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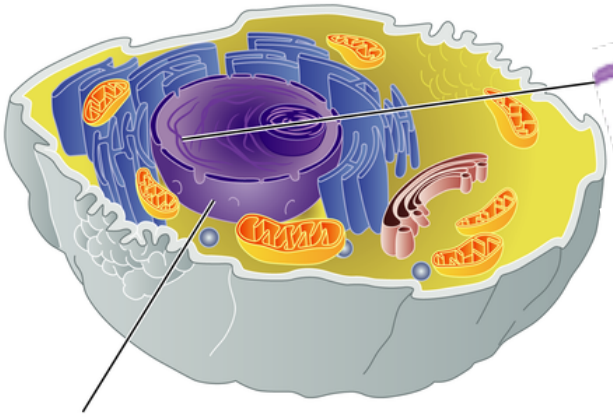
Unidad Irapuato

Regulación y topología del genoma

Parte II: Topología



núcleo

Parte I: Regulación

DNA

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…finales de 2002

¿Quieres ir a Paris
a hacer un proyecto
de epigenética?

epigenética

?

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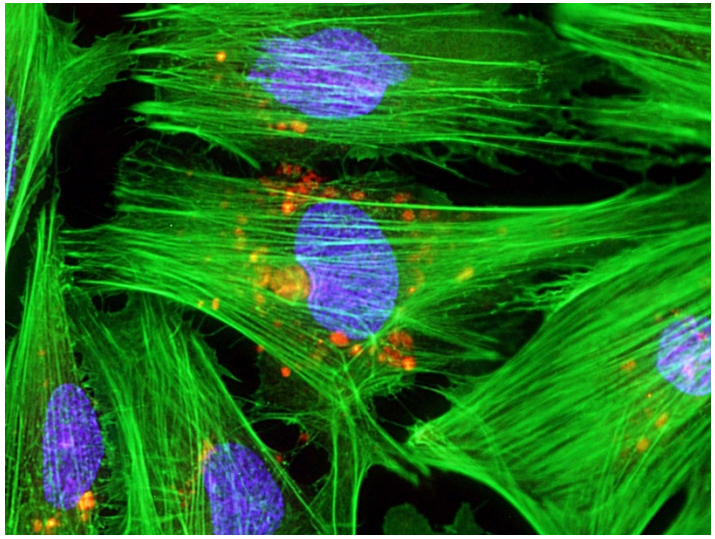
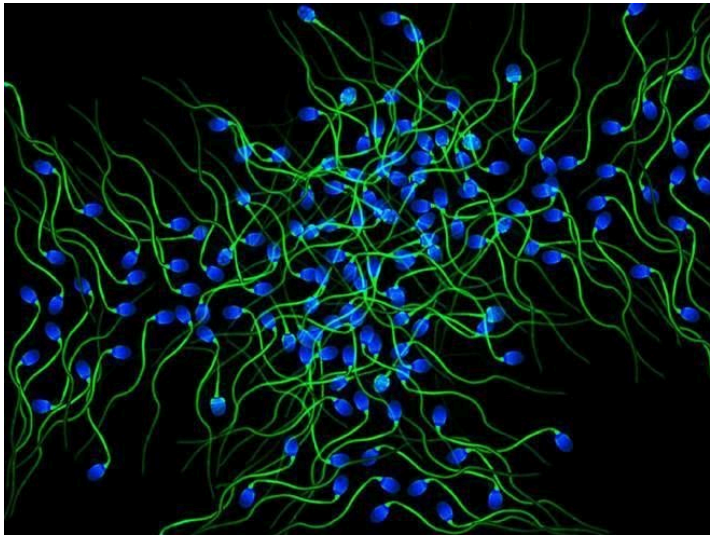
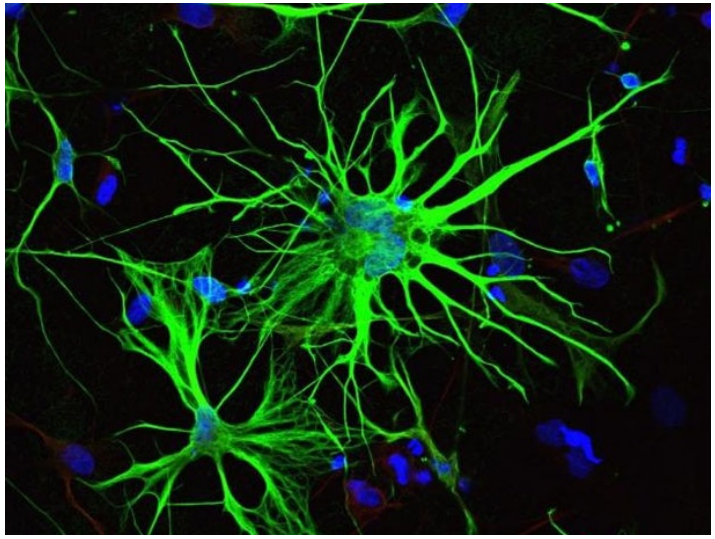
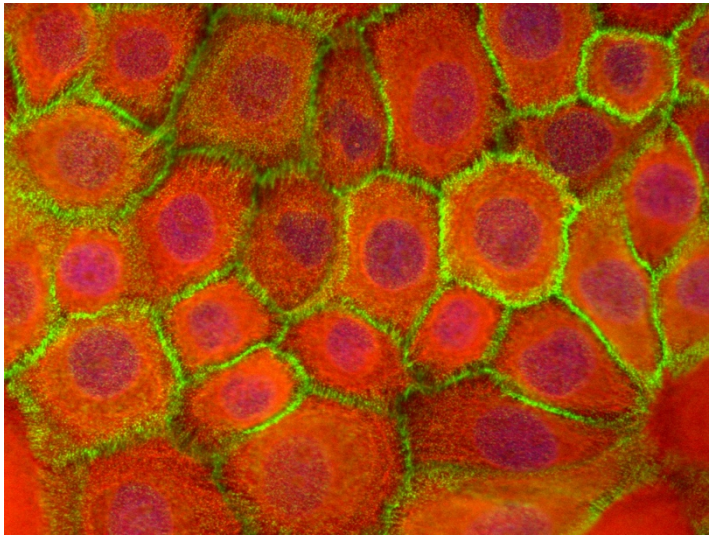
Regulación del genoma

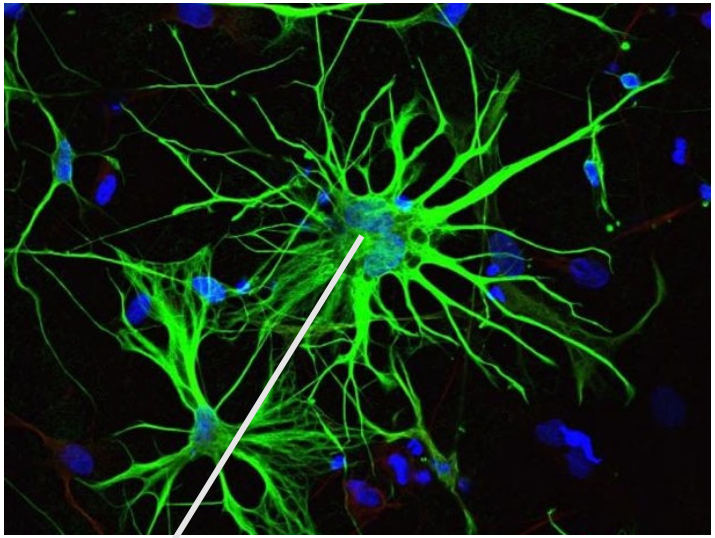


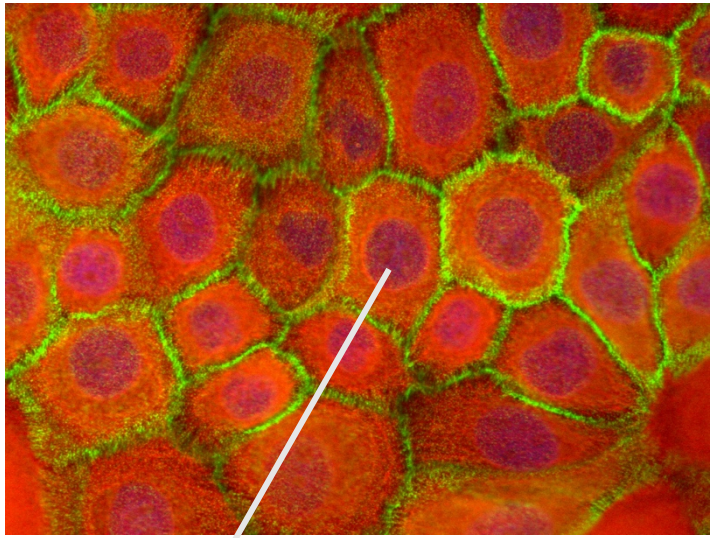






Regulación del genoma





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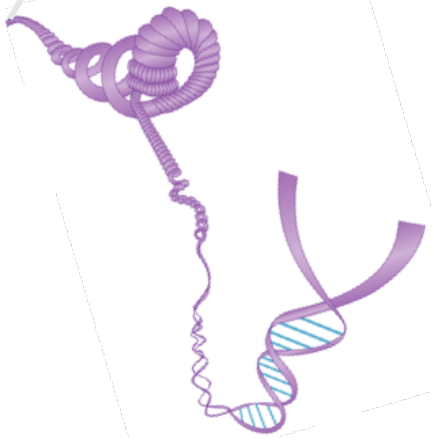

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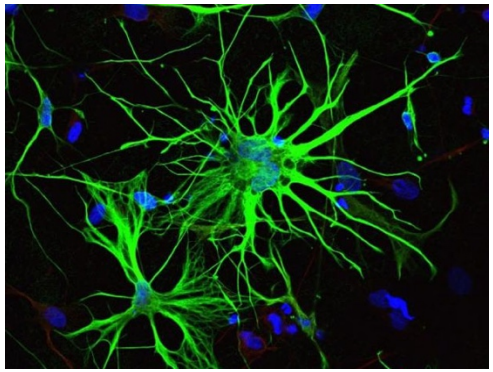
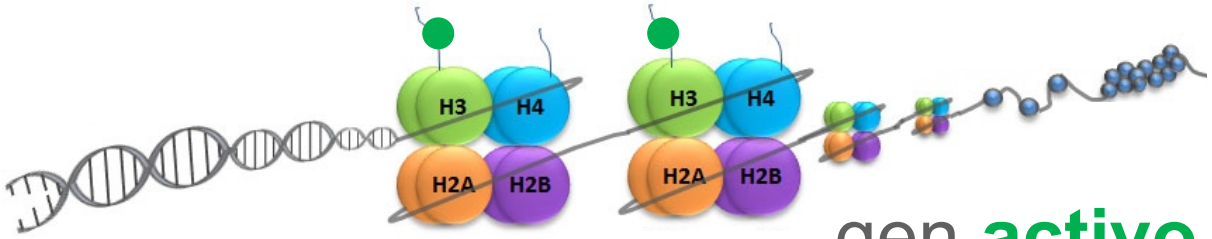
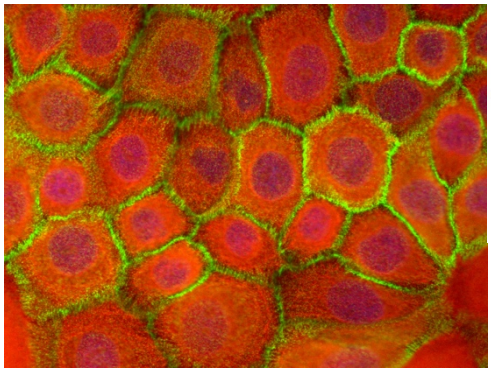
Regulación del genoma: epigenética

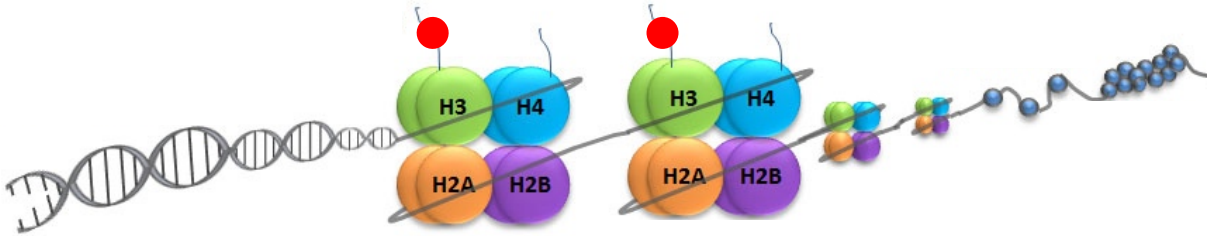
marcas epigenéticas en
colas de histonas: código





gen **activo**



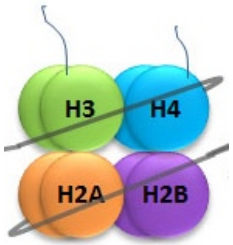


gen **apagado**

2004-2011 en Alemania

EMBL

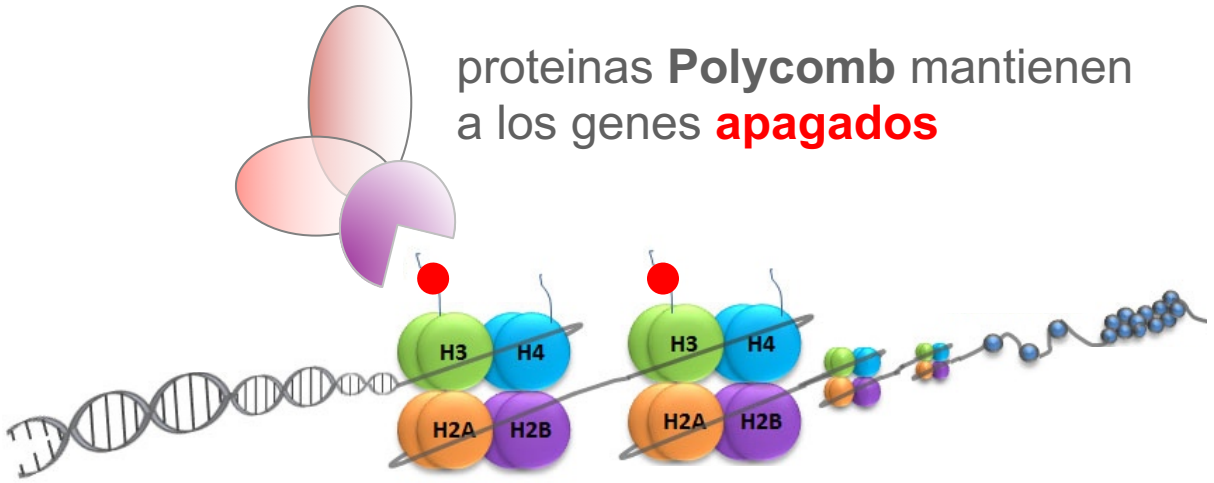
¿Epigenética? está bien
pero usando como modelo
la mosca de la fruta.

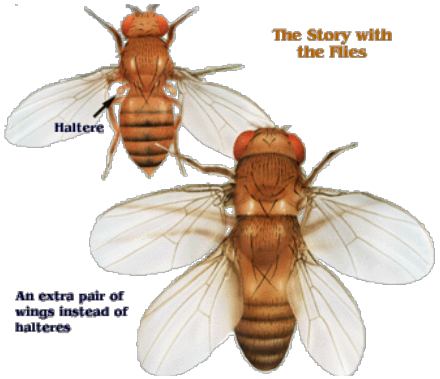


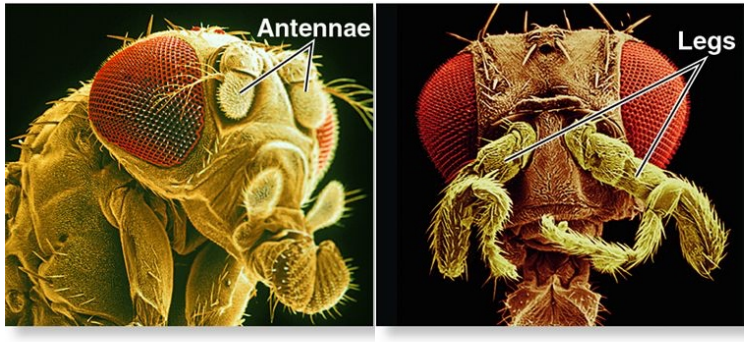
Drosophila

?

Regulación del genoma: en *Drosophila*







2011-2016 en EUA

Berkeley
UNIVERSITY OF CALIFORNIA

¿Y si buscamos todos los 'enhancers' en el genoma de *Drosophila*?

'enhancers'

?

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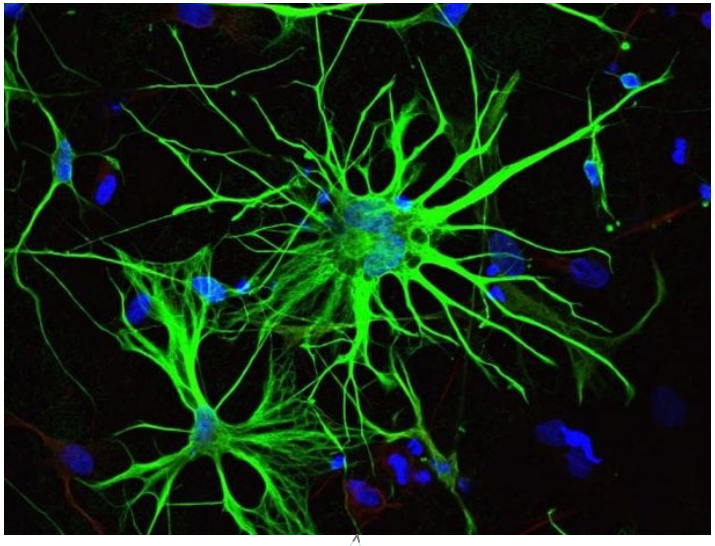
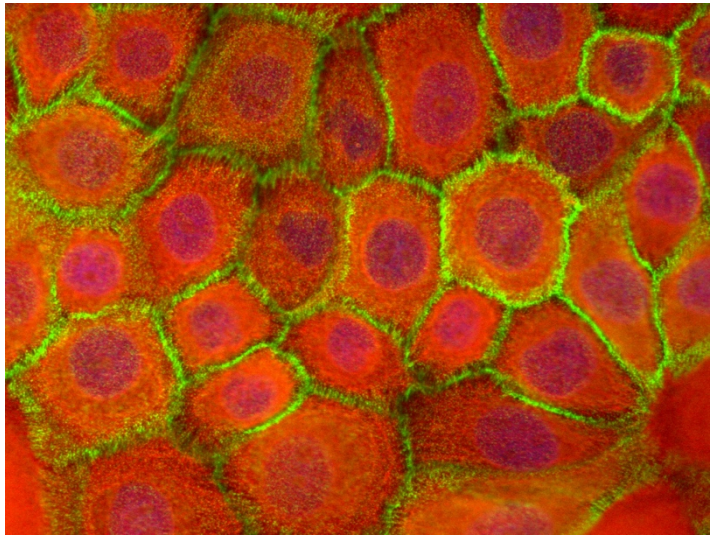
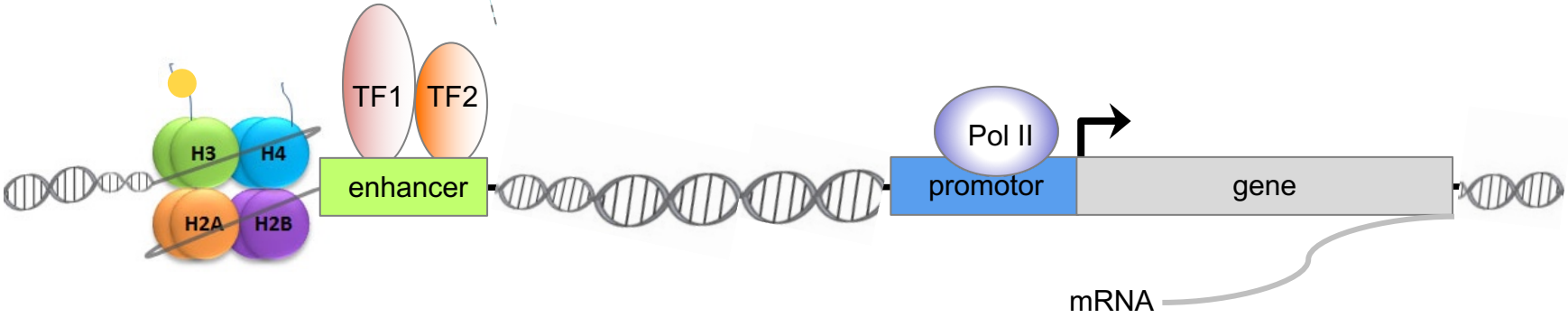
Regulación del genoma: ‘enhancers’

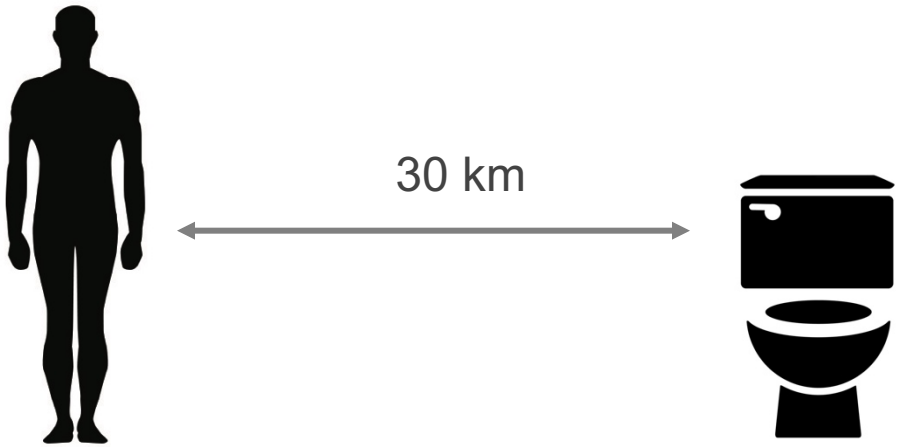




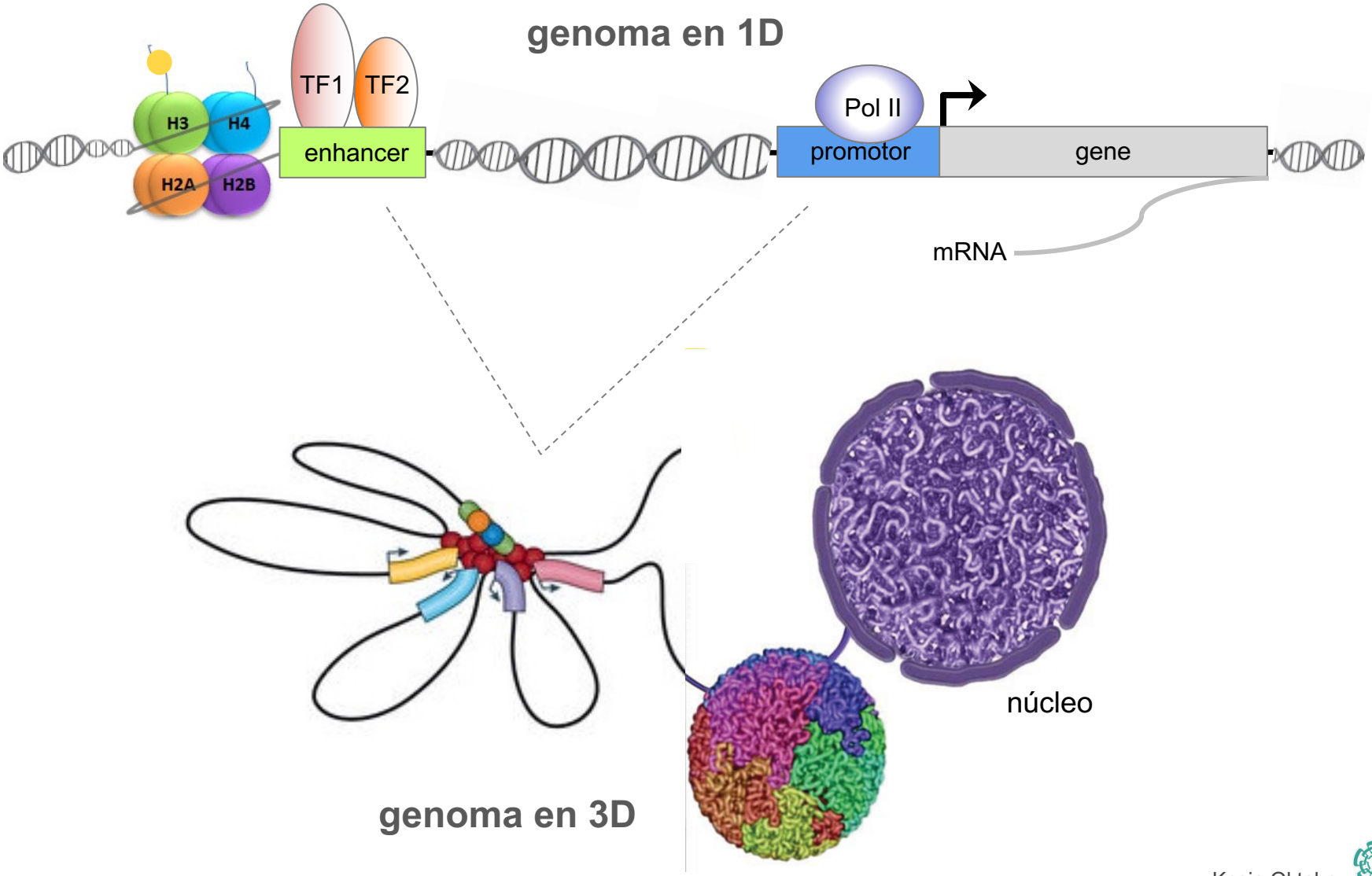
factores de transcripción
activan o **apagan** genes



Problema no. 1



Topología del genoma



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Topología del genoma

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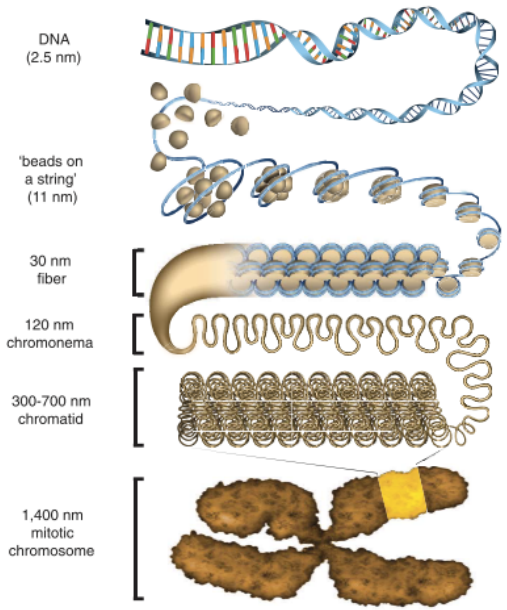
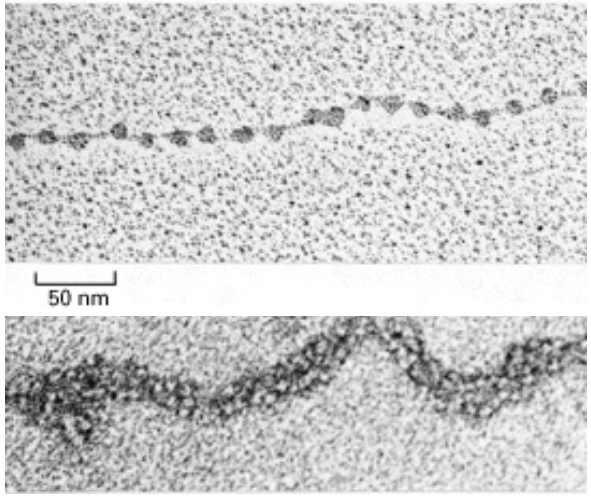
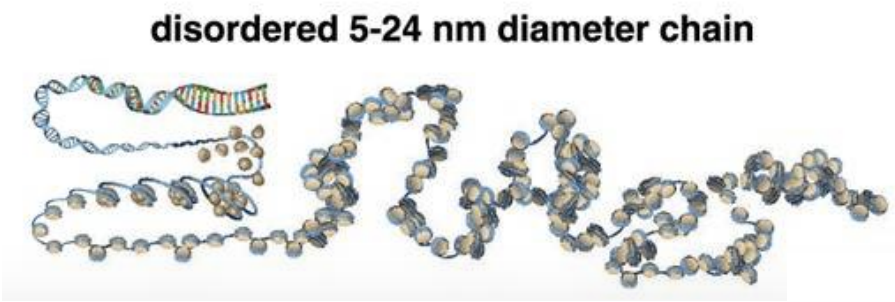
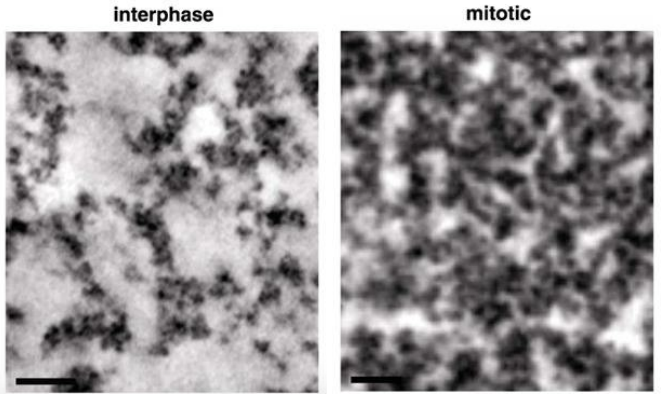
Topología del genoma









Ou *et al* (2017) *Science*

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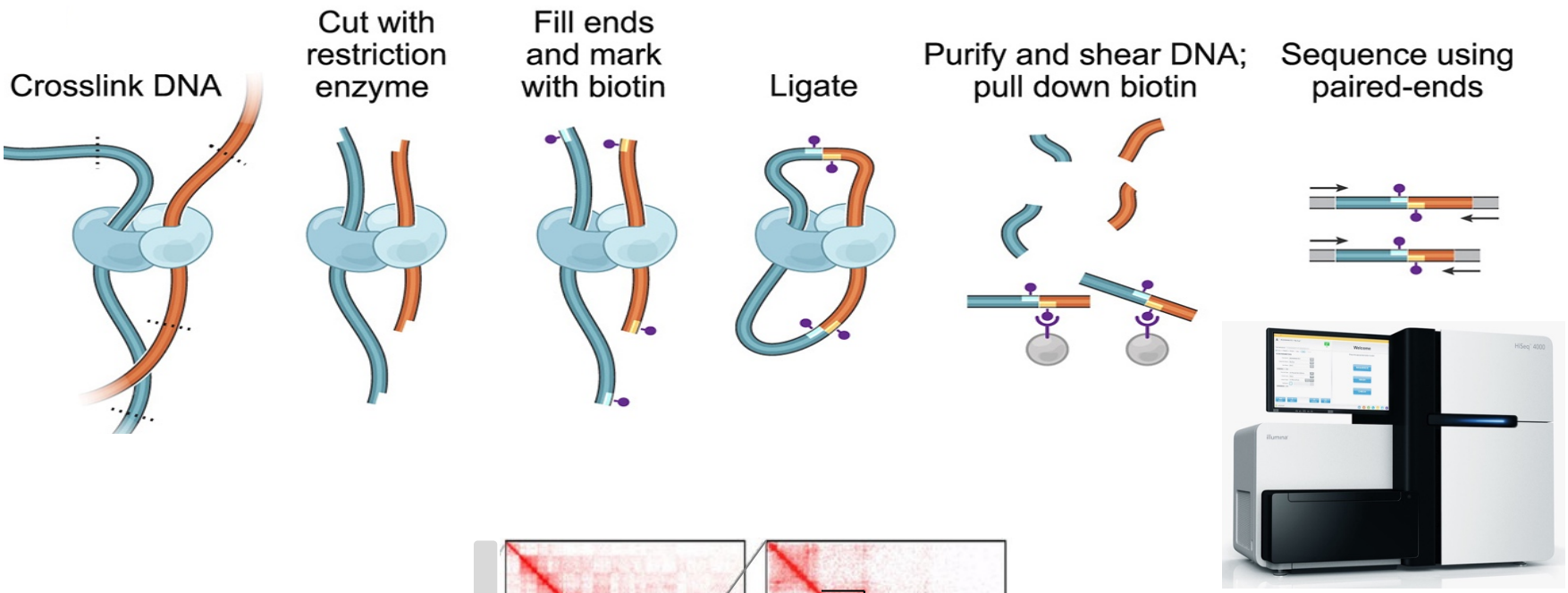
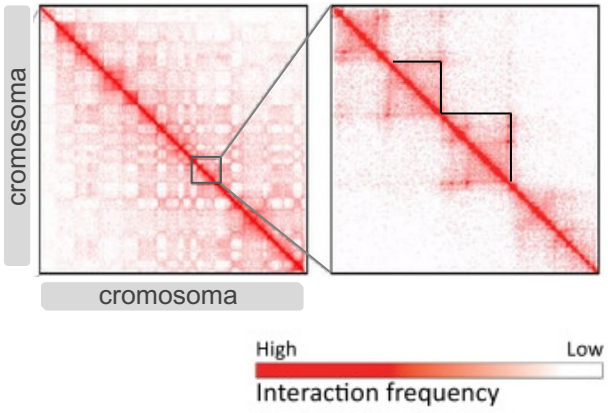
desde finales de 2016 en Irapuato

biología molecular: método HiC



análisis de datos de secuenciación



Rao *et al* (2014) *Cell*

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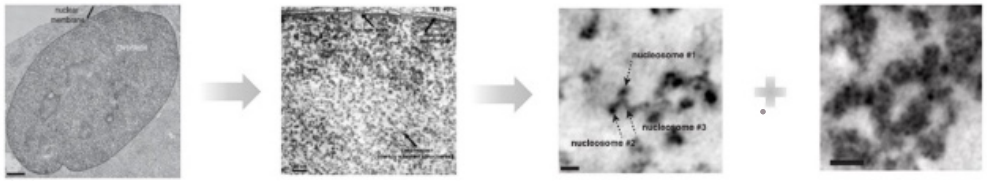
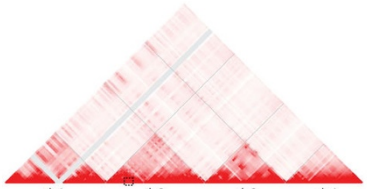
Topología del genoma

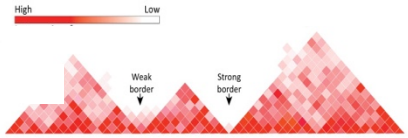
microscopía

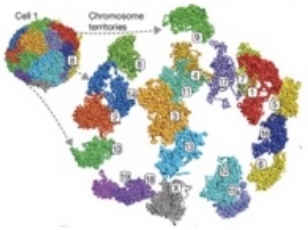


núcleo | cromatina | nucleosoma | interacción

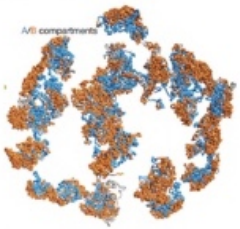
Cell nucleus





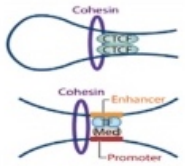


cromosomas



compartimentos A/B

dominios de asociación topológica (TADs)



interacciones enhancer-promotor

método HiC

Kong & Zhang (2019) *Cell Biol Toxicol*

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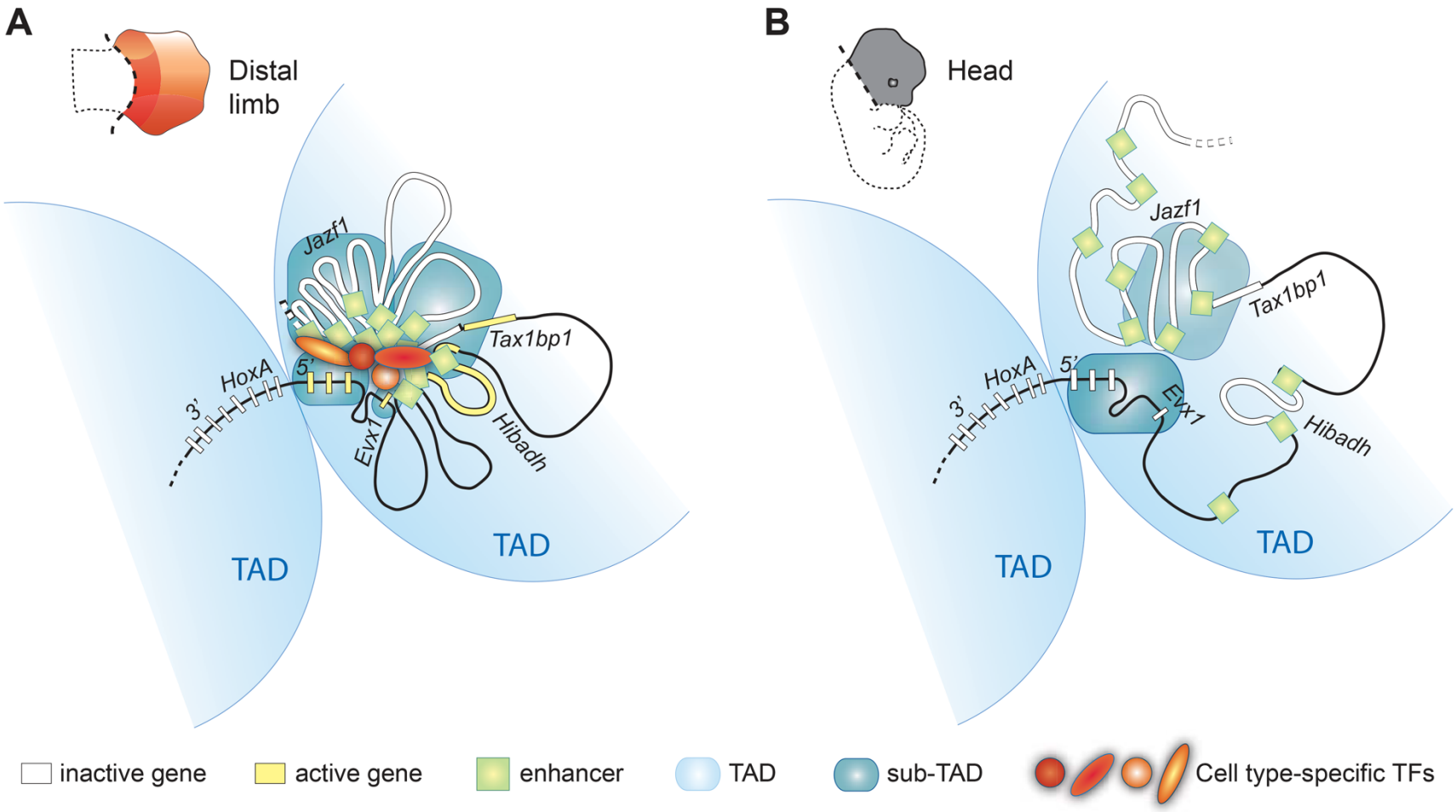
Topología del genoma: tejido específica?



Berlivet *et al* (2013) *BMC Genomics*

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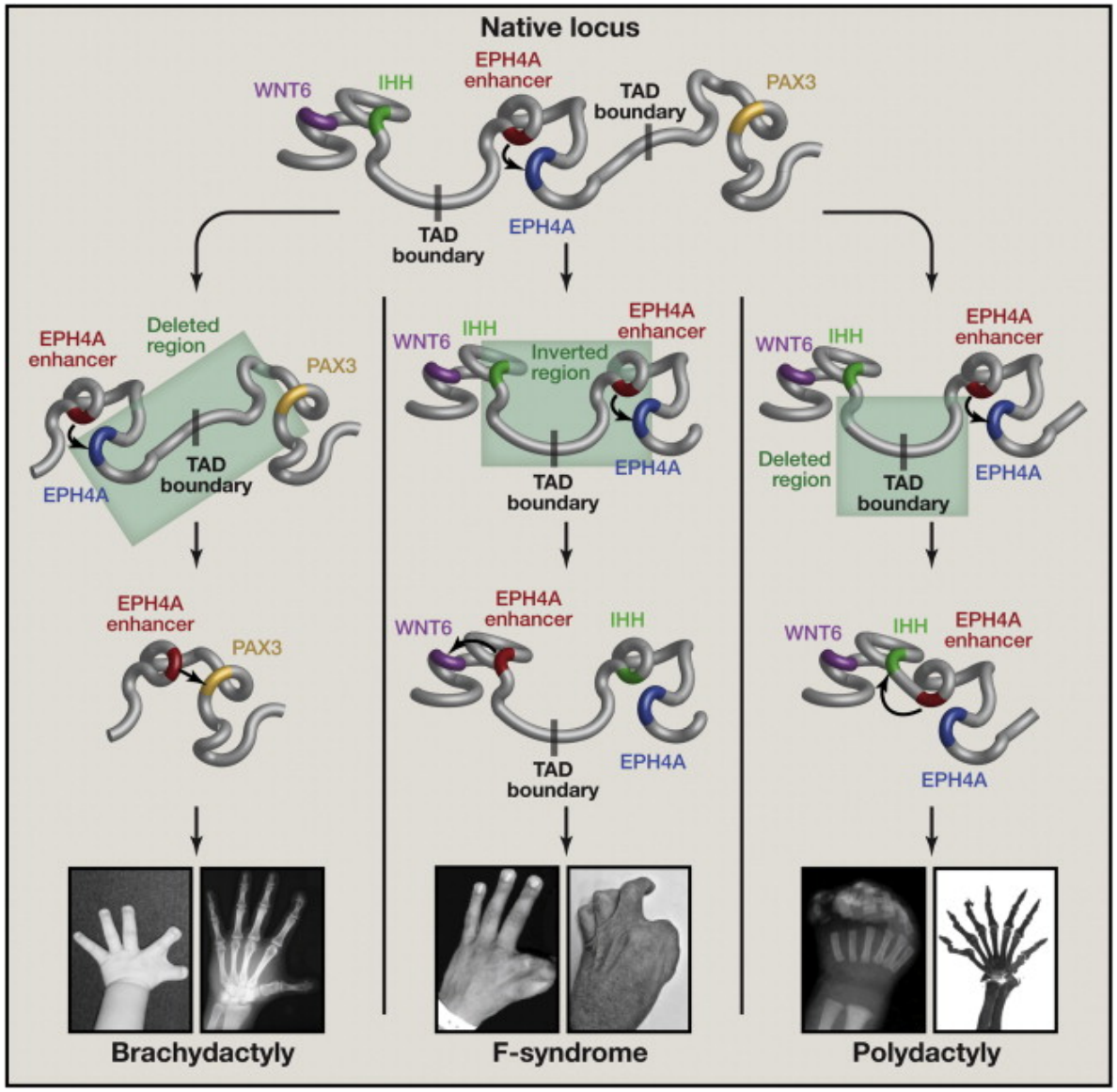
Topología del genoma: relevante?



Lupiañez *et al* (2015) *Cell*

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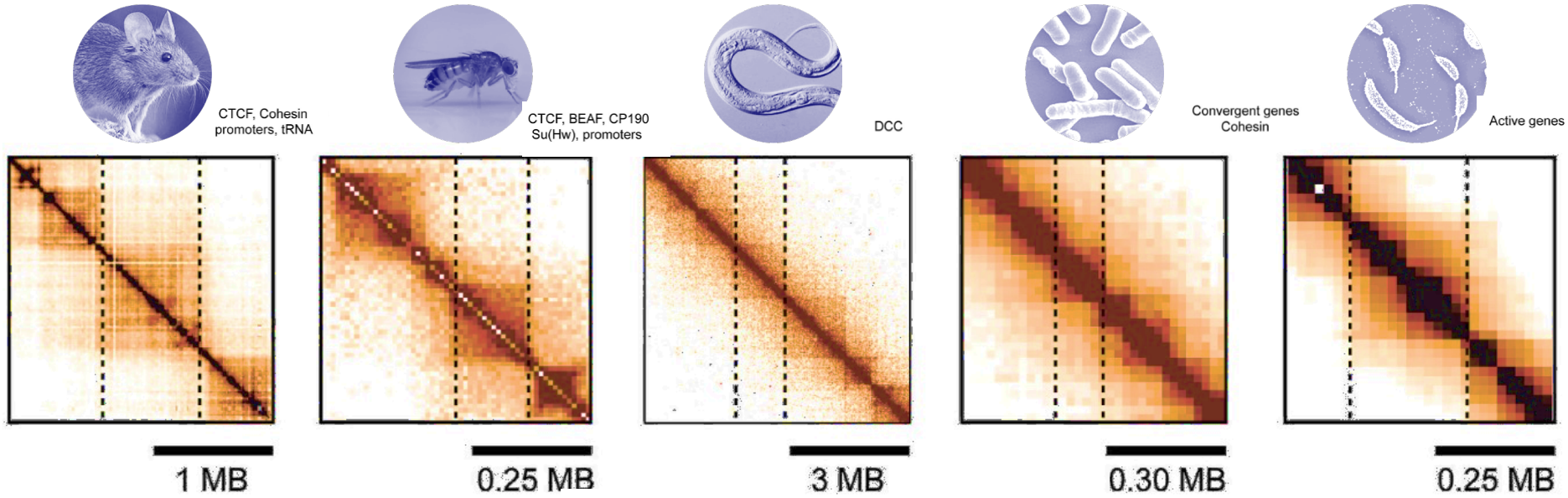
Topología del genoma en distintas especies



Dekker & Heard (2015) *FEBS Letters*

¿qué mecanismos?
¿cómo evoluciona?

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Posgrado en
Biología
Integrativa

Biotecnología de Plantas
Posgrado