Science and Sustainable Development



20 Years
LINKING SCIENCE
AND
SUSTAINABLE DEVELOPMENT



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Our Focus Areas

A pro poor, pro nature, pro women and pro livelihood orientation to technology development and dissemination

The programmes are broadly covered under

- Coastal systems
- Biotechnology
- Biodiversity
- Ecotechnology
- Food security and
- Information, education and communication.



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Coastal System Research

An integrated approach in participatory management of natural resources in coastal areas

Ecological rehabilitation of coastal areas of Pichavaram

Focus: Mangrove restoration, sand dune restoration
Non-mangrove bioshield

Strengthening resilience of tsunami affected communities

Focus: Mangrove bioshield, livelihood and VRC and VKCs

Integrated Fishery Farming System

Training and capacity building



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Ecological rehabilitation of coastal areas

Mangrove restoration

Mangrove restoration in about 48 ha with the participation of fishing community of three villages

Land provided by the Revenue Department, Cuddalore District

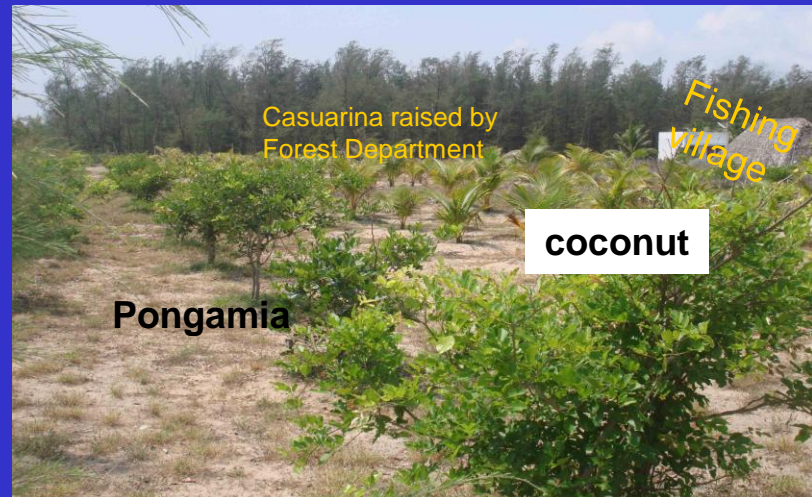
2,42,000 *Avicennia* and 50,000 *Rhizophora* propagules

Mangrove bioshield 90 ha in Tamil Nadu and 80 ha in Andhra Pradesh; Mangrove bioshield in 60 ha without canal method – first time in TN

Non-mangrove bioshield

Multi-species non-mangrove bioshield to a length of about 5 ha

Both ecologically and economically important species
Pongamia, *Callophyllum* and Coconut



Integrated Mangrove Fishery Farming System



A model developed for integrated aqua-agro seawater farms

A fish-for All Capacity Building and Research Centre being established in TamilNadu, addressing from Capture to Consumption.

BIODIVERSITY

Integrated Management of Bioresources

- **Conservation** – Quality Seeds, Seed Banks (Traditional and Modern), Seed Networks, Farmer to farmer exchange
- **Cultivation** – Modified method of cultivation, Intercropping, Farmers' Method of cultivation
- **Consumption** – Processing, Value Addition, Diversification of products
- **Commerce** – Markets, linkages, branding, labeling, product development, marketing preferably in the Organic Farming Sector



Medicinal Plants

9 tribal medicinal plant conservation gardens

347 Medicinal Plant species

Home Herbal Garden- 14 Medicinal Plant species to 806

Households, 27 villages

Student's Herbal Garden in 12 schools

Herbal preventive drug for Malaria to 2358 tribal people across

16 villages

Planting material of 64 MP species (8790 seedlings)

Traditional Healers Association (Paroja & Bonda)



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Capacity Building of PRI in Tamil Nadu on BD Act & PPVFR Act

Conducted in 4 districts of Tamil Nadu

Two Level Training –

Master Trainers 137 from PRIs, Farmer leaders
& NGOs

Second level Training: 3802 persons –

1162 women, 1101 panchayat reps. & officials,

1692 farmers, SHG members & 165 members of

NGOs & CBOs



Every Child a Scientist



Through Interaction with experts; Multimedia; Camps and fests; Field visits

DNA Clubs have already been established in 10 schools in Kerala and Orissa & this year we will be working with 5 schools from Andhra Pradesh



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Biotechnology

Use of cutting edge science and technologies for adding value to bioresources through prospecting for novel genes, compounds and organisms



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Biotechnology and Shaping our Agricultural Future

- **Genetic Shields for Sustainable Food Security**
Salinity Tolerance, Drought Tolerance, Hidden Hunger
- **Tissue Culture, Conservation**
- **Monitoring Ecosystem Health (using Lichens)**
- **Bioprospecting for Novel genes, compounds and organisms**



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Model systems are studied for different purposes.....

GENES IDENTIFIED AND USED FOR TRANSGENICS

Gene Source	Genes	Functions	Used for
<i>Avicennia</i>	SOD, APX, MDAR, Ferritin Transcription factors	Oxidative stress Iron Accumulation	Salt Stress Biofortification
<i>Porteresia</i> (Wild rice)	HKT Na ⁺ /H ⁺ antiporter	Salt Exclusion	Salt Stress
<i>Prosopis juliflora</i>	GST Metallothionein	Oxidative Stress Heavy metal	Salt/ Drought Stress Phytoremediation
<i>D.applanata</i> (Lichen)	Polyketide synthase	Secondary metabolite prodn	Anti-microbial compounds Seed oil biosynthesis
<i>Jatropha curcas</i>	Curcin	Seed protein	

Bioprospecting of selected Lichen and Plant species for product development against Cancer and Tuberculosis

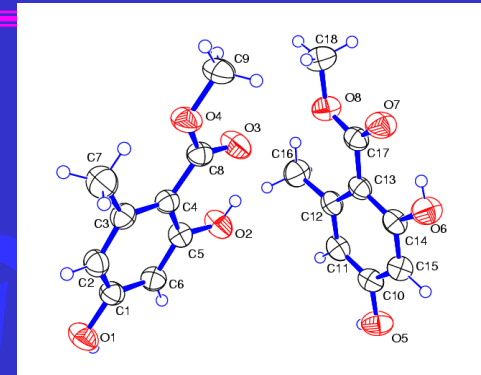
Characterized compounds from Lichen and plant species....



Parmotrema praesorediosum



Excoecaria agallocha



5-methyl – 4 – acetyl resorcinol

Preliminary Screening has been done with **60 different cell lines**

(Lung Cancer, Breast cancer, Human Embryonic Kidney cell line)

Compounds of *E.agallocha* exhibit **100% mortality** against **20 different cancer cell lines** tested.

Lichen compounds are also being tested against cancer cell lines and tuberculosis

Bioprospecting of potential microbes from different ecological niches

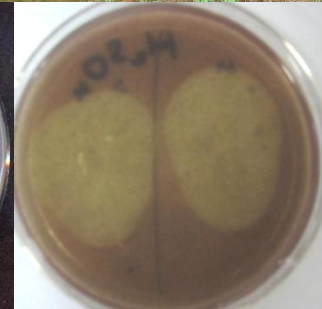
Biological control of blast disease of finger millet

Diversity of Nitrogen fixing and phosphate solubilising microbes in mangrove ecosystems.

Screening for biomolecules from microorganisms collected from different ecological niche

Field testing of liquid formulations

Of the 1600 cultures; 64 positive HITS for anti cancer; 3 and anti- inflammatory



ECOTECHNOLOGY

Harnessing Science and Technology and need based Capacity Building for Promoting On-Farm and Off-Farm Livelihood Opportunities for rural communities



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ON-FARM ACTIVITIES

- More than 500 farmers have adopted Integrated Farming systems
- SRI adopted in more than 100 acres
- 21,500 kg of biological software's have been produced by women Self help group members
- More than 1000 families have adopted Integrated Dairy Management
- Approximately 15,000 households have established kitchen garden
- Soil health cards have been adopted by farmers

Mutler Onion, Karasanaur



Kitchen Garden, Pudukottai



IFS, Pudukottai



Groundnut cultivation, Koraput

LIVELIHOOD INTERVENTIONS

Our interventions has resulted in.....

- o Cultivation of 14 vegetables- 152 acres - 7 villages - 243 HHs
- o Groundnut, Spices & tubers cultivation- 210 acres – 276 HHs
- o Five plant campaign (Papaya, Drum stick, Lemon, Chilli & Yam)-468 HHs- 6 villages
- o Backyard nutritional garden in 327 HHs- 6 villages
- o Cultivation of Pulses & Finger millets – 89 acres-126 HHs
- o Fish cultivation in 26 ponds - 102 HHs - 7 villages.
- o 20 pedal pumps provided for lifting water for vegetable cultivation
- o Establishment of 21 Low cost poly houses.
- o Large-scale cultivation of *Piper longum* in 16 acres.
- o Mobilization of fund for irrigation- 55 acres
- o Mango & cashew plantation in 50 acres



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Climate Change Initiatives

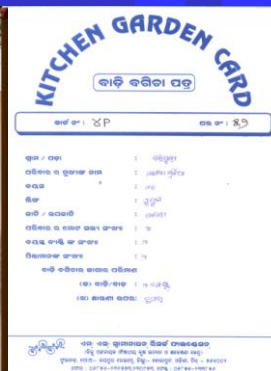
Vulnerability Assessment &
Enhancing Adaptive
Capacity to Climate Change
in the Semi-Arid Regions of
India

MSSRF is working toward creating
a cadre of local level
'Climate Risk Managers'



FOOD SECURITY

*Interventions for improving
food and nutrition security
status of the communities*



Report on the State of Food Insecurity in Rural India

released in New Delhi on 20 Feb 2009

Report is in two parts:

First Part examines status of food and nutrition security in rural India using 7 indicators.

The results suggest that despite high rates of economic growth, levels of food insecurity remain high across most states in both periods.

The second part of the Report examines the major public food delivery systems – PDS, ICDS, MDMS and makes suggestions for effective delivery.



NUS for Livelihood and Food Security

Working on the NUS in five states to promote the cultivation, conservation and consumption.

The focus is on **finger millet, little millet, foxtail millet, barnyard millet and grain amaranth**

3372 kg seeds of different varieties were produced in participation with farmers.

Production and marketing groups formed. Trademark established for millets from Kolli Hills and new packaging carton for *ragi* malt released.



Ragi malt package
of Kolli Hills

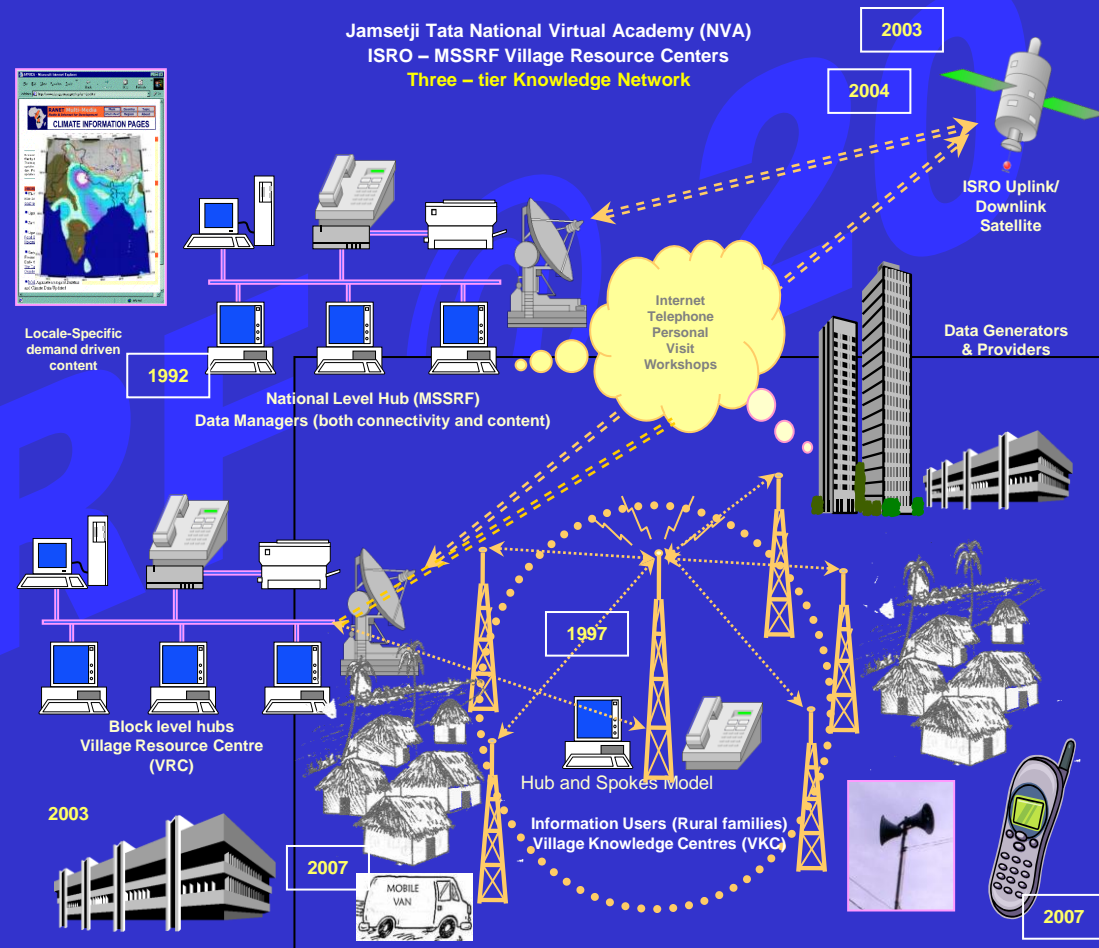
NUTRITIOUS MILLET VALUE ADDED PRODUCTS

Ragi malt,
Ragi flour,
Ragi murukku,
Nipputtu
Ragi Laddu
Little millet Rice,
Little millet flour,
Little millet uppuma mix,
Little millet Rava Dosa Mix,
Little Millet Cookies
Foxtail millet Rice,
Foxtail millet flour,
Foxtail millet ladu,
Millet Diabetic Mix



Information, Communication and Education

To promote sustainable rural livelihoods through digital empowerment based on a pro-poor and pro-women orientation to technology choice and dissemination, and human resource development



Dissemination : What ever it works

Wired / Wireless / GSM based
Public Address System

Community Newspaper



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Dissemination : What ever it works

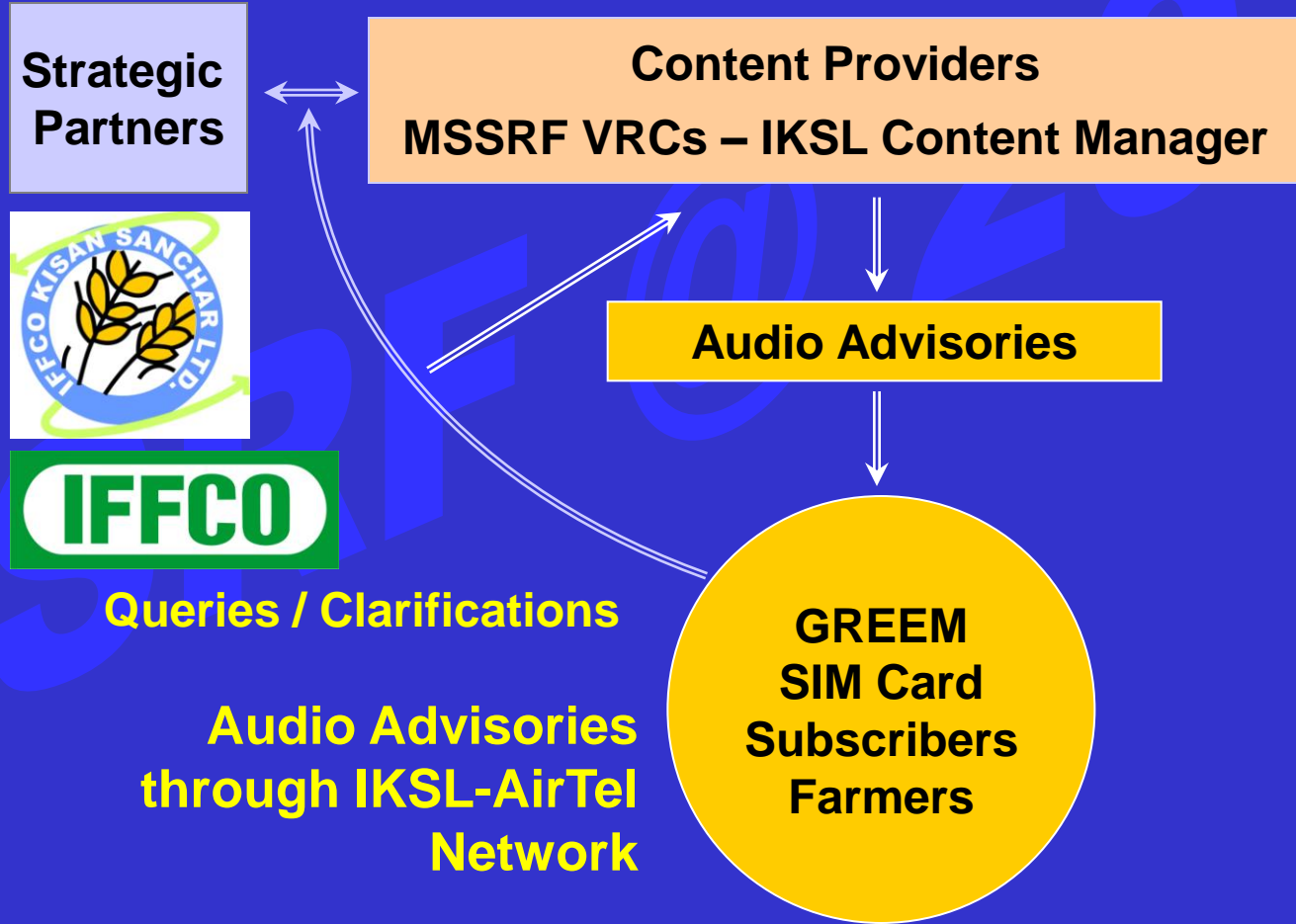
Advisories through Reliance
Fixed Wireless Phone –
Closed User Group

INCOIS – Electronic Display
Board

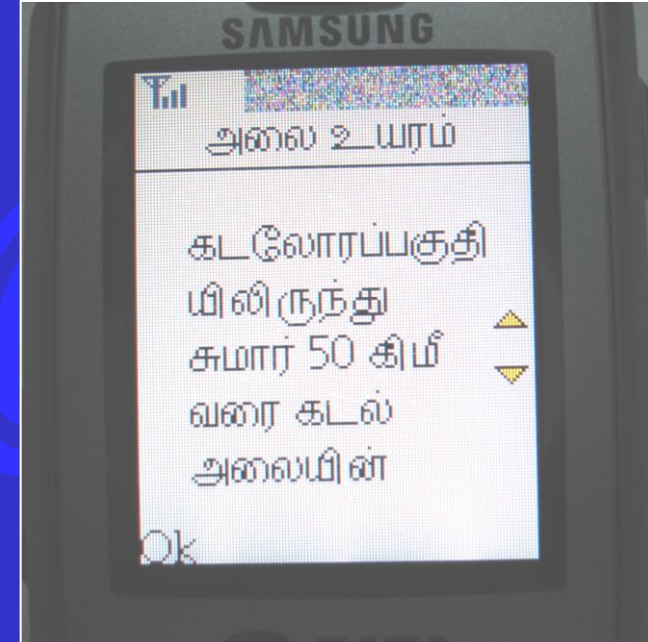


Mobile Applications

SMS Server



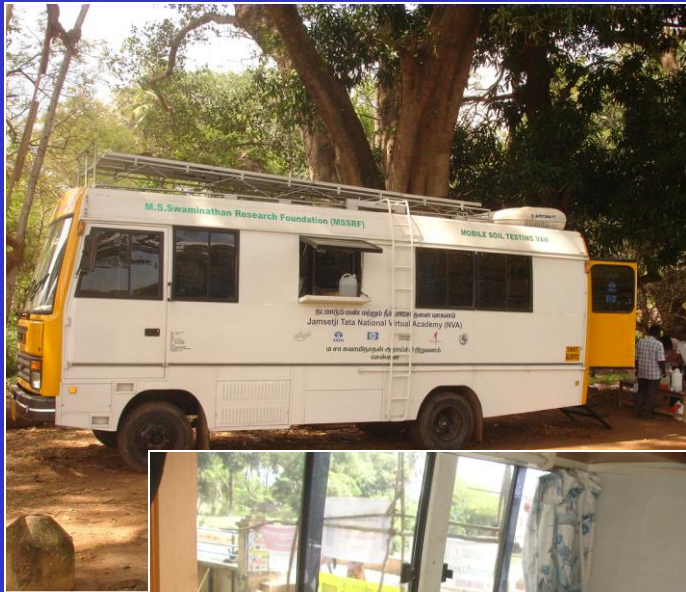
Fisher Friend Mobile Application



Wave height, Weather, Potential Fishing Zone, Flash News, Government Schemes / announcements, Market, Rural Yellow Pages

Knowledge on Wheels

Soil and Water Testing Laboratory Mobile Van



Mobile Tele-Ophthalmology Services



National Virtual Congress on Celebrating Women's Contributions to Safeguarding and Strengthening Ecological Security

Knowledge Management System – Poor People's Google



Linkndia

LINKING INDIA THROUGH KNOWLEDGE

RURAL KNOWLEDGE PORTAL



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International Collaborations





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