

Impact of genetic resource policy on the Innovation Labs: Findings from Case Study Analysis

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The Moving Landscape of Moving Germplasm

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Key Findings

Regulations: Multiple regulatory pressures, beyond ABS. Managed in an integrated fashion only by the individual scientist

Individuals: ILs show heavy reliance on individual efforts to maintain trust and reciprocity

Strategies: Within the IL, diverse strategies coexist at the individual and project levels. This variation may be an asset for adjusting to different realities but difficult to manage in the context of regulatory uncertainty and different individual capacities

Organizations: So far, few organizations play a brokering role within ILs

Potential areas of intervention:

- Monitoring (monitoring coping strategies, assessing reliance on sources of germplasm...)
- Brokering (institutionalize social capital and trust, integrate ILs into local existing collaboration structures...)
- Policy Awareness/Guidance

Case Study Methodology

1. Literature review
2. IL and project selection
3. Semi-structured interviews
4. Transcripts and qualitative analysis

Innovation Labs ¹	Interviews	IL size
Sorghum and millet	32	82
Genomics for Poultry	6	9
Rift Valley Fever Control	5	10
Peanuts & Mycotoxin	16	118
Legumes	18	49
TOTAL	77	

¹ <https://feedthefuture.gov/lp/feed-future-innovation-labs>

ABS matters in ILs ... for plants

	ABS blockage	ABS risk perceptions	Other regulatory constraints
Sorghum	+++	++/+++	++
Peanuts	++	++	+++
Legumes	++	+++	+
Rift Valley	0	0	+++
Poultry	0	+	+++

ABS blockages: + implicitly referred to; ++ described; +++ described and analyzed

ABS risk perceptions: + general; ++ defined; +++ defined and managed

Other regulatory constraints: + generally reported; ++ specifically reported; +++ specifically reported and managed

ABS blockage

It's a [country] policy with the commissioner of biodiversity. They don't allow exchange. Well, they don't allow the materials to go out. Things can go in but not out ... No, we have not proceeded with any national authorities. **We do have good connections with [country] researchers so we know the work that is being performed but it is the material per se that is really not available!**

ABS perception

.. [ABS is] really another issue that's coming online. I think there's just some potential issues and I guess we haven't gotten to the point where we would try to negotiate yet.

But we are hopeful that in the future ... there will be a mechanism or means to [address ABS] or ...that someone would figure out a way.

ABS risks

You know we haven't run into [ABS issue] just yet. I mean first of all, but entirely likely we could as we start isolating samples, we start finding resistant genes in [name of the country]'s... **The government might get involved and restrict what we can do with that.**

ABS combines with other significant regulatory pressures

- **Proprietary frameworks** sometimes limit the ability of scientists to design collaborations (SMIL, PMIL)
- **Biosecurity** is an essential determinant of project designs and collaboration structures (Poultry, RFV)

University IP policy

For instance, there are some [type] material we wanted then from [university] ...to come here. But because of the patent issue, the royalty was...I think it was expiring soon this year and that in [country], we don't have the very good... infrastructure to track down the royalty and the patent, stuff like that. So movement of such material was a problem.

Biosecurity concerns

[Biosecurity, import permits] take an extremely long time and by the time those things are put in place and by the time you get the [material], there's really not a lot of time to do any meaningful evaluation unfortunately.

Findings (1/5)

Individuals



All interview subjects described strategies that fall into one or more of the five following categories: Compliance, Compromise, Avoidance, Defiance, Manipulation (Oliver, 91)

Some scientists engage in more than one strategy. Within the IL, diverse strategies coexist at the project level.

Compliance: Maintenance of research plans while also complying with regulations

Compromise : Adjusted research (plan, location, collaboration pattern, organization) to accommodate rules and regulations

Avoidance: Change the research question in order to avoid regulations or shift to another location that enables them to gather the necessary materials

Defiance: Defying regulations (e.g. disguising shipping materials)

Manipulation: Rule manipulation occurs when rules for genetic resource access were not well developed and required negotiation on a case-by case basis

Avoidance

Now I have to change my approach because we don't know, like we don't want to [run the risk]. It's like putting your money in a stock which you don't know whether it's going to go up or low, or just like that.

Manipulation

Out of [country], I think it is more of that personal individualities rather than the government or the institute restrictions ... What I'm trying to do right now is **I came to know that the person who is in charge of the division, he's going to retire by August so I'm just waiting for the dust to settle down.** So I'm hoping the next guy would be a better guy than this guy so I don't have to go through all this.

Compromise

I think he [the government official] was concerned about exactly what we were doing, what the objectives of this research were and perhaps a little bit of covering himself but you know a lot of it I think goes back to the fear that we were exploiting [name of the country], precisely that. And I certainly left the -- we certainly left that meeting -- with the documents we needed to take the samples out of [name of the country] ... **we would certainly want to work within the government to develop any commercial aspects**

Compliance

We [researchers and authorities] had **all this figured out and the issue of germplasm sharing was explicitly articulated into the project document.** And then also, we had our approach in trying to see how best we can share the germplasm.

Findings (2/5)

Resources

Difference in commercial values among species (beans vs peanuts) or within species (landraces vs breeding lines)

Difference in the geographic concentration/dispersion of diversity

Genetic resources are only one of many types resources and are integrated with other sets of resources (data, technology). In a research context, it is difficult to single out one and consider it separate from other inputs to science

Not all resources are governed the same way (data vs material)



Geographic concentration

I mean... if you have the resources, it would always be nice because you'll never know what you're going to find and you never know when some of the characteristics that you do have might breakdown. You might have to come in with additional types of resistance and like I said, you stack them on top of each other. **It's just that the resources are out there right now so we have to go with what we've got.**

Resource integration

We also have students coming here – learning all the tropical disease management. So we feel that **if we involve germplasm together with human capacity and physical infrastructure, it is much more holistic.**

Findings (3/5)

Network



Scientist networks facilitate the exchange of materials

Academic ties are a strong driver of scientist collaboration within ILs

Reciprocity and mutual trust are built and maintained in most of the ILs

Academic ties

We knew them. One of the co-PI's used to work in [name of the country] quite a bit and we have the relation in this university ...

That interaction, we build up a relation with that. [name of the country], same thing if you use to work in [name of the country], and the dean of the school down there also has friendship relation with this person, and then we conduct the relation based on that previous relation.

Reciprocity

So they [partner researchers] have agreements ... where the old material can go and we use it and then for the newer one ... we're providing that ... we are providing that to be tested in [name of the countries] and make them select what they want.

Mutual Trust

If you find good collaborators, especially in developing countries, it's extremely important that you keep them because you develop a trust and they are motivated and the work gets done much faster and then the productivity is much greater.

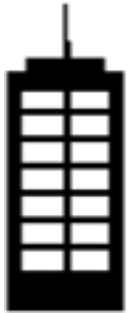
Findings (4/5)

Organizations

University policies inconsistently address ABS. In some cases, lot of autonomy left to scientists/others not

ILs vary in their use of existing sub-regional developing country networks (Beans vs Sorghum)

Few organizations (national, regional, international) mediate regulatory tensions. Potential for research program (e.g. ILs) support



Limited IL's involvement

We've... never really had the opportunity to discuss any of these [ABS issue] within the innovation lab, to talk about this at all with them. Even in the context of ... [name of program] at all. Most of what I described to you comes just with the normal, sort of, everyday work that we do in plant breeding.

Need for institutional guidance

Particularly I think people that were, let's say early career, really wanted to develop an international program which, you know I just think these are becoming and are very important. You know, we would benefit from having some sort of document or guidelines or at least what to think about

Findings (5/5)

Institutions, norms



Friction between different sets of norms and policies
Few efforts to bridge open science and regulatory norms

Predominance of *ad hoc* rules which leave researchers with flexibility but leave aside those with less capacity or less awareness

Conflicting norms

*It was a real I should say a very disappointing kind of experience **being not able to share materials, it is like your job is totally curtailed.***

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