**Suggest IDOBRU surveillance hierarchy re-engineering**

The following is a suggested reengineering me and Barry Smith worked that appears in the most recent draft of the new IDO paper. This is designed to fix the issue you and I previously talked about (see you comment in the margin) where the current IDOBRU hierarchy falsely implies that infectious disease surveillance only includes surveillance of human infectious disease. I was hoping that we could work together to make something like the suggested changes below. That way a new version of IDOBRU could be uploaded to bioportal before sometime before the new IDO paper is published. (Optionally, we could also address some other small issues I raised in a supplementary material document. I have imported that discussion here below. Since you created IDOBRU, your feedback on that would be appreciated. Though, the suggested movement of some terms up to OBI might take more work as it will involve others)

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“The following is an example of a hierarchy of surveillance related terms, all of which (below OBI:planned process) were created for IDOBRU:

OBI:planned process

*health Surveillance*

*[biosurveillance](https://bioportal.bioontology.org/ontologies/IDOBRU/?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FIDO_0100654)*

*disease surveillance*

[*animal disease surveillance*](https://bioportal.bioontology.org/ontologies/IDOBRU/?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FIDO_0100721)

*animal infectious disease surveillance*

*animal brucellosis surveillance*

[*human disease surveillance*](https://bioportal.bioontology.org/ontologies/IDOBRU/?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FIDO_0100720)

*human [infectious disease surveillance](https://bioportal.bioontology.org/ontologies/IDOBRU/?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FIDO_0100722)*

*human* [*brucellosis surveillance*](https://bioportal.bioontology.org/ontologies/IDOBRU/?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FIDO_0100658)

OBI:planned process

Public health Surveillance (up to OBI)

[biosurveillance](https://bioportal.bioontology.org/ontologies/IDOBRU/?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FIDO_0100654)

infectious disease surveillance­­

[human infectious disease surveillance](https://bioportal.bioontology.org/ontologies/IDOBRU/?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FIDO_0100720)

human [brucellosis surveillance](https://bioportal.bioontology.org/ontologies/IDOBRU/?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FIDO_0100658)

[veterinary infectious disease surveillance](https://bioportal.bioontology.org/ontologies/IDOBRU/?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FIDO_0100721)

swine brucellosis surveillance

cat brucellosis surveillance

goat brucellosis surveillance

camel brucellosis surveillance

horse brucellosis surveillance

sheep brucellosis surveillance

All of the terms from human disease surveillance and animal disease surveillance up will be ported to an external ontology such as OBI. Animal infectious disease surveillance and human infectious disease surveillance will be promoted to IDO Core and then imported from there to IDOBRU.”

**Other issues (from supplementary materials)**

II. *Brucellosis Ontology* (*IDOBRU*)

Though IDOBRU is largely in alignment with IDO Core and other relevant ontologies, there are some aspects of the ontology needing to be addressed. For example, some IDOBRU definitions are redundant, such as:

* IDOBRU:*brucellosis disposition*, which is defined as “A brucellosis disposition that is the disposition to be transmitted from an infected non-human host to a human host”, while its parent IDO:*zoonotic disposition* is defined as “the disposition to be transmitted from an infected non-human host to a human host”. IDOBRU:*brucellosis disposition* should not be a child of IDO:*zoonotic disposition*, given that *Brucella* can be transmitted from humans to humans. It should be replaced with the term *Brucella infectious disposition*, which we would define as follows:

*Brucella infectious disposition* =def An infectious disposition that is the disposition of Brucella to be transmitted to a host and establish a Brucella infectious disorder.

Since a Brucella infectious disorder is the material basis of the brucellosis disease, this definition captures the fact that Brucella is a cause of brucellosis. For zoonotic transmission, we may also define a new term, *brucella zoonotic disposition*, along the following lines:

*Brucella zoonotic disposition* =def An infectious disposition that is the disposition of Brucella to be transmitted from an infected non-human host to a human host.

Several textual definitions are circular:

* IDOBRU:*brucellosis pathogen role* is a subclass of IDO:*pathogen role*, but the former is defined circularly as “a pathogen role of being a brucellosis pathogen”. We revise this definition by refinementof the differentia used to define IDO:*pathogen role*,replacing the term *pathogenic disposition* with *Brucella infectious disposition,* as follows:

*brucellosis pathogen role* =def A pathogen role borne by Brucella bacterium when contained in a host in which its Brucella infectious disposition can be realized.

**IDOSCHISTO and IDOMEN issues**

VI. *The Schistosomiasis Ontology* (*IDOSCHISTO*)

IDOSCHISTO will require significant rebuilding if it is to be considered a bona fide extension of IDO Core. IDO CORE is imported in full, and certain key classes descend from IDO Core classes (e.g. *Schistosoma* *is\_a* IDO:*infectious agent*, *Schistosomiasis* *is\_a* IDO:*infectious disease*). Still, most IDOSCHISTO terms lack textual definitions, and many other classes fall outside the BFO entity hierarchy entirely. Rather, they appear as subclasses of classes that are themselves direct children of OWL:*thing*. For example:

* *sample\_for\_direct \_diagnosis*
* *snail\_survival\_condition*
* *schistosoma\_survival\_condition*
* *schistosomiasis\_pathological\_process*

While the ontology’s developers acknowledge the importance of reusing terms from established OBO Foundry ontologies, in various cases IDOSCHISTO fails to adhere to the principle of orthogonality. For example:

* IDOSCHISTO:*drug* and IDOSCHISTO*:vaccine* were newly created instead of reusing CHEBI:*drug* and VO:*vaccine*
* IDOSCHISTO adds many new terms for snail hosts and *schistosoma* pathogens rather than import the appropriate terms from NCBITaxon.

Dr. Camara has recently informed us (personal communication) that starting this year he and his team will be beginning a new project studying schistosomiasis and fasciolosis in Senegal. In coordination with this project they have plans to revise and update IDOSCHISTO. We will be in communication with their team to help ensure consistency and IDO Core conformity.

VII. *The Meningitis Ontology* (*IDOMEN*)

IDOMEN, in its current iteration, suffers from several issues, and is far from alignment with BFO, OGMS, and IDO Core despite importing each in full. Of importance:

* IDOMEN is exceedingly difficult to navigate, due to the redundant assertion of classes
* IDOMEN’s continuantclasses all appear as direct children of BFO:*continuant* (the same can be said for its occurrent hierarchy)
* IDOMEN sometimes fails to adhere to the principle of orthogonality, for example IDOMEN adds the new terms *patient*, *patient role*, and *vaccination* to serve, respectively, as the parents of the IDOMEN terms *meningitis patient*, *meningitis patient*, and *vaccination campaign* rather than import OAE:*patient*, OBI:*patient role*, and VO:*vaccination*. Similarly, to represent meningitis epidemic risk factors, IDOMEN adds a number of new terms for environmental factors, including terms for climatic factors. IDOMEN should consider reusing terms from ENVO
* Many IDOMEN terms lack textual definitions
* IDO:*infectious disposition* has the sole child IDOMEN:*meningitis disposition*