

Personality traits in fish : focus on the Mangrove rivulus

Pollutants

T°

Salinity

How animal cope with new environmental conditions?



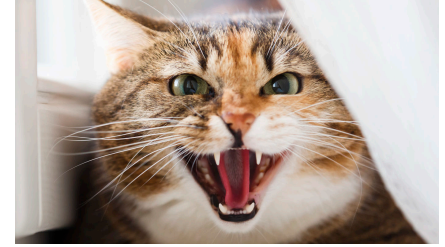
Different level of biological organization

Physiological
Biochemical
Behavioral
Molecular

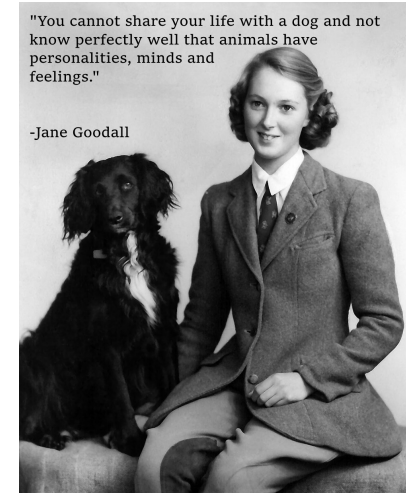
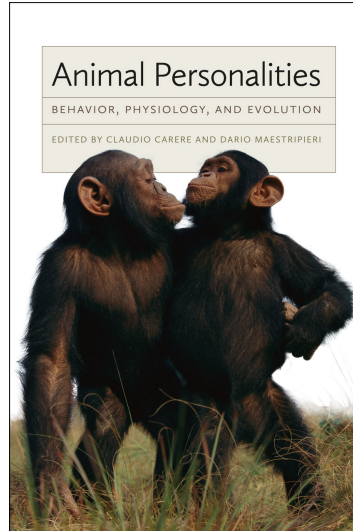
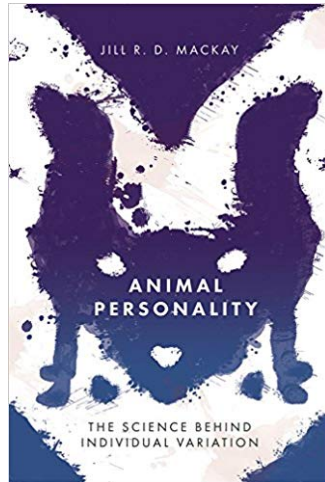


What creates your personality and how environment affects it?





What creates your personality and how environment affects it?



What's a behavior ?

« All movements, postures, vocalizations and body demonstrations
that can be observed in animals »



(Bovet, D -)

« Behaviour mediates interaction between animal and its environment »

(Sih et al, 2010)

Organisms ability to behave appropriately → **survival in a changing environment**

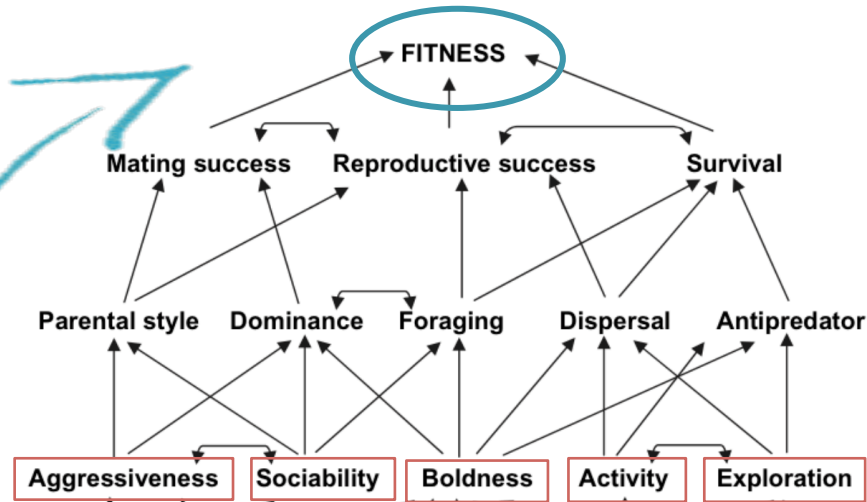


Particular behaviors → Personality traits

Consistent individual behavioral differences across time and context

Strongly influence:

- social relationship
- reproductive success
- food access
- survival



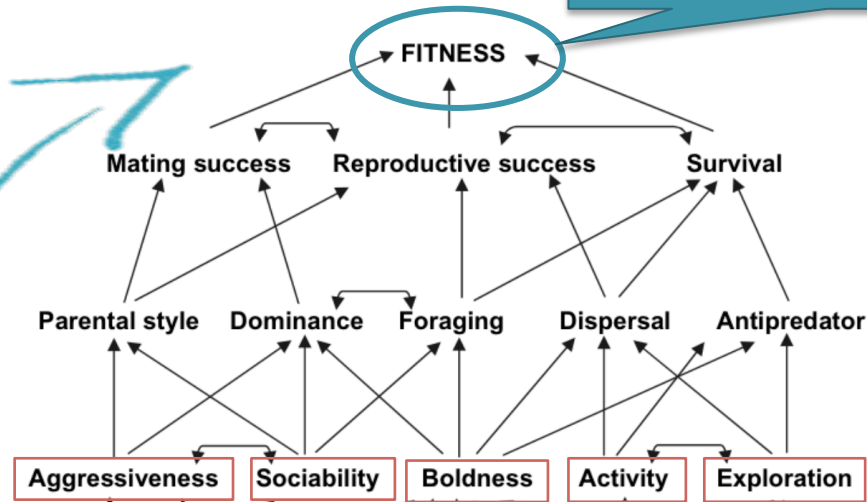
(Reale et al., 2007)

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Mangrove rivulus (*Kryptolebias marmoratus*)



© Frederic Silvestre



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Not a common fish...



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MALE



HERMAPHRODITE

NO FEMALE !



Mangrove rivulus (*Kryptolebias marmoratus*)



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NO FEMALE !

Androdioecy

Only vertebrate capable of
self-fertilization



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Live in very variable and harsh environment (O_2 , T° ,
salinity, ...)



Mangrove rivulus (*Kryptolebias marmoratus*)



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HERMAPHRODITE

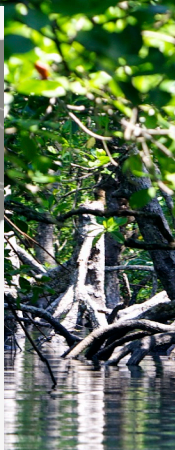
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Androdioecy

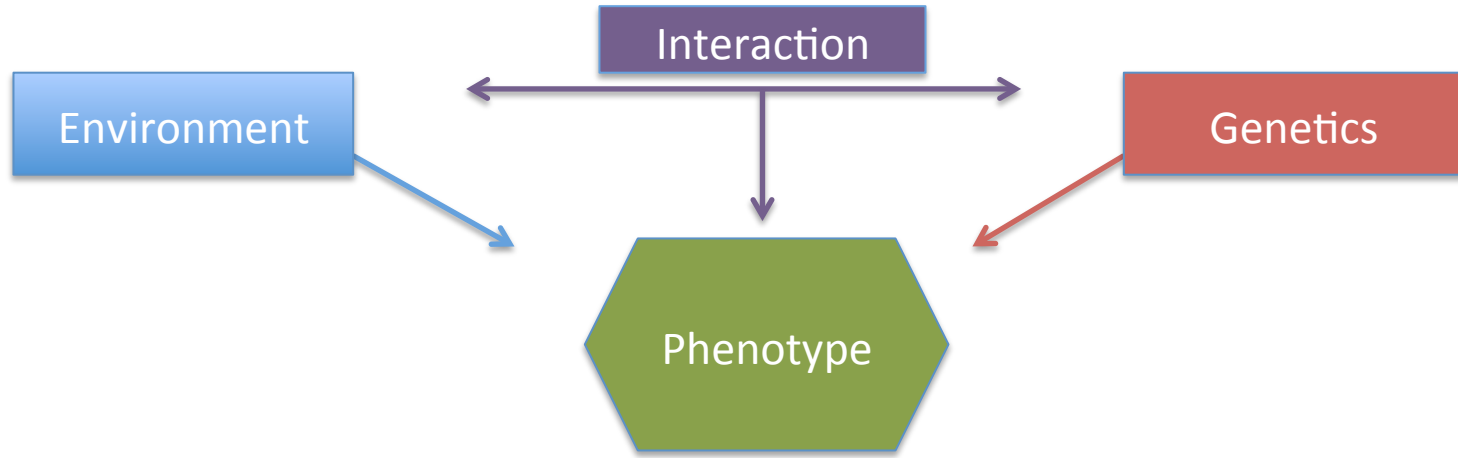
<https://www.youtube.com/watch?v=XUKeObOXpfU>

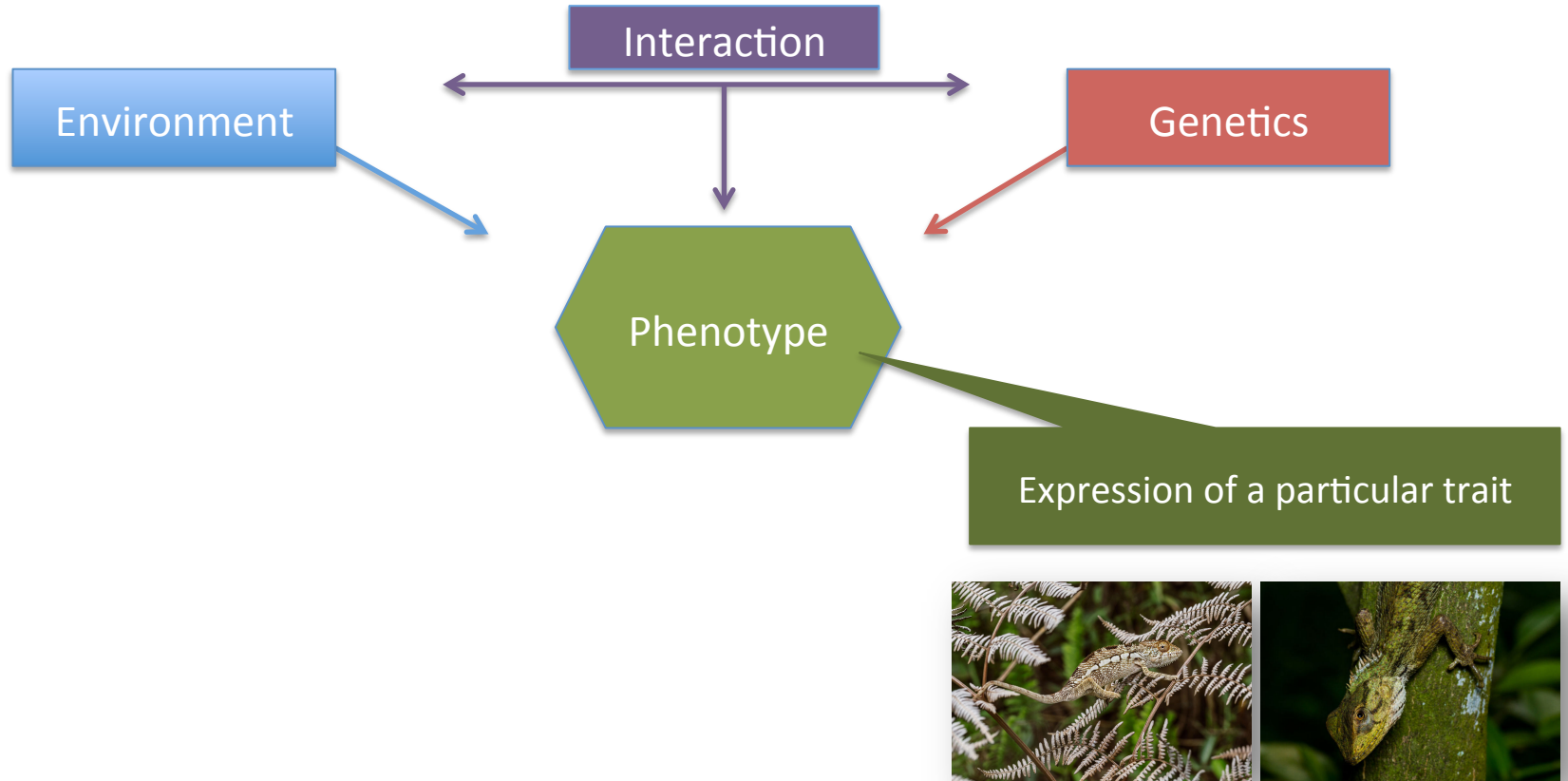


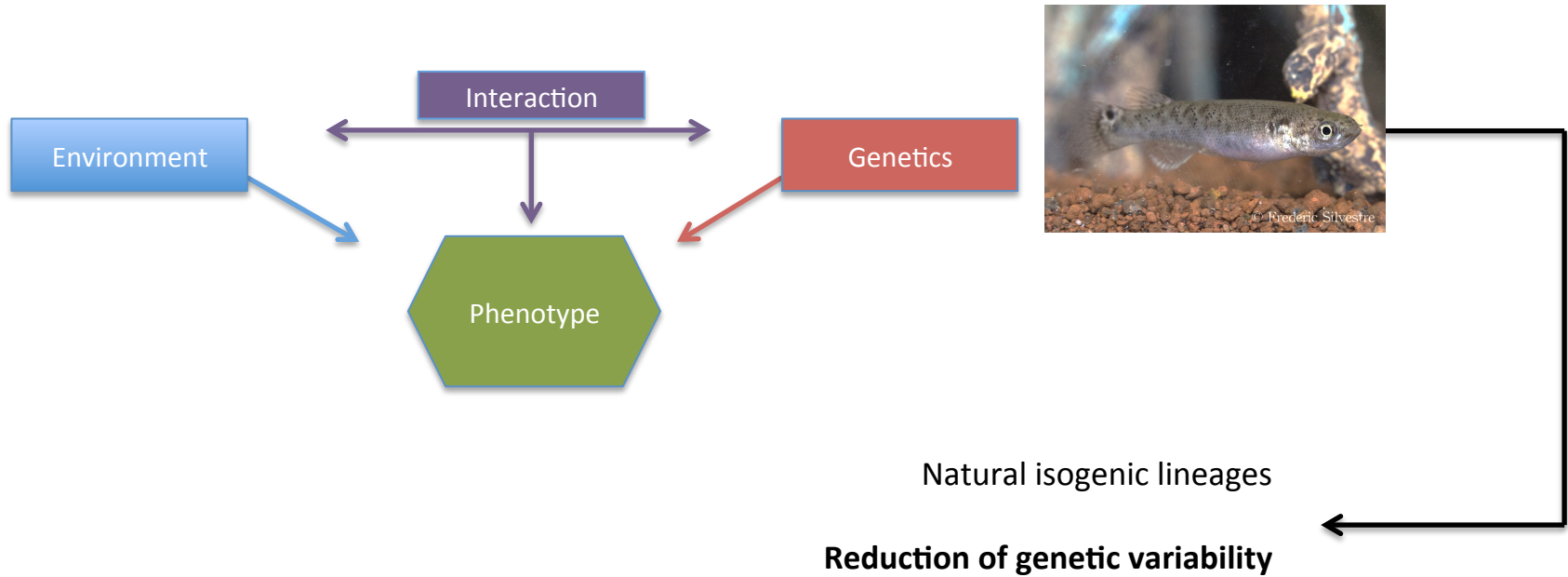
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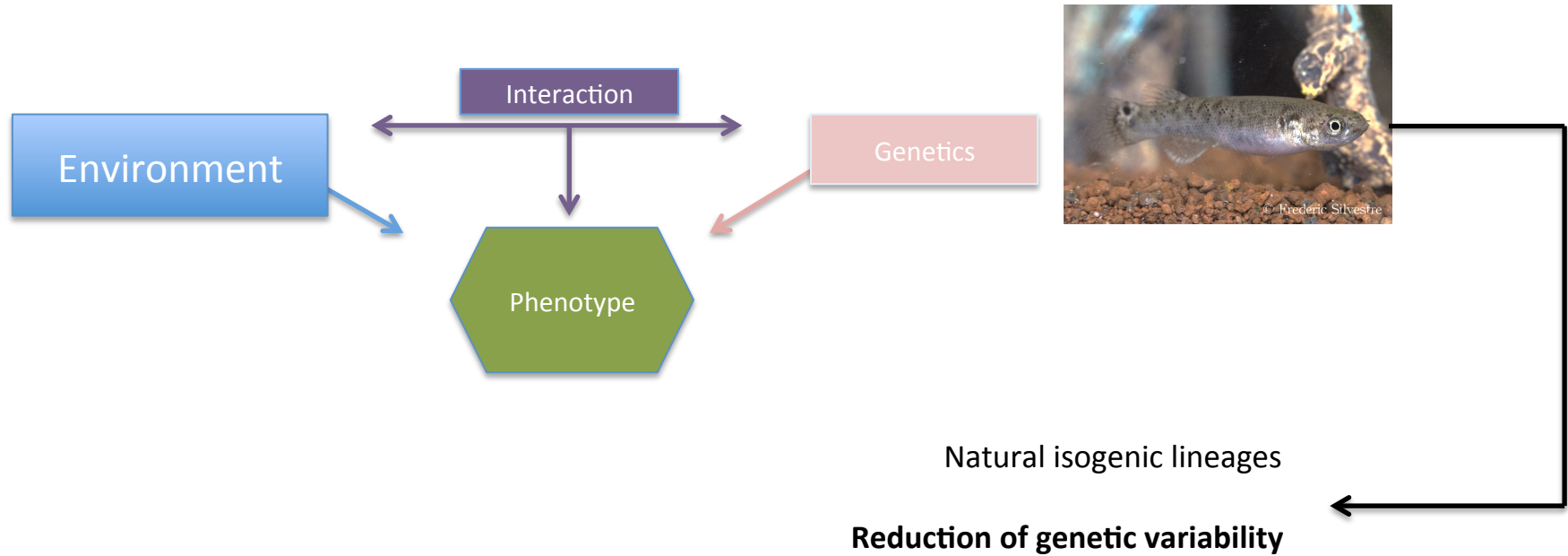
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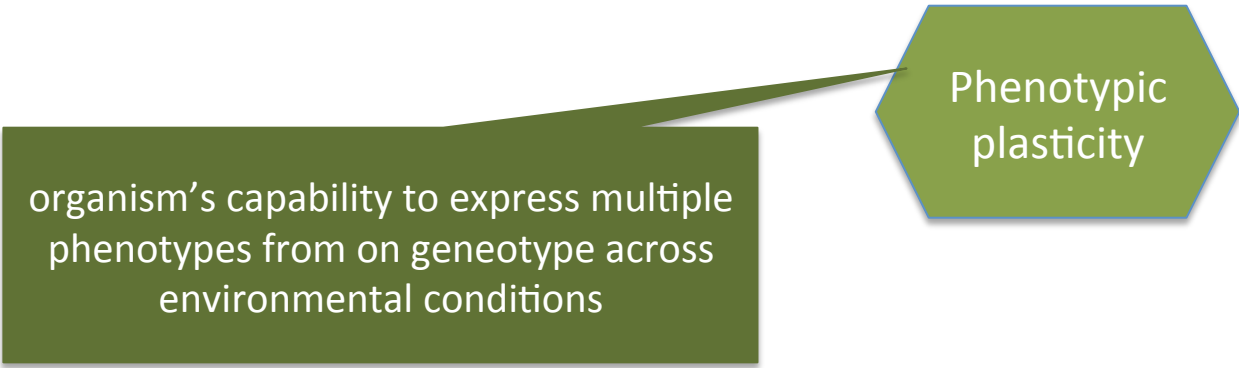












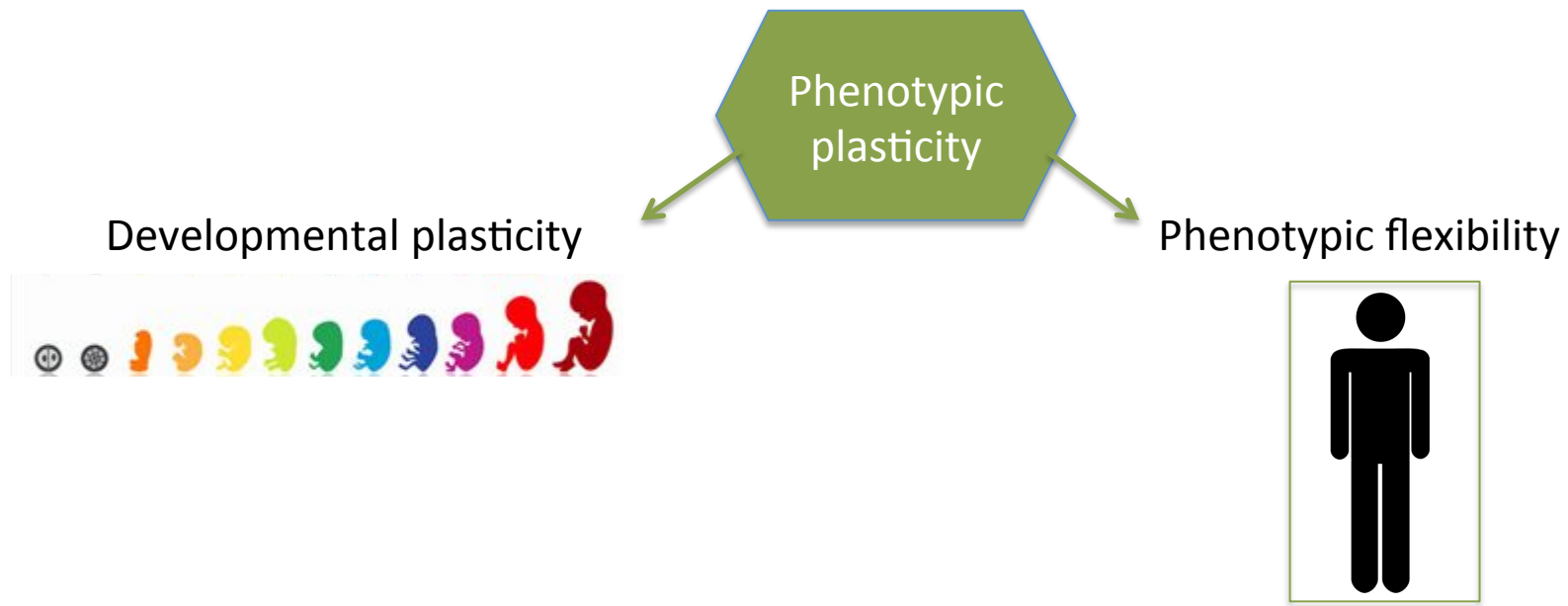
Phenotypic plasticity

organism's capability to express multiple phenotypes from on genotype across environmental conditions

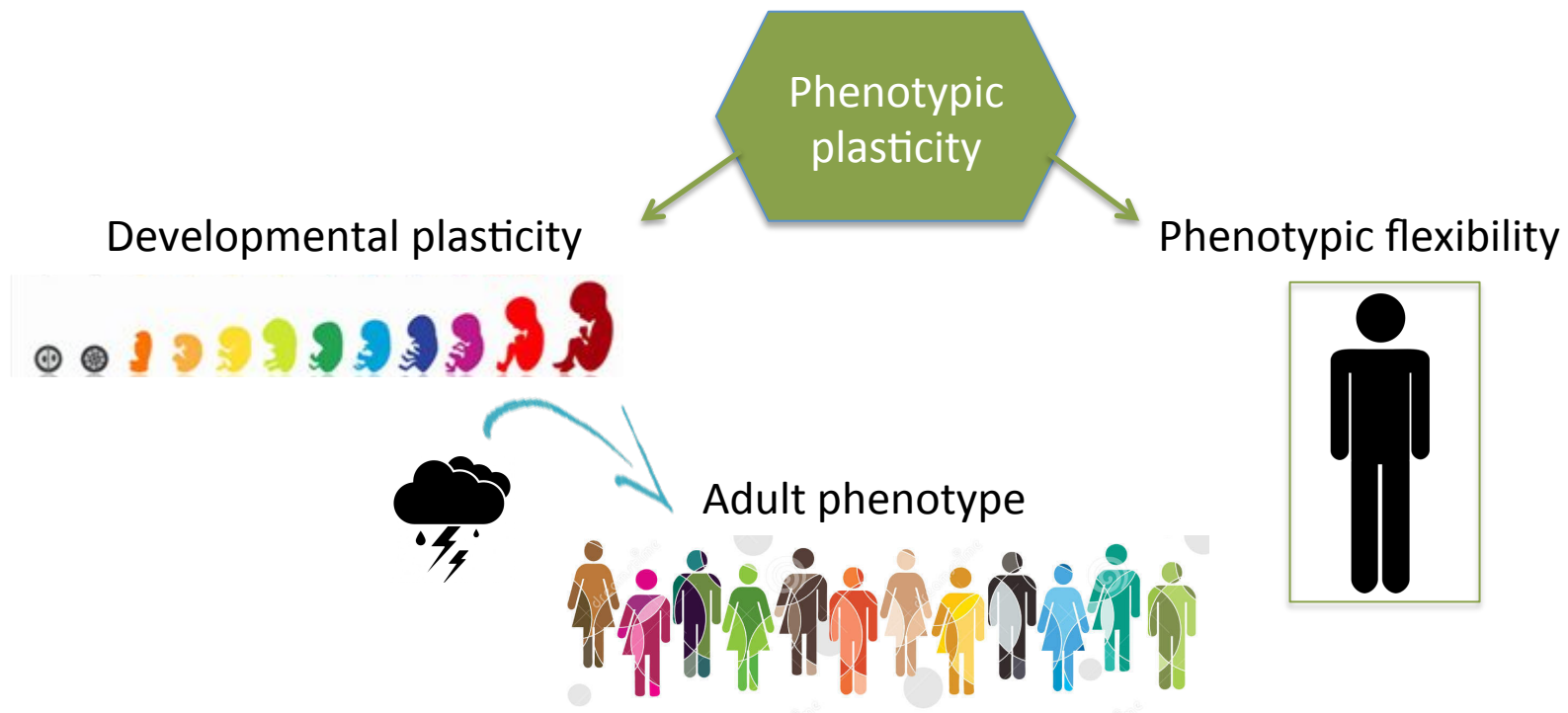
Phenotypic
plasticity

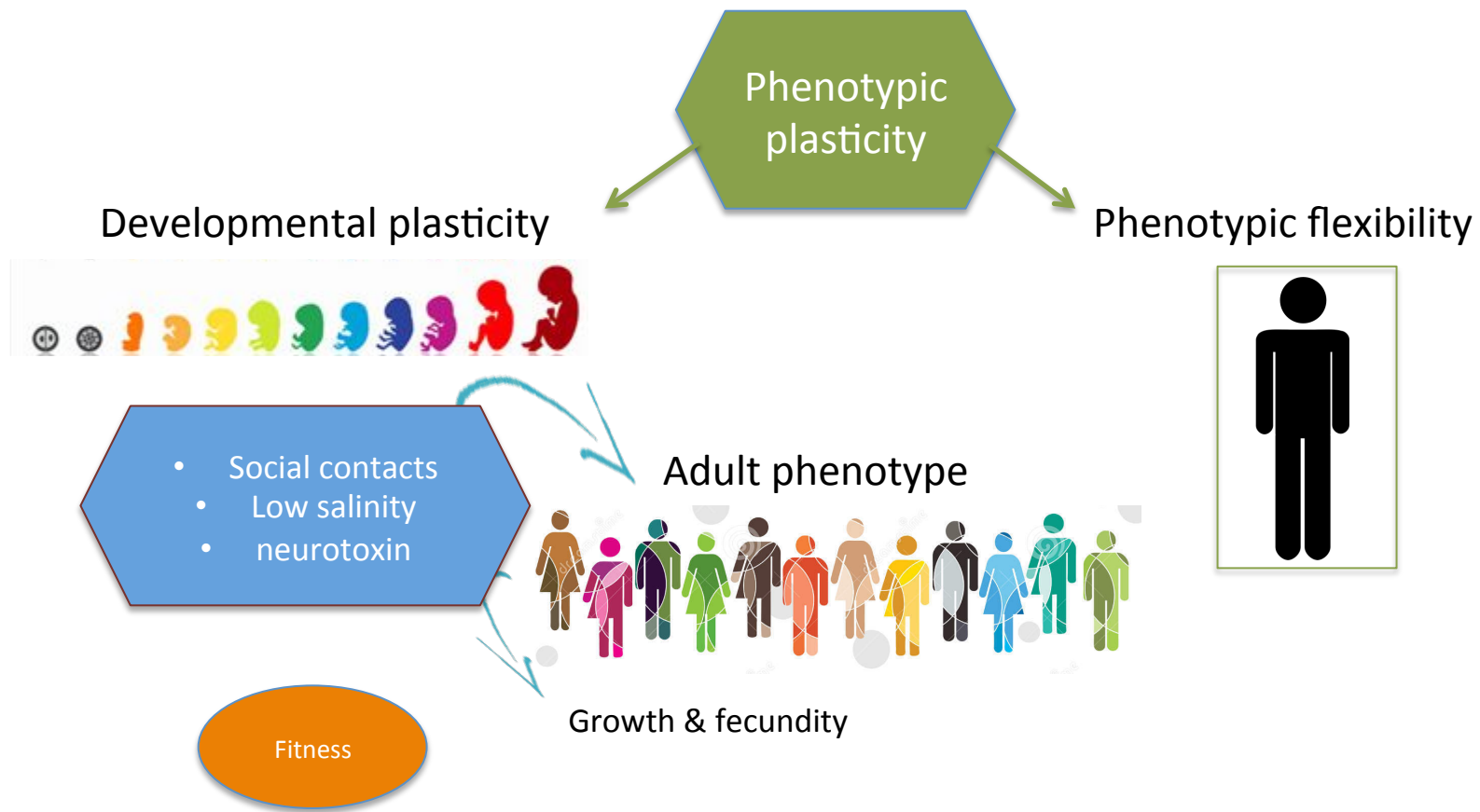
Developmental plasticity

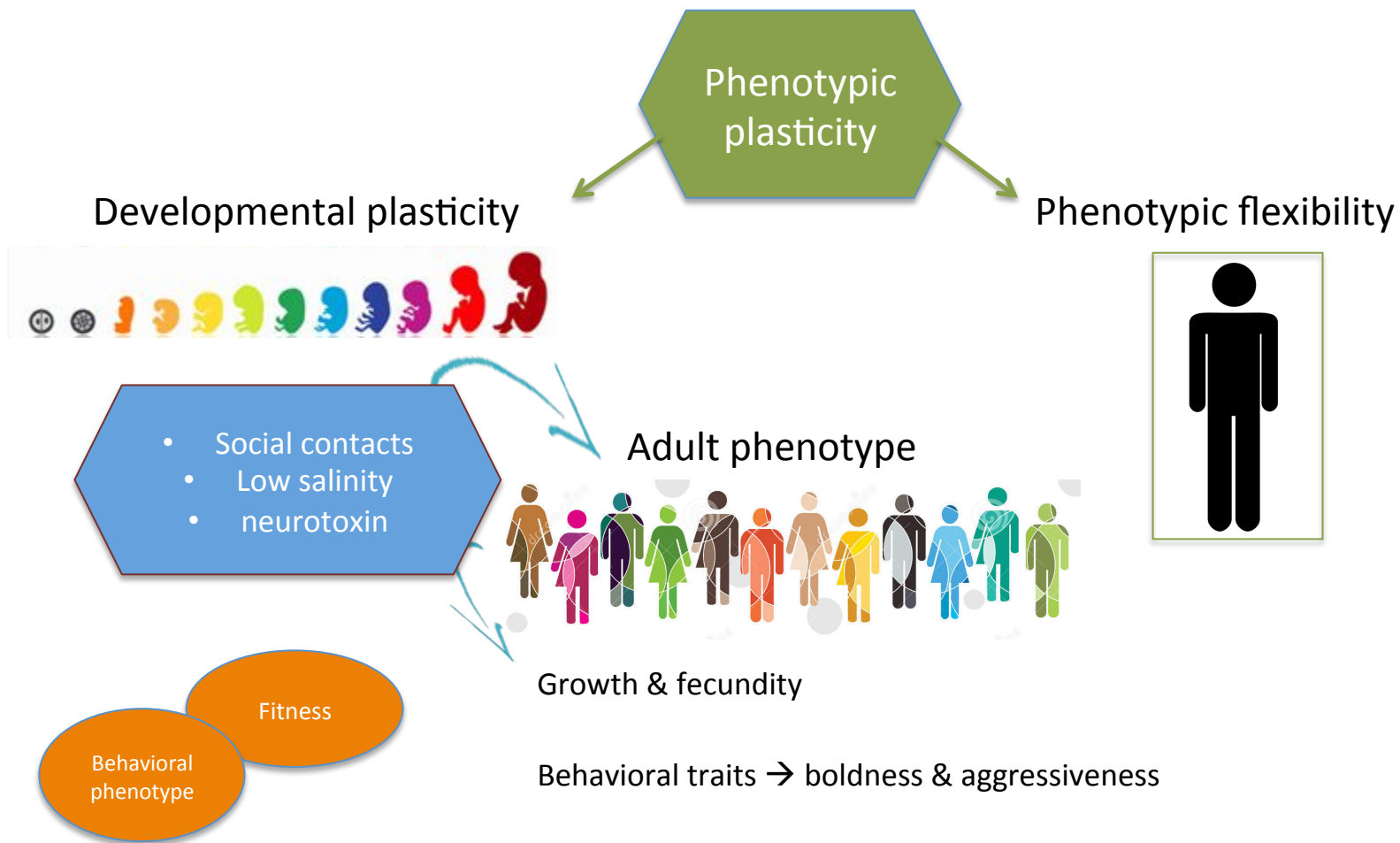


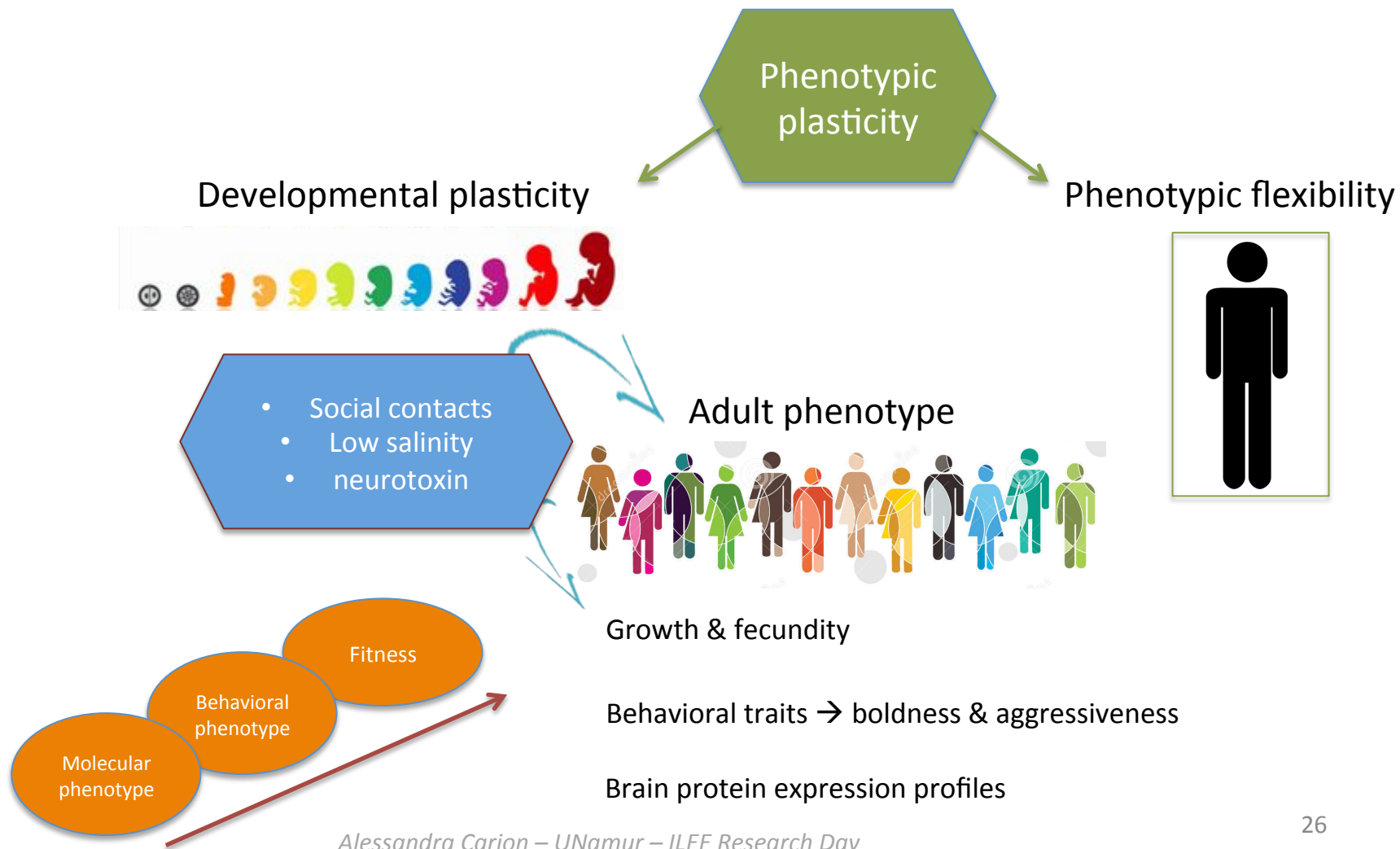


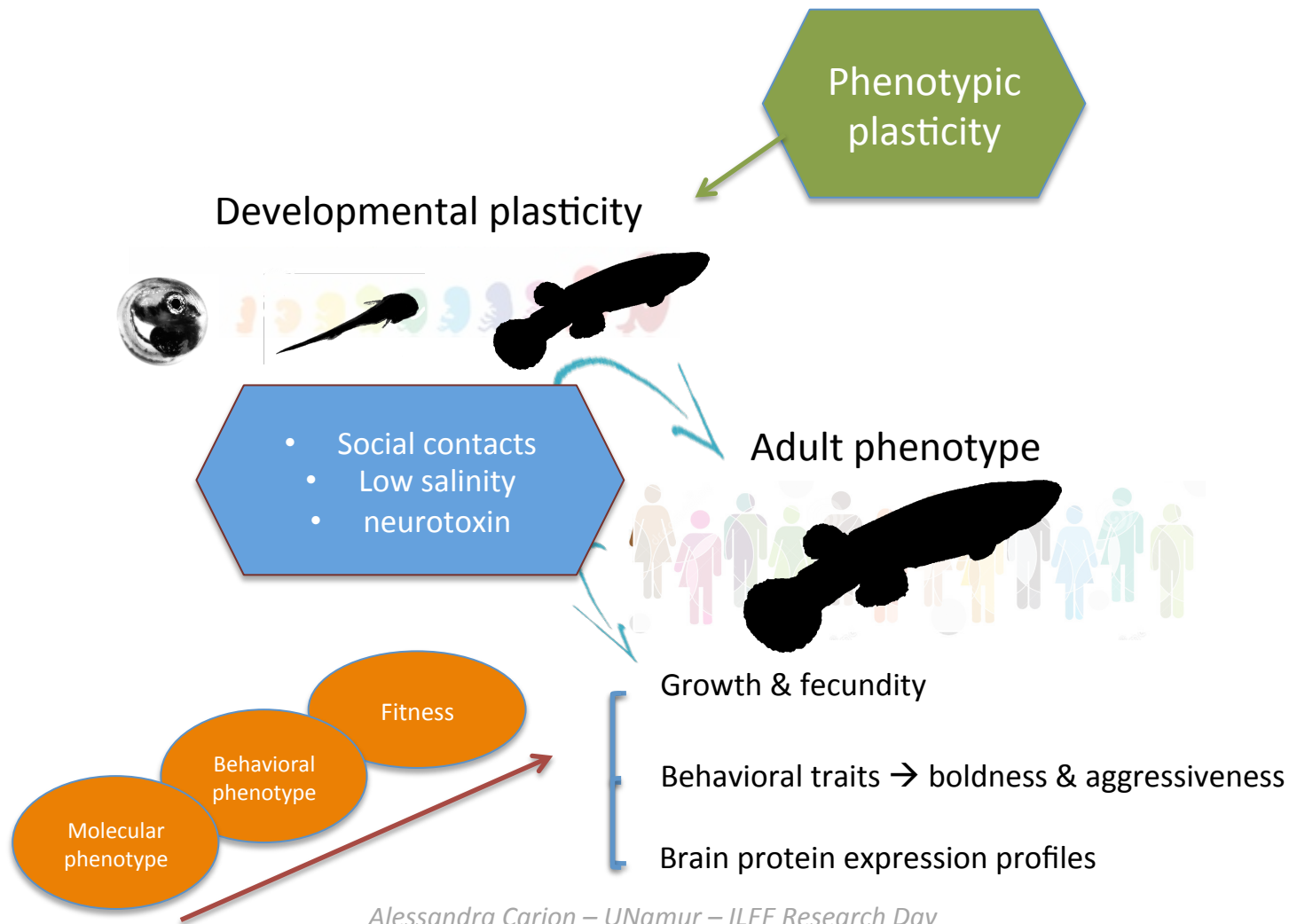
(Pigliucci et al., 2006)









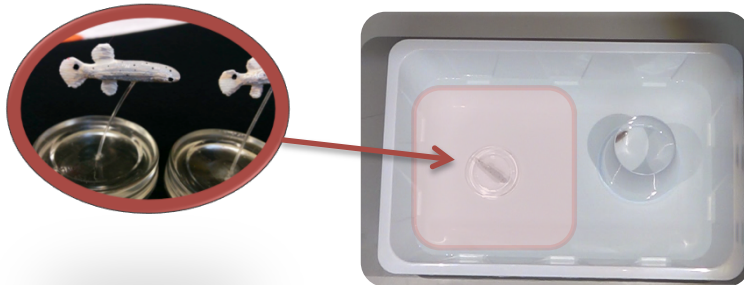


→ Behavioral analyses

Boldness



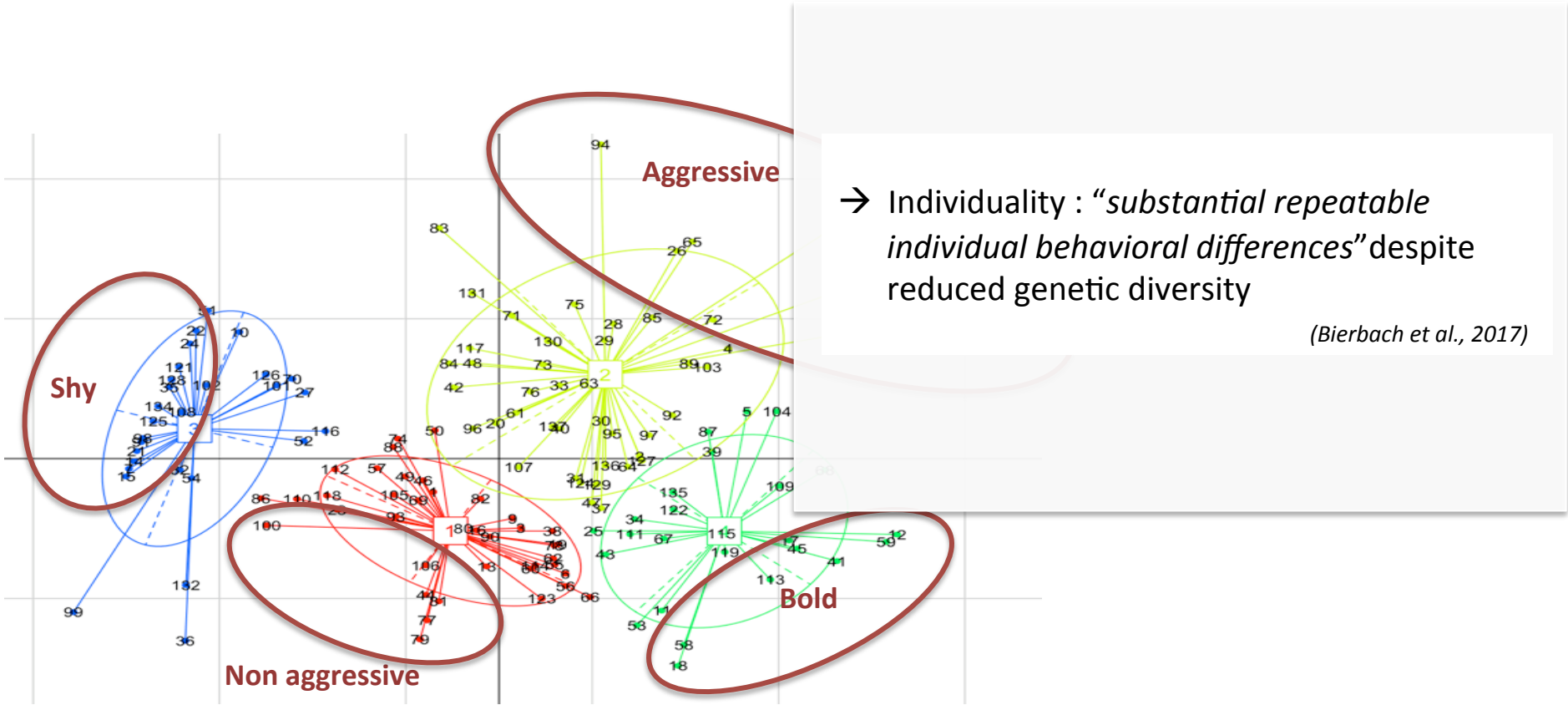
Aggressiveness

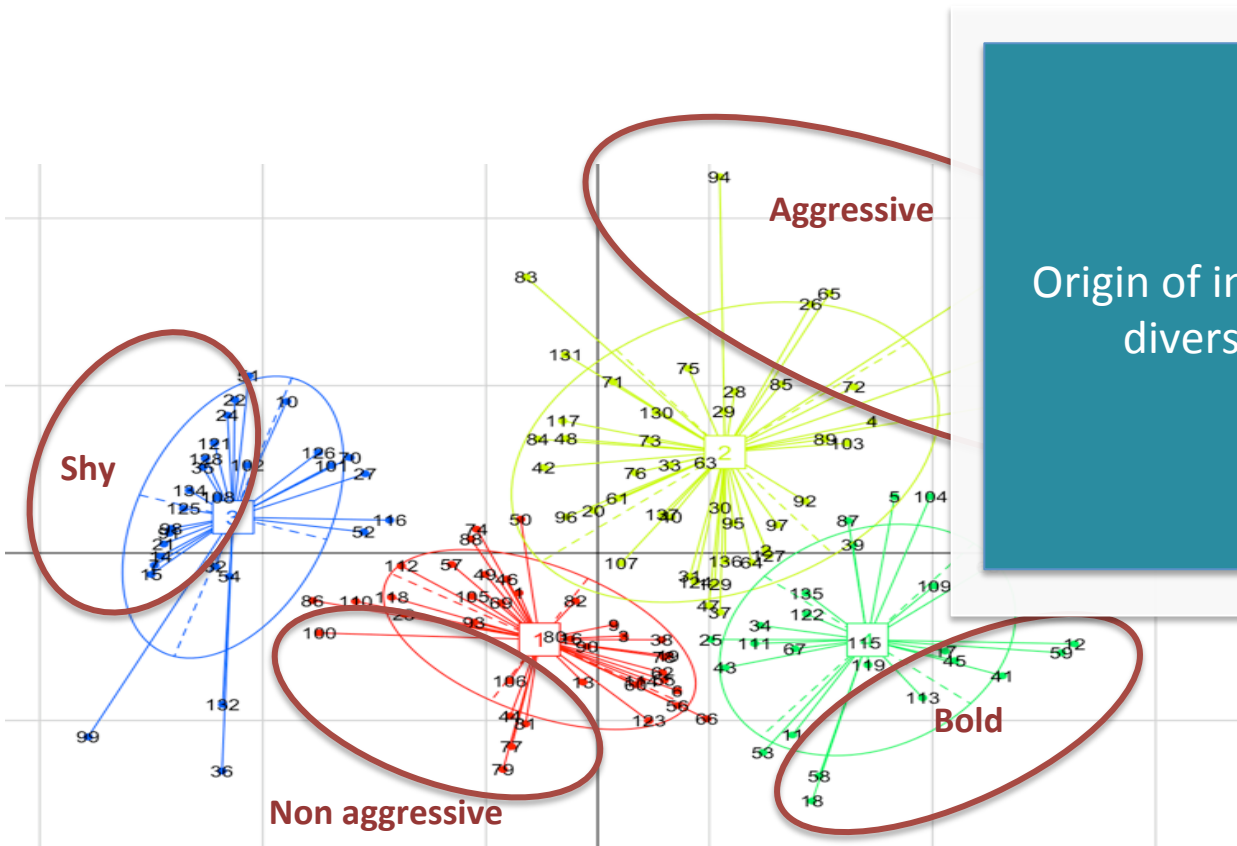


Ethovision analyses

- Total time inside shelter
- Latency to first entry in the arena

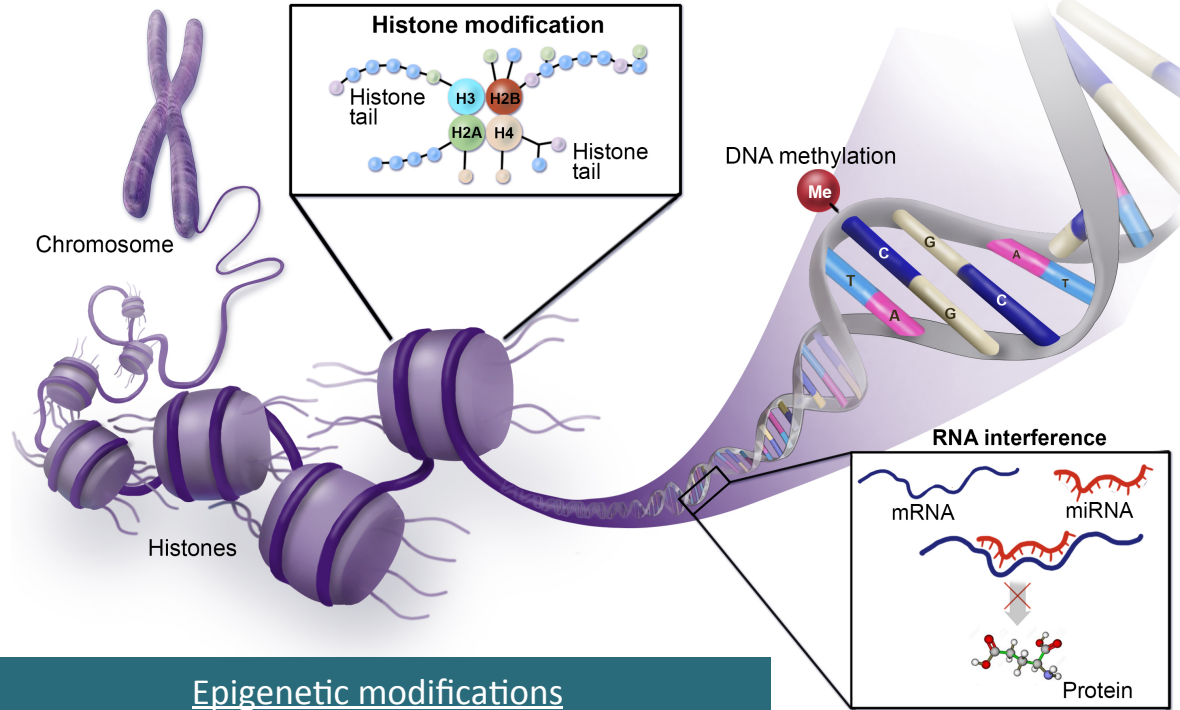
- Number of attack postures
- Number of bites
- Latency to first attack posture
- Latency to first bite





Origin of individuality when low genetic diversity between individuals?

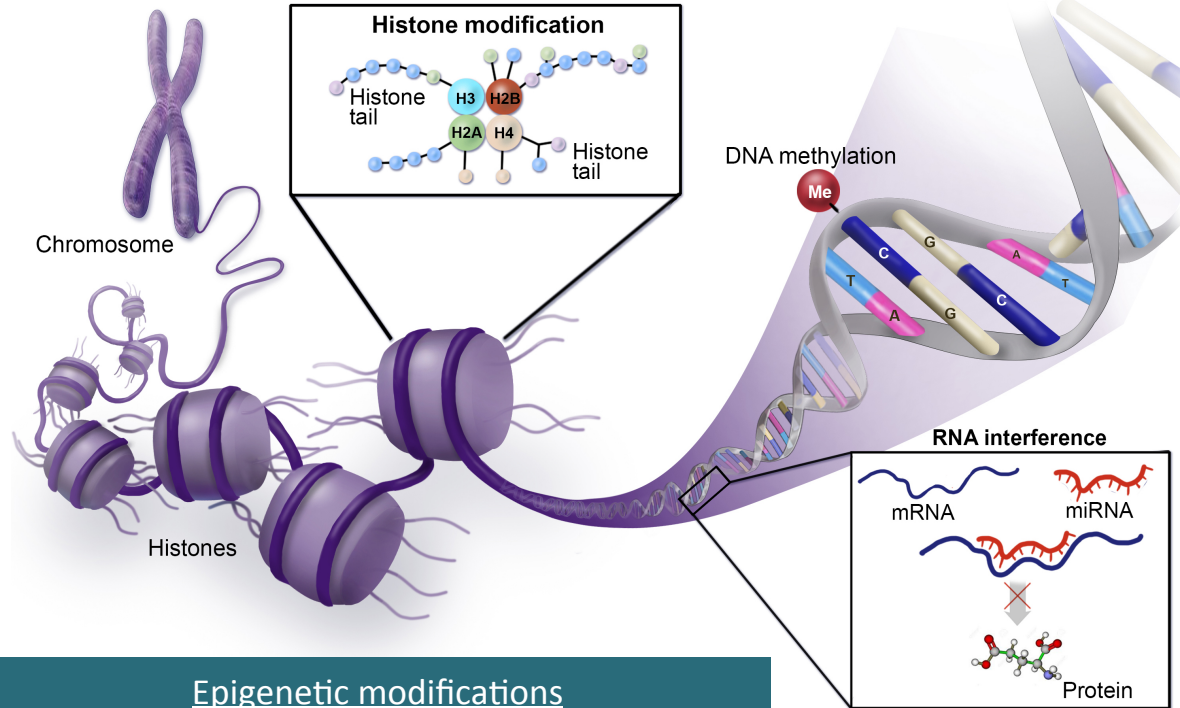
Origin of individuality when low genetic diversity between individuals?



Epigenetic modifications

Heritable changes in gene expression that do not involve changes to the underlying DNA sequence

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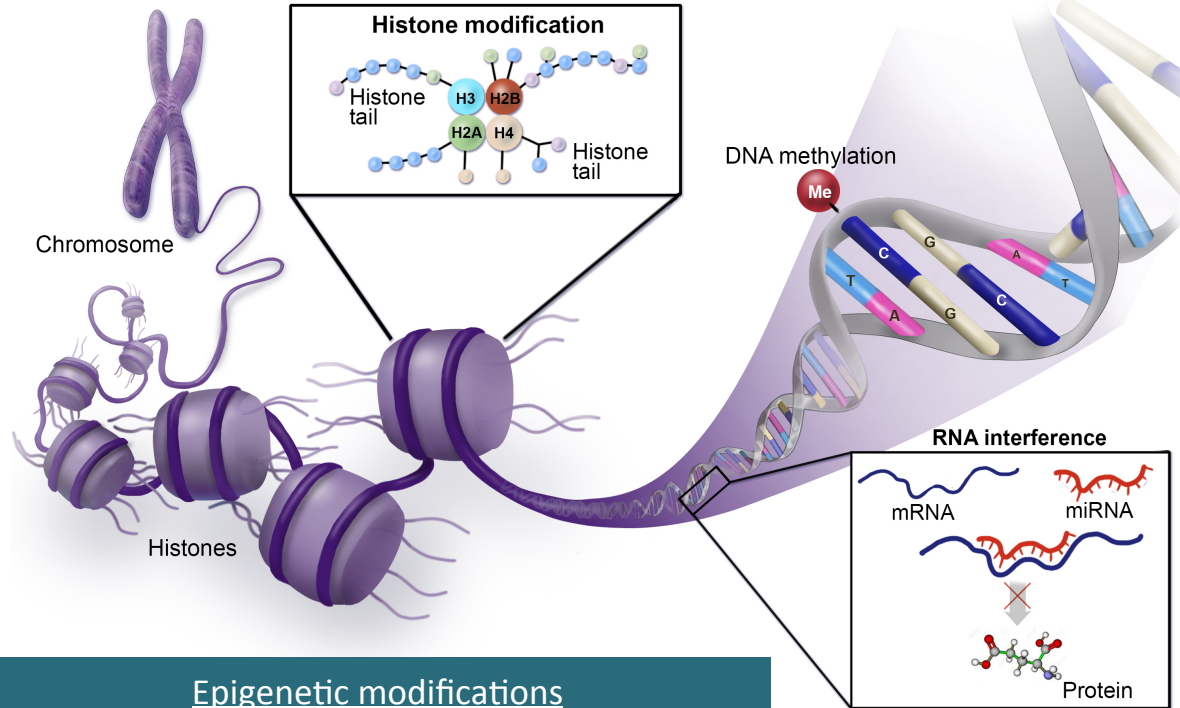


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www.hematology.org

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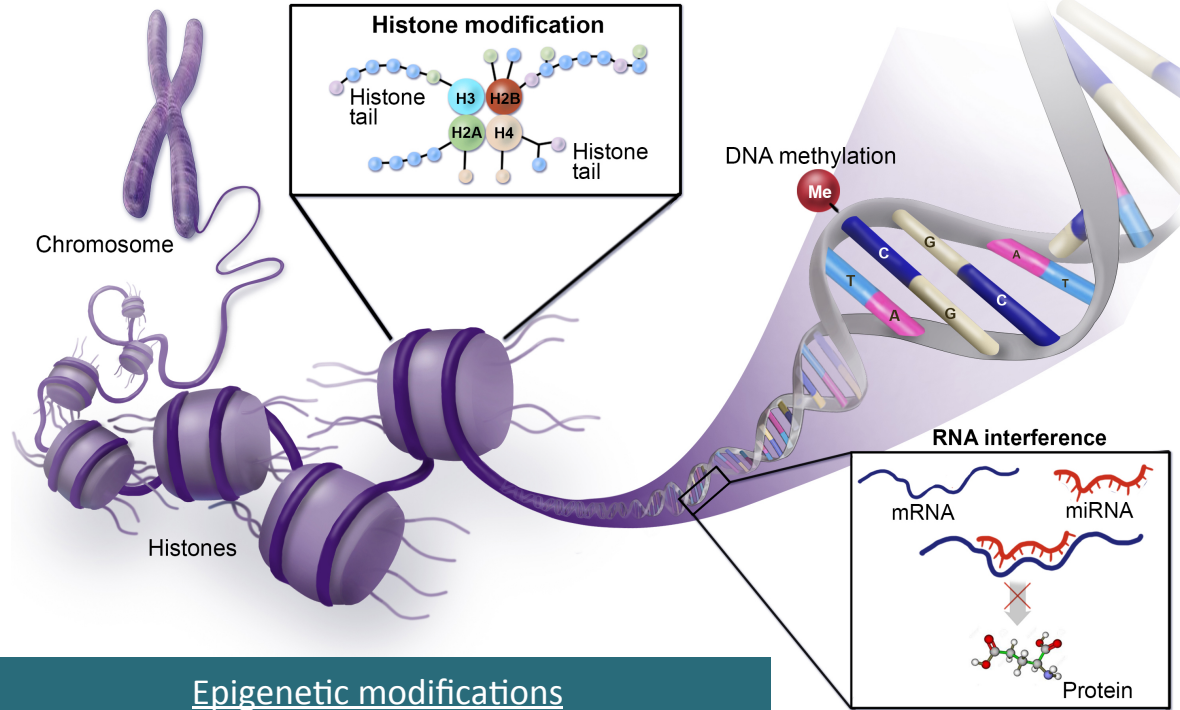


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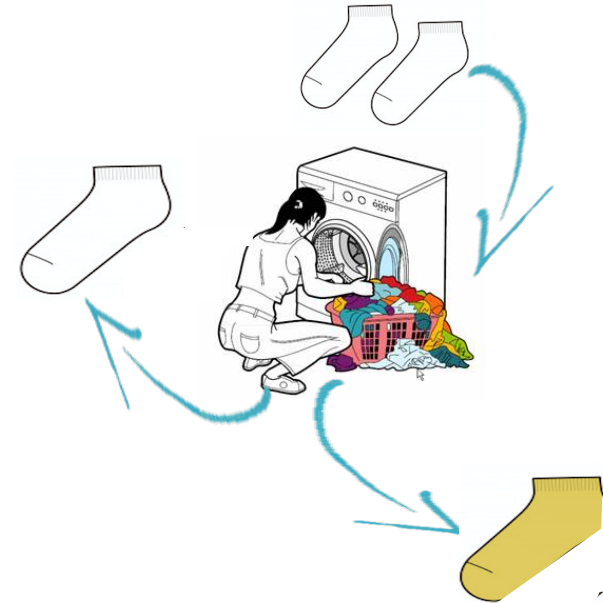
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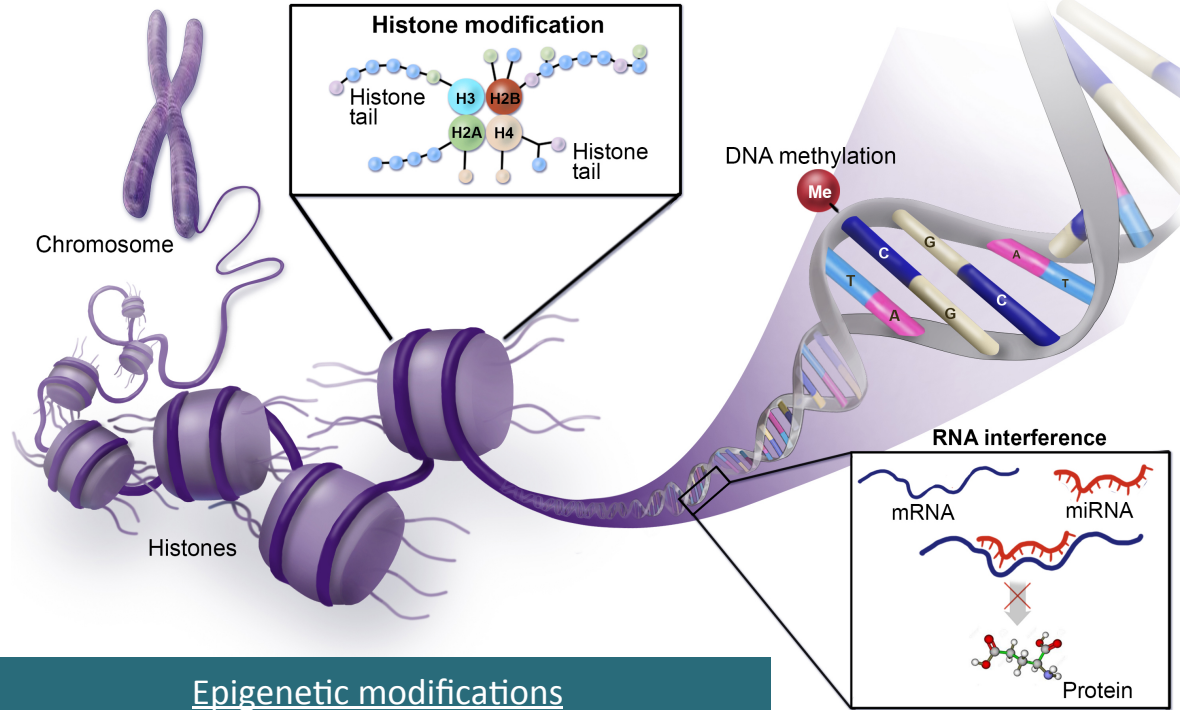


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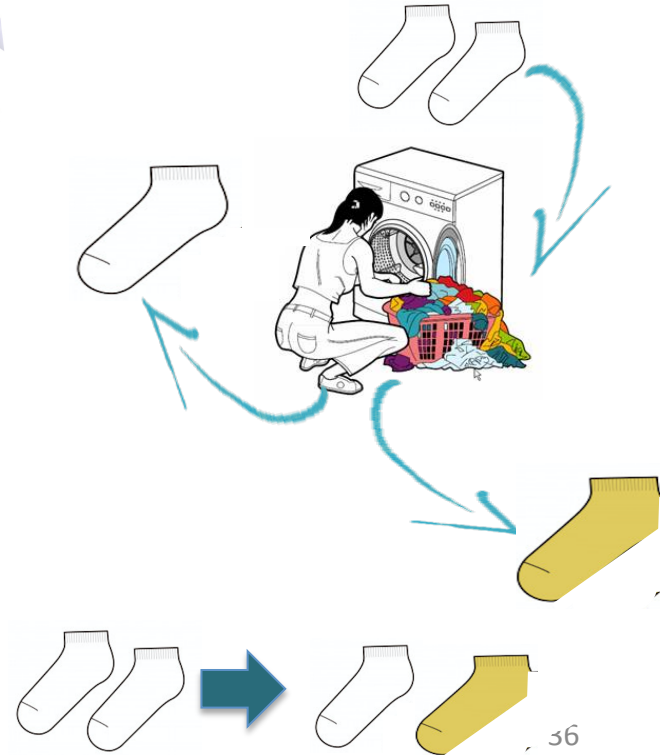
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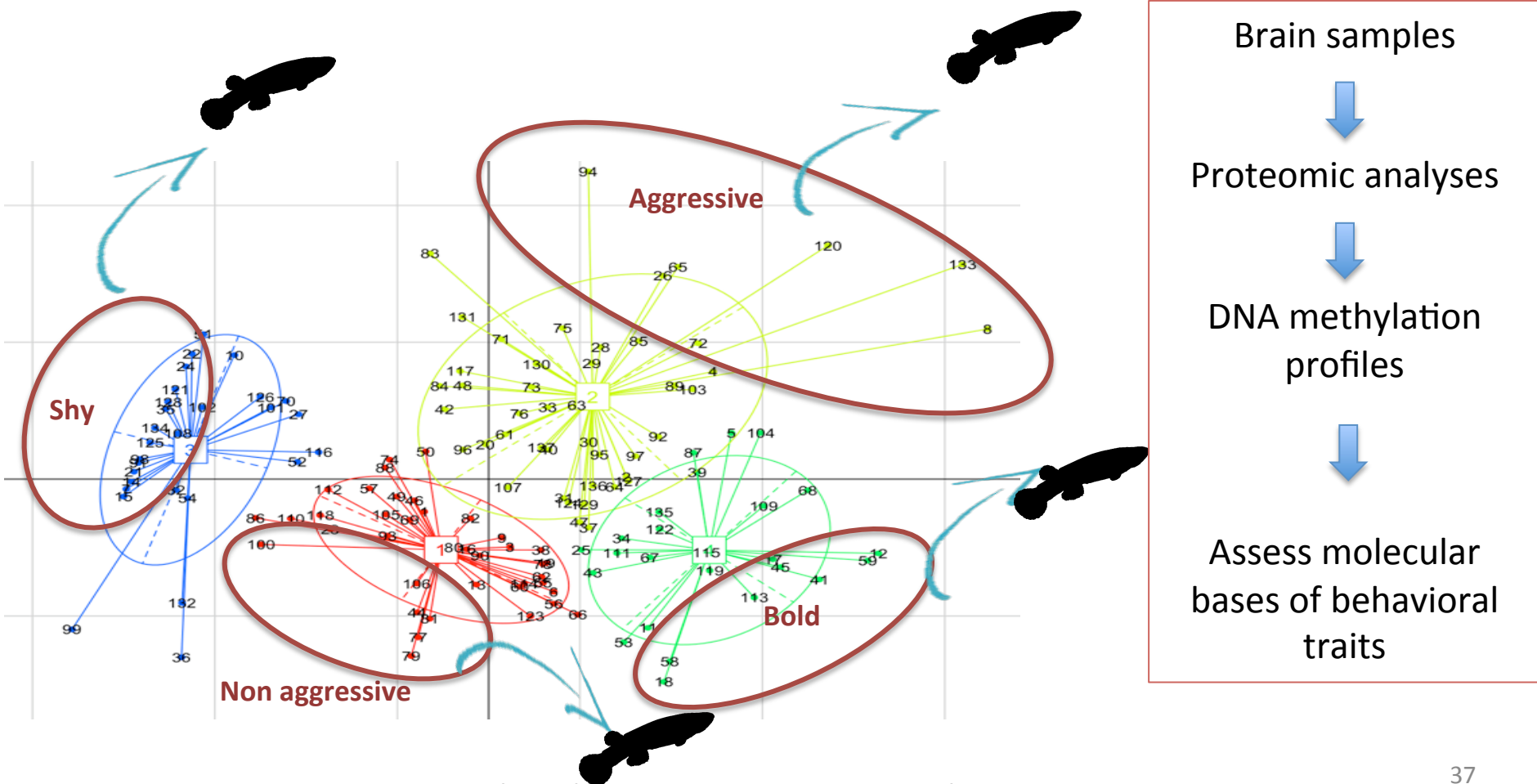


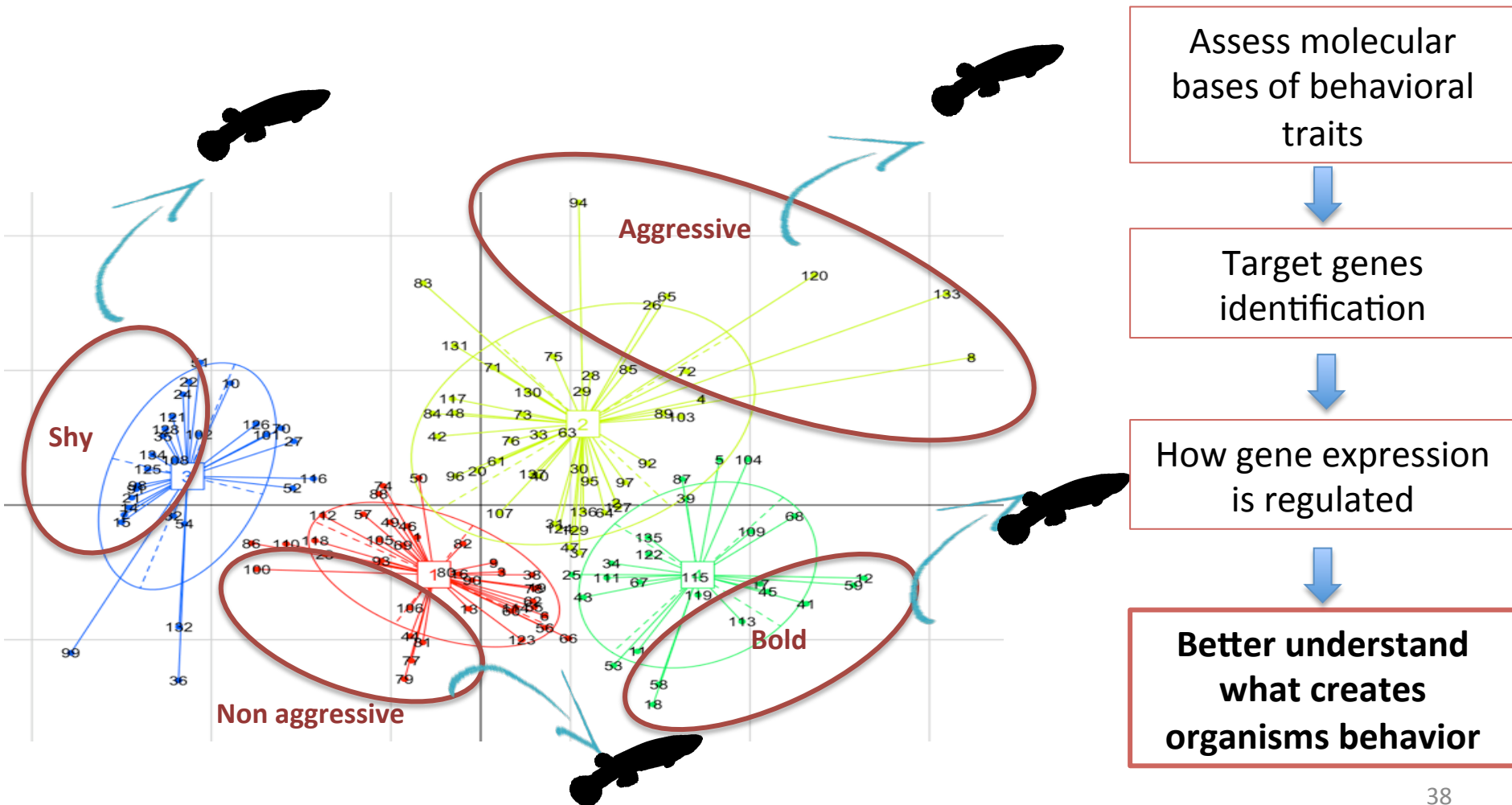
Epigenetic modifications

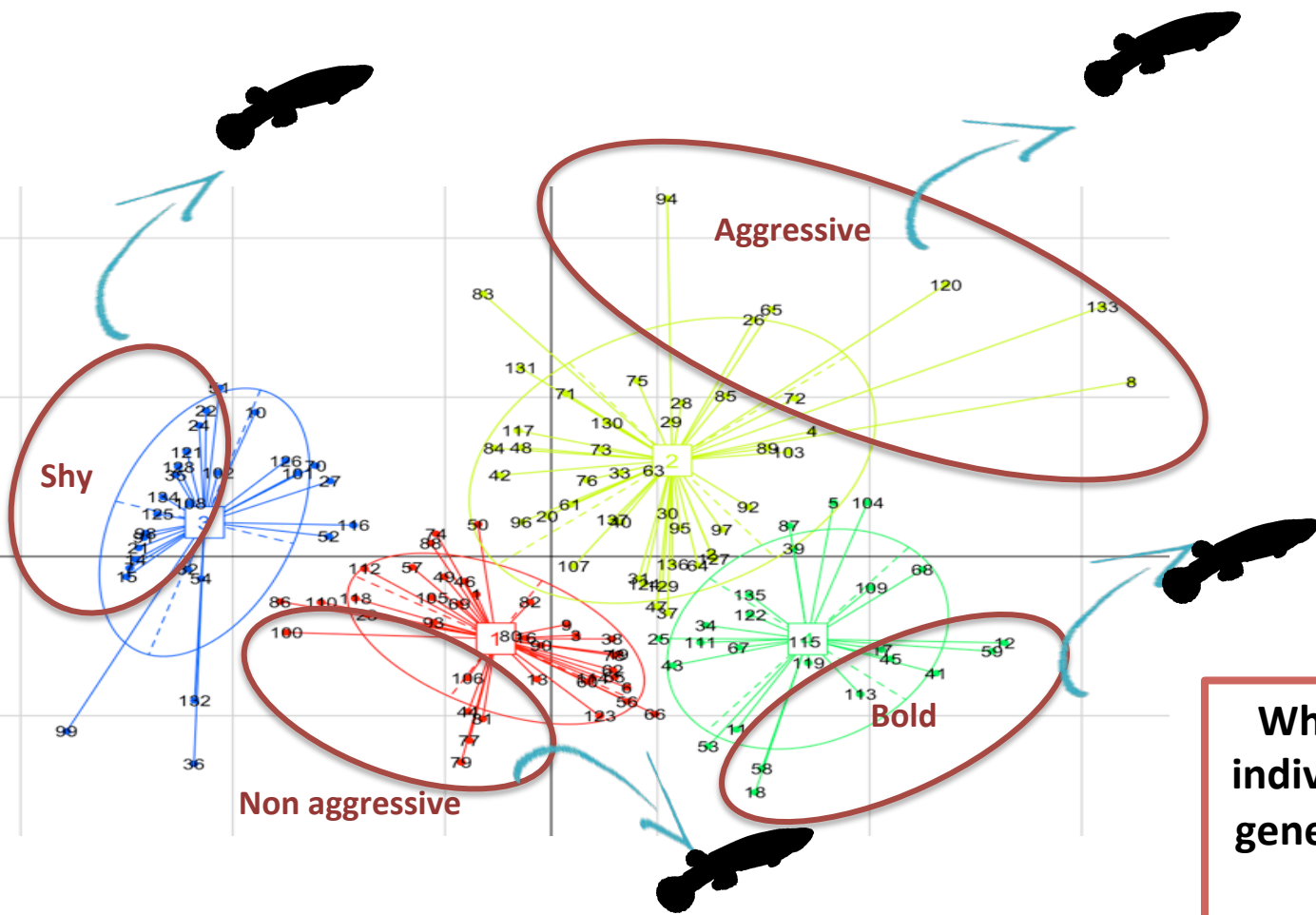
Heritable changes in gene expression that do not involve changes to the underlying DNA sequence

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Assess molecular
bases of behavioral
traits



Target genes
identification



How gene expression
is regulated



**What creates behavioral
individuality when reduced
genetic and environmental
influences??**

A close-up photograph of a fish's head, showing its eyes and the texture of its scales. The fish is looking directly at the camera. The background is a soft, out-of-focus orange-brown color.

Thank you

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