# **Supplementary file 3.** PHI-base nine high level term mapping to PHI-Canto.

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| **PHI-Canto term name1** | **Definition** | **Term ID** | **High level term annotated to …** |
| Increased resistance to chemical2 | A single species population phenotype in which a population shows increased resistance to a chemical stimulus.3  | PHIPO:00000225 | Genotype7 with PHIPO term |
| Increased sensitivity to chemical2 | A single species population phenotype in which a population shows decreased resistance to a chemical stimulus.4  | PHIPO:0000021 | Genotype with PHIPO term |
| Inviable population | An organism population phenotype in which no organisms in the population are viable. | PHIPO:0000513 | Genotype with PHIPO term |
| Loss of pathogenicity | A phenotype where the ability of a pathogen, to produce an infectious disease in another organism is abolished (pathogenicity was present and is now absent). | PHIPO:0000010 | Metagenotype8 with AE9 extent of infectivity |
| Unaffected pathogenicity | A phenotype where the ability of a pathogen, to produce an infectious disease in another organism is unaffected (i.e., the same as wild type, it could be pathogenic or non-pathogenic). | PHIPO:0000004 | Metagenotype with AE extent of infectivity |
| Reduced virulence | A phenotype where the degree to which a pathogen (species or strain) is able to cause infectious disease in another organism is increased (i.e., more symptoms than normal). | PHIPO:0000015 | Metagenotype with AE extent of infectivity |
| Increased virulence | A phenotype where the degree to which a pathogen (species or strain) is able to cause infectious disease in another organism is increased (i.e., more symptoms than normal). | PHIPO:0000014 | Metagenotype with AE extent of infectivity |
| Loss of mutualism | A phenotype in which the balance of symbiotic mutualism has been disrupted compared to the normal interaction and the endosymbiont organism is able to show greater biomass within the host and/or the formation of visible disease formation symptoms compared to the normal interaction. | PHIPO:0000207 | Metagenotype with AE extent of infectivity |
| Effector-mediated modulation of host process by symbiont | A process mediated by a molecule secreted by a symbiont that results in the modulation (either activation or suppression) of a host structure or process. The host is defined as the larger of the organisms involved in a symbiotic interaction. | GO:01404186 | Gene10 with GO Biological Process term (or descendants)11 |

1 Some term names have been updated since initial publication in Urban et al., 2015 NAR (PMID:25414340). Specifically, ‘inviable population’ was formerly ‘lethal’ and ’loss of mutualism’ was formerly ‘enhanced antagonism’.

2 Lower ranked terms, containing specific chemicals names, are mapped up to this term.

3 Additional definition gloss: Resistance to a chemical is usually measured by determining the maximum concentration of the chemical at which a population grows and divides.

4 Additional definition gloss: Resistance to a chemical is usually measured by determining the maximum concentration of the chemical at which a population grows and divides. Typically, populations are deemed sensitive to a chemical if they stop growing (and may die) at a concentration of the chemical that allows wild type populations to grow.

5 PHIPO is the Pathogen-Host Interaction Phenotype Ontology.

6 GO is the Gene Ontology.

7 A single species genotype can be either a pathogen or a host genotype.

8 A metagenotype consists of both a pathogen genotype and a host genotype in the context of a pathogen-host interaction.

9 AE is an Annotation Extension. Annotation extensions enable additional data to be related to a primary annotation.

10 This curation type does not refer to annotating a phenotype to a genotype, but instead refers to annotating a GO term to a gene product.

11 The curator has the option to add a GO Molecular Function term annotation to the pathogen effector, if known.