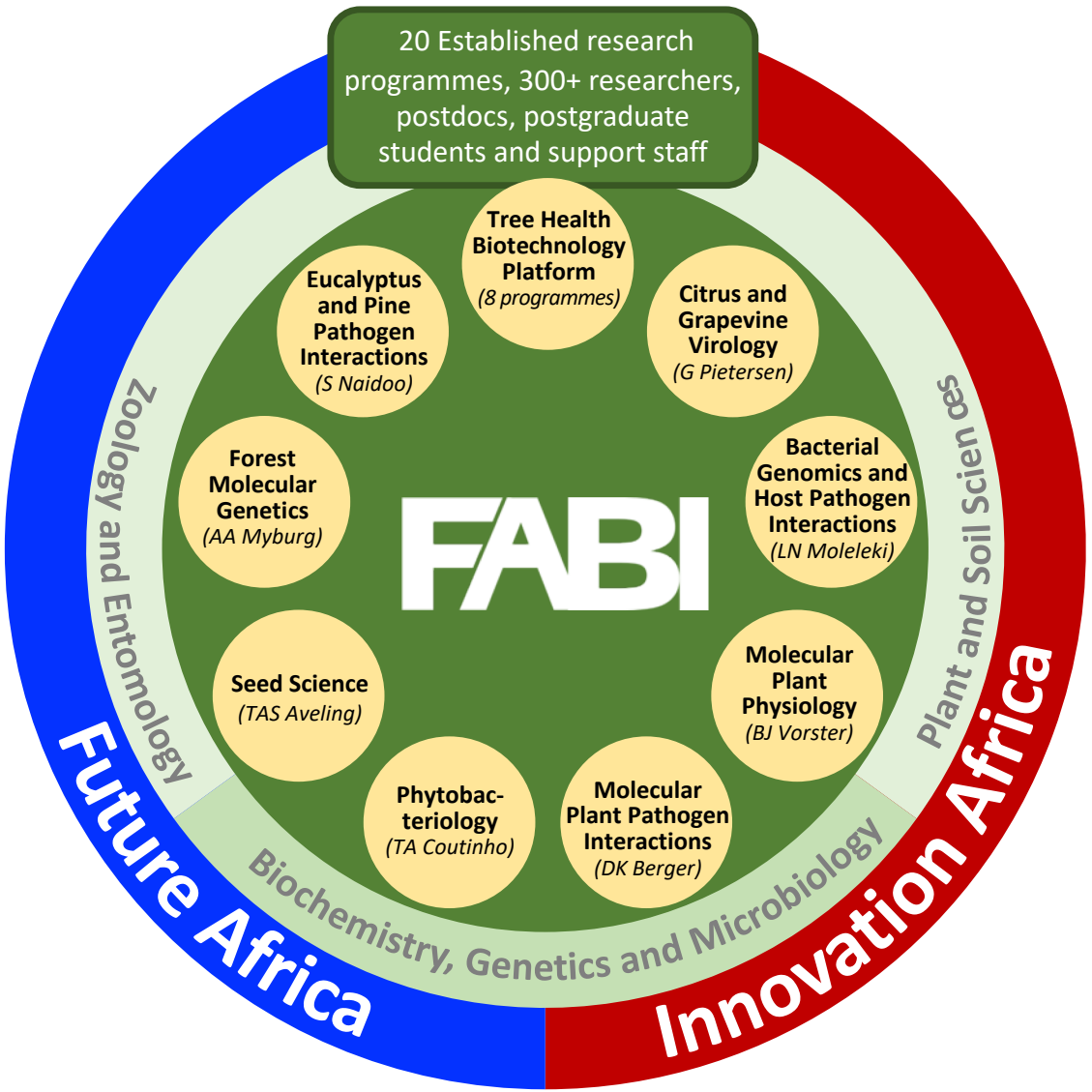
A world class research team

FABI

The largest team working on agricultural and forestry biotechnology in Africa, and for some fields, in the world

Strong team and foundation, critical mass, magnet and pipeline for talent, international networks, strong inter-dependent stakeholder programs with industry and government, incubator for industry-academia linked programs with impact

Forestry and Agricultural Biotechnology Institute (FABI)



Management Committee

35 research leaders from FABI and its affiliated Departments

- Biochemistry, Genetics and Microbiology
- Plant and Soil Sciences
- Zoology and Entomology
- Physics & Chemistry

Advisory Committee

Heads/Chairs/Directors of:

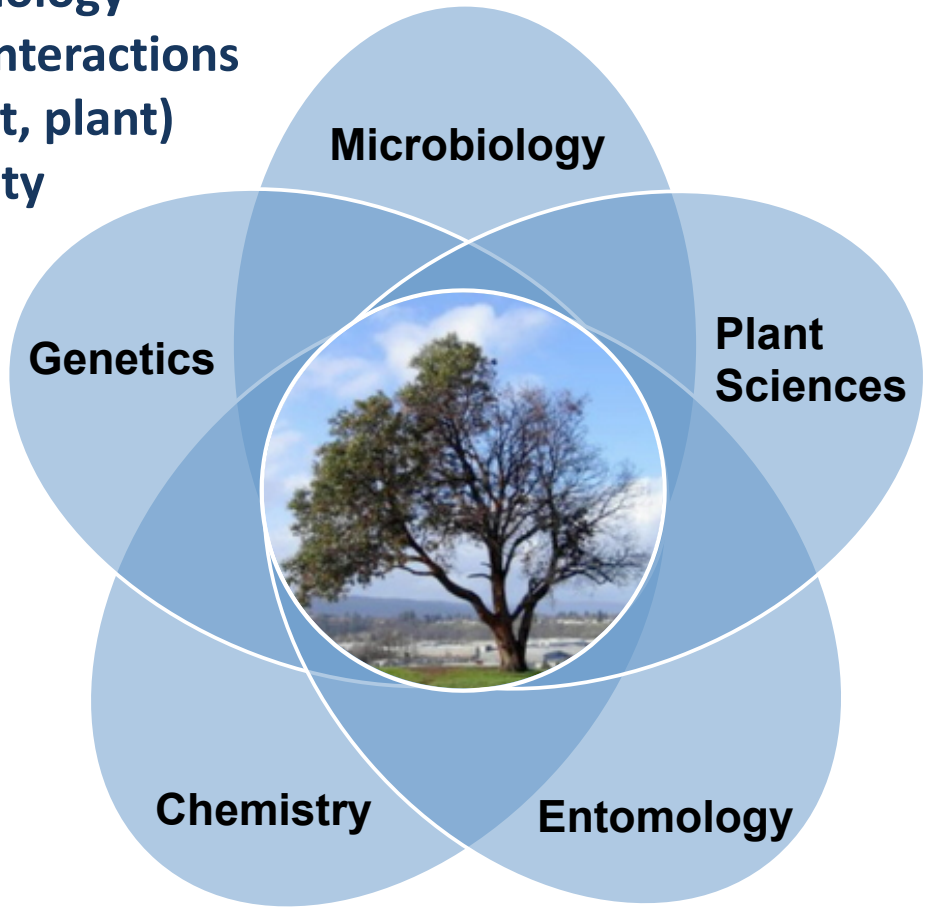
- Biochemistry, Genetics and Microbiology
- Plant and Soil Sciences
- Zoology and Entomology
- Chemistry
- Chemical Engineering
- Civil Engineering
- Mammal Research Institute
- Genome Research Institute
- Center for Bioinformatics and Computational Biology
- Mathematics and Applied Mathematics
- Computer Science

Stakeholder Advisory Board

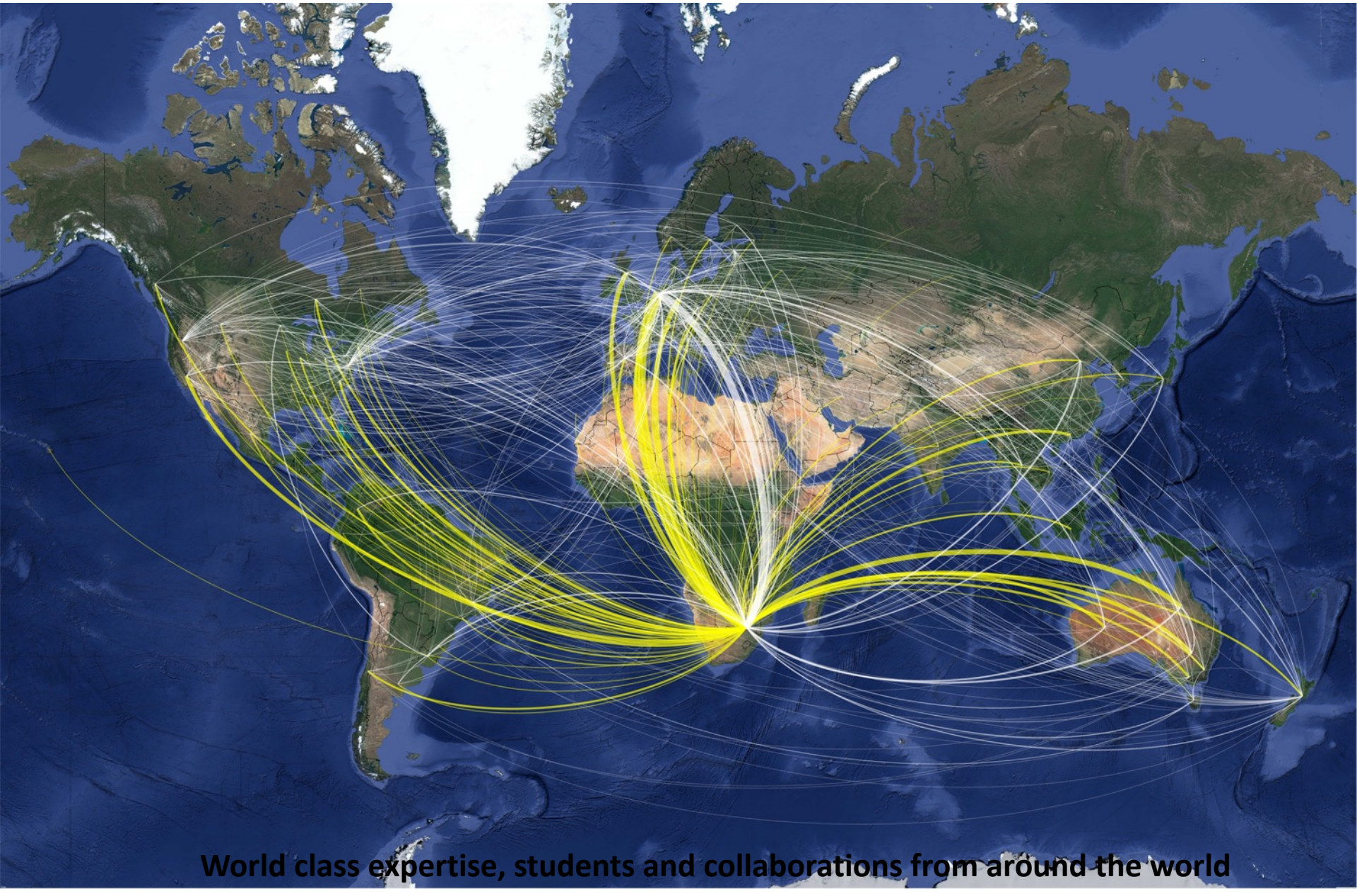
Industry and Government

A problem oriented, team based, interdisciplinary approach

Agricultural and Forest Biotechnology
Forest Entomology and Pathology
Agricultural plant pathology and entomology
Molecular plant-pathogen and -insect interactions
Applied chemical ecology (fungal, insect, plant)
Applied mycology and fungal biodiversity
Modeling of biological systems
Molecular plant physiology
Forest molecular genetics
Phytobacteriology
Seed vigour and pathology
Plant genomics
Synthetic biology
Systems biology
Data Science & Bioinformatics
Sensor technology



FABI research networks



World class expertise, students and collaborations from around the world

Satellite Labs Extend Science

A new type of lab links Western scientists who want to expand with emerging nations seeking access to world-class researchers

Four years ago, Le Quang Minh and Hoang Zung decided to create a cutting-edge chemistry research center at Vietnam National University (VNU), Ho Chi Minh City. The center would also help train the next generation of basic scientists.

But neither Minh, VNU's vice president of international relations, nor Zung, the director of its science and technology department, could think of a domestic researcher with the scientific heft to lead the center. That's not too surprising, given that one of their goals was to strengthen the research capacity of their home institution. So the two men launched a global search, and on a visit to the University of California, Los Angeles (UCLA), they found someone who seemed to fit the bill.

His name was Omar Yaghi, and his scientific achievements clearly qualified him for the job. The Jordanian-born faculty member is one of the most highly cited chemists in the world and an expert on designing novel porous materials. Yaghi had also shown an ability to work with those from another culture, having formed a mentoring relationship with the International Center for Materials Nanoarchitectonics in Tsukuba, Japan. The icing on the cake was a Vietnamese graduate student working in his lab.

Convinced that Yaghi was their man, Minh and Zung invited him to run the center as a satellite of his own lab. Yaghi readily agreed. "Scientists do science to stimulate their mind," Yaghi says. "I want to go into new territories to explore them."

With Yaghi on board, the three men went to work making the center a reality. The university hosted an international conference to flesh out a research agenda for what they called the Center for Molecular and Nanoarchitecture (MANAR). Then they pitched the idea to the Vietnamese government. After countless meetings, Minh and Zung wrung a promise for $20 million over 5 years for the center, no small feat in a country with a total budget for science and technology of roughly $700 million a year.

Global reach. Omar Yaghi (*top*) with the molecular cages he pioneered, and (*above*) with Anh Phan (*far right*) and students at MANAR in Vietnam.

CREDIT: (TOP TO BOTTOM) REED HUTCHINSON/UCLA; COURTESY OF HOANG ANH MINH HA

Work began in 2009 on the lab, to be housed on one floor of a newly built high school. Yaghi's graduate student, Anh Phan, began traveling back and forth to Vietnam in 2-month chunks to oversee construction. MANAR officially opened for business in December.

Yaghi is one of several high-profile researchers who in recent years have opened such satellite labs in other countries. It's a hybrid form of international partnership—smaller, more focused, and less bureaucratic than a formal alliance between two institutions, but broader and more structured than a simple agreement between two like-minded researchers to team up on a project.

Western scientists who have set up satellite labs in other parts of the world say the approach provides a relatively easy way to expand their research group and obtain funding without having to run the peer-review gauntlet in the United States and Europe. In return, the host country buys access to a world-class scientist willing to train its students and strengthen its research capacity. That arrangement typically requires less than 20% of a professor's time, comparable to the amount available to faculty for outside consulting projects. Compensation is also worked out on a case-by-case basis.

Yaghi isn't paid by VNU to direct the center. But VNU has named him a distinguished professor, and the position covers a portion of his travel and administrative costs. Yaghi has also promised to visit as often as needed to keep the research on track and to mentor VNU students. So far he has spent only a few weeks in Vietnam. But e-mail and Skype allow him to stay in close contact with his group of some two dozen students and several senior researchers and professors.

MANAR likely won't be the final satellite lab on his plate. Yaghi is looking into creating labs in several countries in the Middle East, including Qatar, Saudi Arabia, and his native Jordan.

Yaghi, who in January left UCLA to head the Molecular Foundry at Lawrence Berkeley National Laboratory and join the faculty of the University of California, Berkeley, says he isn't trying to create a global scientific empire. But he would like to help jump-start scientific development in areas that desperately need it.

"These countries are very eager to join the world economy and the world science scene," says Yaghi, who took his satellite arrangements with him when he came to Berkeley. In fact, the three institutions have agreed to back a new center for global mentorship to help other topflight researchers around the world set up their own satellites (see sidebar, p. 1602).

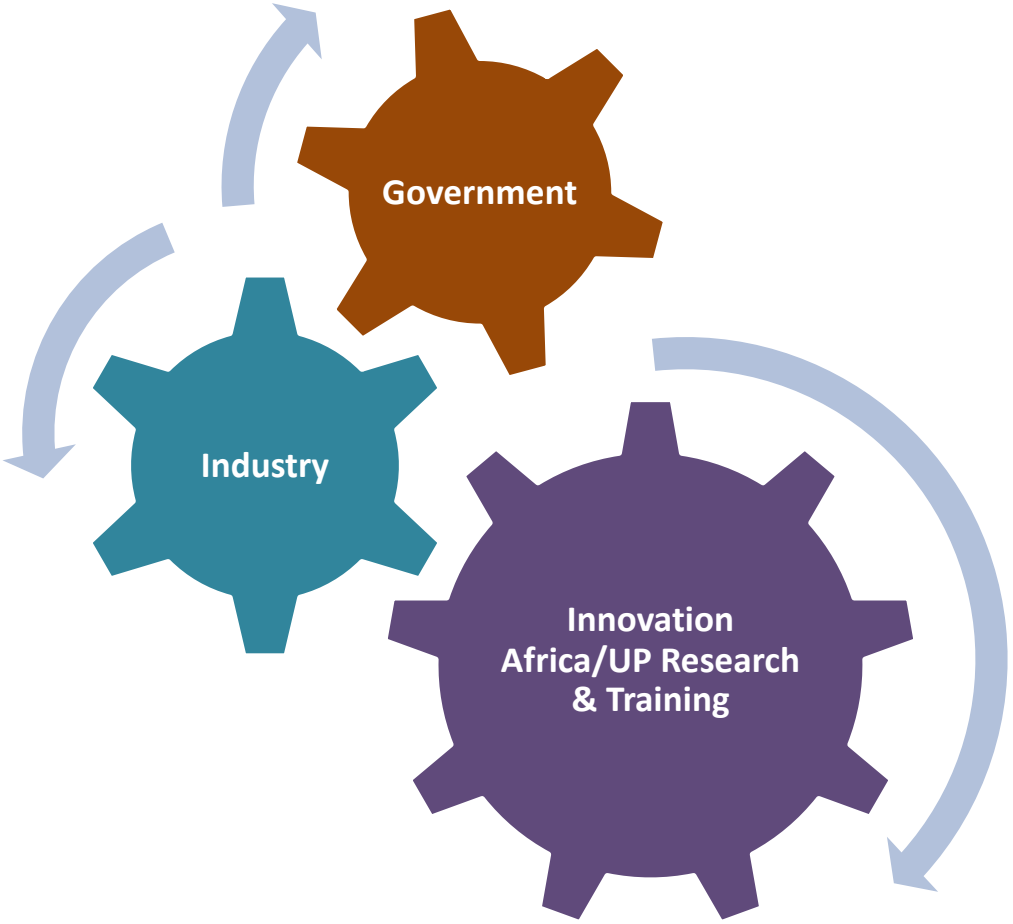
Satellite labs can be a challenge to set up and run, Yaghi and oth-

Satellite Lab
Applied
Chemical
Ecology

Shared projects
Shared postdoctoral fellows
to transfer skills
Shared students
Shared lab facilities
Shared resource mobilization
Advanced teaching modules
Student exchange
Staff exchange

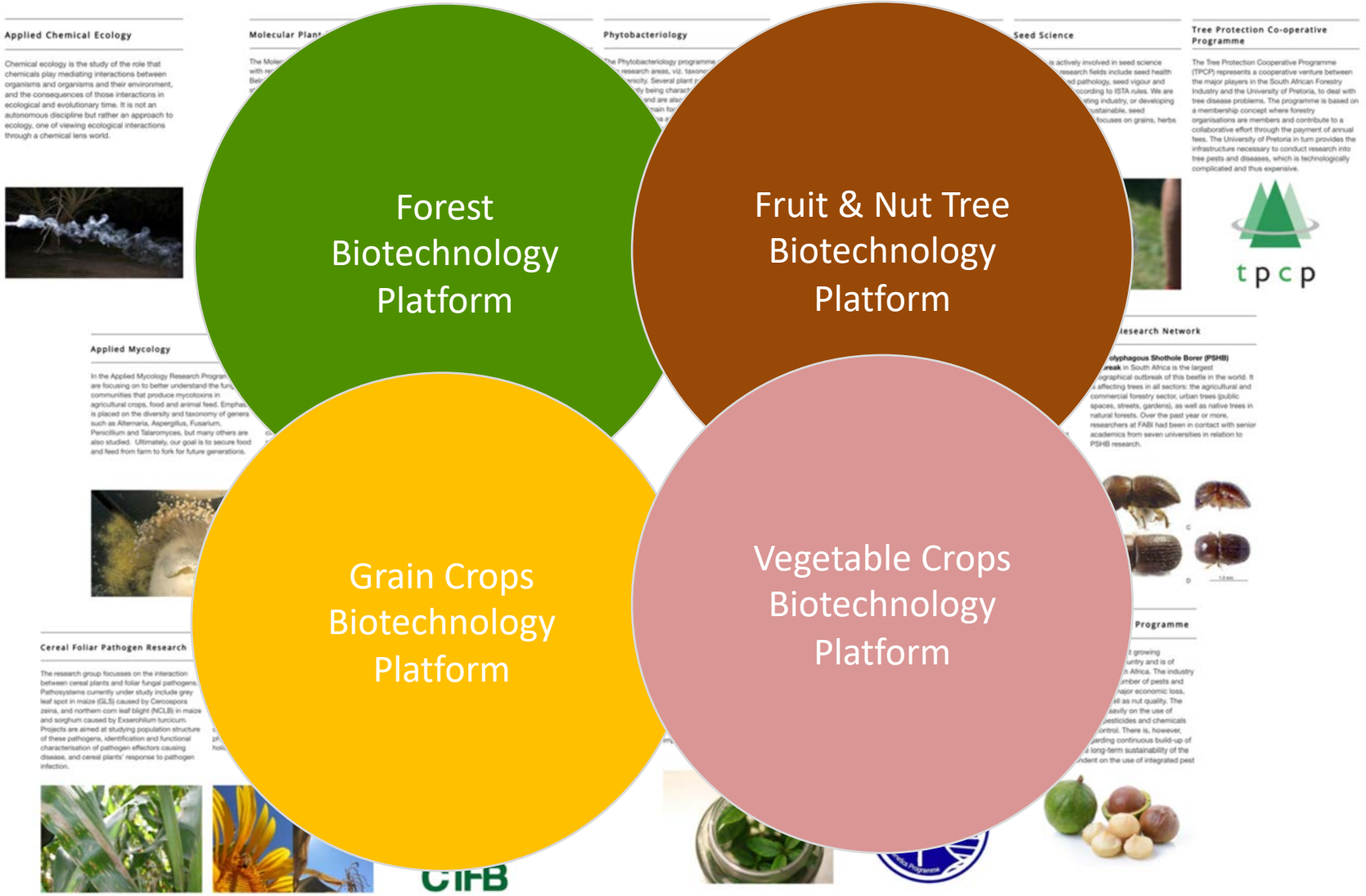
isce2020.science

Build strong, long term and inter-dependent stakeholder relationship



Industry support for FABI

FABI Research Groups



Long term, multi-stakeholder programs

Tree Protection Cooperative Programme

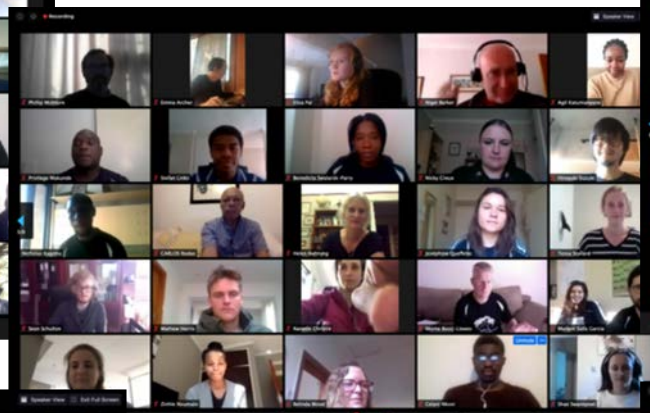
Partnering with forestry for 31 years

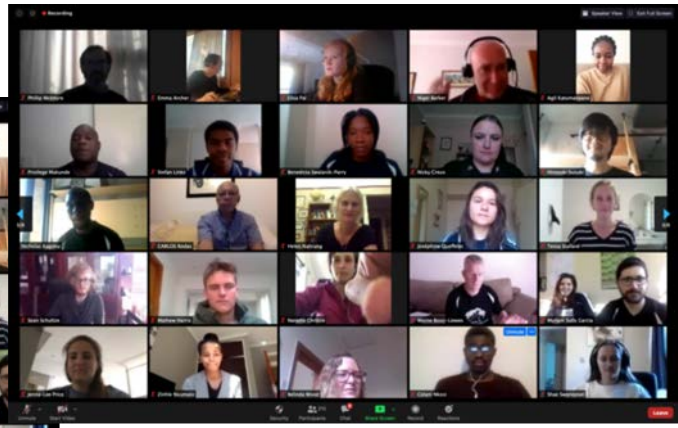
tpcp CPHB FABI UNIVERSITEIT VAN PRETORIA UNIVERSITY OF PRETORIA YUNIBESITHI YA PRETORIA Denkleiers • Leading Minds • Dikgopolo tša Dihlalefi

ICFR FORESTRY SOUTH AFRICA HMH Komatiland forests TWK agri

NCT NCT FORESTRY CO-OPERATIVE LIMITED sappi mondi MTO YORK TIMBERS

Stakeholder engagement going online





CPHB

DSI NRF Centre of Excellence in Plant Health Biotechnology

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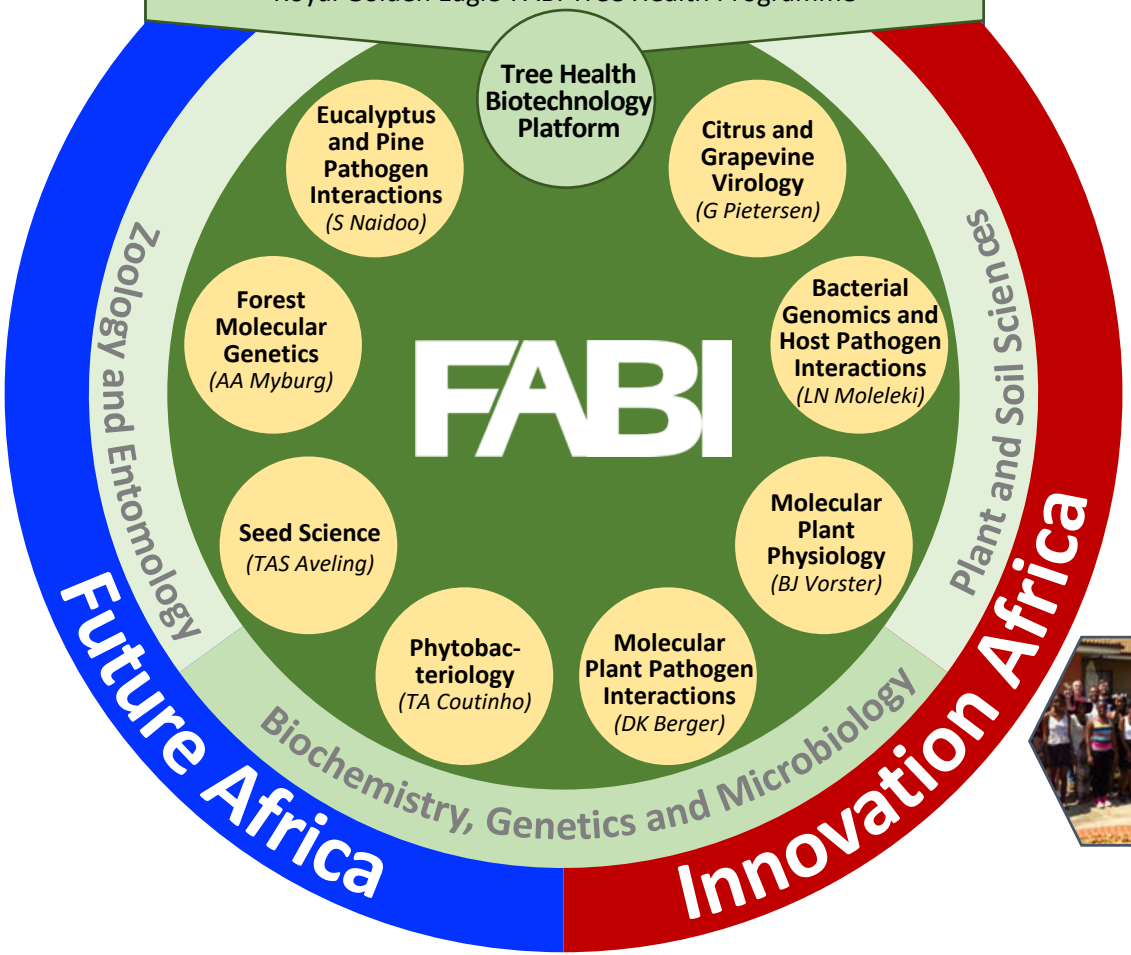
science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

NRF National Research Foundation

Tree Health Biotechnology Platform @ FABI

Industry, University and Government-funded

Tree Protection Cooperative Programme (TPCP)
DST-NRF Centre of Excellence in Tree Health Biotechnology (CTHB)
DST-NRF SARChI Chair in Fungal Genomics
Macadamia Protection Programme
Avocado Research Programme
Polyphagous Shothole Borer Research Network
China Eucalypt Research Centre-FABI Tree Protection Programme
Royal Golden Eagle-FABI Tree Health Programme



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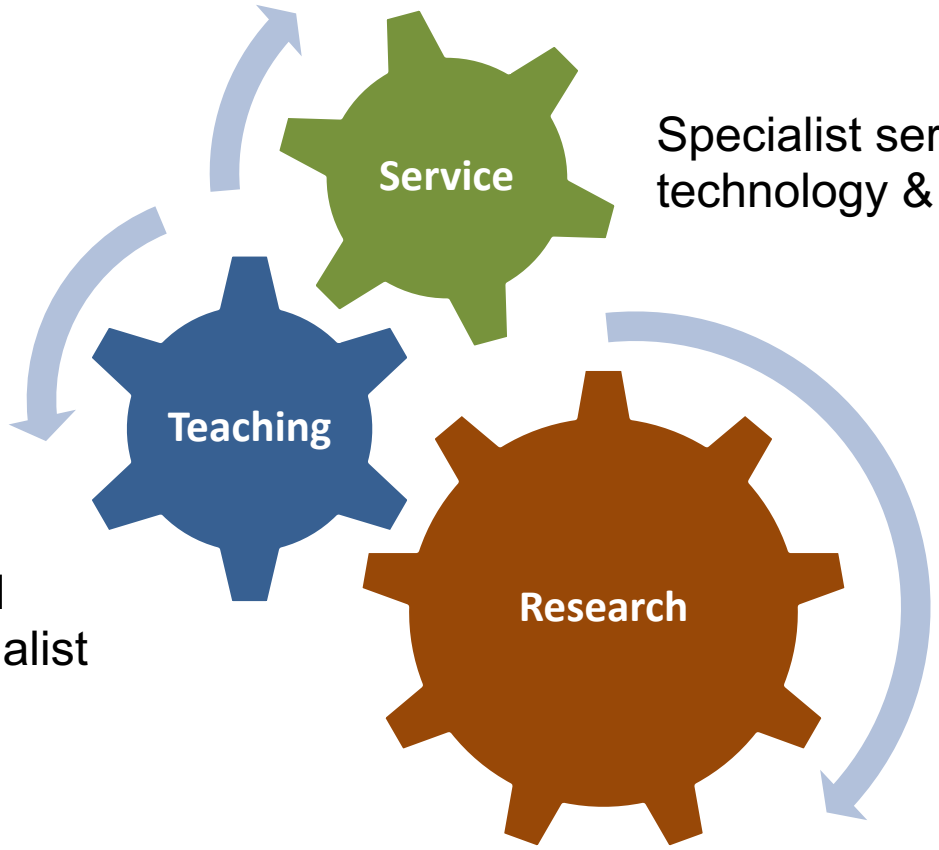
1423 articles

139 MSc

109 PhD

95 Hons

Building on a strong integrated research, training and service focus

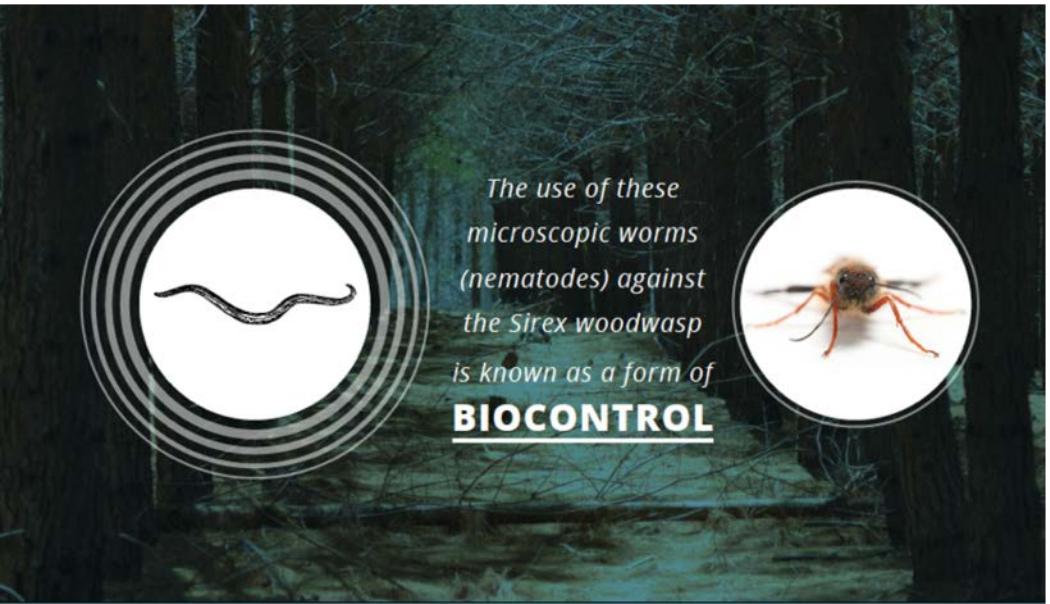


Specialist services based on latest technology & knowledge; non-profit

Research to technical professionals in specialist areas; integrated with service and research

Basic to applied

Making an impact in industry

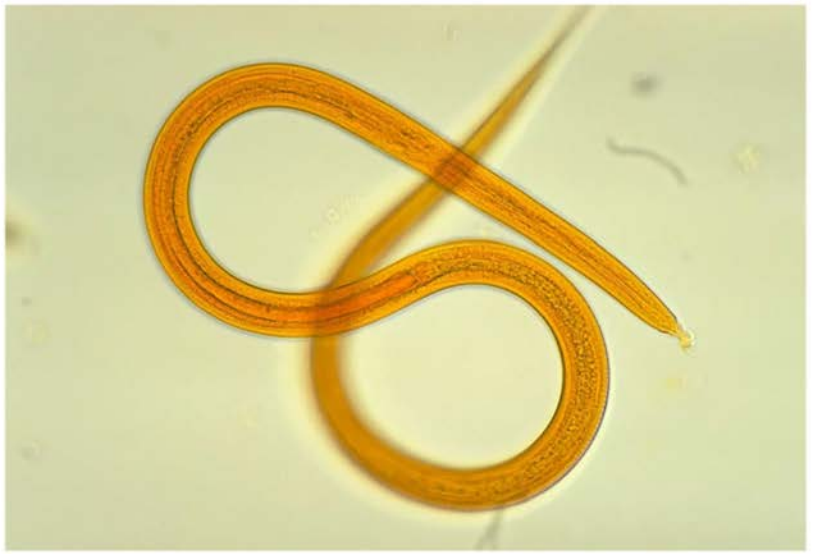


TRENDING BUSINESS MONEY & MARKETS TECH

BUSINESS INSIDER | BUSINESS

This tiny worm has saved South African companies more than R400 million

Sarah Wild , Business Insider SA
Aug 06, 2018, 07:07 AM

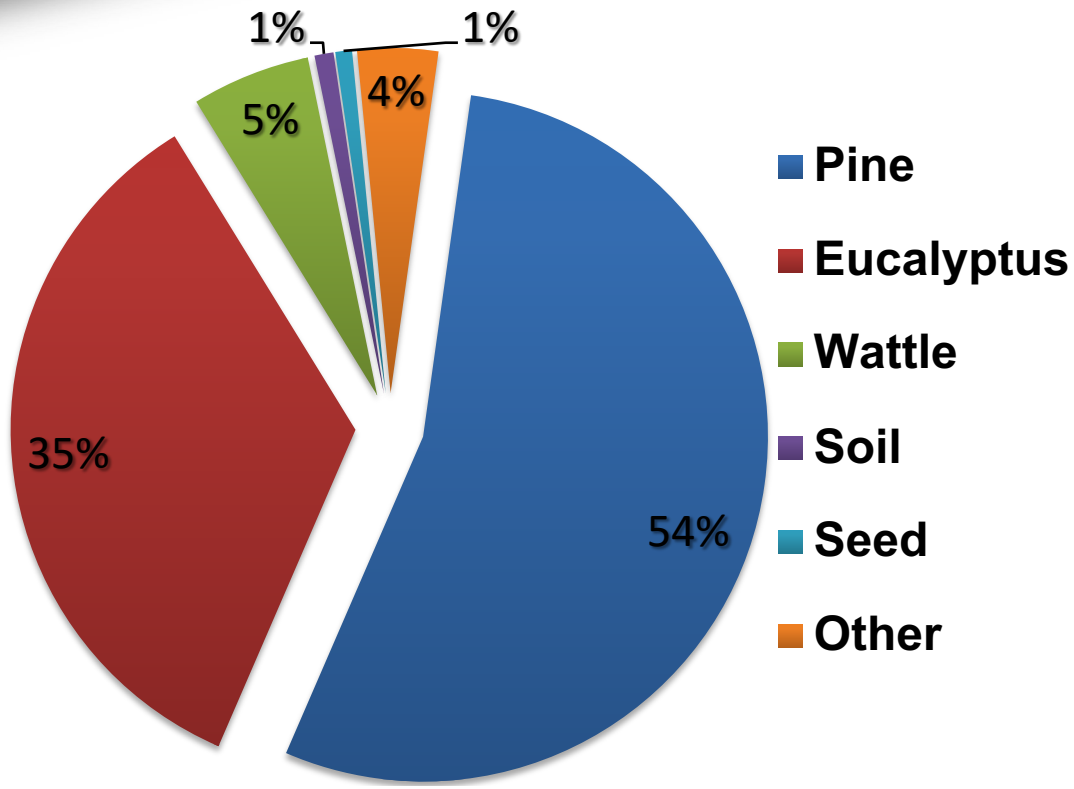


A microscopic worm, called a nematode. (Getty Images)

- Scientists are breeding billions of microscopic worms to kill an invasive wasp in plantations all over the country.
- The Sirex wasp is a serious threat to South Africa's pine industry
- Originally from Eurasia and North Africa, *Sirex noctilio* is one of many invasive species that are finding their way to South Africa

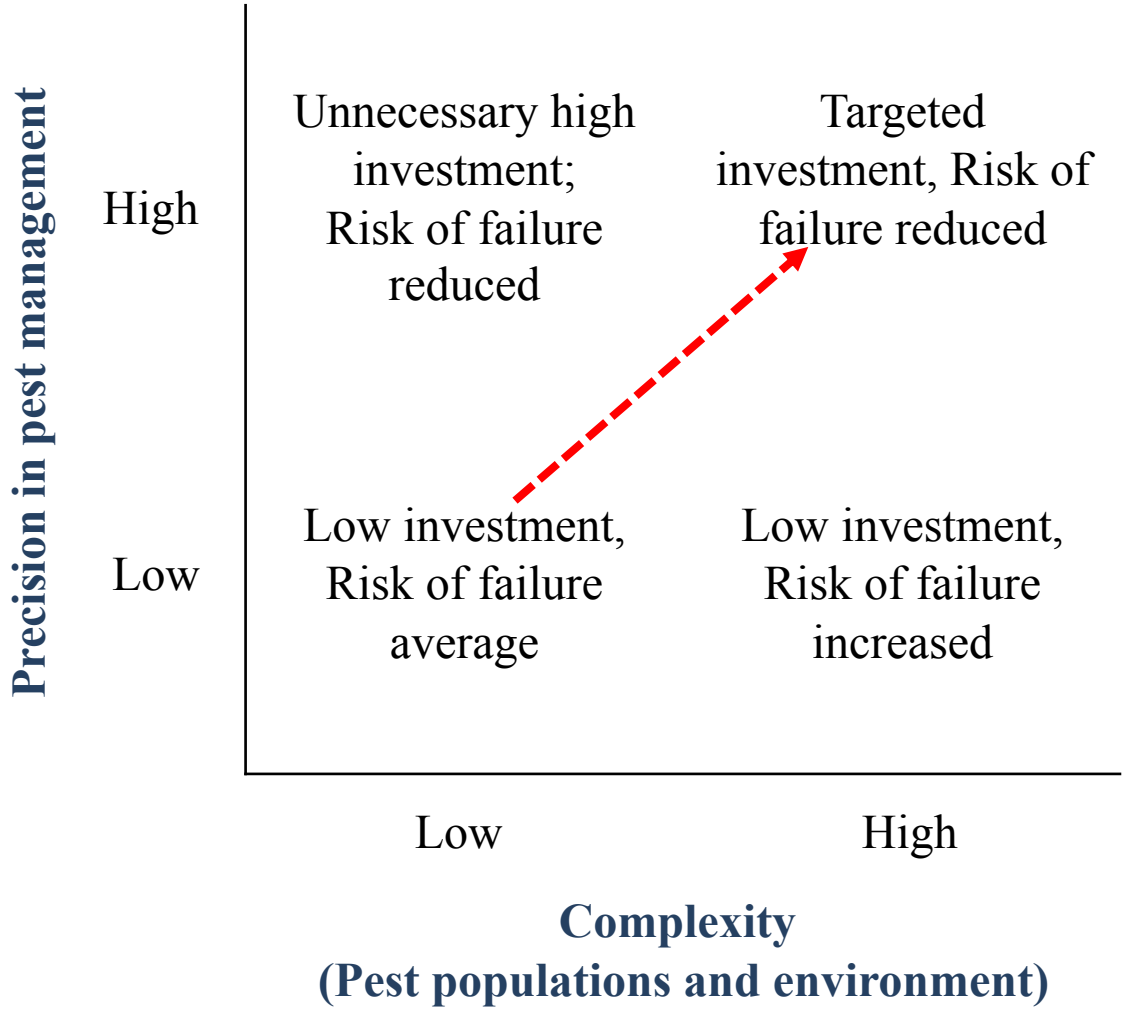
Field extension & diagnostics

1000s samples/yr
>1000 person days in field/yr



Pathology and Entomology samples

Supporting Precision Pest Management



Slippers et al 2020 *Southern Forests*

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Transdisciplinary Research Leadership for Innovation

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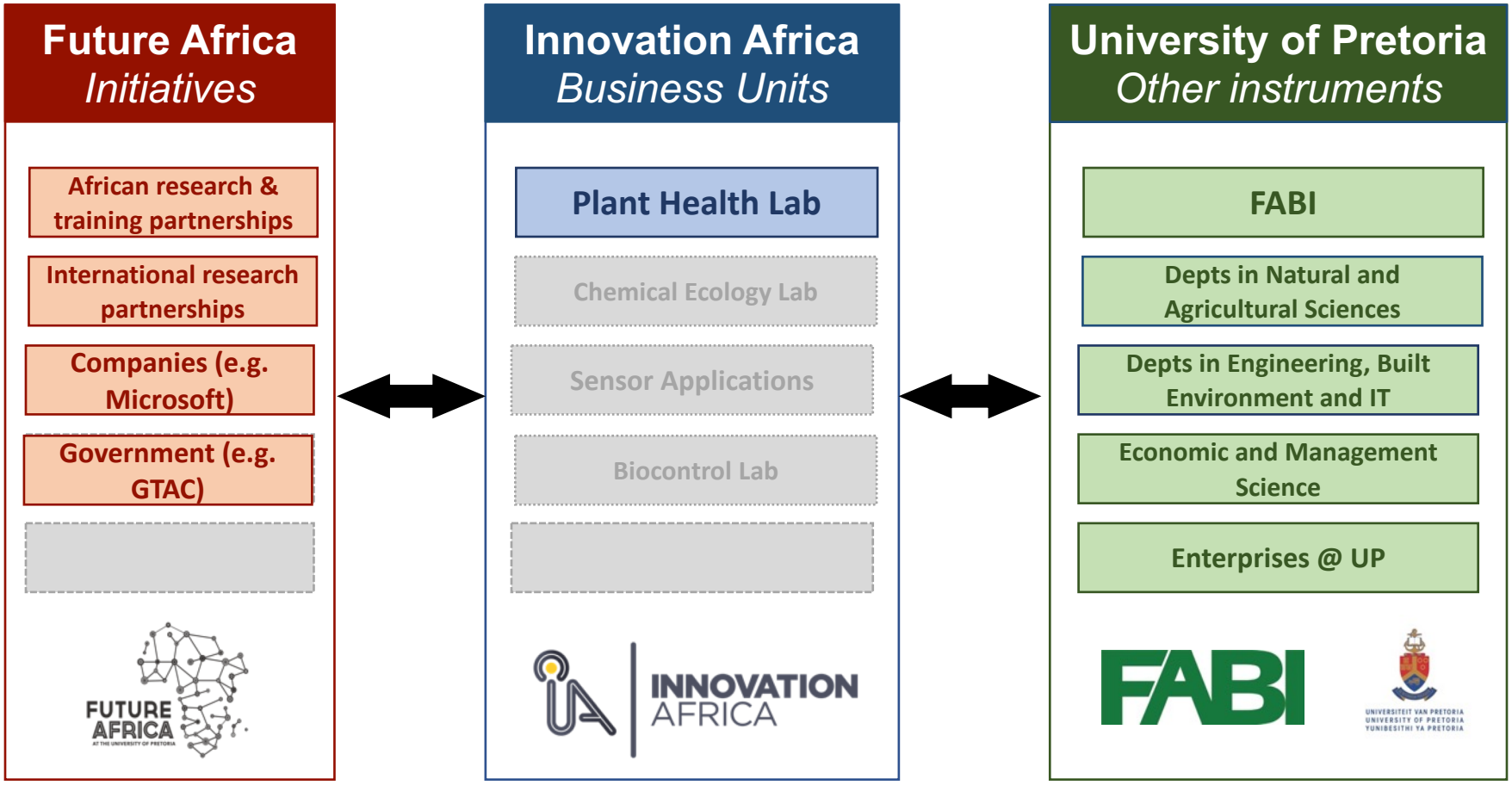
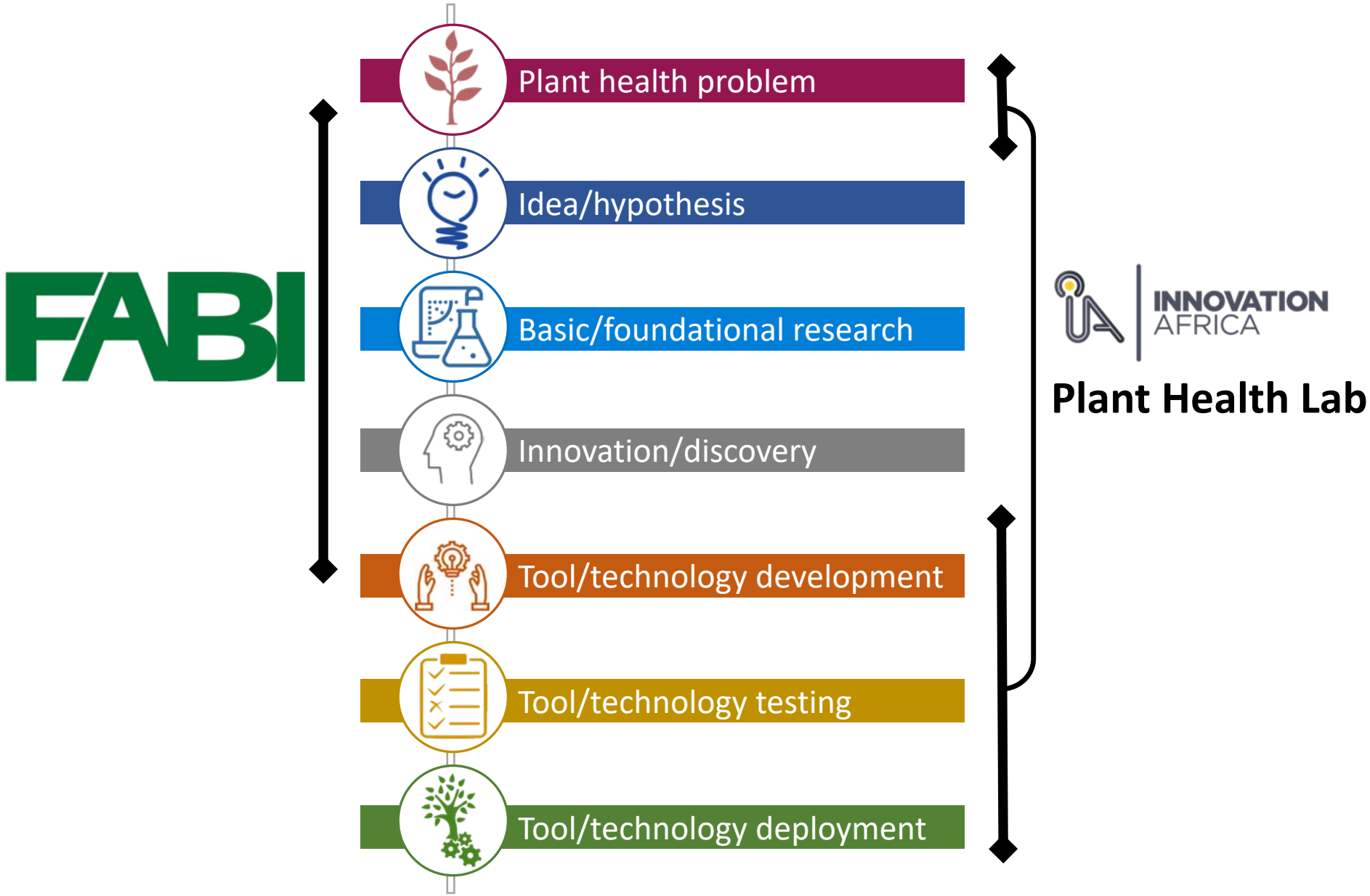
Connecting the best minds around the world, with a particular focus on Africa

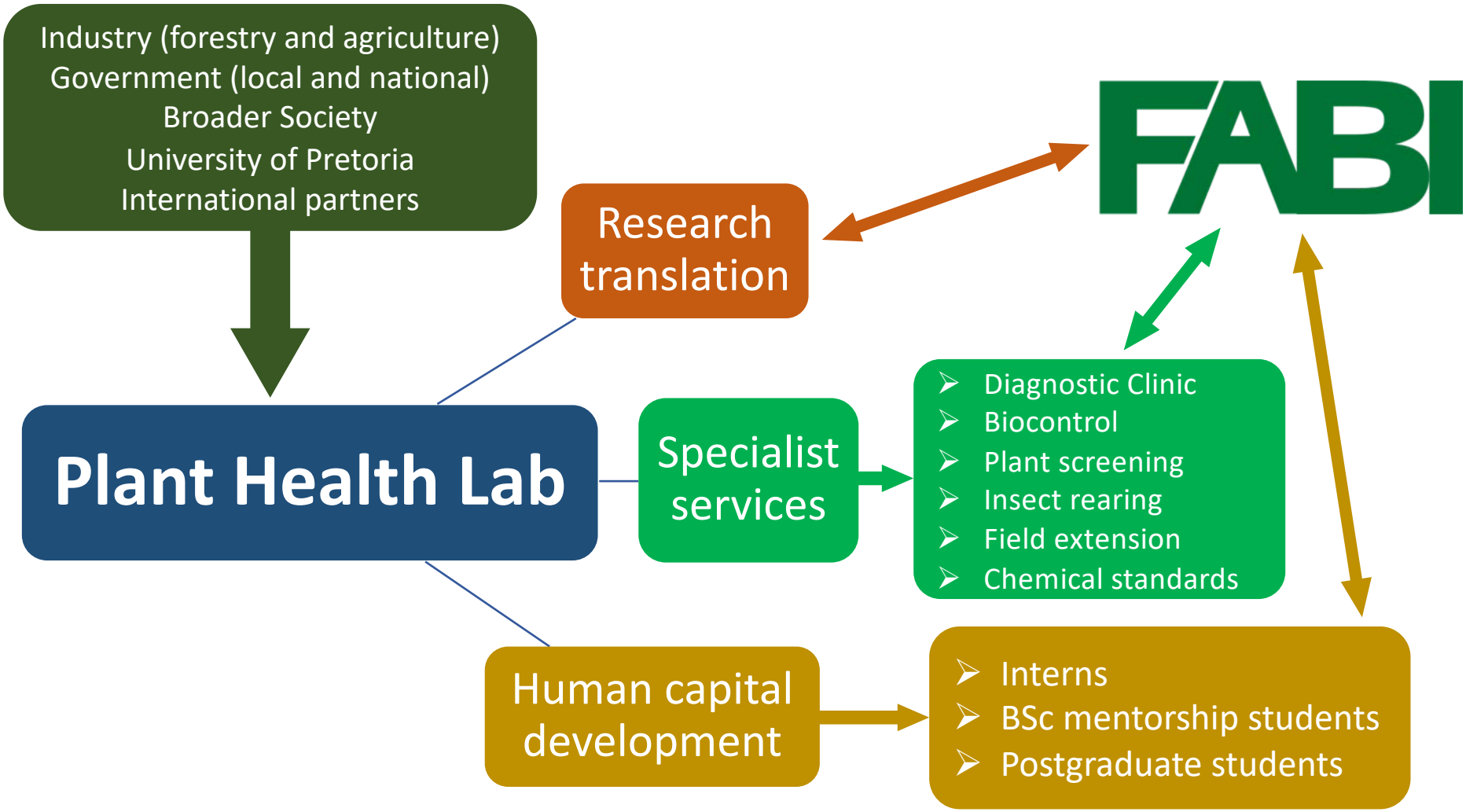
Development of Innovation Africa @UP

Future Africa, Innovation Africa and future Agriculture and Forestry Research at UP



Translational research in Plant Health

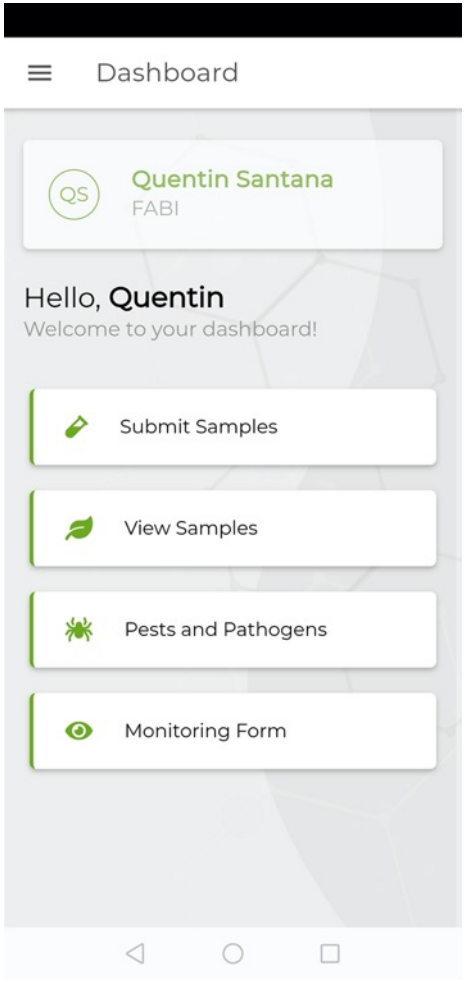


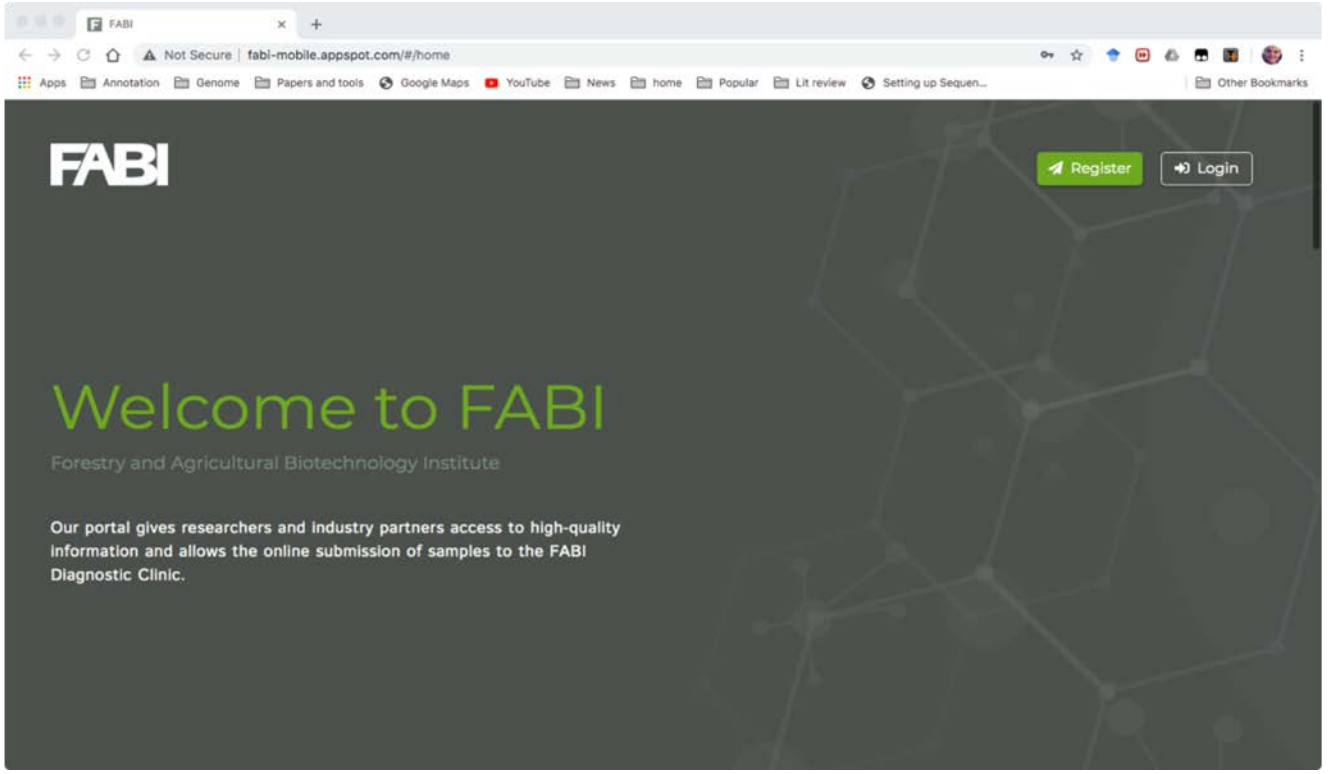


INNOVATION AFRICA

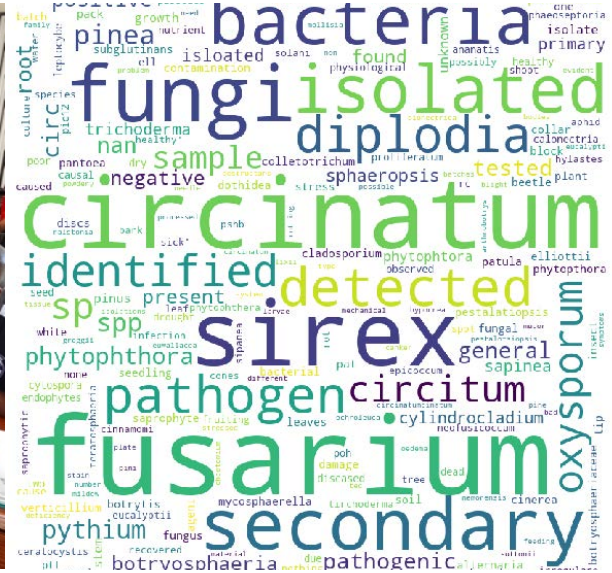
UP's new **Higher Education-Industry Partnership Platform**.

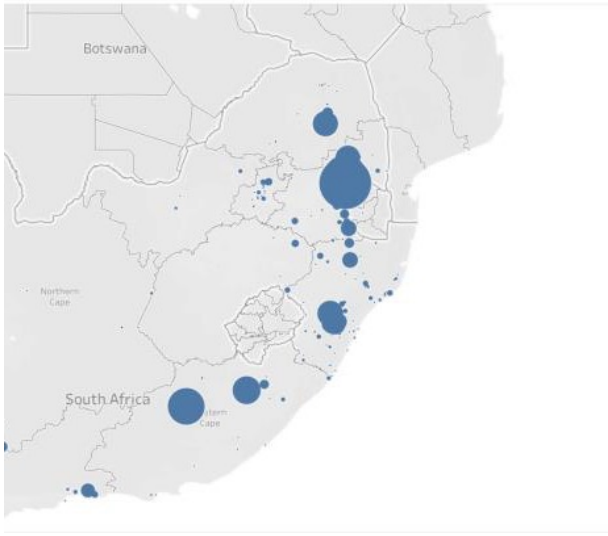
FABI Mobile


Dashboard
QS
Quentin Santana
FABI
Hello, Quentin
Welcome to your dashboard!
Submit Samples
View Samples
Pests and Pathogens
Monitoring Form


FABI
Not Secure
fabi-mobile.appspot.com/#/home
Apps
Annotation
Genome
Papers and tools
Google Maps
YouTube
News
home
Popular
Lit review
Setting up Sequen...
Other Bookmarks
FABI
Register
Login
Welcome to FABI
Forestry and Agricultural Biotechnology Institute
Our portal gives researchers and industry partners access to high-quality information and allows the online submission of samples to the FABI Diagnostic Clinic.

Next generation FABI Diagnostic Clinic Database

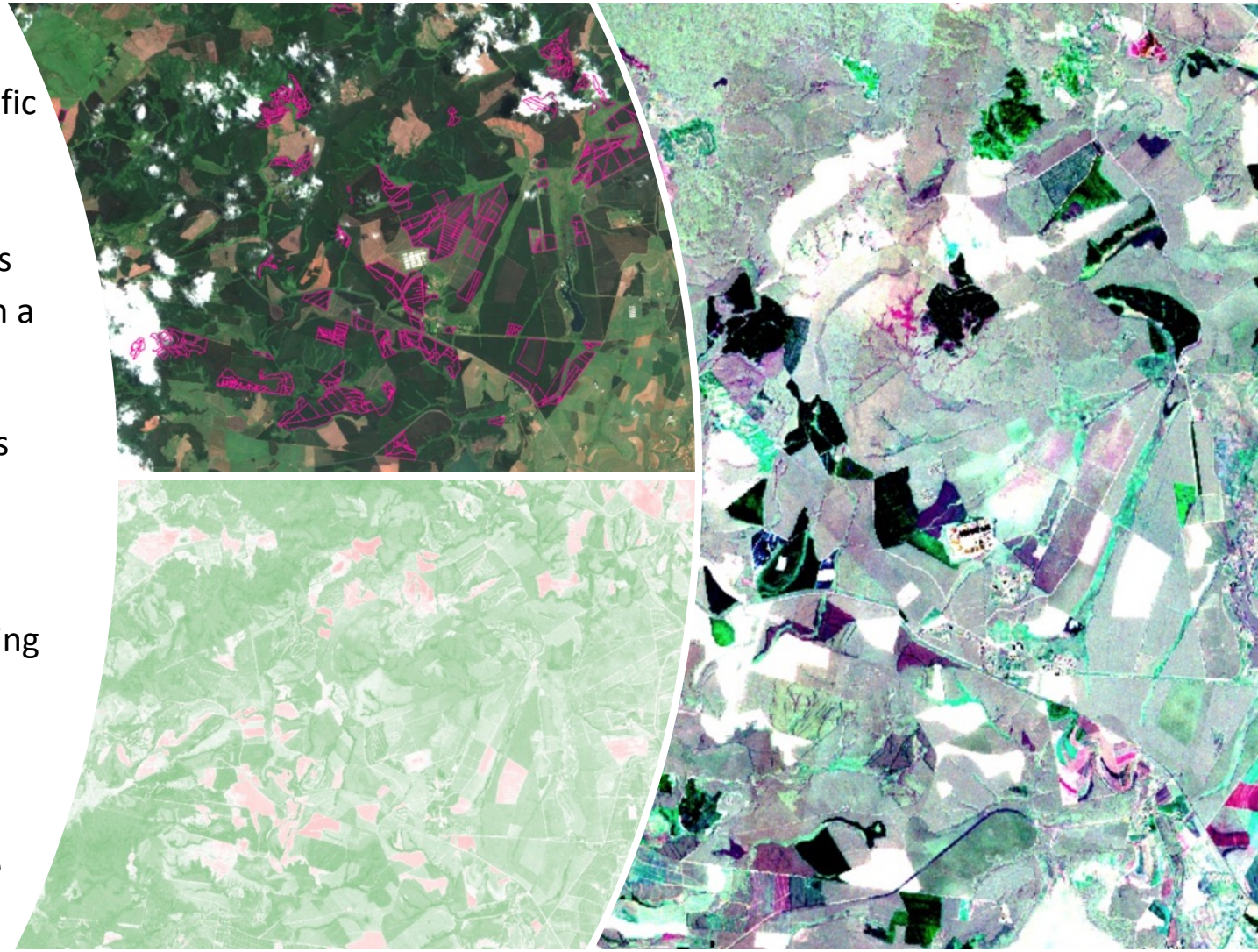




- Multiparty collaboration
- Consolidate over 25 years of diagnostic clinic data
- Clean data for data modeling and linking to GIS information
- Develop “Pre-diagnosis” tool for all new sample
- Training program with emerging farmers

Satellite surveillance & diagnostics

- Multi-spectral image analysis to detect specific pests and diseases
- Potential to:
  - Identify outbreaks
  - Predict areas with a high chance of infestation
  - Determine factors linked to high infestation
- Moving forward:
  - Increase monitoring and validation of infestations
  - Higher resolution satellite imagery
  - Both will improve data models



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