



Health Cluster Portugal

Pólo de Competitividade da Saúde

# In search of an oral therapeutic Hepatitis B vaccine

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MILLION PERSONS  
WORLDWIDE ARE  
LIVING WITH HBV.

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• Encontros com a Inovação em Saúde •  
Novas agendas de investigação e inovação  
para a Saúde do futuro

In 2016 a Global strategy was approved in World Health Assembly to  
**ELIMINATING VIRAL HEPATITIS AS A PUBLIC HEALTH THREAT by 2030**

# In search of an oral therapeutic Hepatitis B vaccine



## Key facts

A prophylactic vaccine against hepatitis B has been available since 1982.

The vaccine is 95% effective in preventing infection and the development of chronic disease and liver cancer due to hepatitis B.

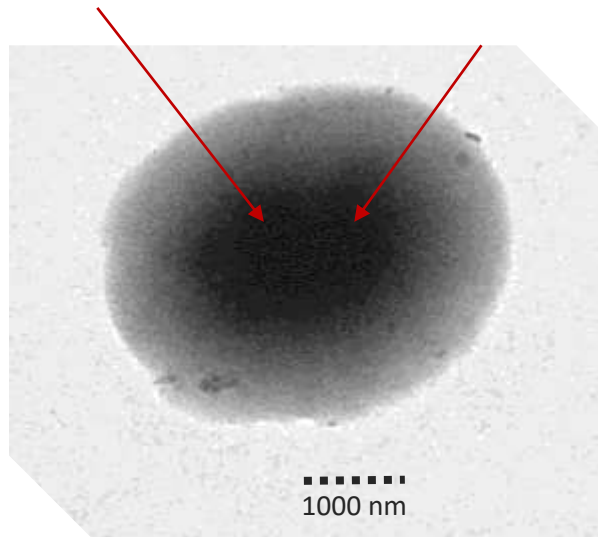
The vaccine is not useful for chronic hepatitis B patients

## What we need?

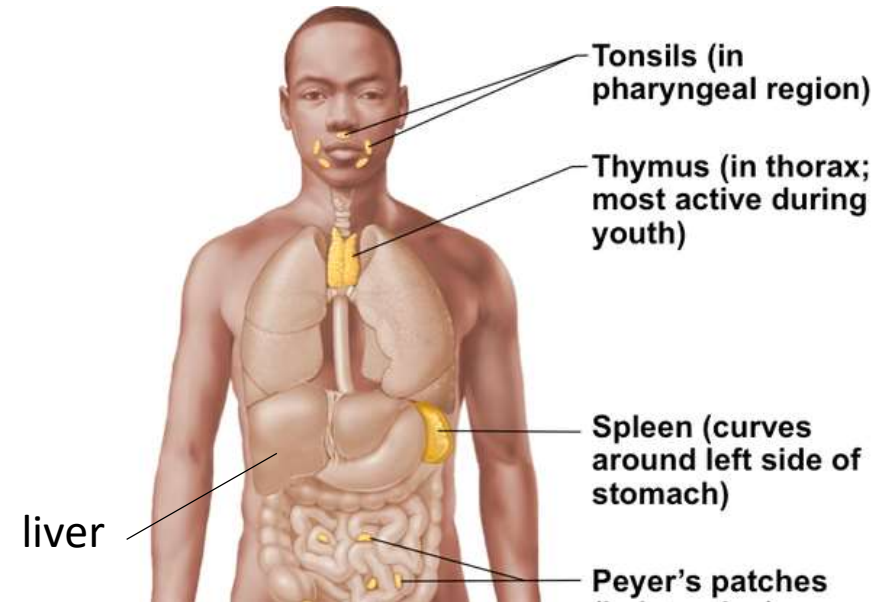
- A therapeutic vaccine
- A needle-free vaccine
- A thermostable vaccine



**Multicomponent delivery system  
with adjuvant properties  
Antigens & Immunopotentiators**

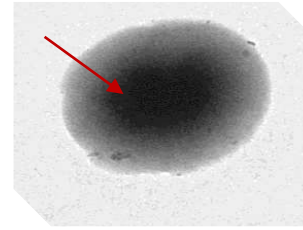


SC & oral  
administration



# Results already achieved

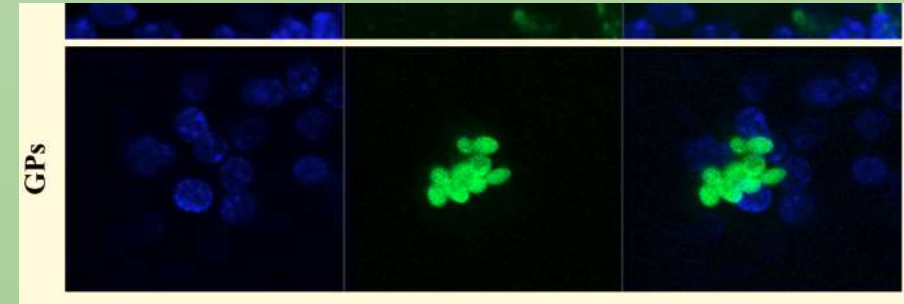
(mice)



## By s.c. administration:

- High titer of HBsAg antibodies(IgG1, IgG3)
- After in vitro re-stimulation with antigen - high concentration of cytokines (IFN- $\gamma$ ; IL-2, GM-CSF, IL-17 A, IL-9; IL-6, IL-22, IL-4; IL-5

## By SC + oral +oral administration:



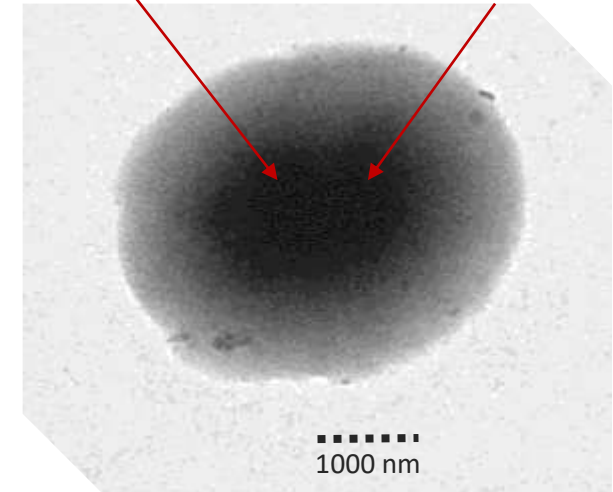
- Robust serum titers of HBsAg antibodies(IgG1, IgG3)
- Presence of mucosal antibodies
- Presence of IFN- $\gamma$  in Liver tissue interstitial fluid

# Future work that still needs the financial support:

- To co-encapsulate a core antigen and an immunopotentiator and vaccination studies
- To depth assessment of cytokine composition in liver after oral vaccination
- To evaluate the effect of the formulation on CHB cells (PBMC's)



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**Thanks !!!!!**

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