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Transcriptional response against biocontrol agents in the agricultural pest *Spodoptera frugiperda* (Lepidoptera: Noctuidae)

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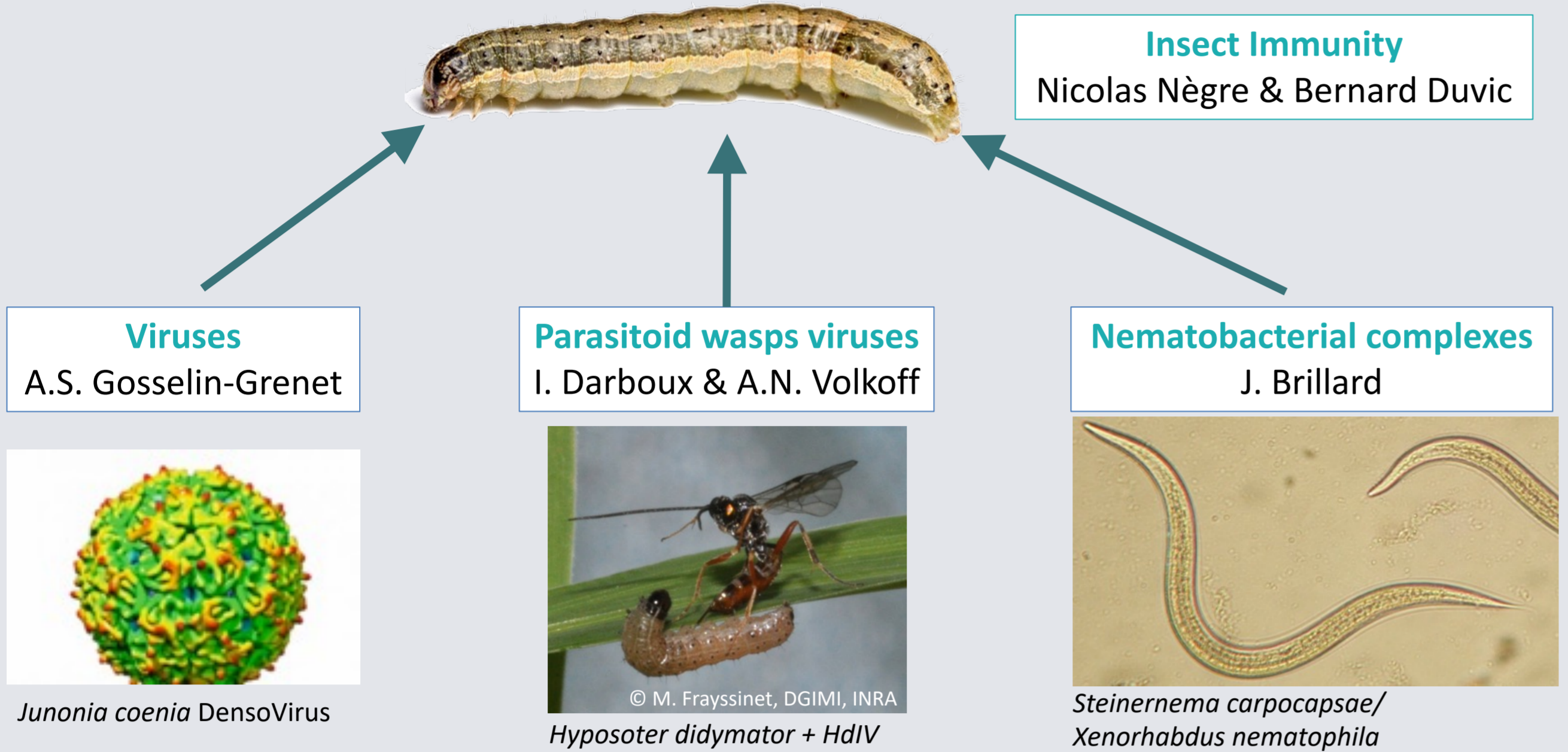
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Transcriptional response against biocontrol agents in the agricultural pest *Spodoptera frugiperda* (Lepidoptera: Noctuidae)

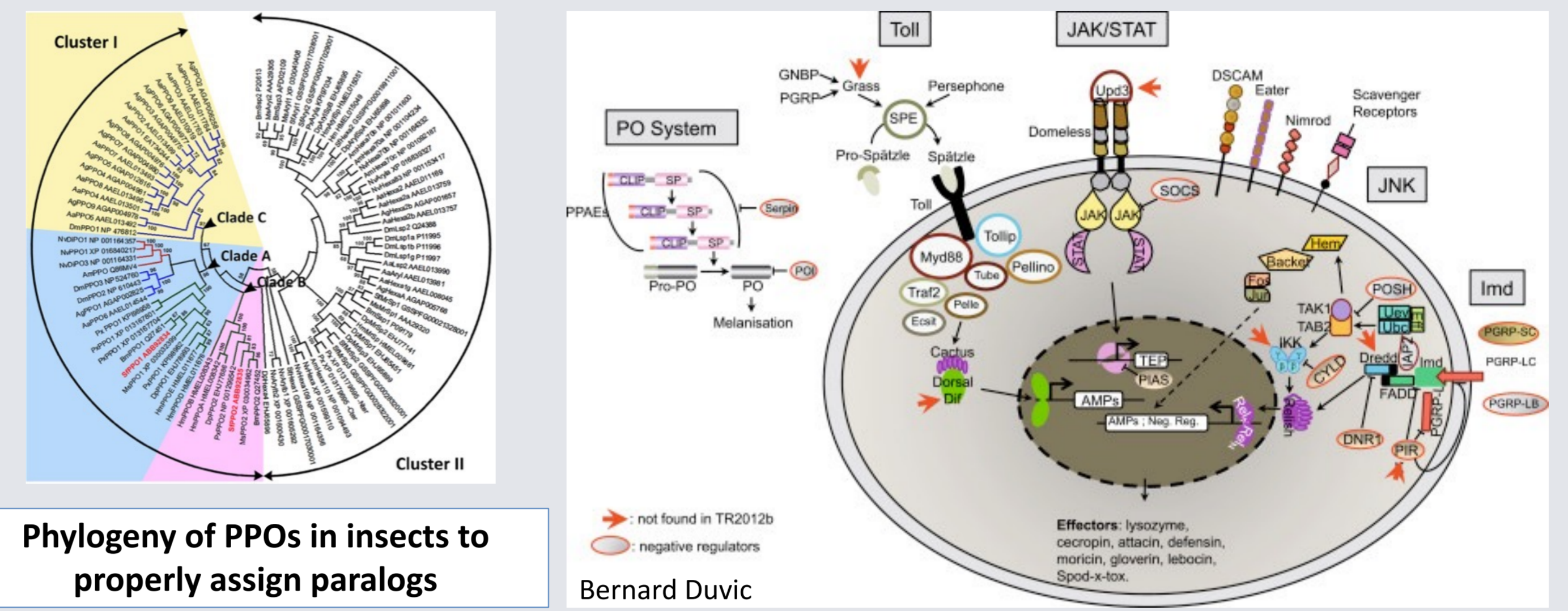
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Spodoptera frugiperda : a hungry caterpillar confronted with various microbial agents used in biocontrol

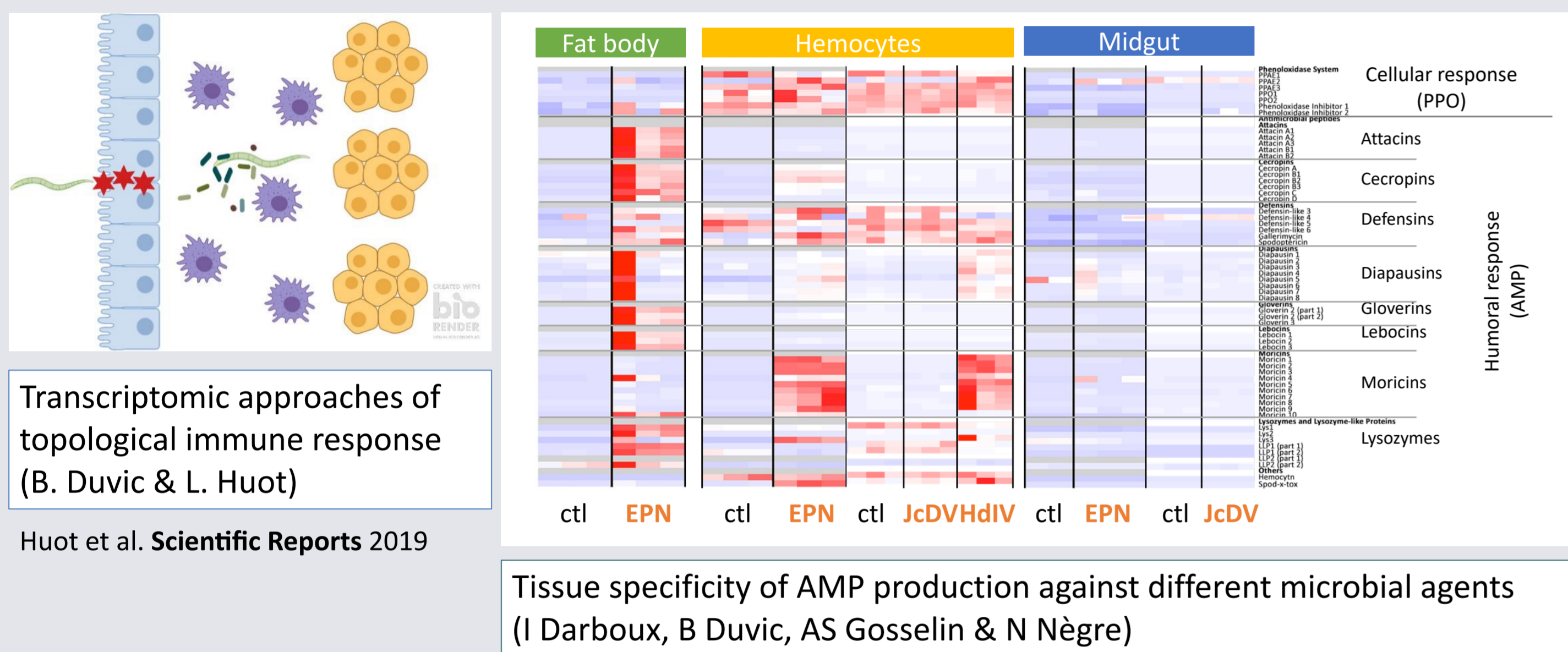


Genome assembly and manual curation of genes for the description of the immunome



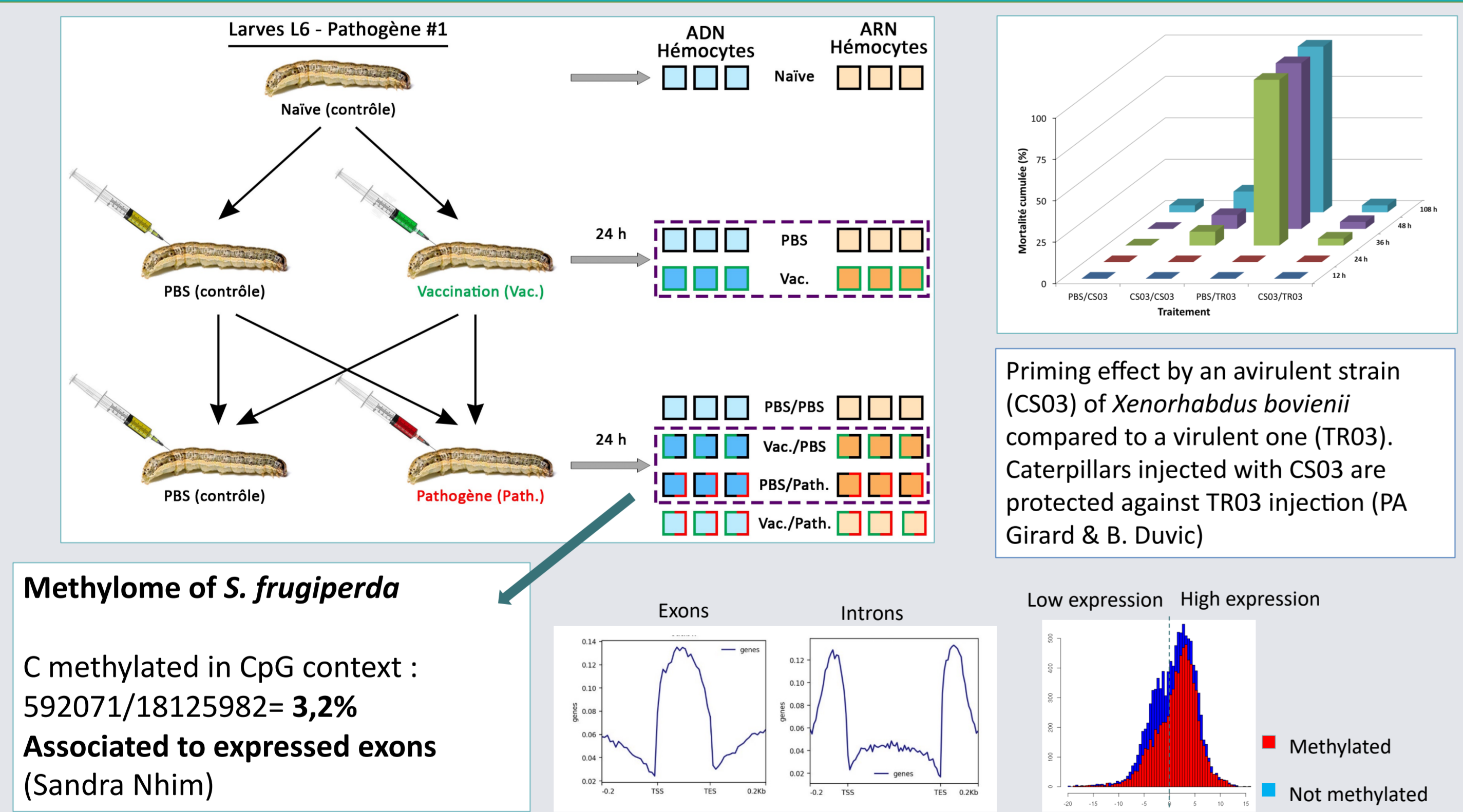
- Legeai et al. 2014: Establishment and analysis of a reference transcriptome for *Spodoptera frugiperda*. *BMC Genomics*.
- Gouin et al. 2017: Two genomes of highly polyphagous lepidopteran pests (*Spodoptera frugiperda*, Noctuidae) with different host-plant ranges. *Scientific Reports*

Immune response of *Spodoptera frugiperda* against micro or macropathogens

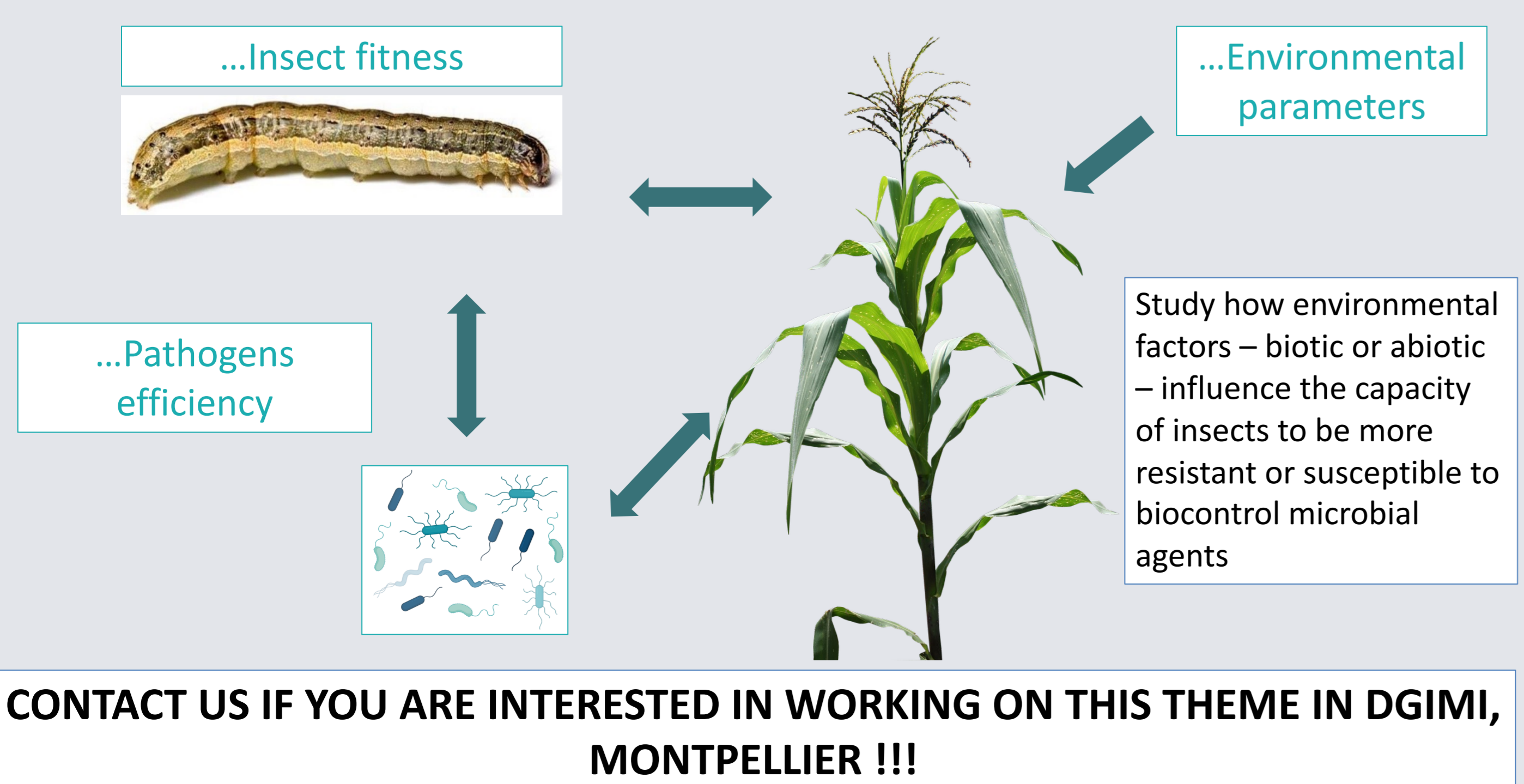


Towards a **Systems biology of biotic interactions** by combining:
 => **transcriptomic studies** : Huot et al 2019, Huot et al. 2020, Orsucci et al. 2022, Pigeyre et al. 2019
 => **epigenomic studies** : Moné et al. 2018, Gimenez et al. 2020, Nhim et al. 2022
 And their integration on the **BIPAA platform** (<https://bipaa.genouest.org/is/lepidodb/>)

Epiprime: epigenetics basis of priming



Towards an eco-immunology approach: variations in...

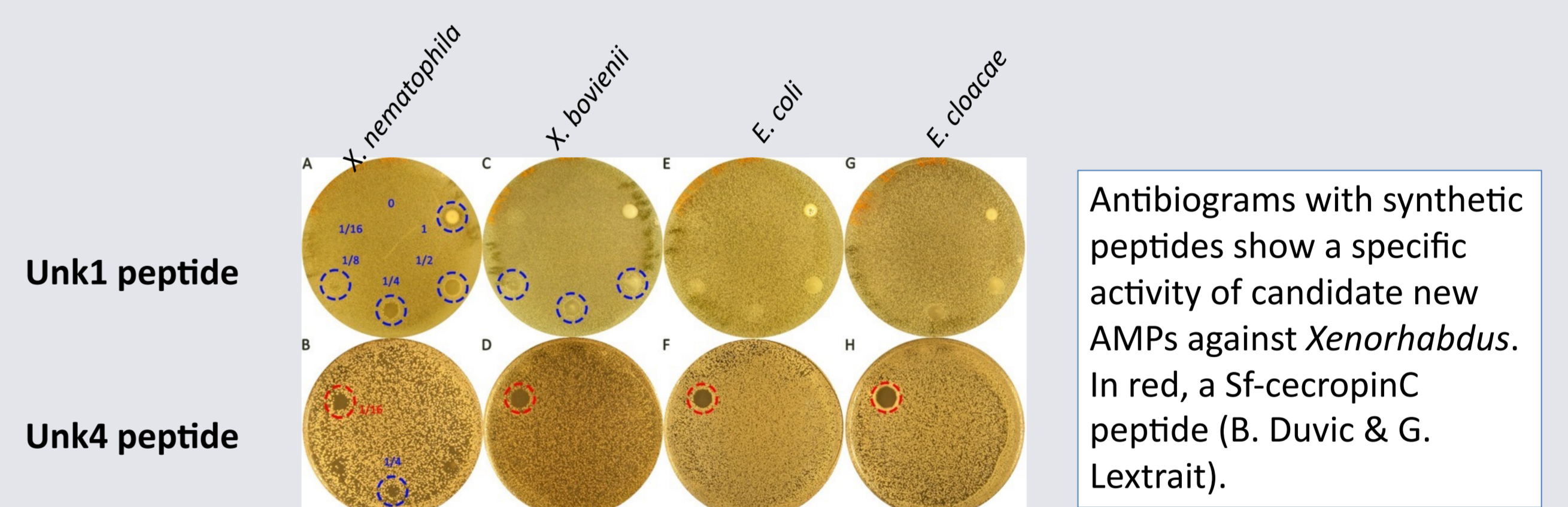
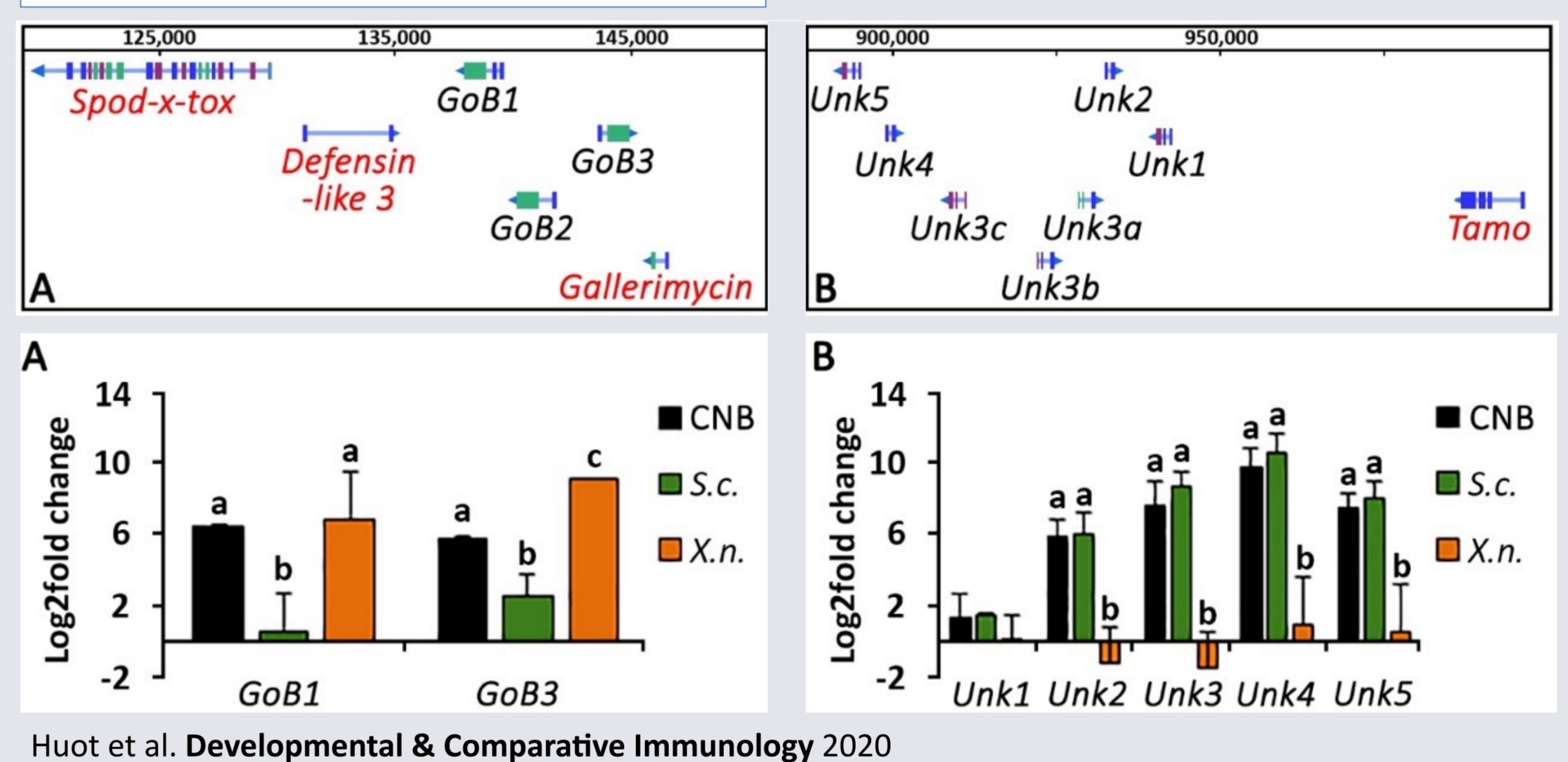


Functional genomics of Lepidoptera specific immune genes

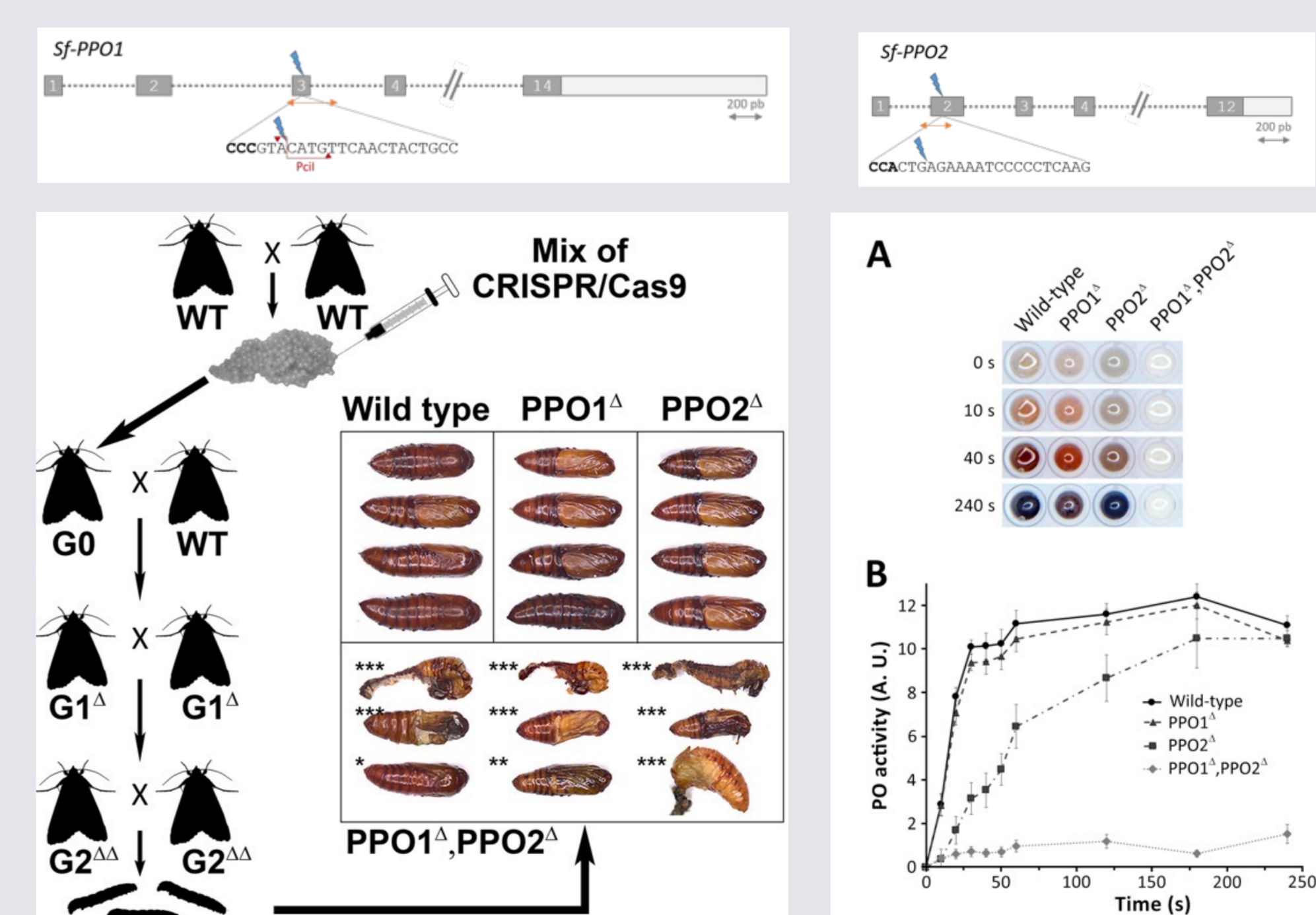
A. New effectors

Gene cluster 1 (GoB) : 3 paralogous genes within the defensin locus, found only in Lepidoptera and in... Bacteria (HGT). respond to bacteria, not nematode.

Gene cluster 2 (Unk) : short transcripts, with peptide signals. Noctuid specific. Respond to nematode not bacteria.



B. Prophenoloxidases CRISPR mutants



Conclusion: Gene Regulation and Immunity of Lepidoptera

Establishment of genomic and functional genomics resource of immune genes in *Spodoptera frugiperda*
Current research 1: Characterization of Lepidoptera specific effectors
Current research 2: Epigenomics basis of regulation during priming
To hire: a researcher in Eco-Immunology