



# **не все в долонях ДНК: Епігенетика та імунні клітини**

**Гречуха Є.О., студент 5 курсу,  
10М2**

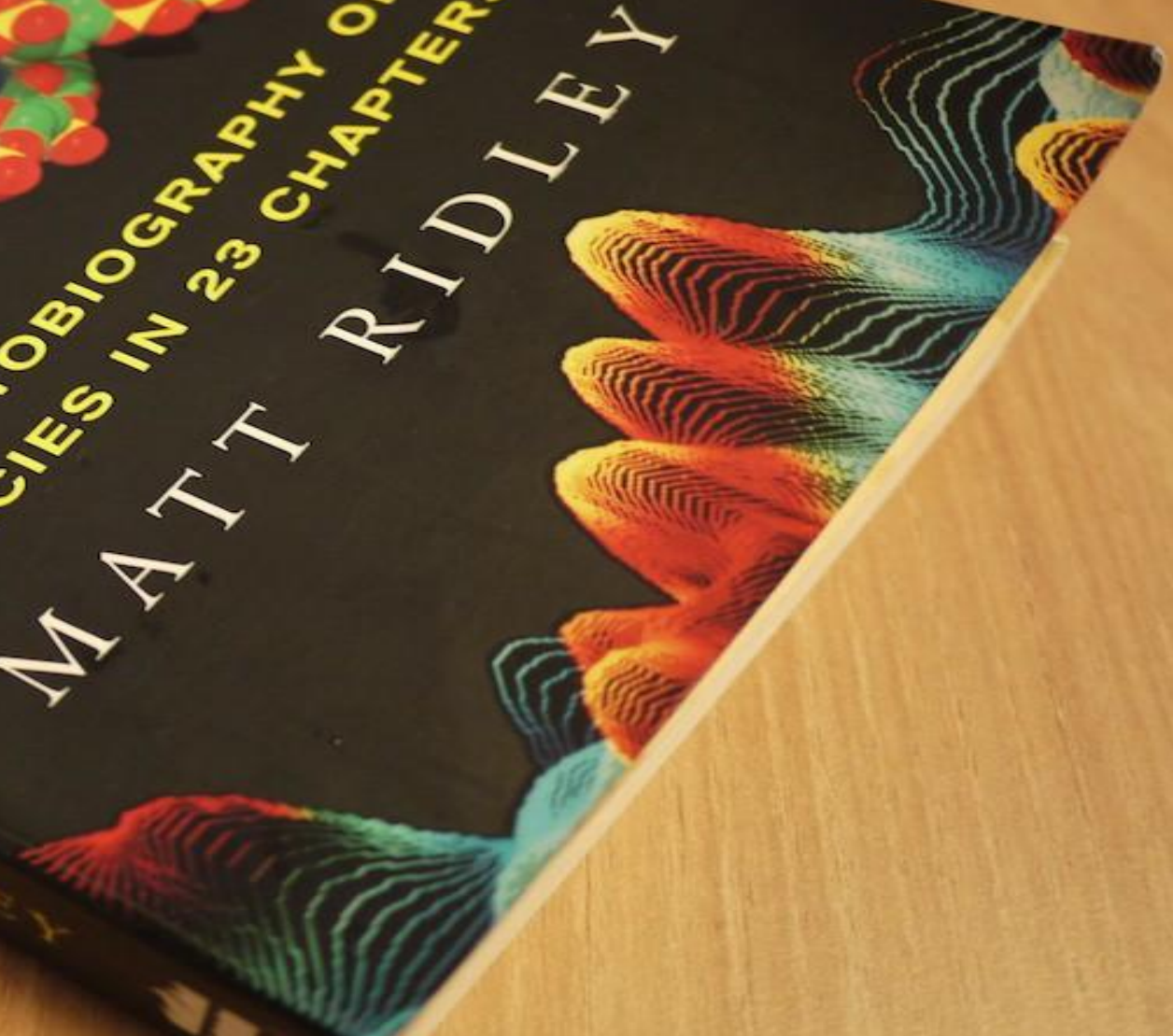
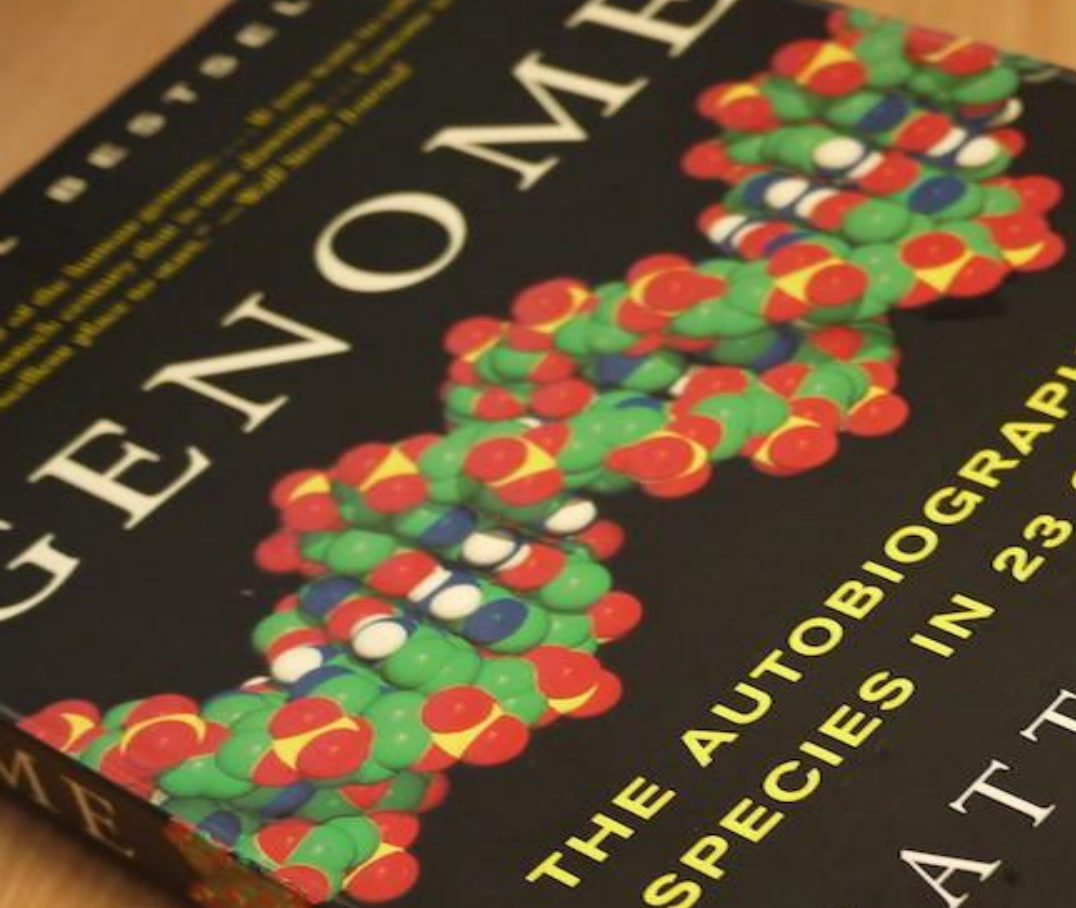
NATIONAL BESTSELLER

# GENOME

"A fascinating tour of the human genome...  
A tour of the human genome that is both  
fascinating and enlightening." —Neil deGrasse Tyson

THE AUTOBIOGRAPHY OF A  
SPECIES IN 23 CHAPTERS

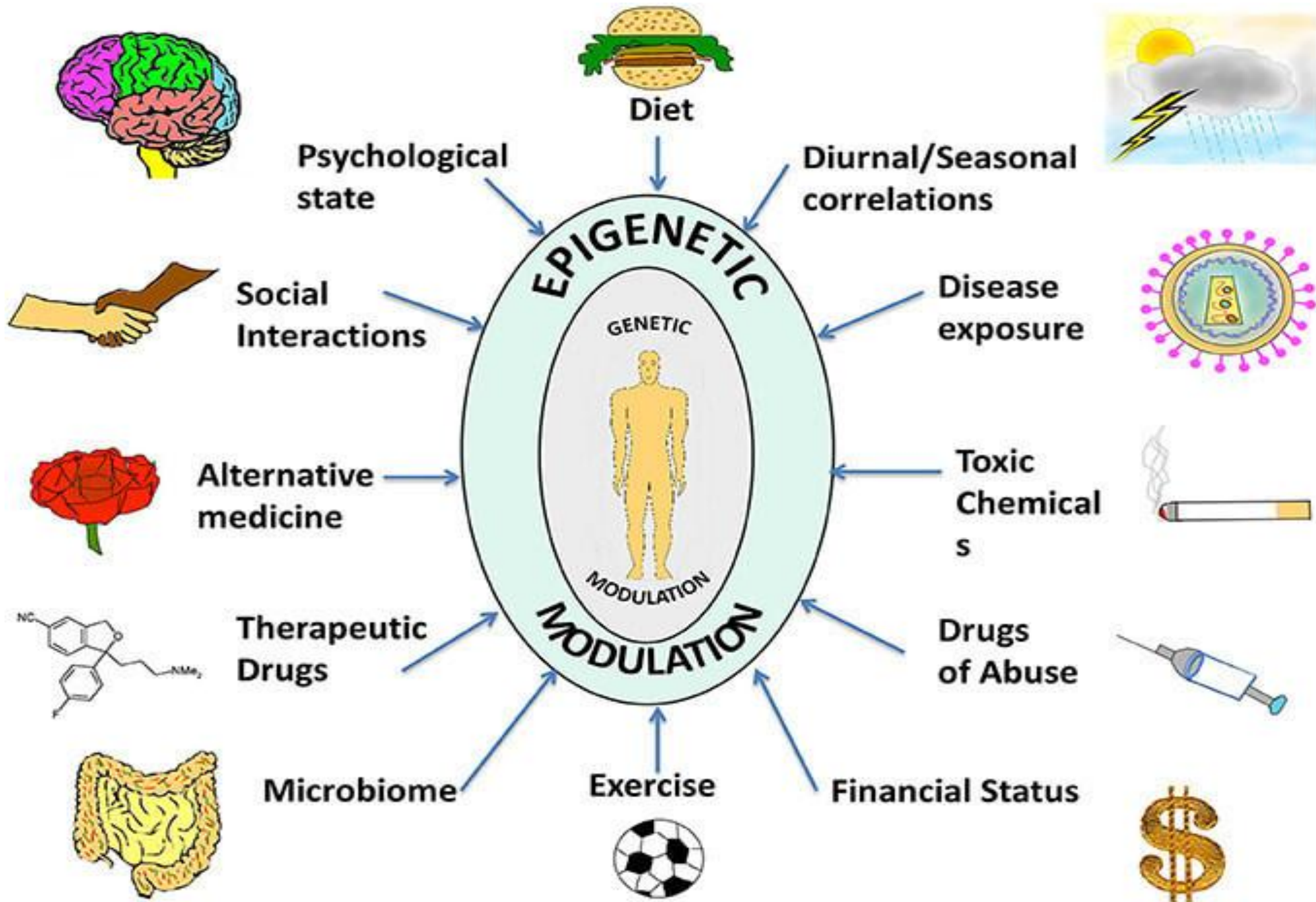
MATT RIDLEY



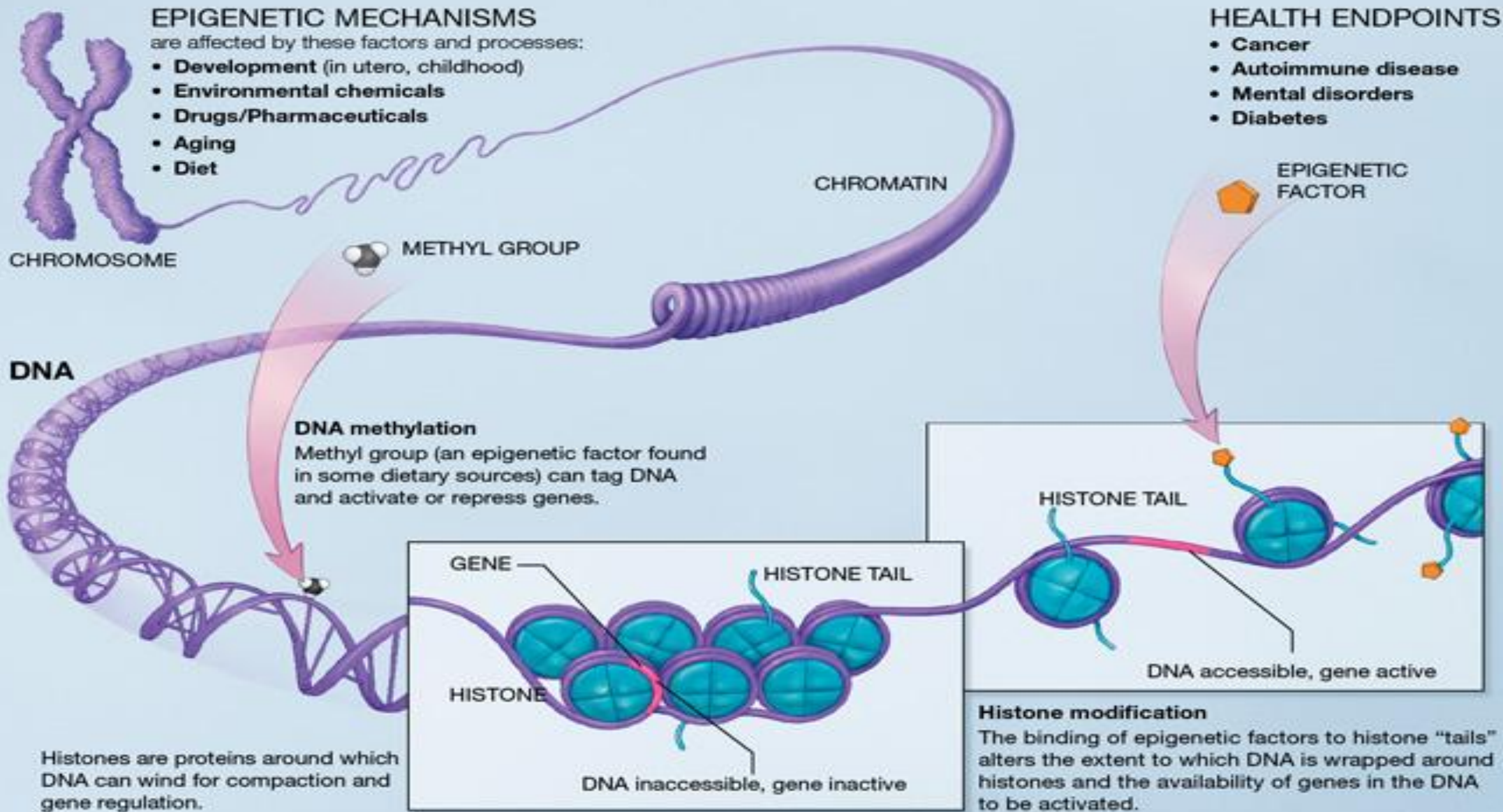
GENOME  
MATT RIDLEY









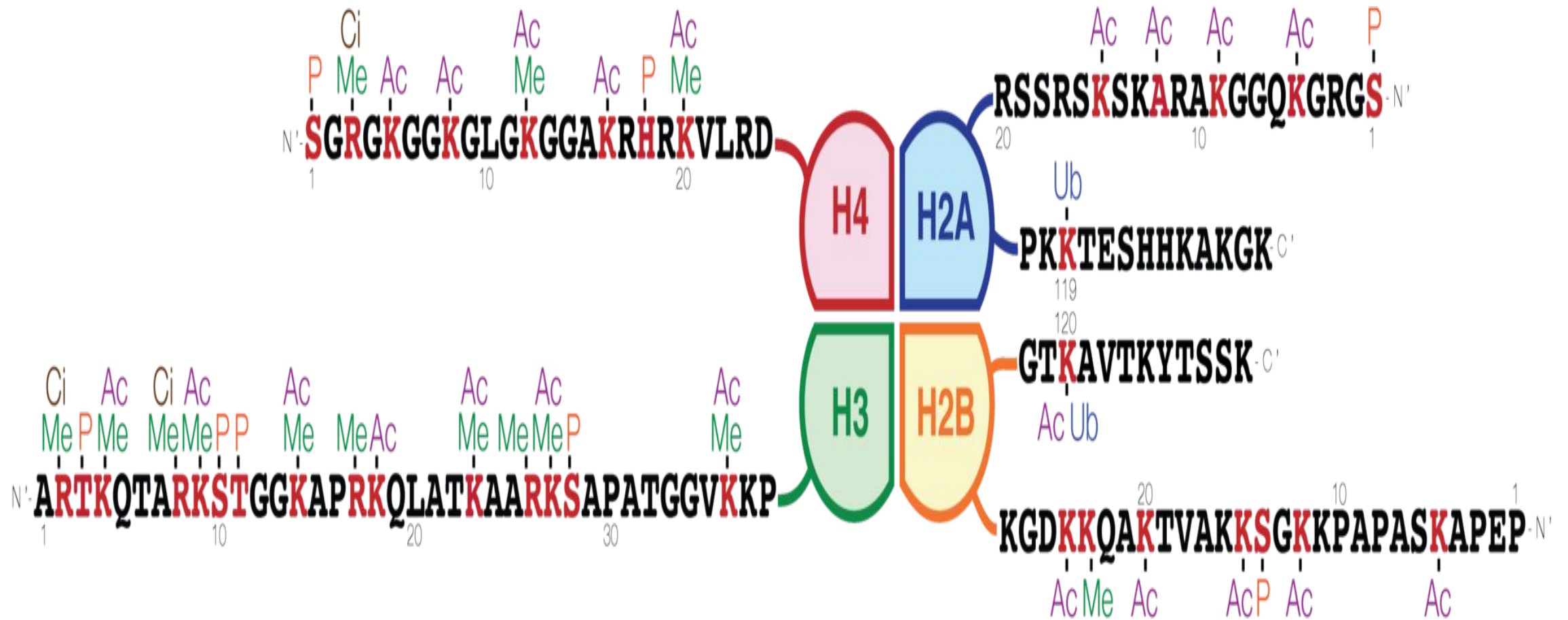


# Епігенети

**ка**

- Метилювання ДНК
- Модифікація гістонів
- Ремоделювання хроматину
- Пріони
- мікроРНК





Me Methylation

Ac Acetylation

Ci Citrullination

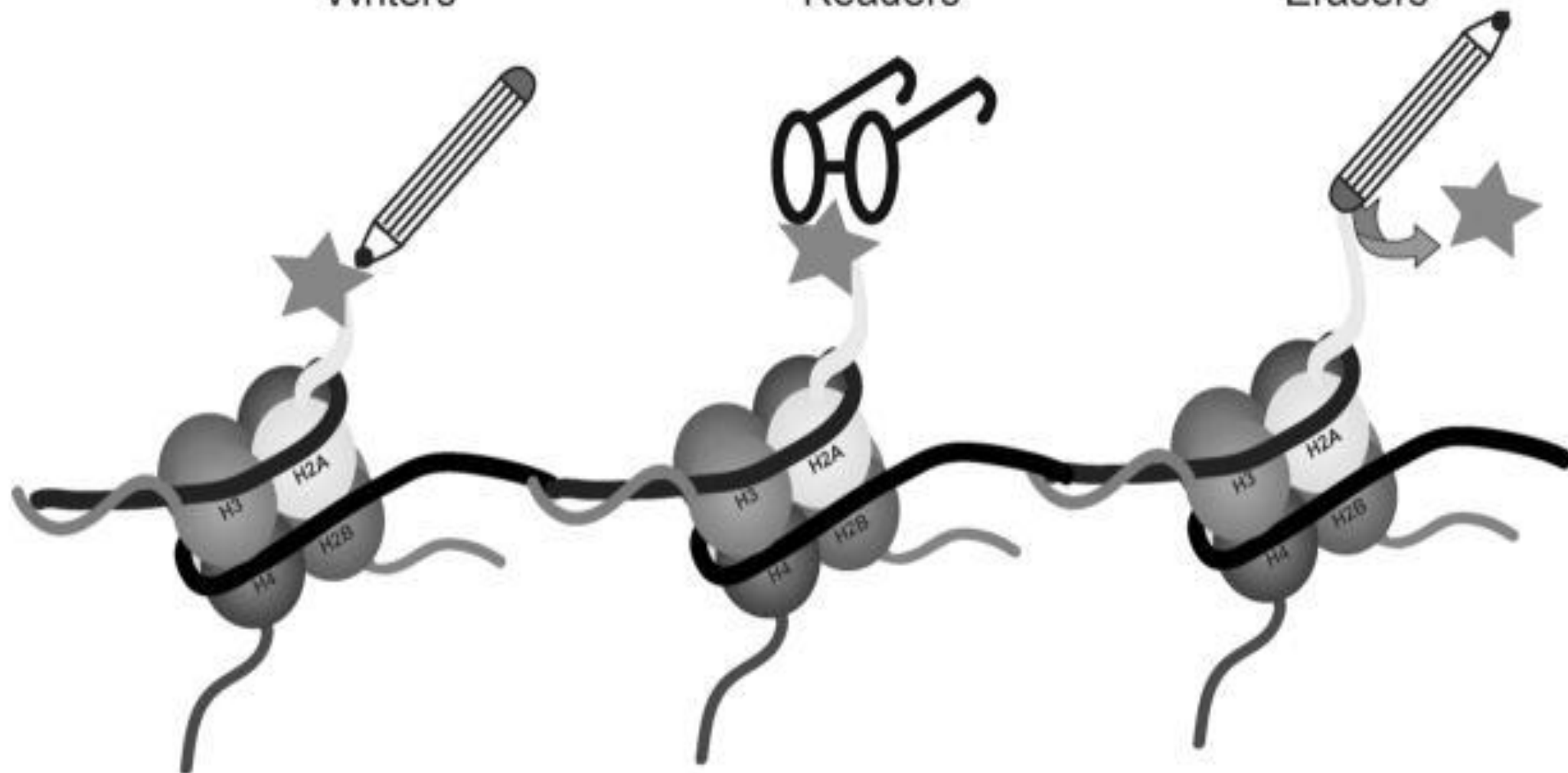
Ub Ubiquitination

P Phosphorylation

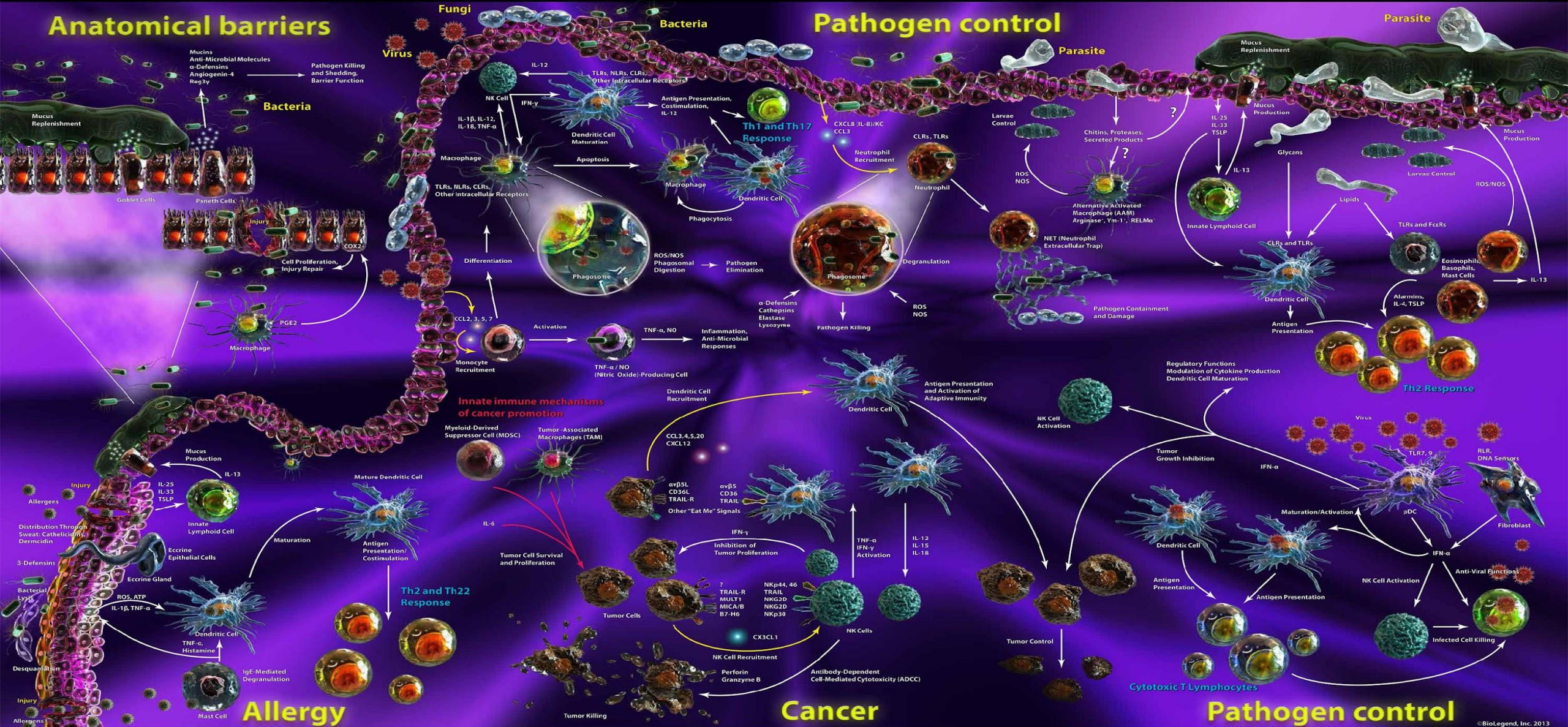
Writers

Readers

Erasers



~147 bp



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CD11c CD80 CD86 MHC-II CLRs TLRs	CD3 <sup>+</sup> CD11b <sup>+</sup> CD119 <sup>+</sup> CD135 <sup>+</sup> CD337 <sup>+</sup>	Human: CD123 CD110 CD135 CD398 CD317	CD49b CD36 CD122 CD314 (NKG2D) CD336 (NKG4) CD336 (NKG4d)	Classic AAM CD86 CD14 CD14 CLRs NLRs Mouser FA/80	CD33 CD117 CD203c FcγR1b	CD11b CD15 CD36 Mouser Gr-1	CD3 <sup>+</sup> CD11b <sup>+</sup> CD15 <sup>+</sup> CD36 <sup>+</sup> B220 <sup>-</sup> CD49b <sup>-</sup>
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Interactive Poster: [biolegend.com/innateimmunity](http://biolegend.com/innateimmunity)

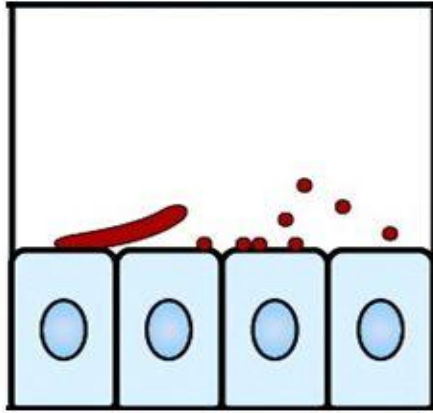
We would like to thank Dr. Ruslan M. Medzhitov of the Yale School of Medicine for his contributions to this poster.

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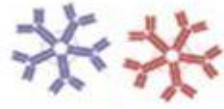
US Headquarters:  
San Diego, CA 92121

04-0029-00

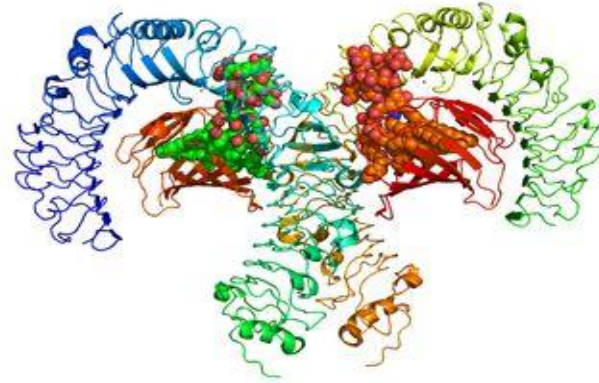
# Innate Immunity



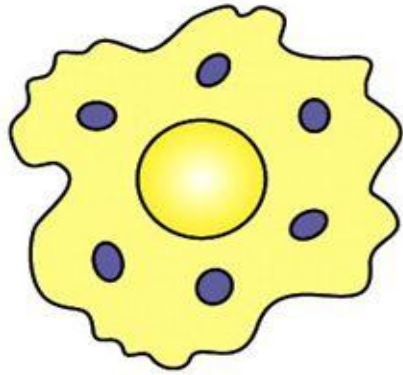
Epithelial barriers



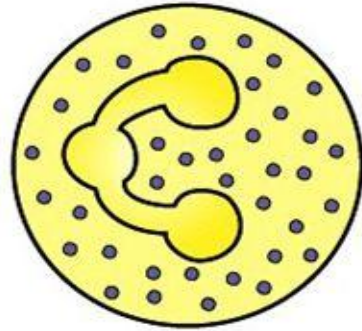
Soluble molecules



Pattern-recognition receptors:  
TLRs, NLRs, scavenger Rs,  
C-type lectin Rs



Macrophages

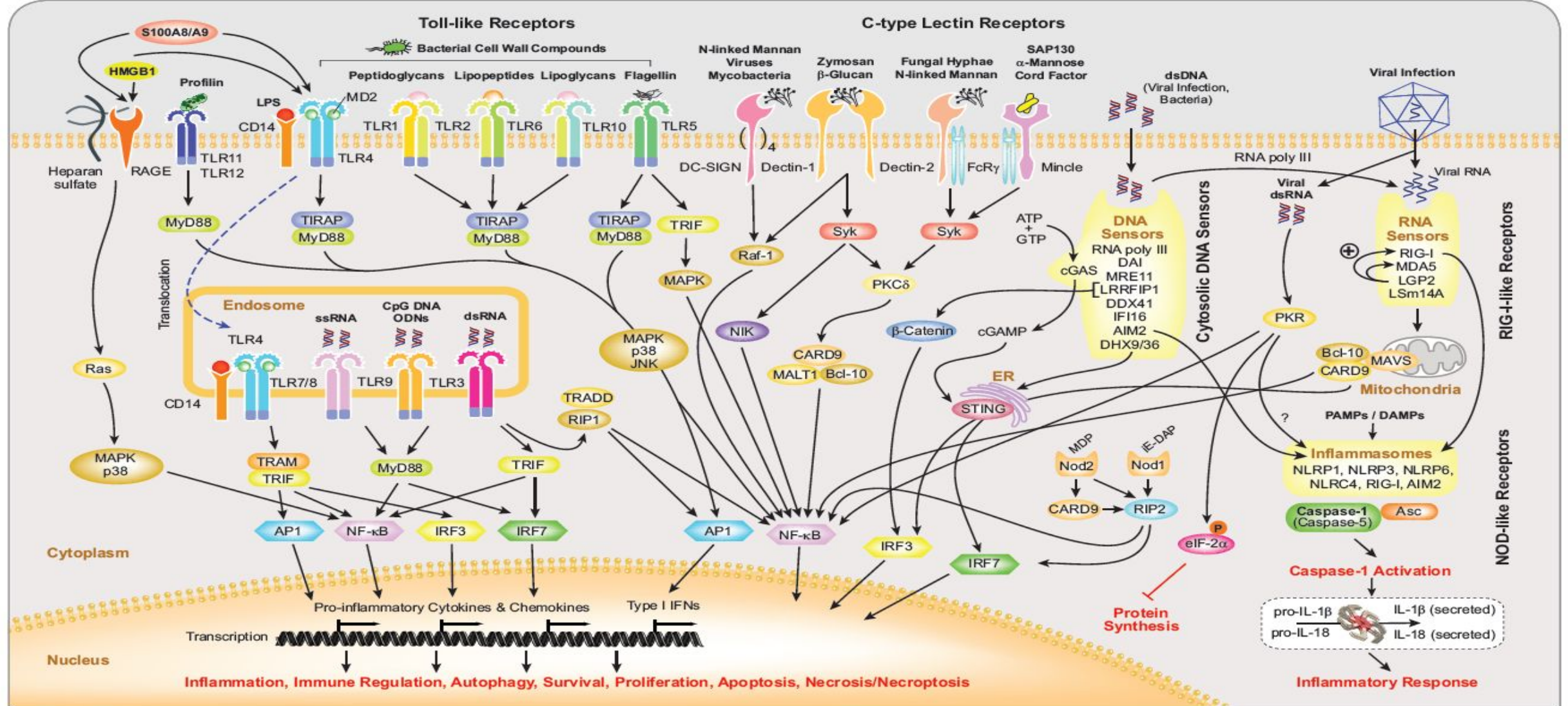


Neutrophils

# Pattern Recognition Receptors (PRRs) Signaling Pathways

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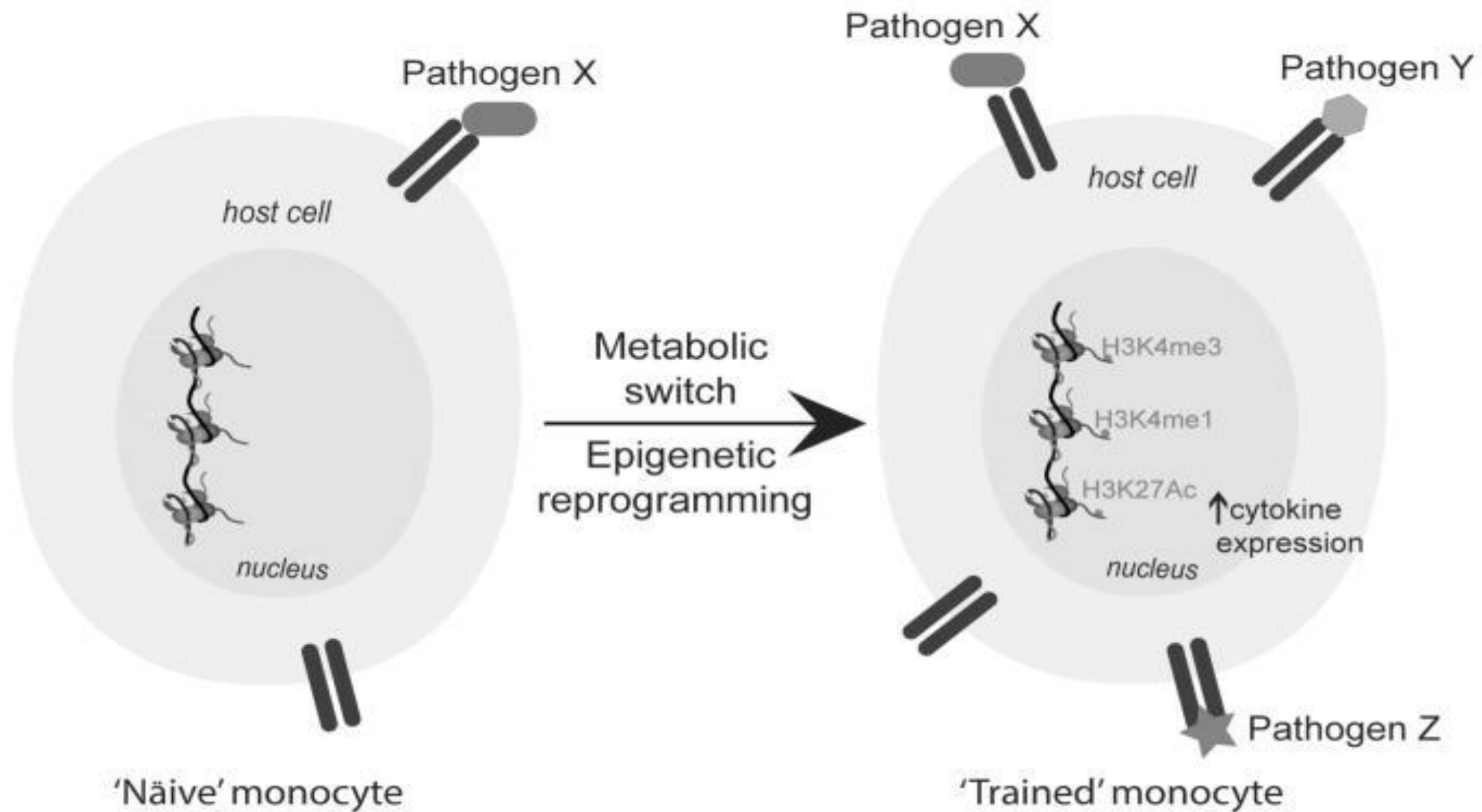


→ Activation  
 - - - Translocation  
 —|— Inhibition

TLRs:
 

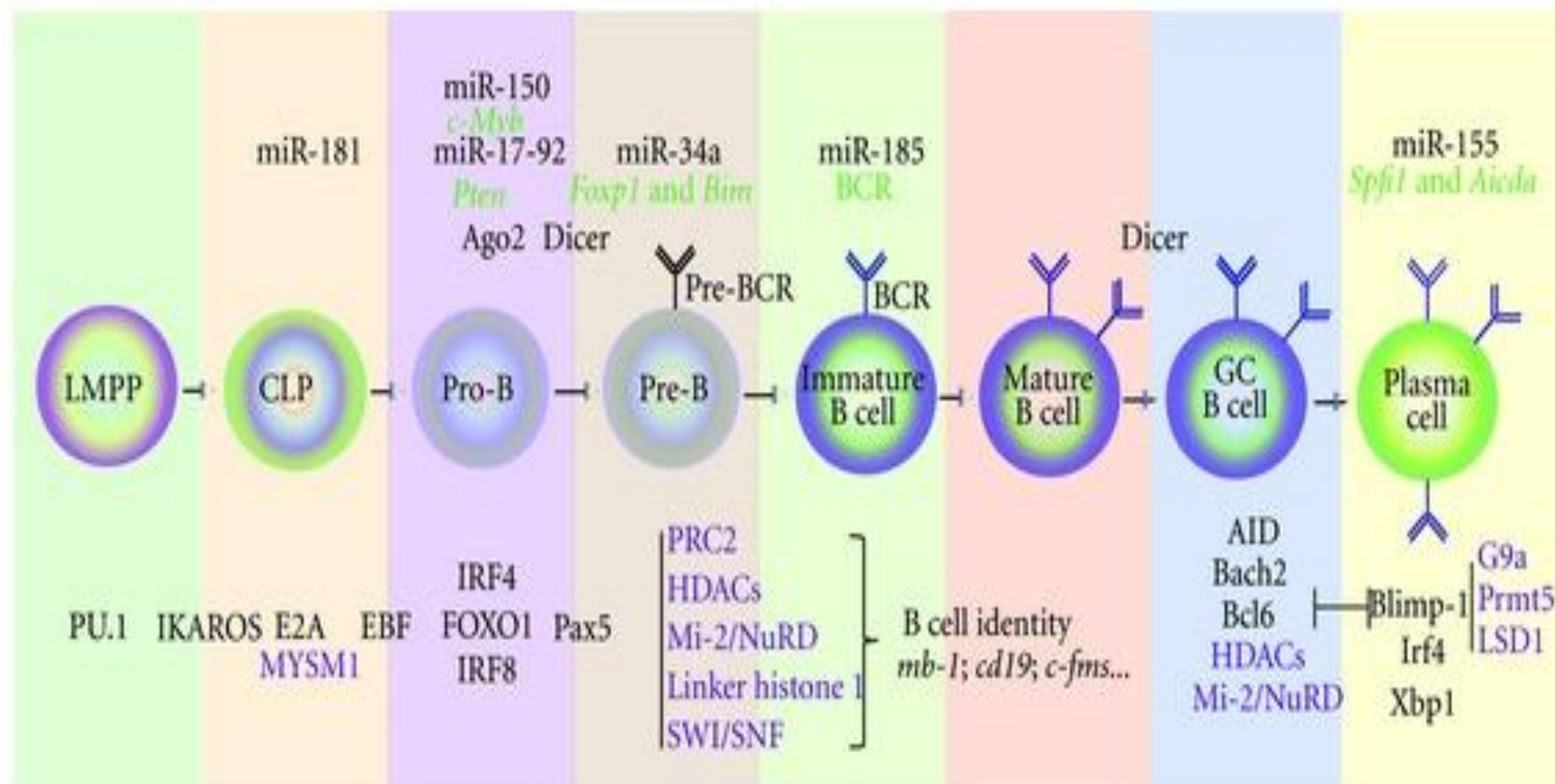
- ← Horseshoe-shaped solenoid N-terminal extracellular leucine-rich repeat (LRR) motifs
- ← Compact and globular C-terminal intracellular Toll/interleukin-1 receptor (TIR) domain

TLR11/TLR12: Expressed in mice only



# **В- лімфоцити**

**Bruna Barneda-Zahonero** *“Epigenetic Regulation of B Lymphocyte Differentiation, Transdifferentiation, and Reprogramming”*  
2012





1.

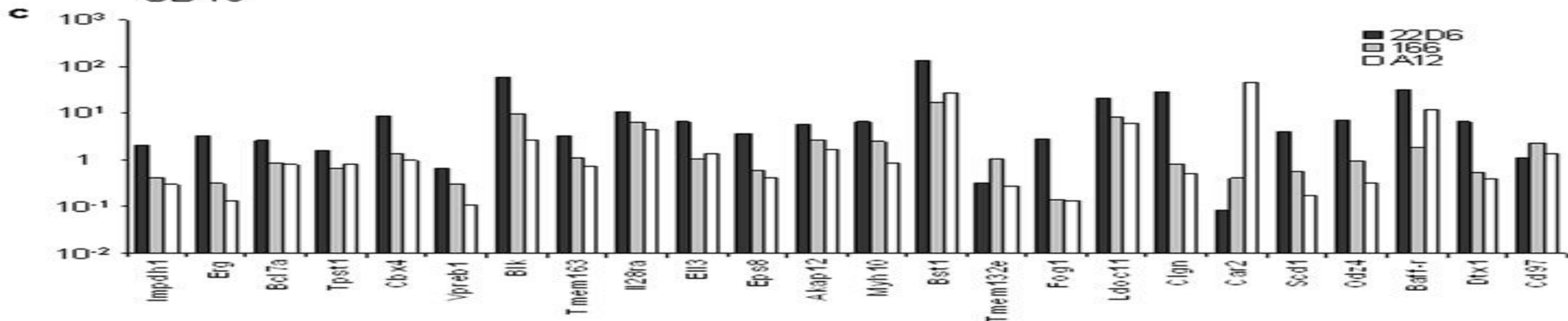
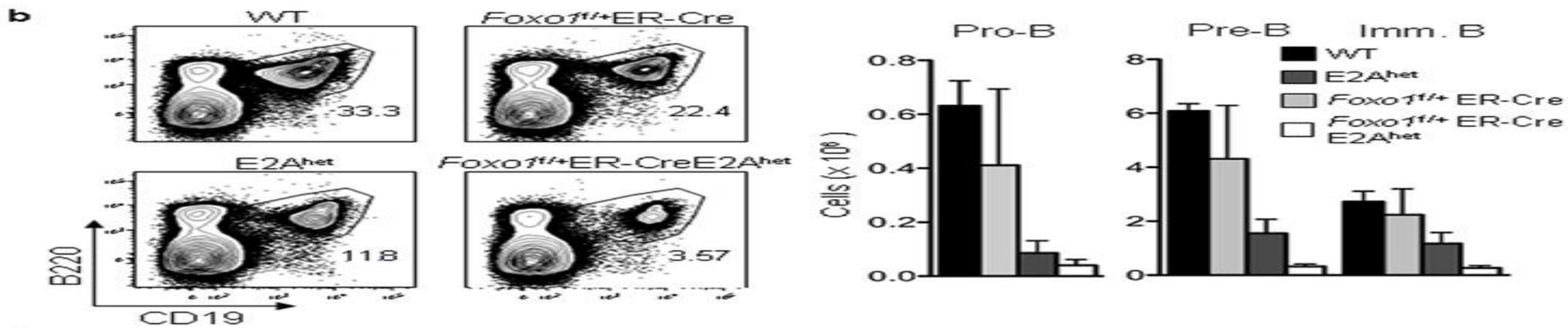
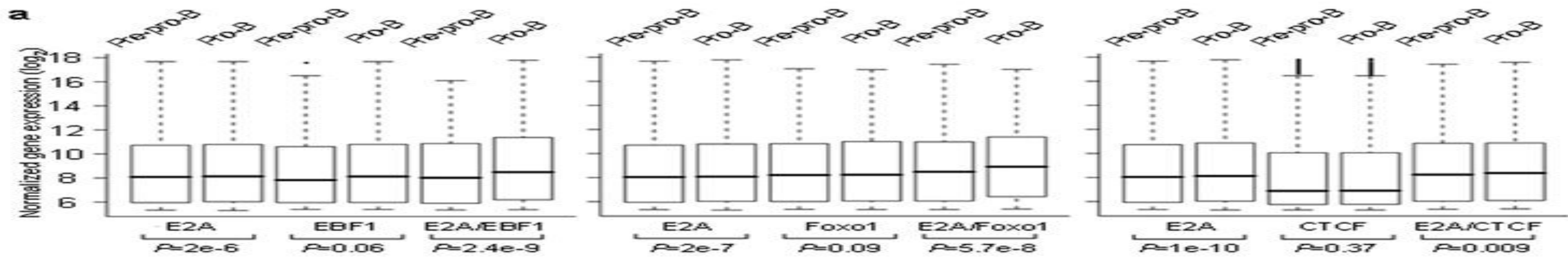
Клітина попередник лімфопоезу: для перетворення в В-лімфоцити мають подіяти транскрипційні фактори - *ikaros* та *PU*.

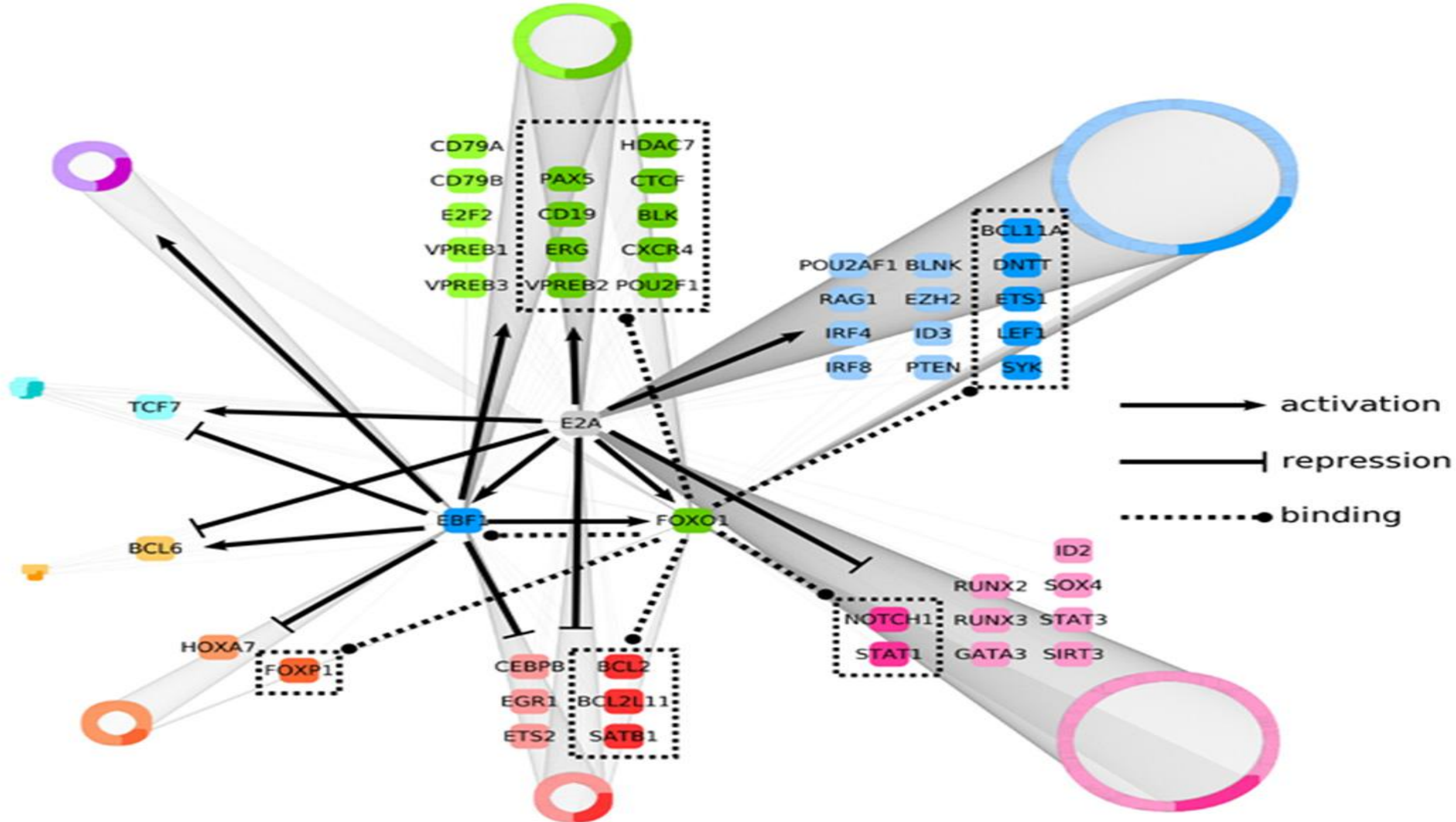
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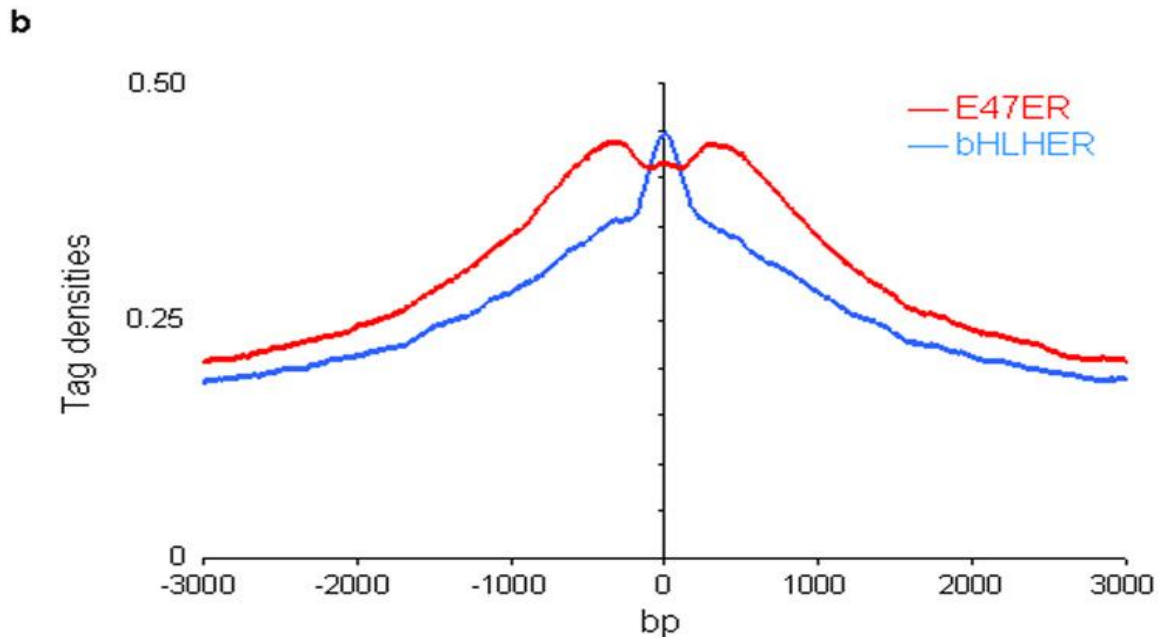
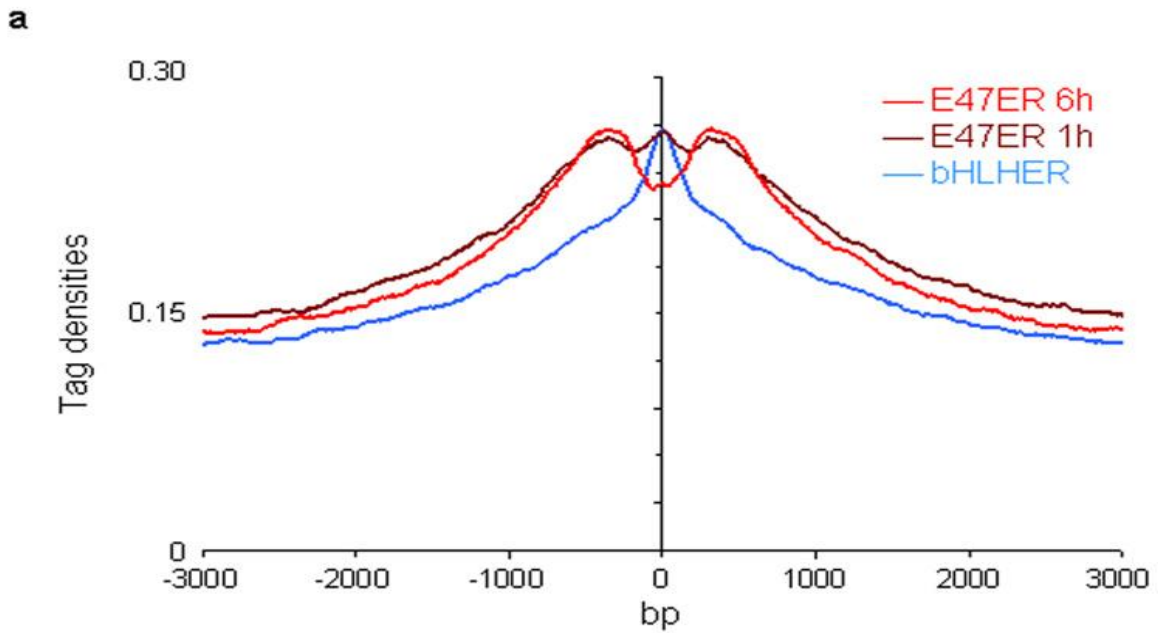
Рання «спеціалізація»: E2A, EBF, and FOXO1 ( а саме реанжерування генів V(D)J).

3.

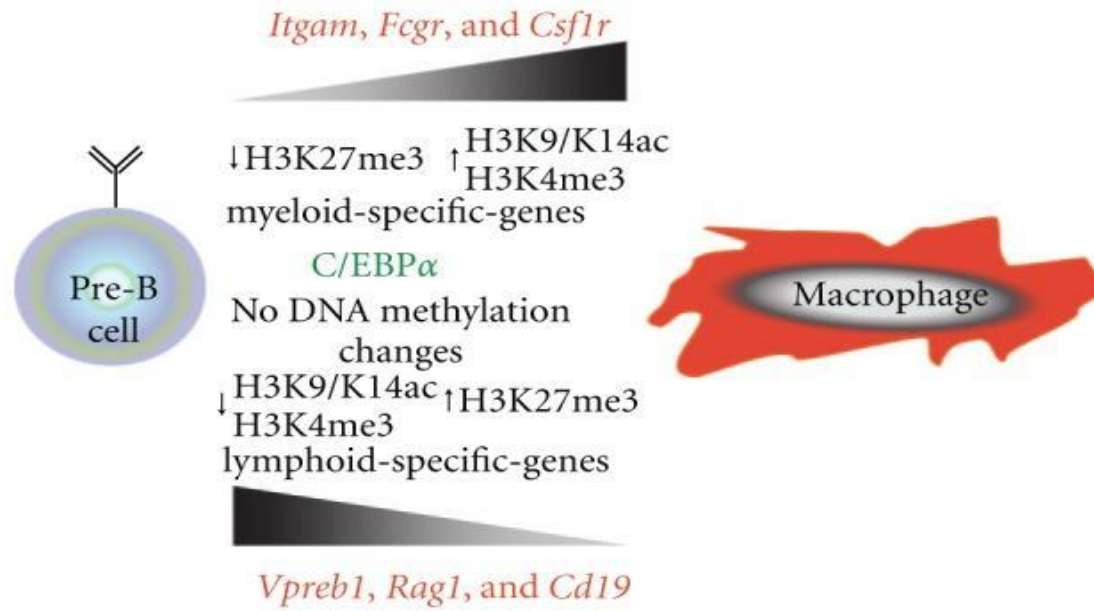
Фактори репресії транскрипції Bcl6 and Blimp-1 мають місце в перетворенні в плазматичні клітини.



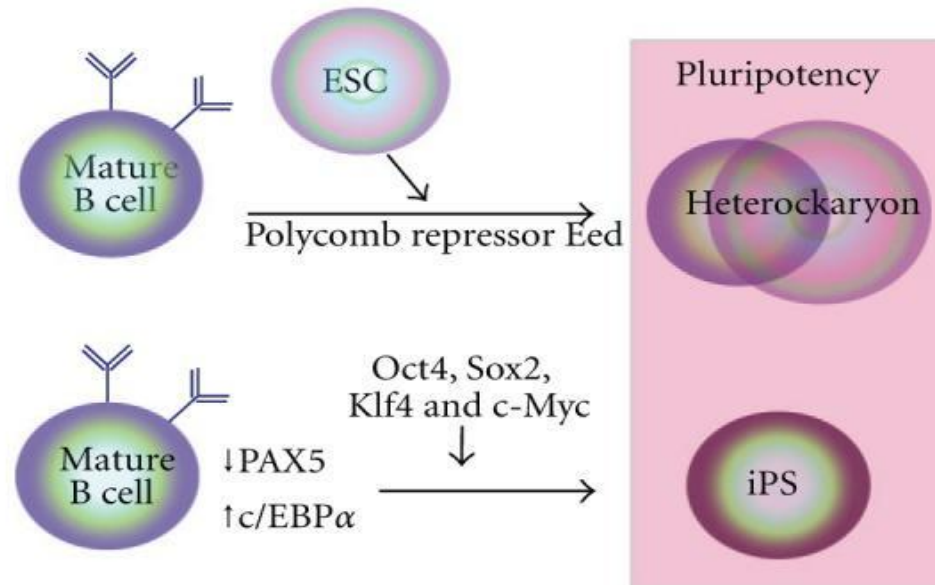




E47 DNA binding alters the pattern of H3K4 monomethylation. (a) Forced E47 expression in E2A-deficient pre-pro-B cells promotes the establishment of a bimodal distribution of H3K4me1 centered across E2A occupancy. E2A-deficient pre-pro-B cells were transduced with virus carrying the full-length coding DNA sequence of E47 fused to the estrogen receptor domain (E47ER). As a control, cells were transduced with virus expressing the E47 bHLH domain fused to the ER domain (bHLHER). Twenty-one hours post infection, cells were incubated with tamoxifen to induce E47 activity for either one or six hours, harvested, formaldehyde cross-linked, immunoprecipitated with an anti-E2A or anti-H3K4me1 antibody, and analyzed by CHIP-Seq. X-axis shows the genomic distance from E2A bound regions. Y-axis shows the individual immunoprecipitated mapped reads (or tags) per base pair. (b) Forced E47 expression in E2A-deficient T cells promotes the establishment of a bimodal distribution of H3K4me1 centered across E2A occupancy. E2A-deficient A12 cells were transduced with virus and analyzed by CHIP-Seq as described above.



(a) Transdifferentiation

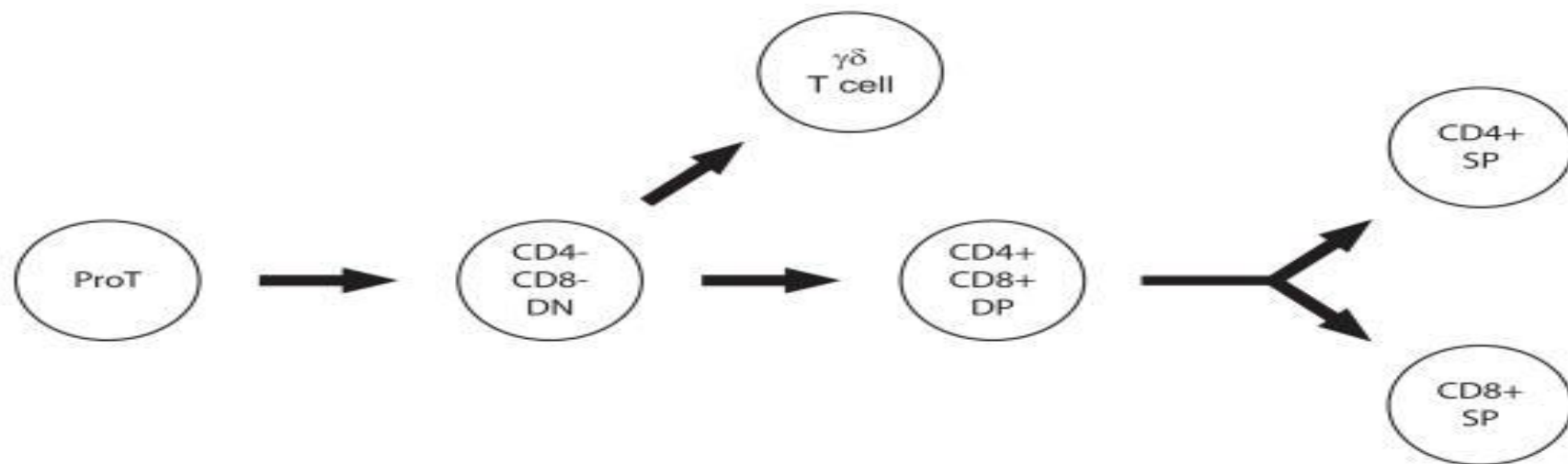


(b) Reprogramming to pluripotency

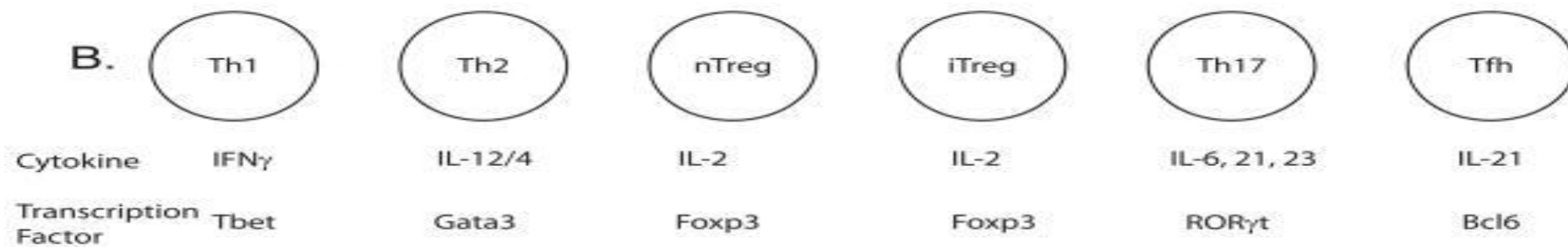
# T- лімфоцити

**Brendan E. Russ: «*T cell immunity as a tool for studying epigenetic regulation of cellular differentiation*»  
2013**

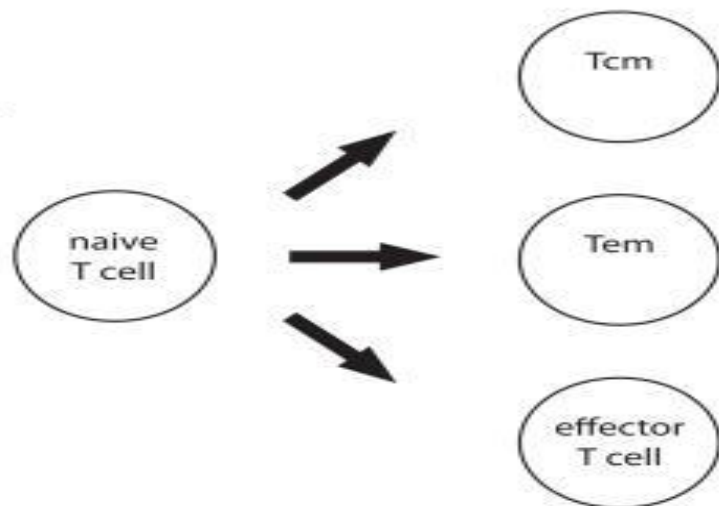
A.

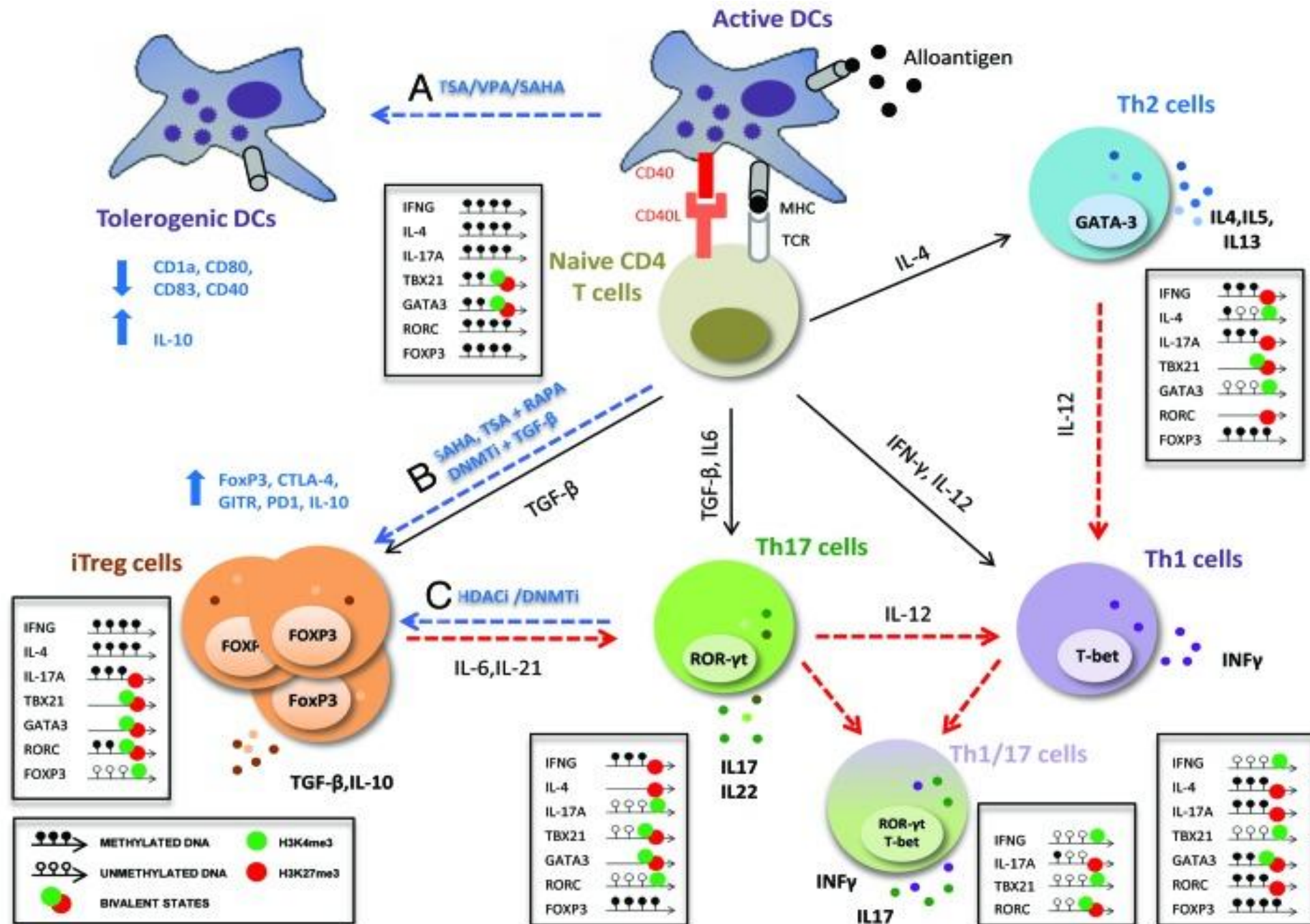


B.



C.







**<https://www.encodeproject.org/>**

**<http://www.roadmapepigenomics.org/>**