



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

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

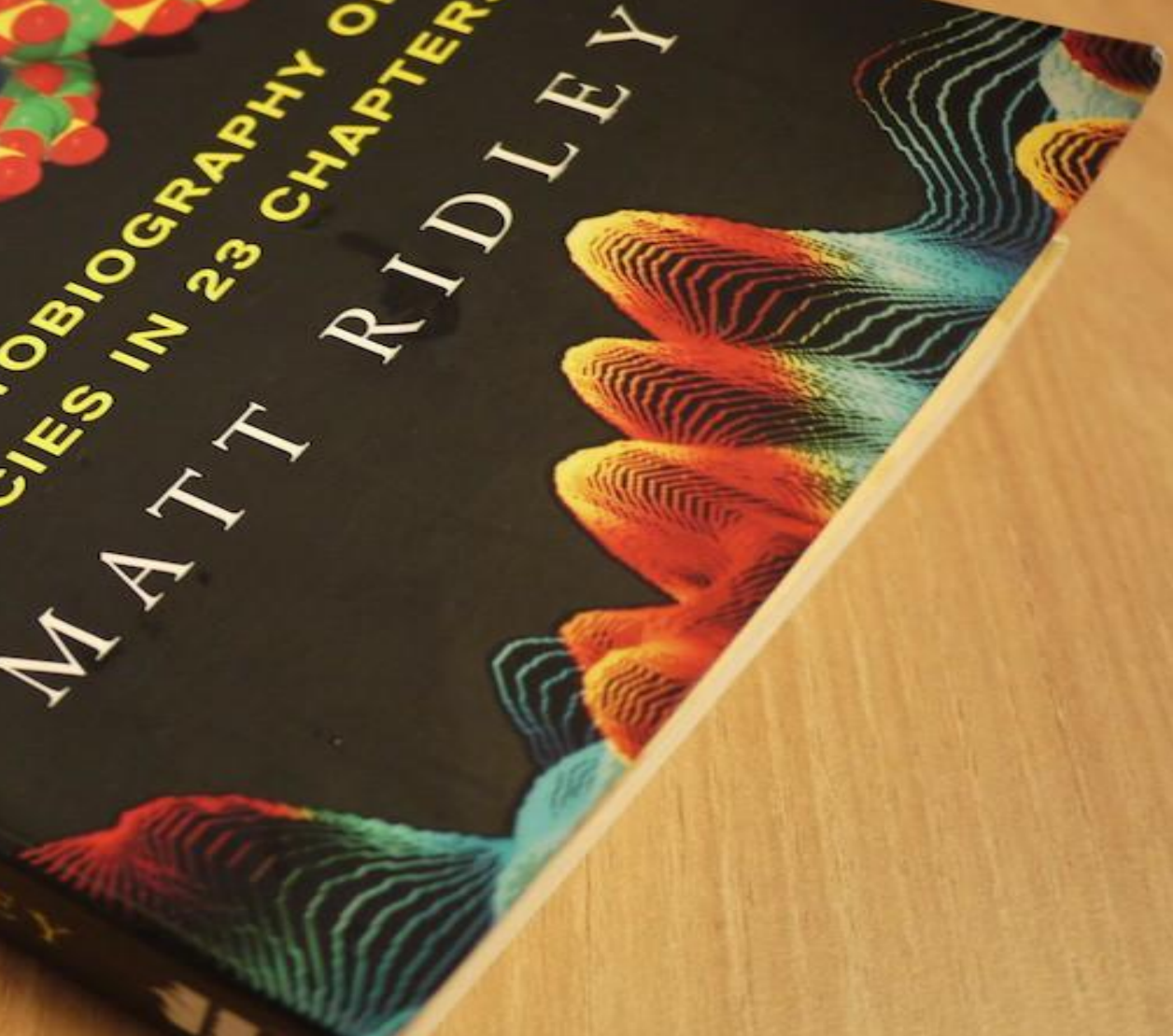
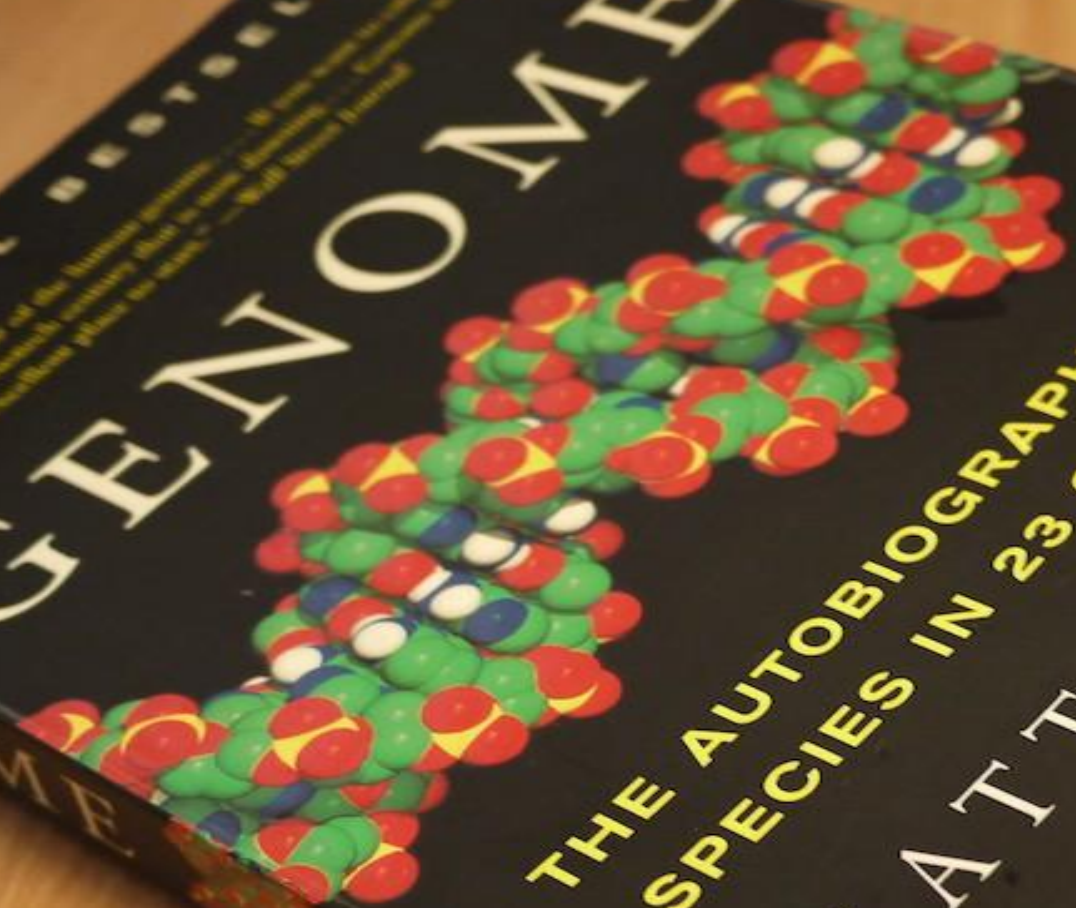
NATIONAL BESTSELLER

# GENOME

"A fascinating tour of the human genome... a journey of the human history that is more illuminating than any other." —Neil deGrasse Tyson

THE AUTOBIOGRAPHY OF A  
SPECIES IN 23 CHAPTERS

MATT RIDLEY





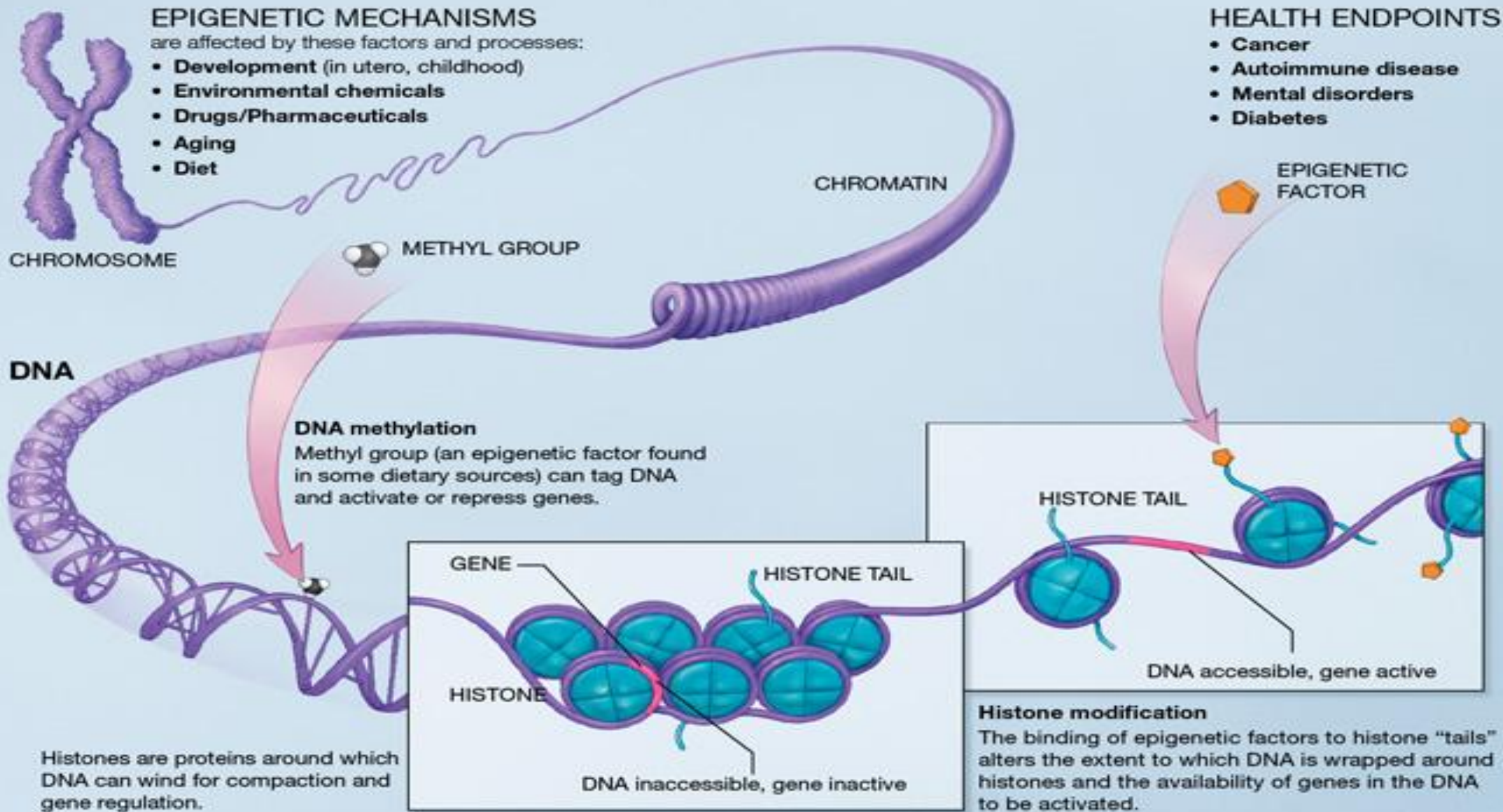


Описание  
Работы с...  
Далее в России  
в подруги свои  
разбойные част-  
ные. Не одна из  
них этой царицы  
лесной уборщи,  
ее бы не было на

человек  
А. В. Кривоноз  
мации на кра-  
научная сове-  
Вроде бы по сти-  
лю и сохранил  
работы и сейчас  
много все что





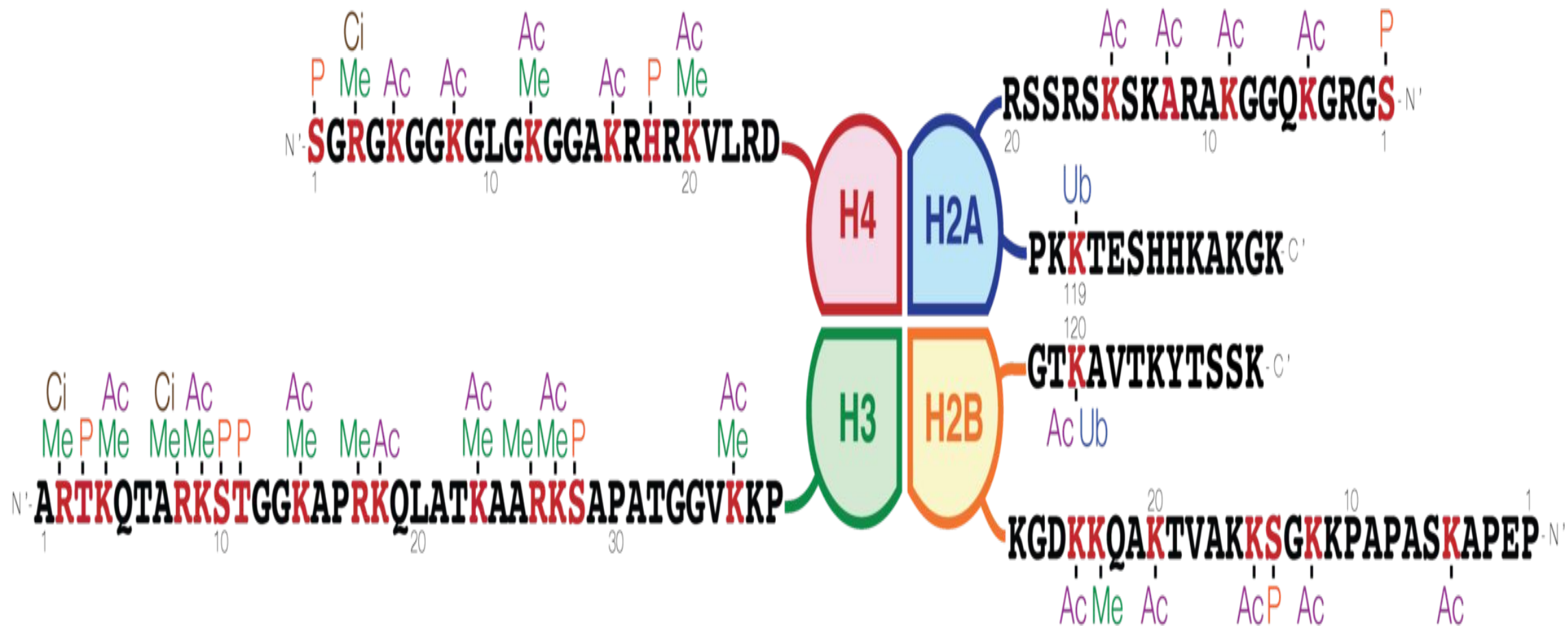


# Епігенети

**ка**

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





Me Methylation

Ac Acetylation

Ci Citrullination

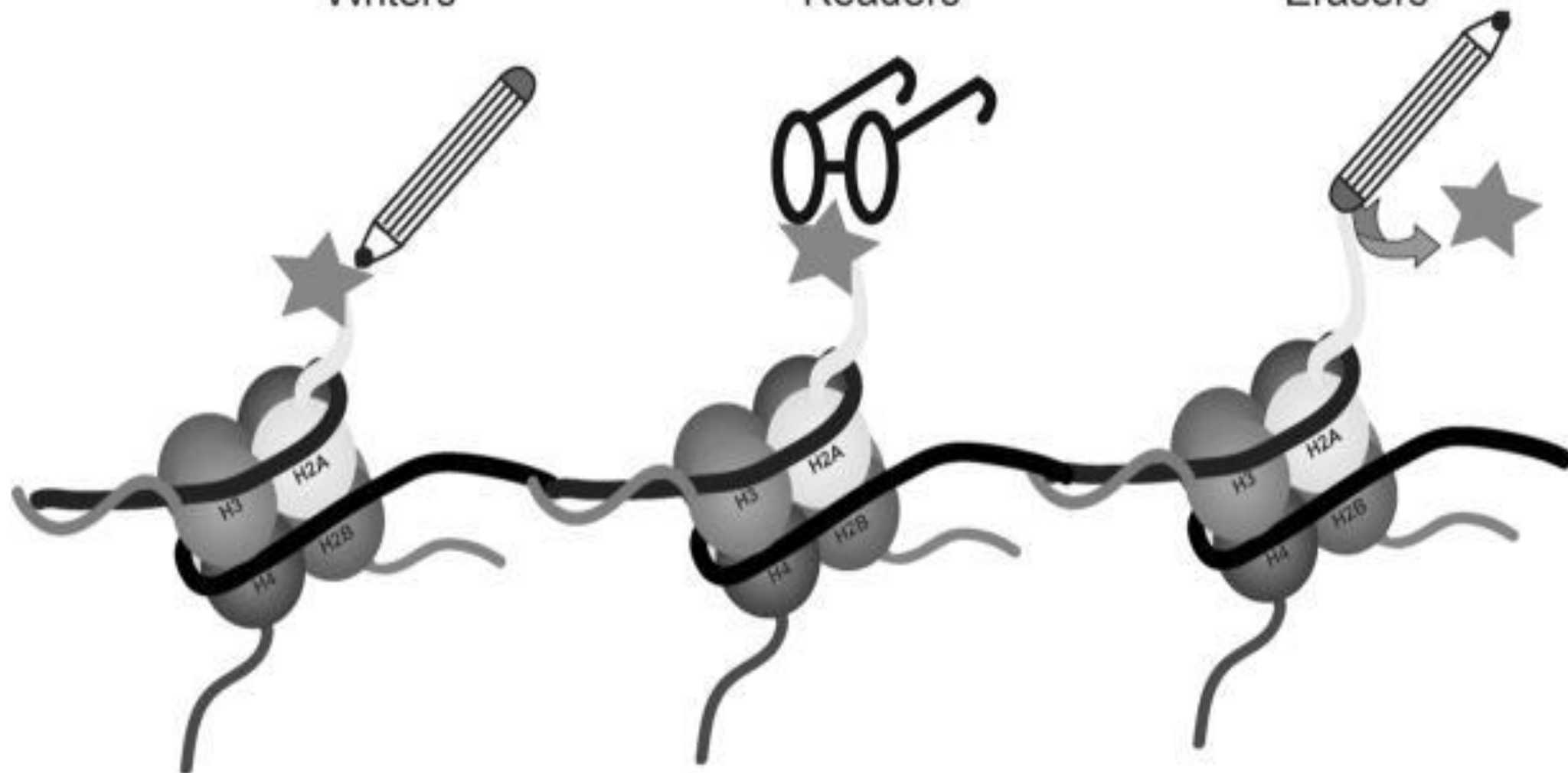
Ub Ubiquitination

P Phosphorylation

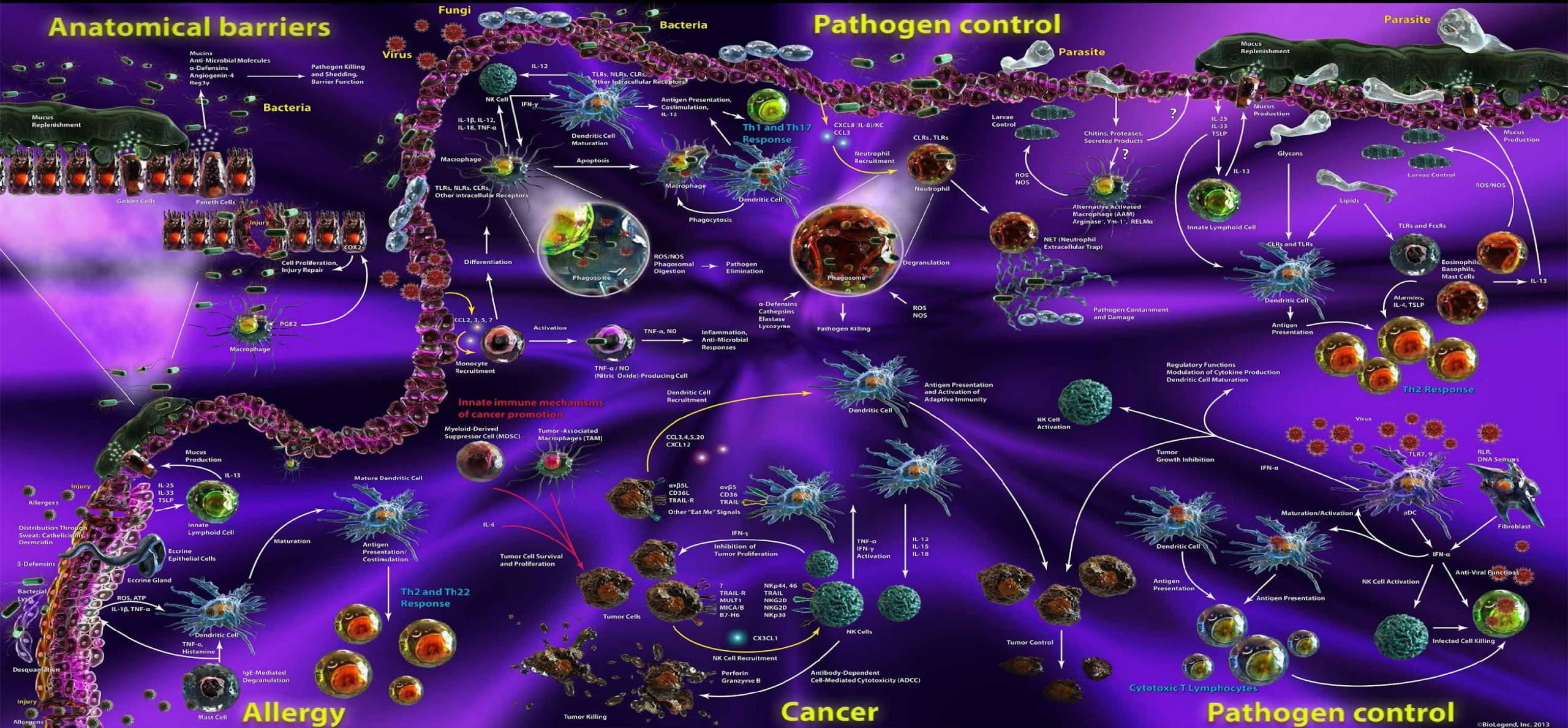
Writers

Readers

Erasers



~147 bp



CD11c CD80 CD86 MHC-II CLRs TLRs	CD3 <sup>+</sup> CD11b <sup>+</sup> CD119 <sup>+</sup> CD19 <sup>+</sup> CD99 <sup>+</sup>	Human: CD123 CD11b <sup>+</sup> CD119 <sup>+</sup> CD19 <sup>+</sup> CD99 <sup>+</sup>	CD49b CD36 CD122 CD314 (NKG2D) CD336 (NKG4) LY6C CD317	Classic AAM CD36 CD122 CD314 (NKG2D) CD336 (NKG4) TLRs FA/80 RELMs	CD33 CD117 CD203c Fc $\gamma$ R1b	CD11b CD15 CD36 Minc1 Gr-1	CD3 <sup>+</sup> CD11b <sup>+</sup> CD15 <sup>+</sup> CD11c <sup>-</sup> CD96 <sup>+</sup> B220 <sup>-</sup> CD49b <sup>+</sup>	TLR: Toll-like receptor NLR: NOD-like receptor CLR: C-type lectin receptor ILR: Interleukin-like receptor
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biolegend.com

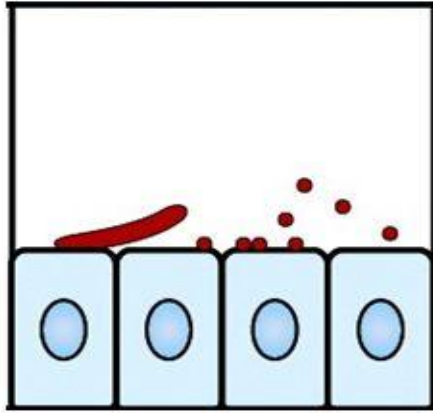
Interactive Poster: [biolegend.com/innateimmunity](http://biolegend.com/innateimmunity)

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

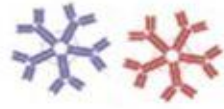
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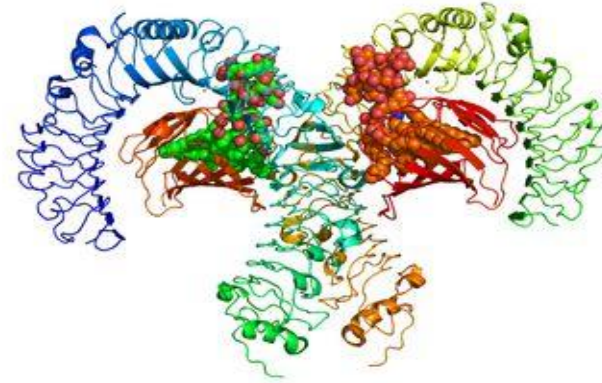
# Innate Immunity



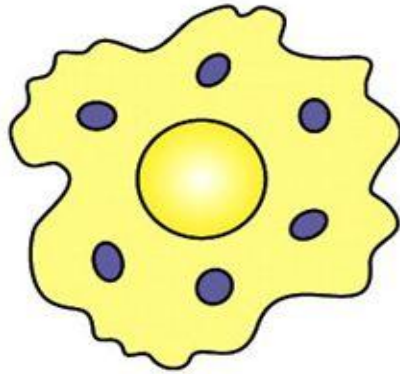
Epithelial barriers



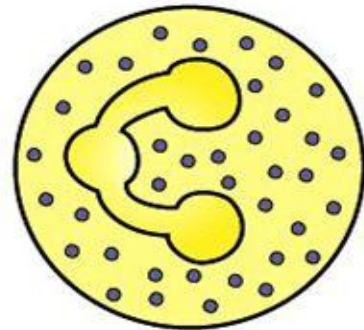
Soluble molecules



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



Macrophages

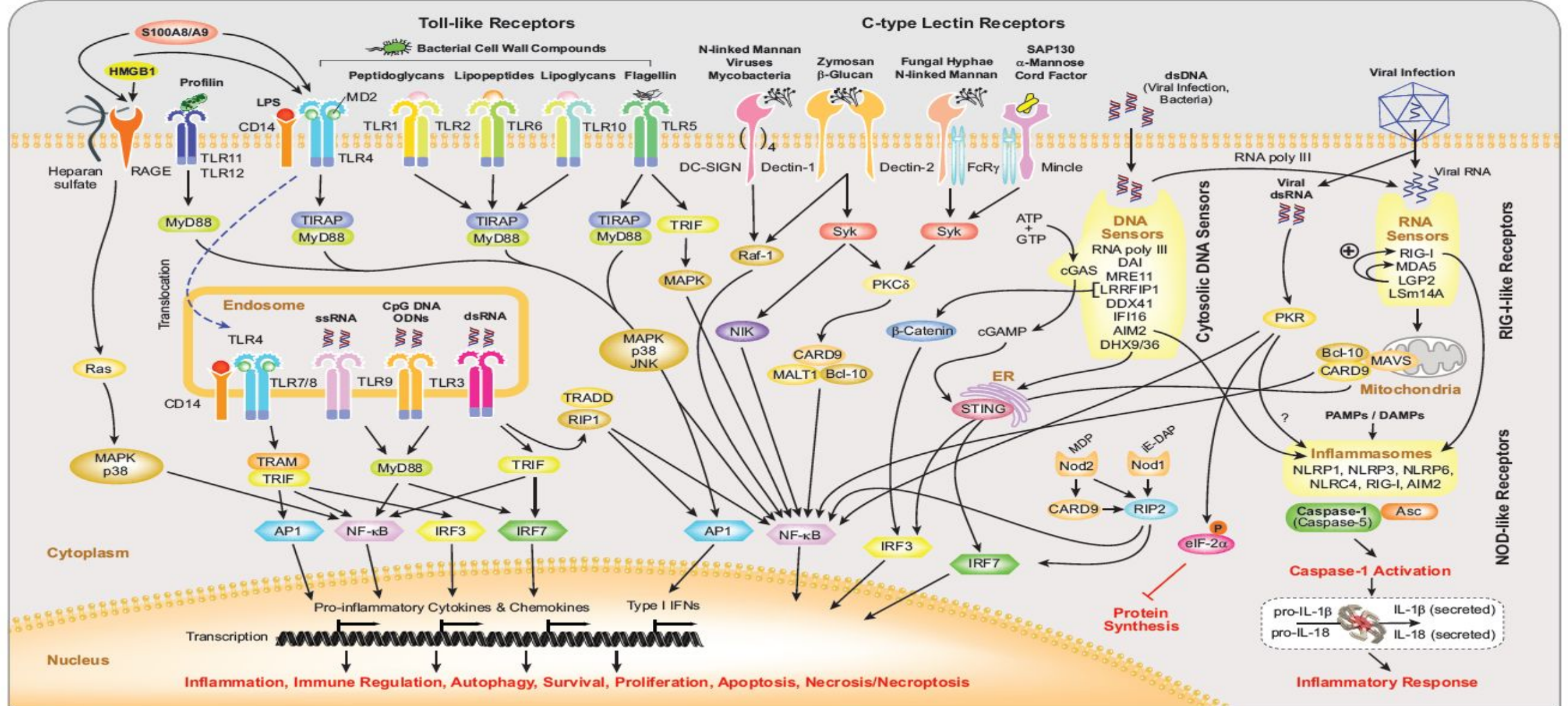


Neutrophils

# Pattern Recognition Receptors (PRRs) Signaling Pathways

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 Schützenstrasse 12 · CH-4410 Liestal · Switzerland  
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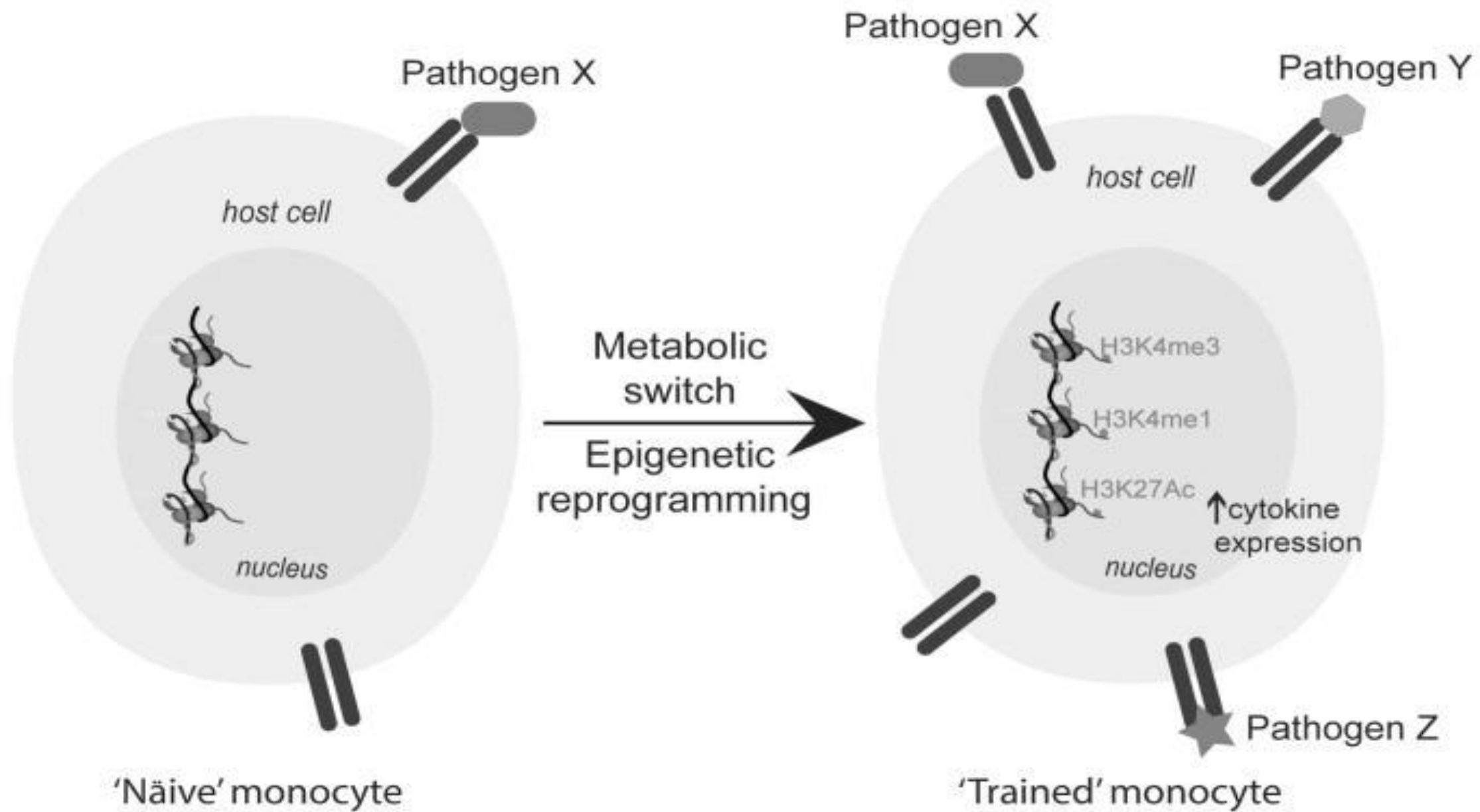
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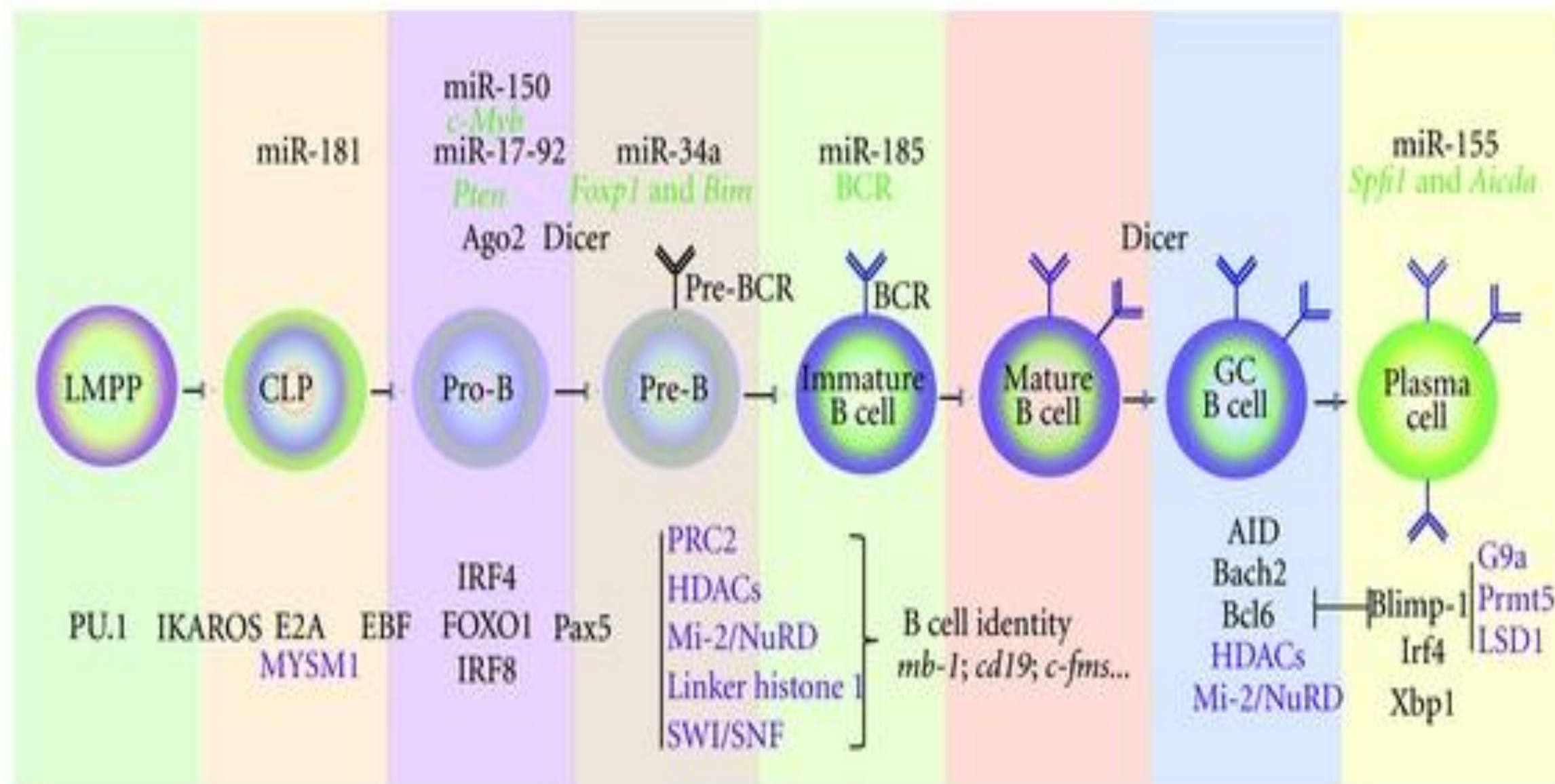
→ Activation  
 - - - Translocation  
 —|— Inhibition  
 TLRs: ← Horseshoe-shaped solenoid N-terminal extracellular leucine-rich repeat (LRR) motifs  
            ← Compact and globular C-terminal intracellular Toll/interleukin-1 receptor (TIR) domain

TLR11/TLR12: Expressed in mice only



# **В- лімфоцити**

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





1.

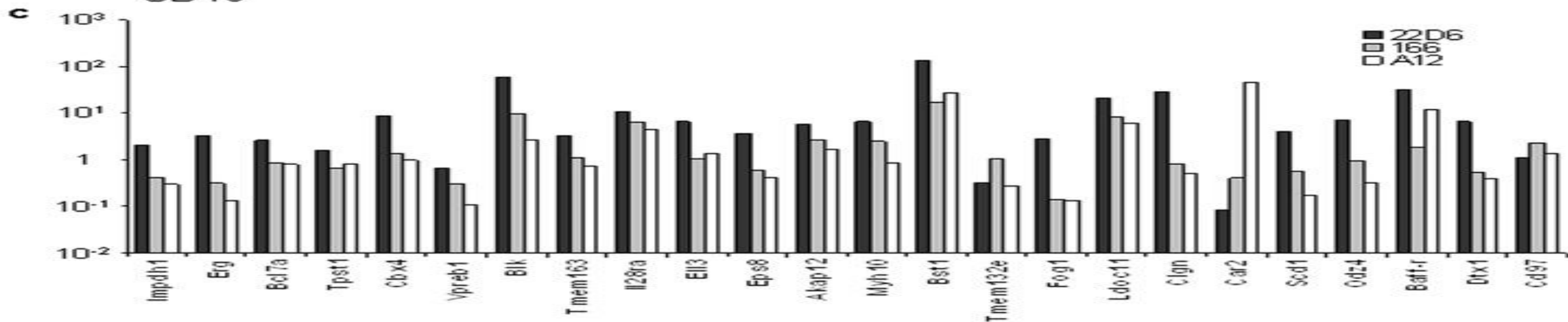
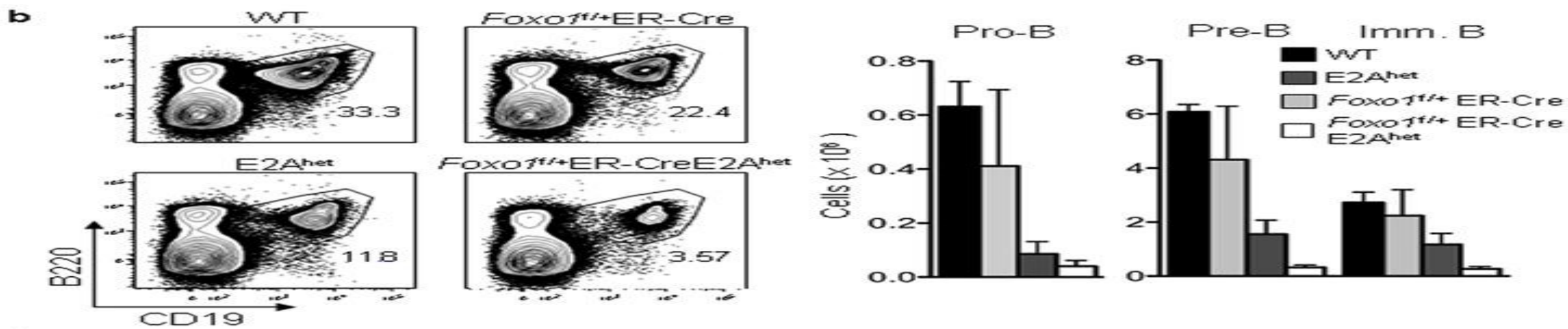
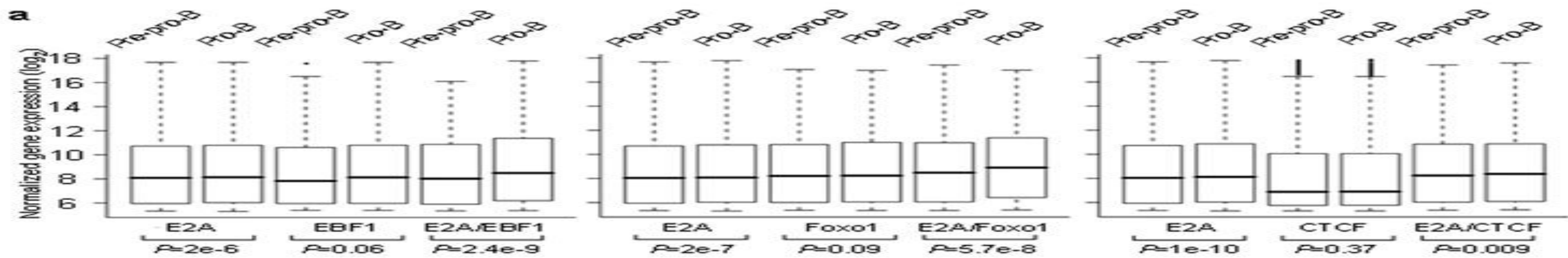
Клітина попередник лімфопоезу: для перетворення в В-лімфоцити мають подіяти транскрипційні фактори - *ikaros* та *PU*.

2.

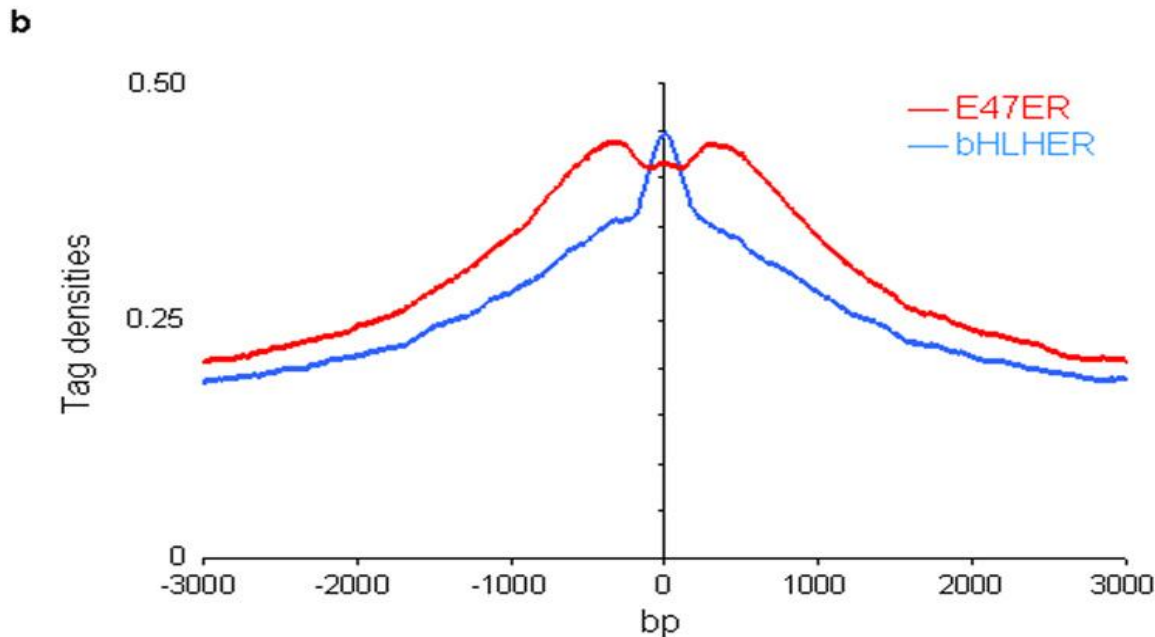
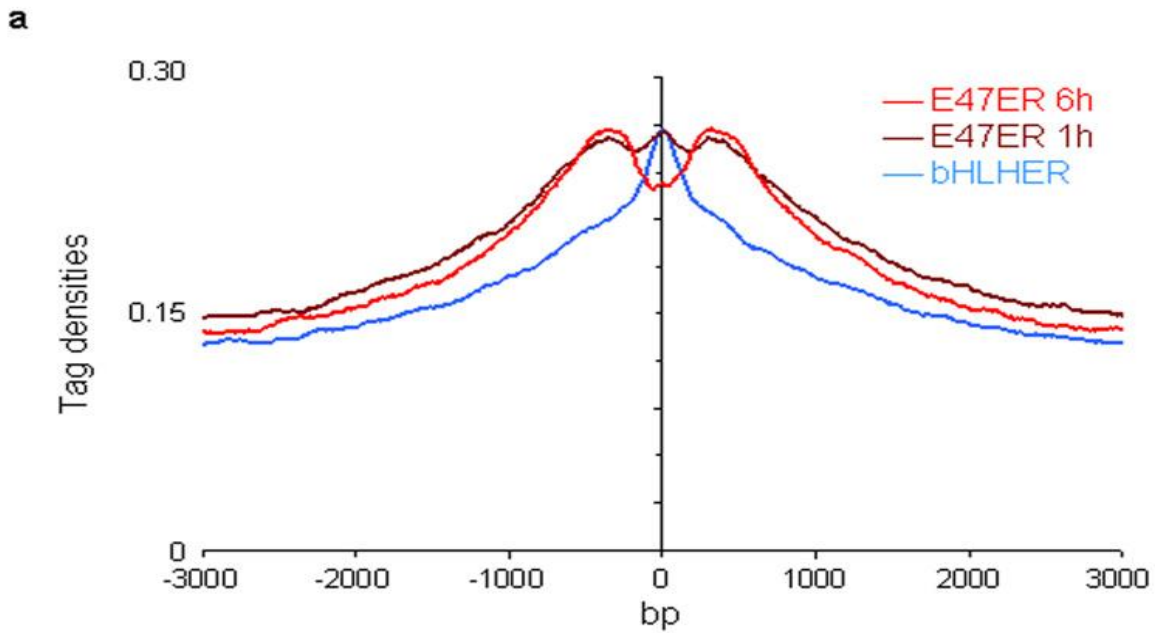
Рання «спеціалізація»: E2A, EBF, and FOXO1 ( а саме реанжерування генів V(D)J).

3.

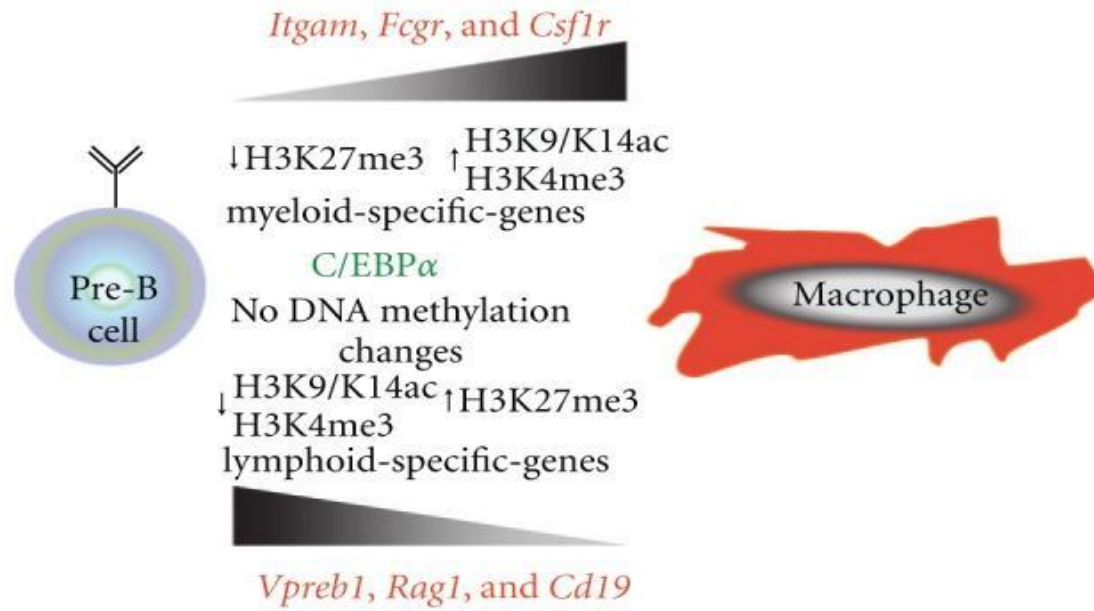
Фактори репресії транскрипції Bcl6 and Blimp-1 мають місце в перетворенні в плазматичні клітини.



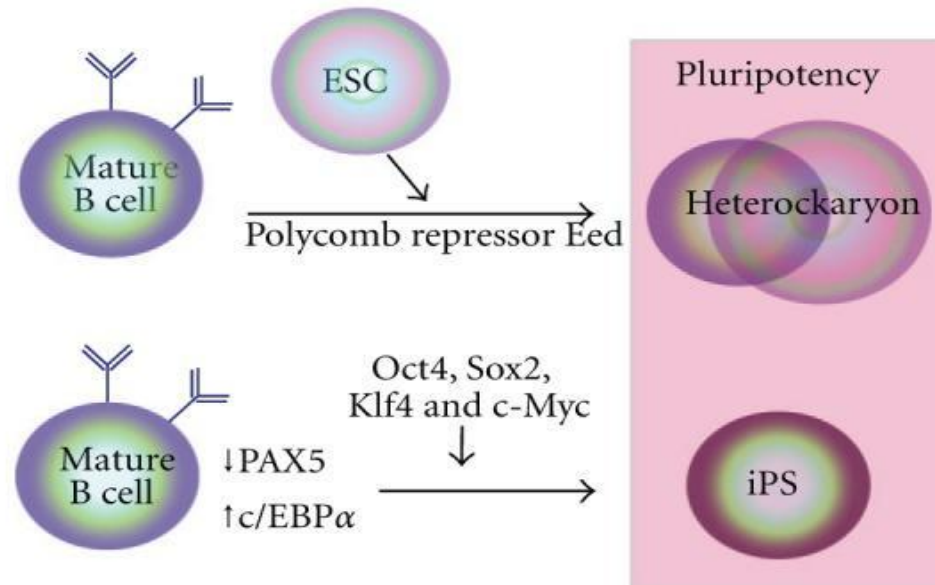




E47 DNA binding alters the pattern of H3K4 monomethylation. (a) Forced E47 expression in E2A-deficient pre-pro-B cells promotes the establishment of a bimodal distribution of H3K4me1 centered across E2A occupancy. E2A-deficient pre-pro-B cells were transduced with virus carrying the full-length coding 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

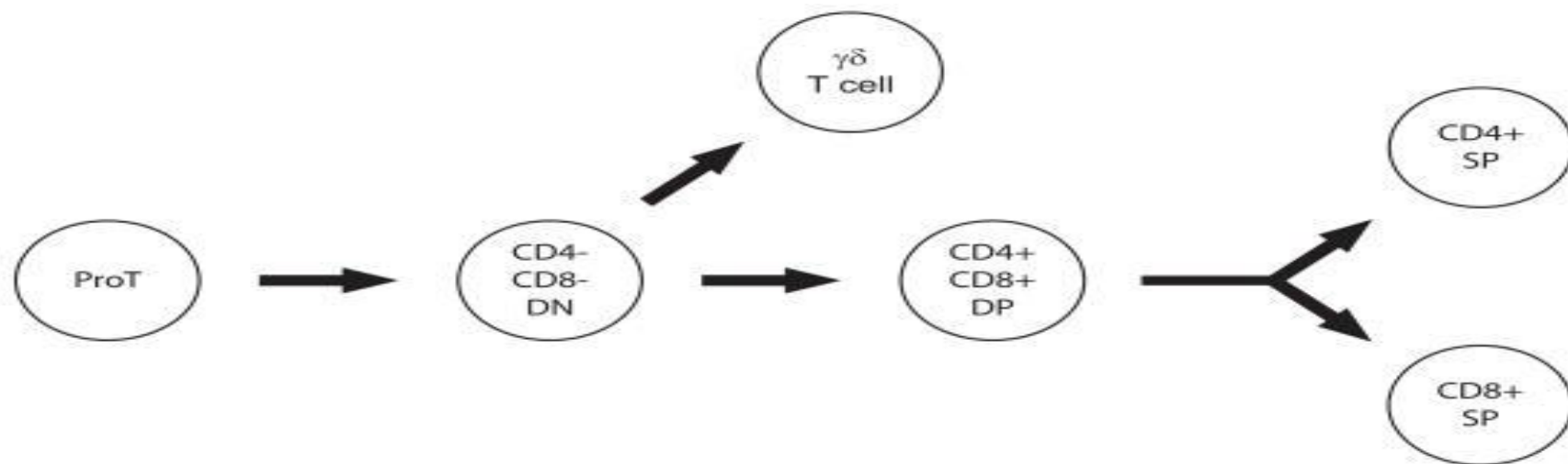


(b) Reprogramming to pluripotency

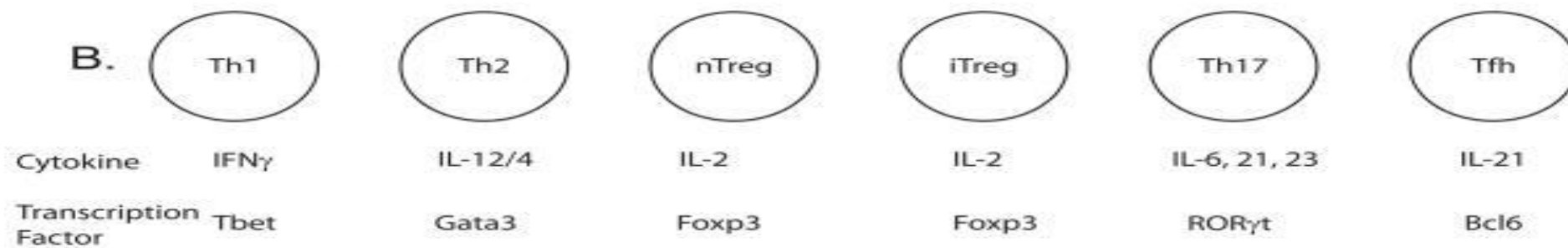
# T- лімфоцити

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

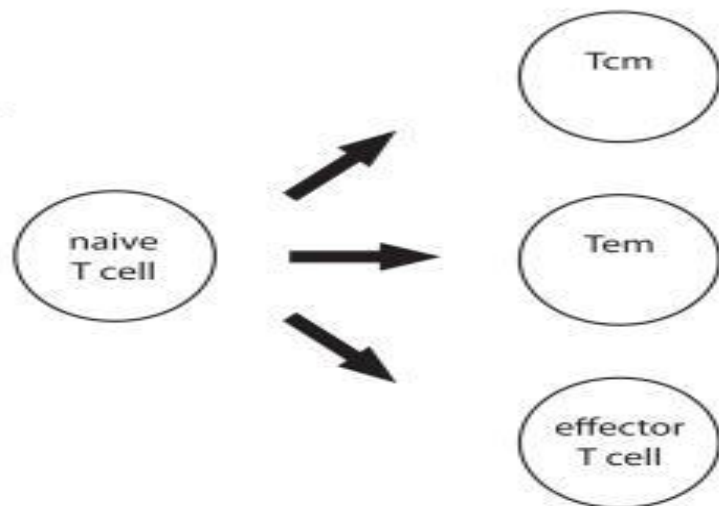
A.

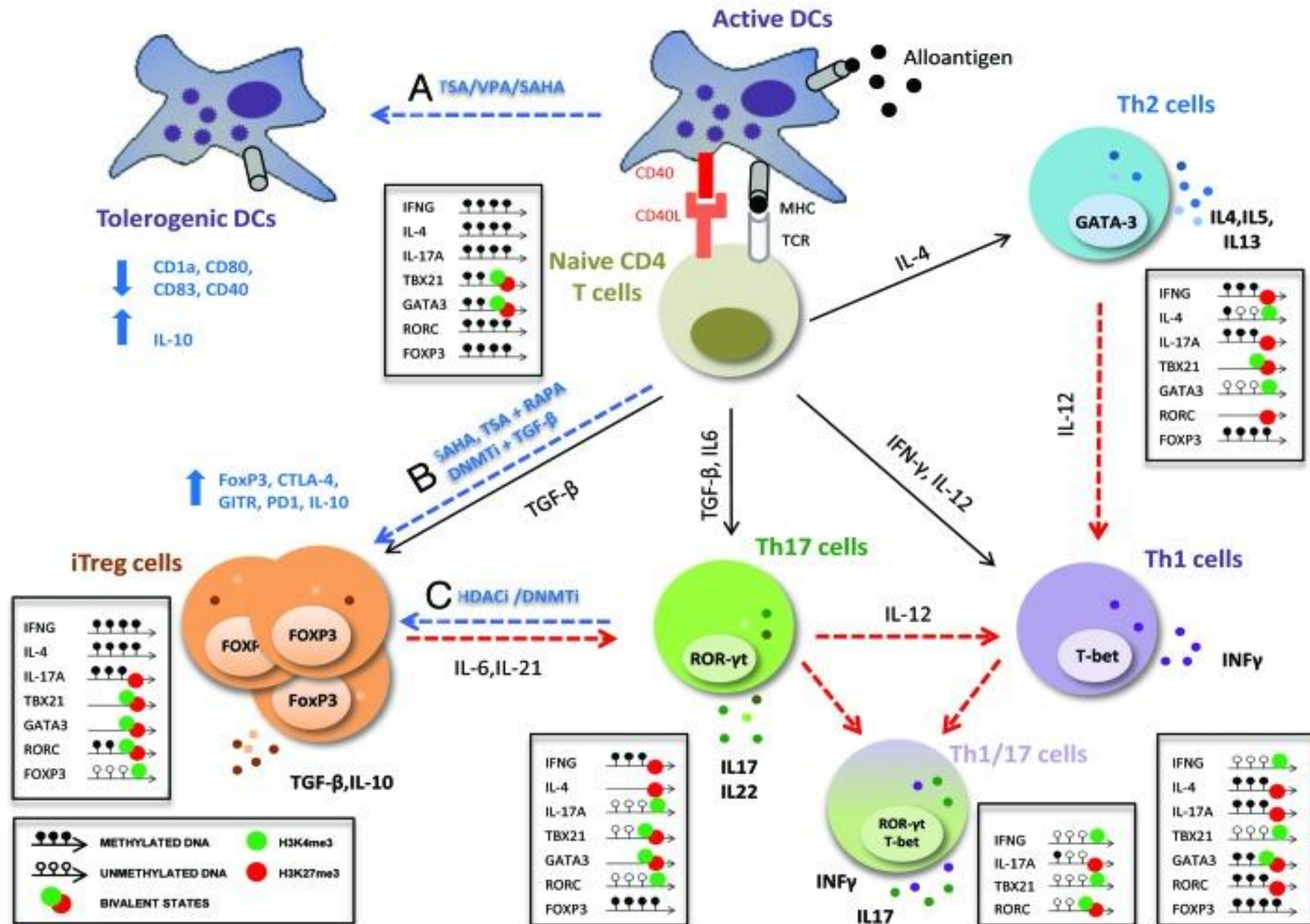


B.



C.







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

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