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Evolutionary genomics of the immune response against parasitoids in *Drosophila*

by

Laura Salazar Jaramillo

1) The parasitoid resistance mechanism of melanotic encapsulation found in *D. melanogaster* evolved in a subgroup of *Drosophila* species and involves duplicated genes, as well as the differentiation of hemocytes into a new type of blood cell (This thesis, Chapter 2)

2) Within-species variation in resistance against parasitoids results from the modulation of the immune response by changing the number of circulating hemocytes and the differential expression of transcript isoforms. (This thesis, Chapter 3 and Chapter 4).

3) The specialization of *Drosophila sechellia* on noni fruit may have protected it from attack by parasitoid wasps, resulting in the loss of its ability to encapsulate parasitoid eggs (This thesis, Chapter 5).

4) Working with a model organism can be both a blessing and a curse: a broad range of tools are available for functional characterization, but this also increases the burden of proof.

5) Redundancy creates evolutionary innovations, while natural selection merely modifies (Susumu Ohno, 1970¹). Accordingly, knock-down functionality can mostly assess essentiality, while functional redundancy may be more fundamental for evolvability

6) *Masterpieces are not single solitary births; they are the outcome of many years of thinking in common, of thinking by the body of the people, so the experience of the mass is behind the single voice* (Virginia Woolf²)

7) *Science is not a heartless pursuit of objective information; it is a creative human activity its geniuses acting more as artists than as information processors* (Stephen Jay Gould³)

8) The best way for scientists to contribute to the public interest is by ensuring that their work is freely available for any purpose in any place of the world.

1 Susumu Ohno (1970). *Evolution by gene duplication*. Springer-Verlag

2 Virginia Woolf (1989). *A room of one's own*. Harcourt Brace & Co.

3 Stephen Jay Gould (1979). *Ever since Darwin: Reflections in Natural History*. W. W. Norton & Company