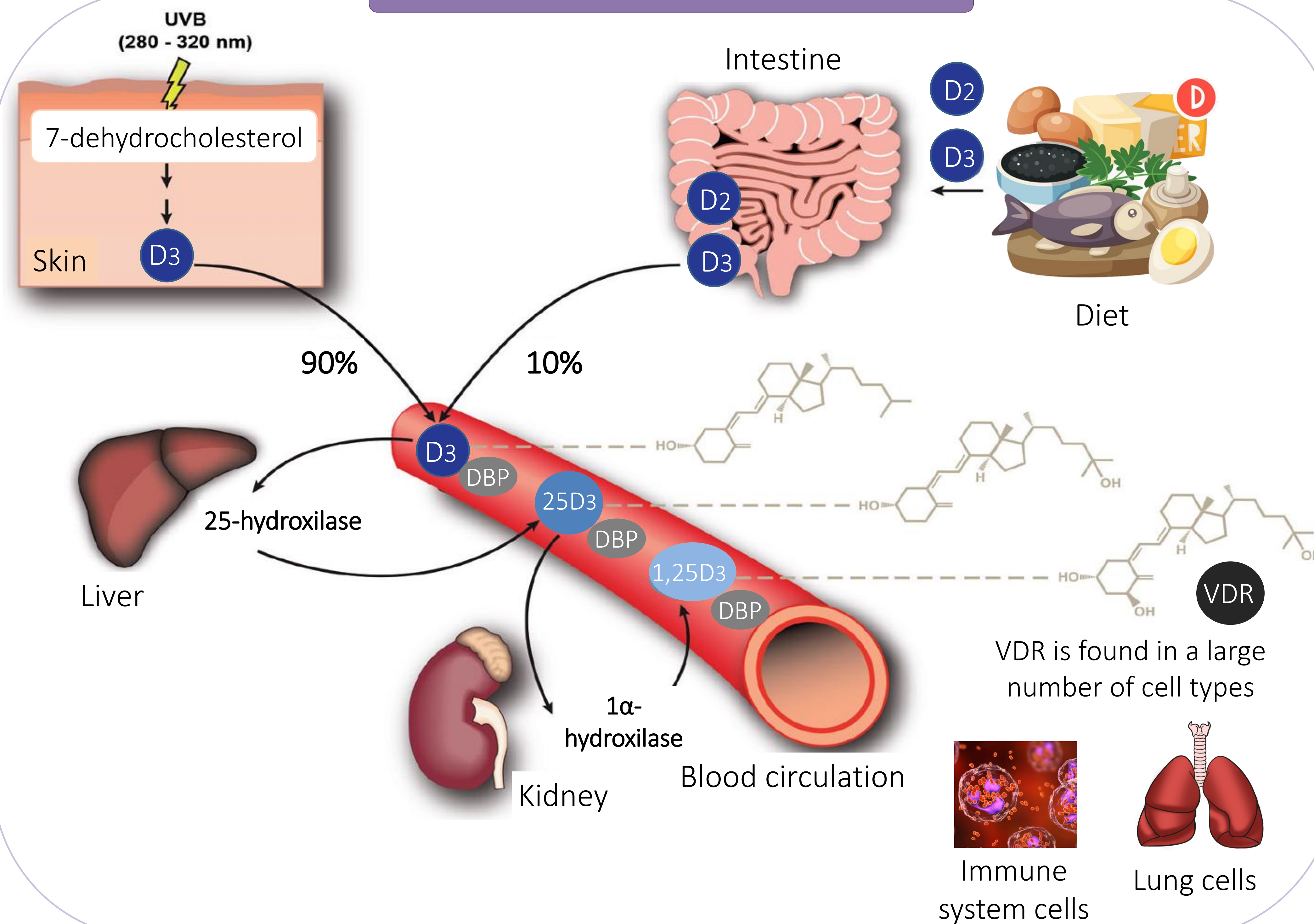


AIMS

1. To understand the synthesis mechanism of vitamin D in the body
2. To understand the mechanisms of action of vitamin D involved in the defense of the body against a SARS-CoV-2 infection
3. To investigate the association between low levels of vitamin D and evolution of COVID-19 infected patients

SYNTHESIS MECHANISM OF VITAMIN D



VITAMIN D LEVELS

Toxicity	Optimal levels	Insufficiency	Deficiency*
>150 ng/ml	30-70 ng/ml	20-29 ng/ml	<20 ng/ml

*Present the maximum benefits of vitamin D supplementation

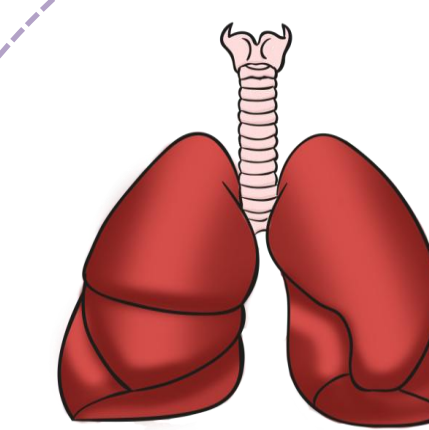
CONCLUSIONS

- Immunomodulatory, antiviral, anti-inflammatory, and lung protective vitamin D actions confer the vitamin D an important role on the prevention of SARS-CoV-2 infection.
- Although there is still insufficient evidence to justify supplementing with vitamin D in the COVID-19 pandemic, the vitamin D role in enhancing the immune response has been demonstrated.

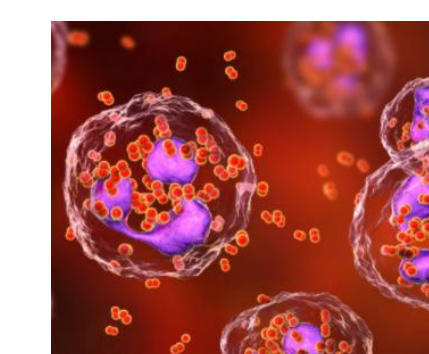
INTRODUCTION

- Vitamin D exerts its biological function through its binding to the VDR
- Vitamin D is a steroid hormone involved in modulating the immune system → interferes with SARS-CoV-2 viral replication
- Fatality rates from SARS-CoV-2 infection frequently increase in people with pathologies associated with low levels of vitamin D

ROLE OF VITAMIN D AGAINST SARS-COV-2 INFECTION



- Anti-inflammatory and antioxidant action at the lung
- Stimulates the physical barrier integrity of the alveolar epithelium
- Promotes ECAII expression of SRAA in the alveolar epithelium = ↓ Ang II



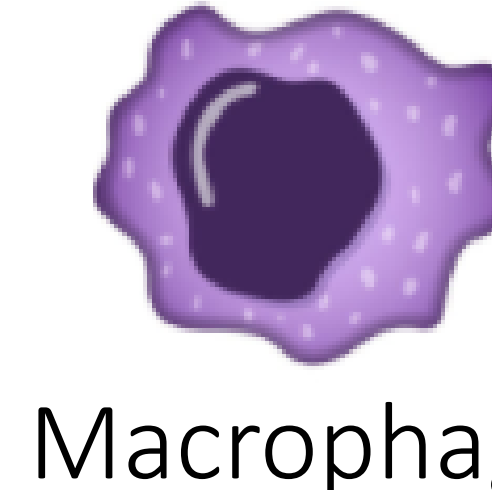
- Promotes innate immunity
- Limits adaptative immunity, avoiding excessive inflammation

VITAMIN D

INNATE IMMUNITY

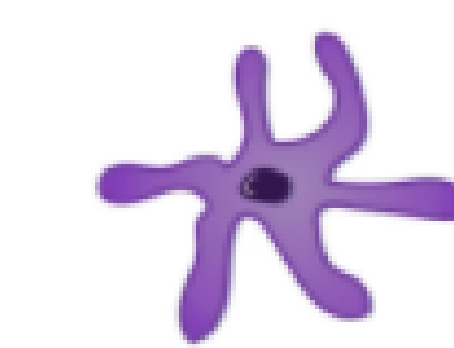


Monocyte



Macrophage

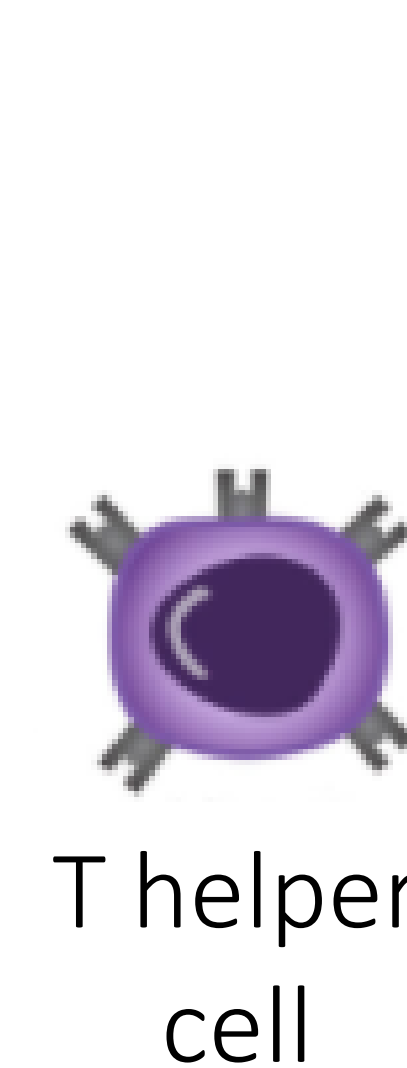
- ↑ Macrophage differentiation
- ↑ Phagocytosis
- ↑ Synthesis of antimicrobial peptides



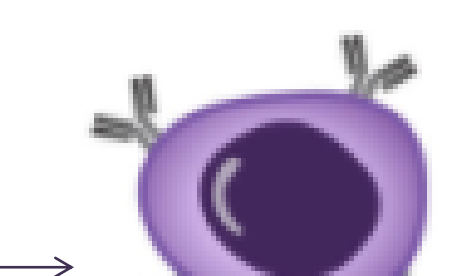
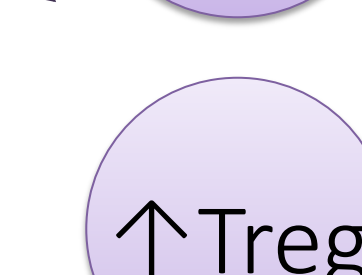
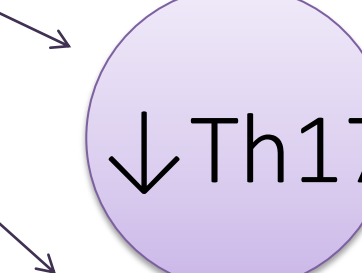
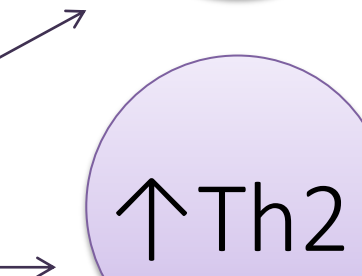
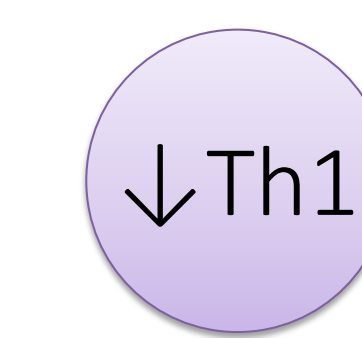
Dendritic cell

- ↓ Dendritic cell maturation
- ↓ Antigenic presentation

ADAPTATIVE IMMUNITY



T helper cell



- ↓ Pro-inflammatory cytokines

- ↑ Anti-inflammatory cytokines
- Regulation of B cell proliferation = ↓ Ig

- ↓ Pro-inflammatory IL-17 cytokine
- ↓ Autoimmunity

- ↑ T helper cell suppression

REFERENCES

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- Zuluaga Espinosa, N. A., Alfaro Velásquez, J. M., Balthazar González, V., Jiménez Blanco, K. E., & Campuzano Maya, G. (2011). Vitamina D: nuevos paradigmas.