

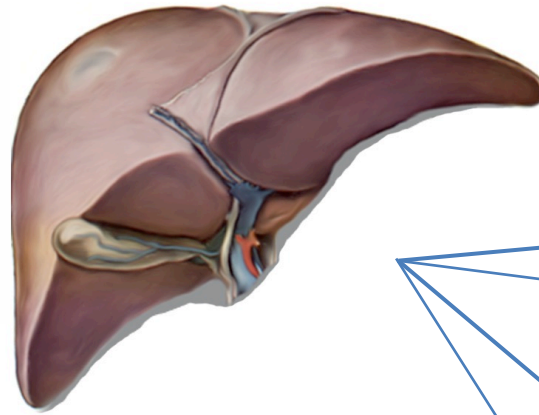
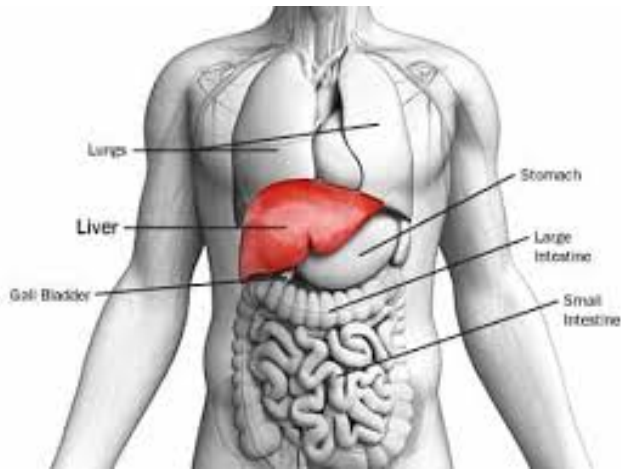


Institute for Cancer Research

RNA Helicase DDX5 in Hepatitis B virus hepatocellular carcinoma

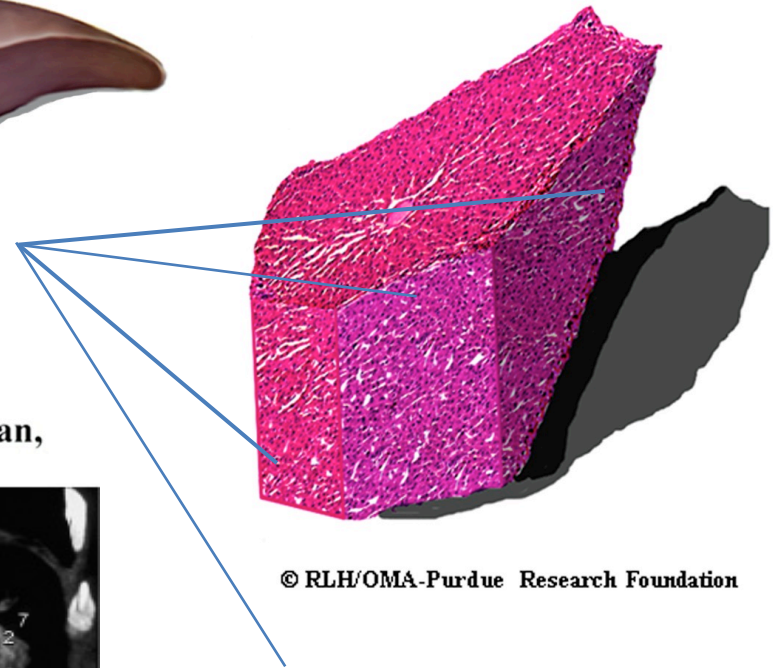
Ourania M. Andrisani Ph.D.

Department of Basic Medical Sciences and
Purdue Institute for Cancer Research

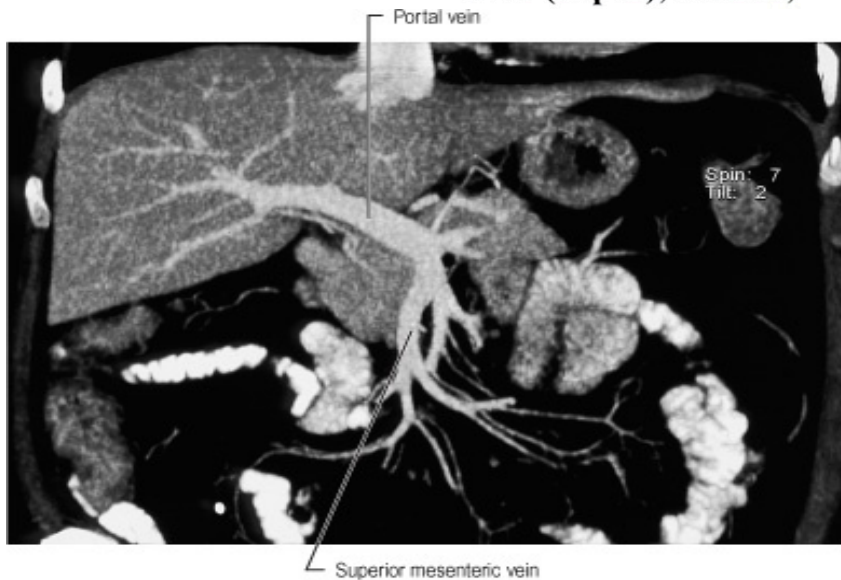


liver (hepar), human,

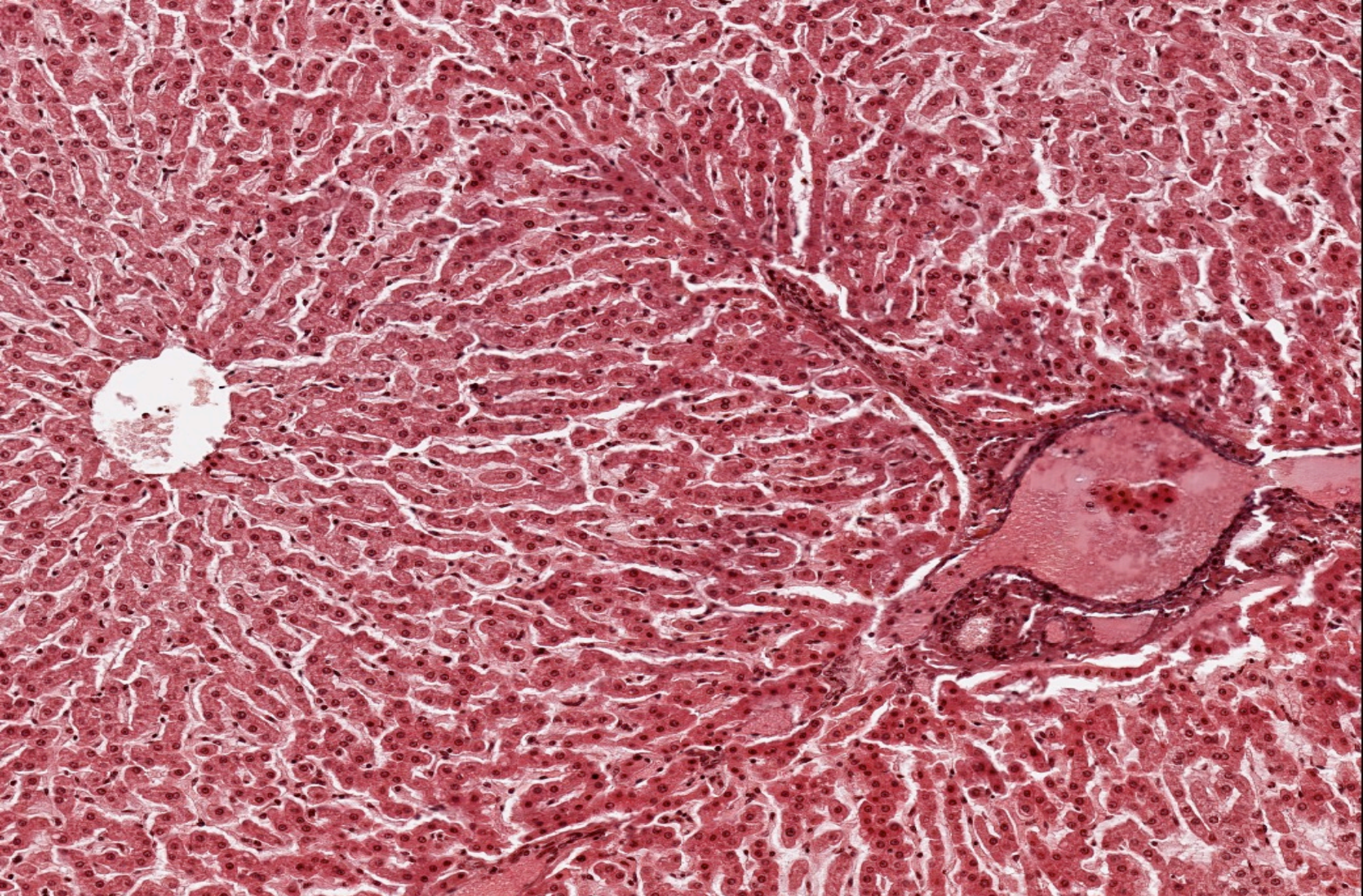
liver lobule (3-dimensional)

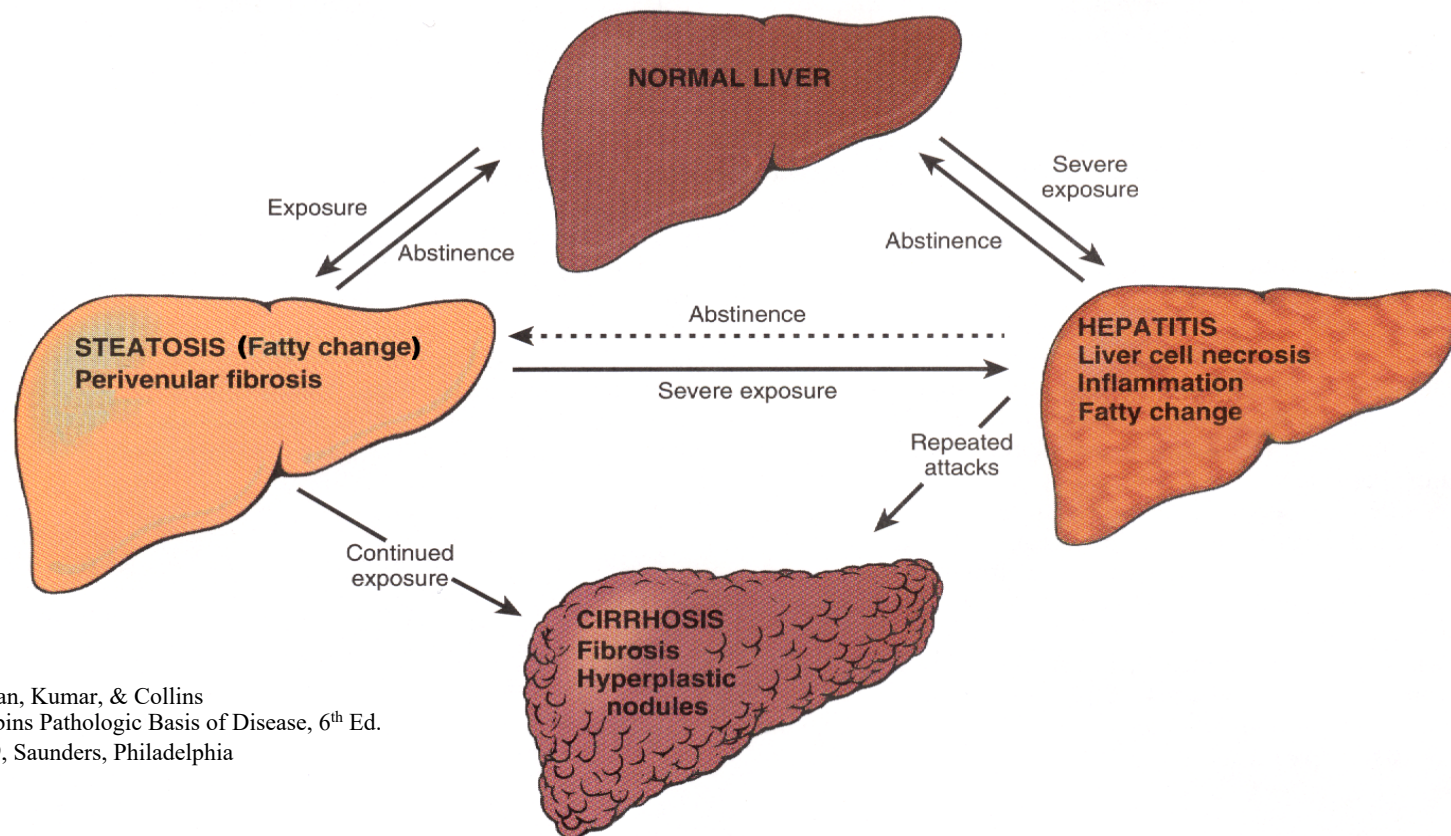


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Normal liver tissue and cells (hepatocytes)

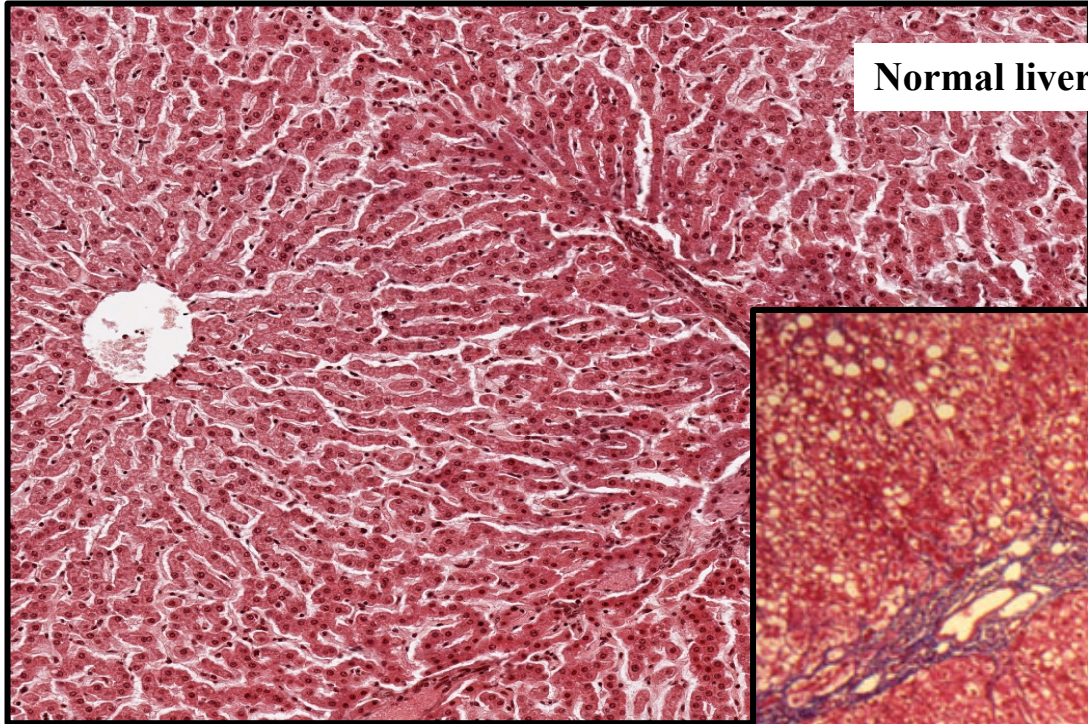




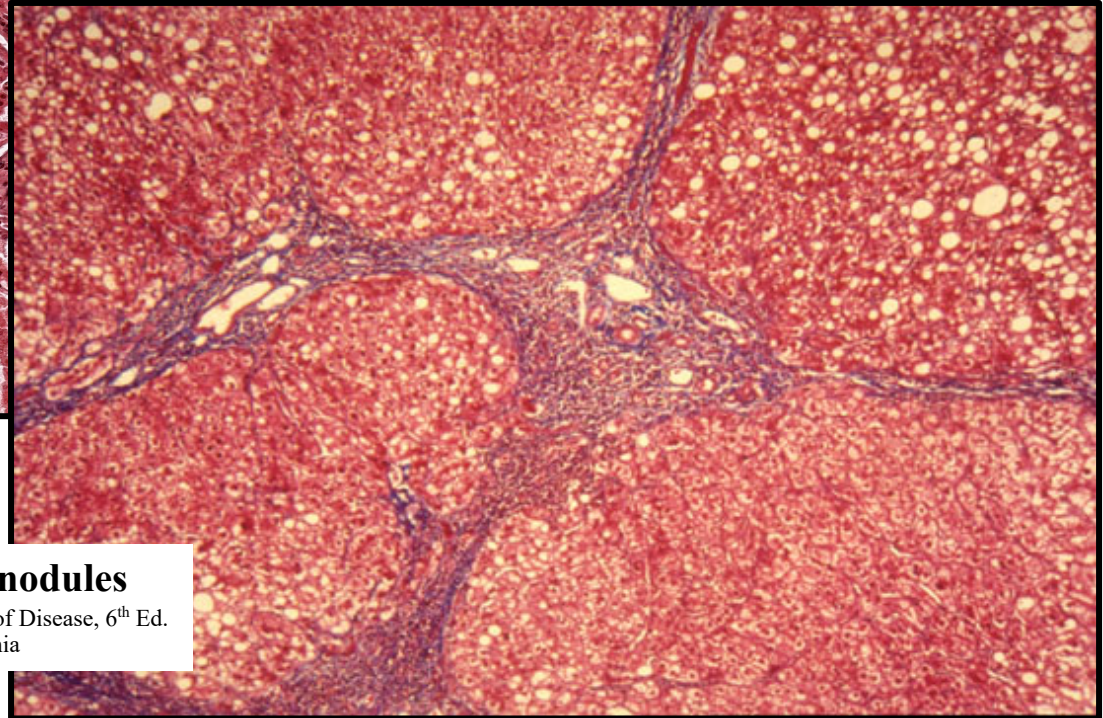
Cotran, Kumar, & Collins
 Robbins Pathologic Basis of Disease, 6th Ed.
 1999, Saunders, Philadelphia

Figure 19-22

Alcoholic liver disease. The interrelationships among hepatic steatosis, hepatitis, and cirrhosis are shown.



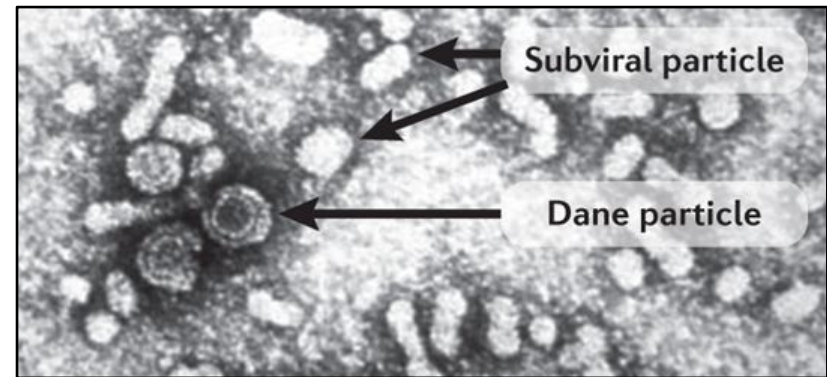
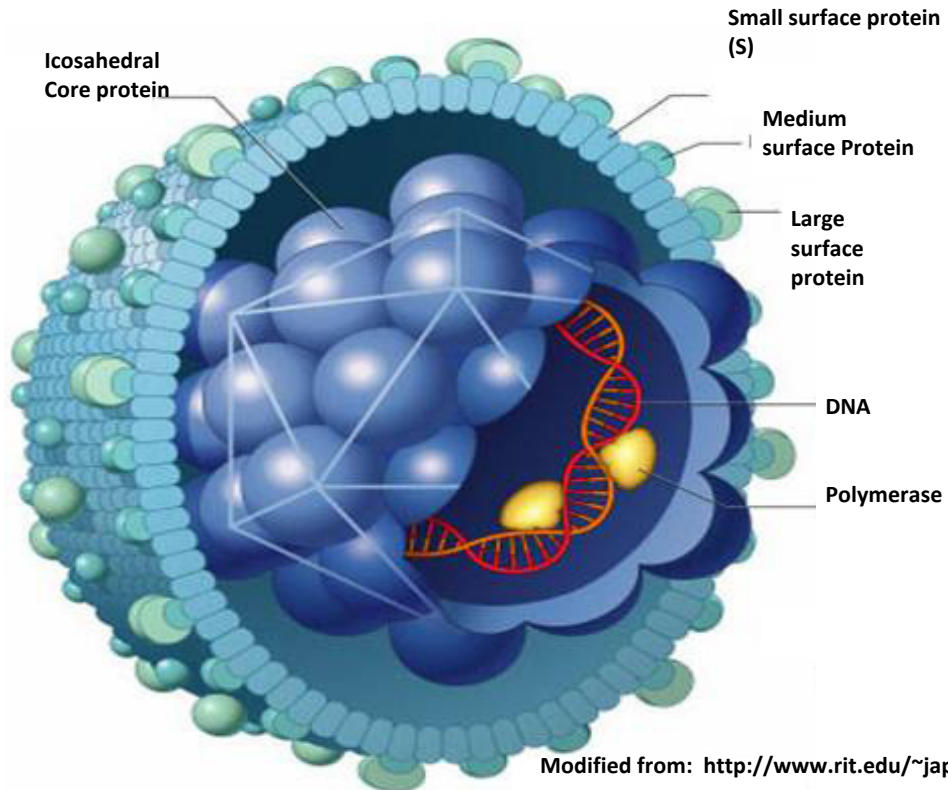
Normal liver tissue and cells (hepatocytes)

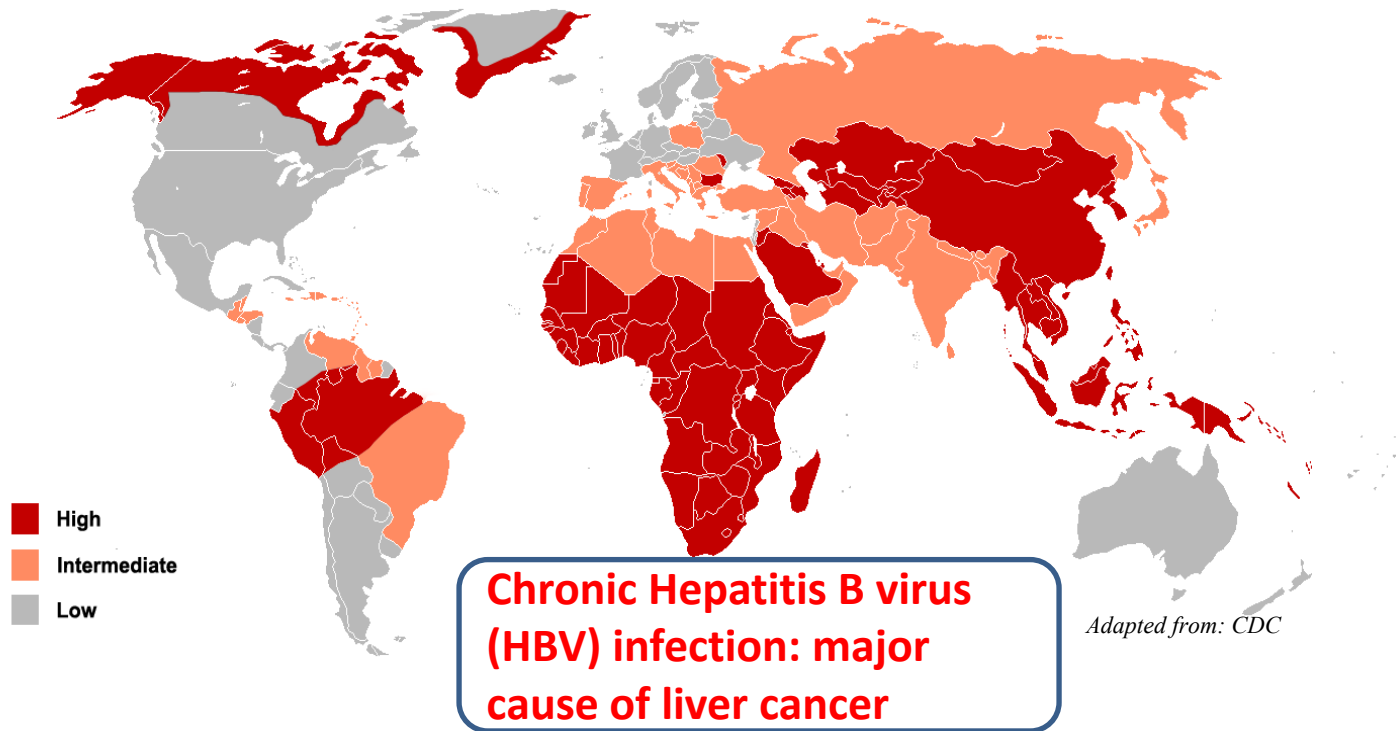


Cirrhotic liver nodules

Robbins Pathologic Basis of Disease, 6th Ed.
1999, Saunders, Philadelphia

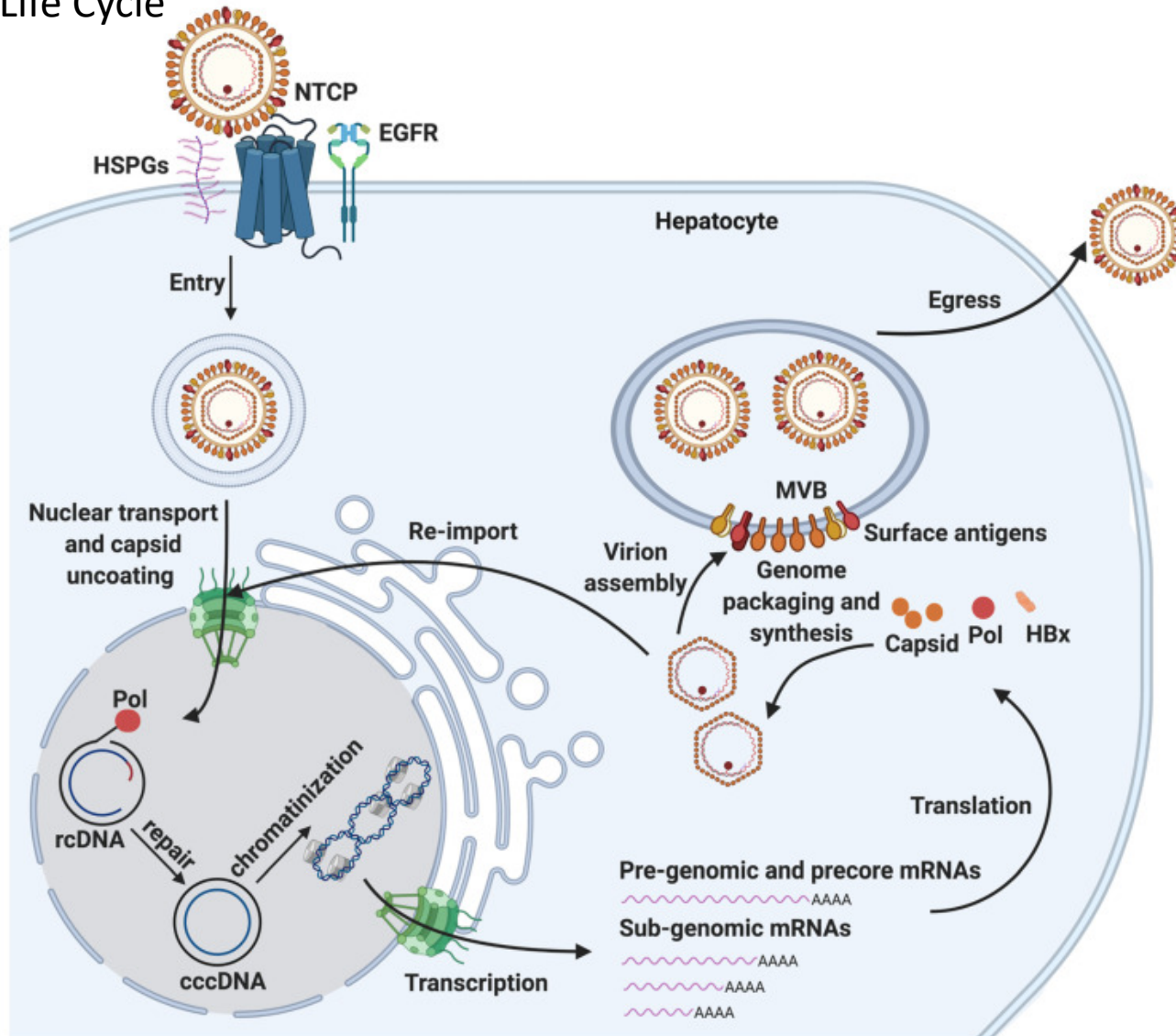
The Hepatitis B Virus Particle 30-42 nm diameter



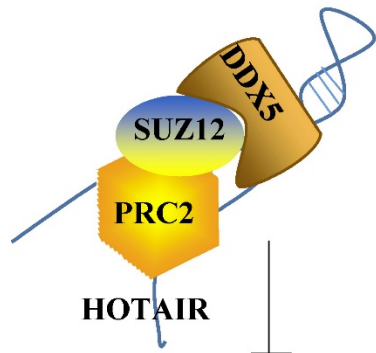


- **Chronic HBV infection is linked to Hepatocellular Carcinoma (HCC)**
- **250 million chronic carriers- WHO**
- **HCC has the fastest growing death rate in USA**
- **HBV is the major etiologic factor for HCC**
- **Endemic infections in parts of Africa, Southeast Asia and China**

HBV Life Cycle

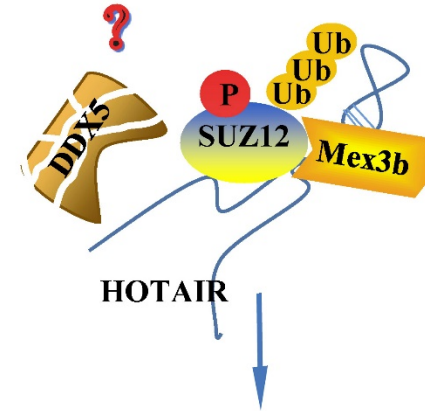


Epigenetic Mechanism Deregulated by HBV Infection Linked to Hepatocellular Carcinoma (HCC)



H3K27me3

Transcriptional Repression



Transcriptional De-Repression

Cellular and viral genes

Studach L. et al. J Biol Chem, 285:30282-93,2010

Wang WH et al, Hepatology, 53:1137-47, 2011.

Studach et al. Hepatology, 56:1240-51, 2012

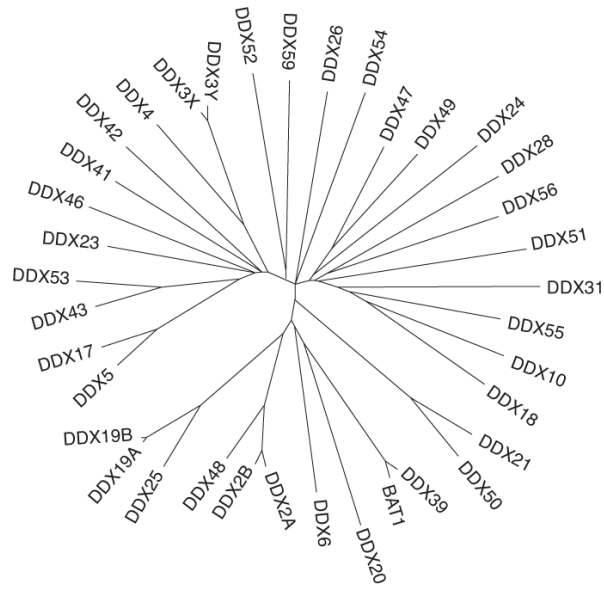
Zhang et al, Cancer Research, 75: 2363-74, 2015

Zhang et al, Hepatology, 64:1033-48, 2016

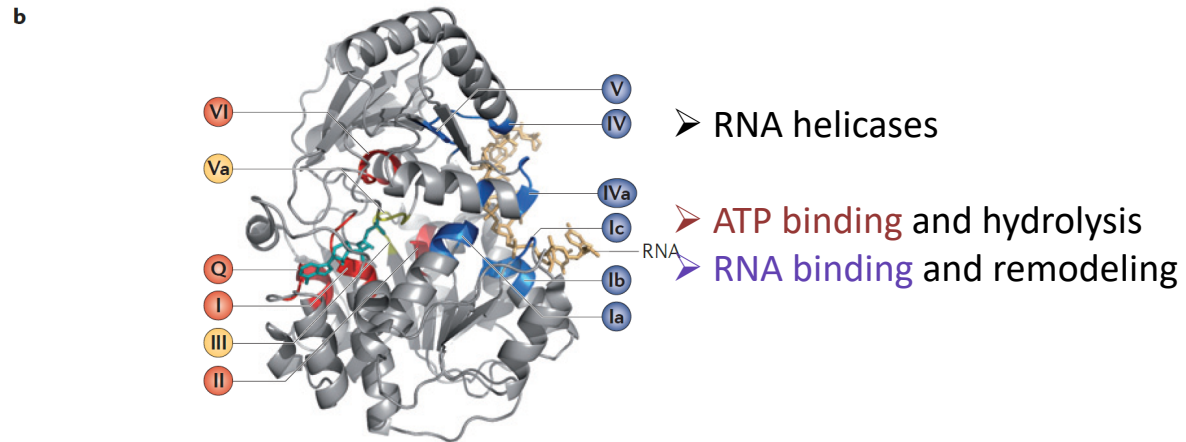
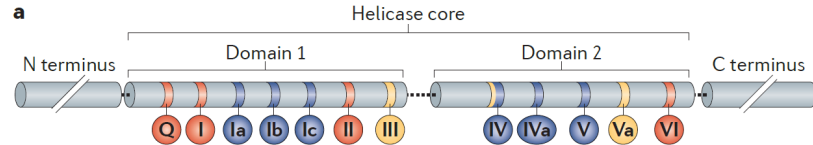
Diab et al, Hepatology, 66:1750-1765, 2017

RNA Helicase Protein 5 (DDX5)

Asp-Glu-Ala-Asp/His



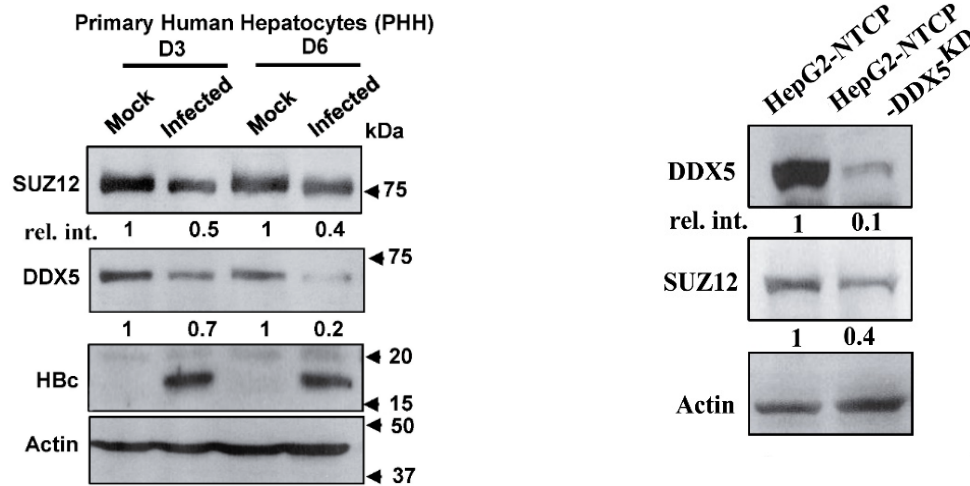
- Unwind RNA duplexes
- Remodel RNP complexes



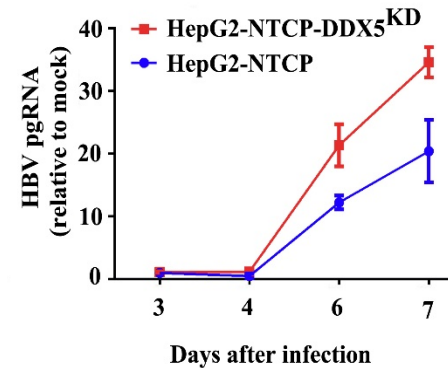
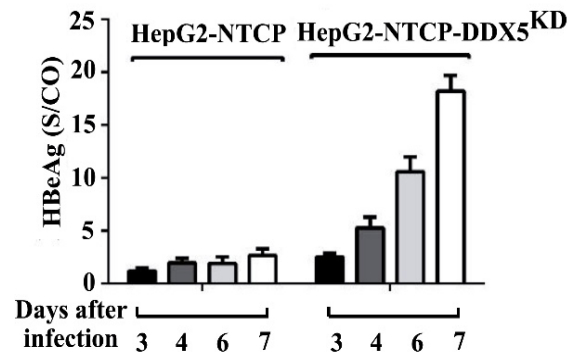
Andrisani et al Nature Immunology, 2022

Linder & Jankowsky, Nat Rev Mol Cell Biol 2011

Reduced DDX5 expression enhances HBV replication

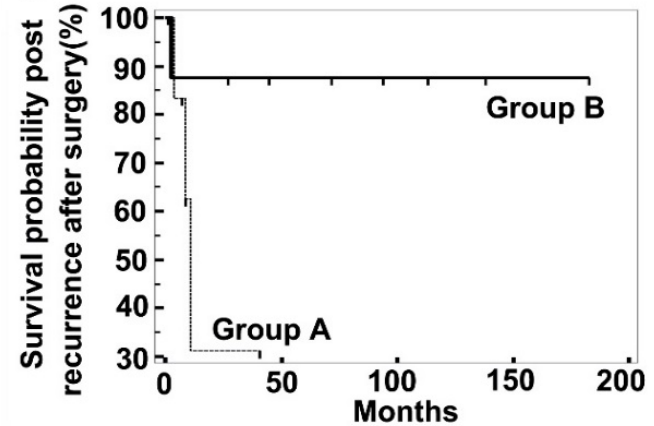
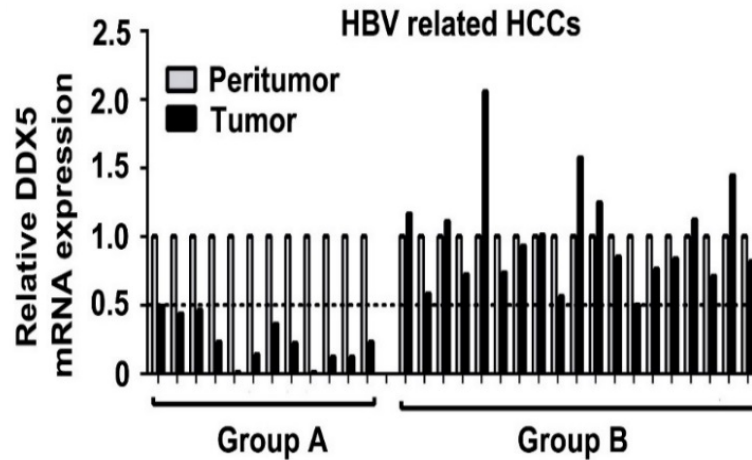


Drs D. Durantel & F. Zoulim
INSERM, France



Zhang et al, Hepatology, 64:1033-48, 2016

Role of DDX5 in liver cancer



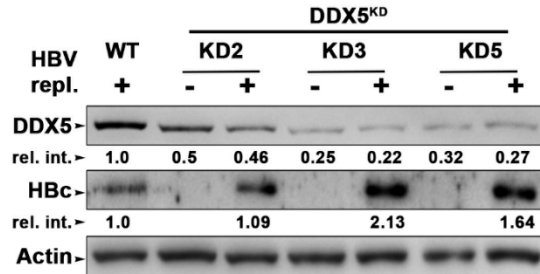
Zhang et al, Hepatology, 64:1033-48, 2016

Dr. P. Merle
Medical Co-Director, Liver Department
Lyon University Hospital, France

DDX5 Knockdown Cell Lines and Sorafenib Sensitivity

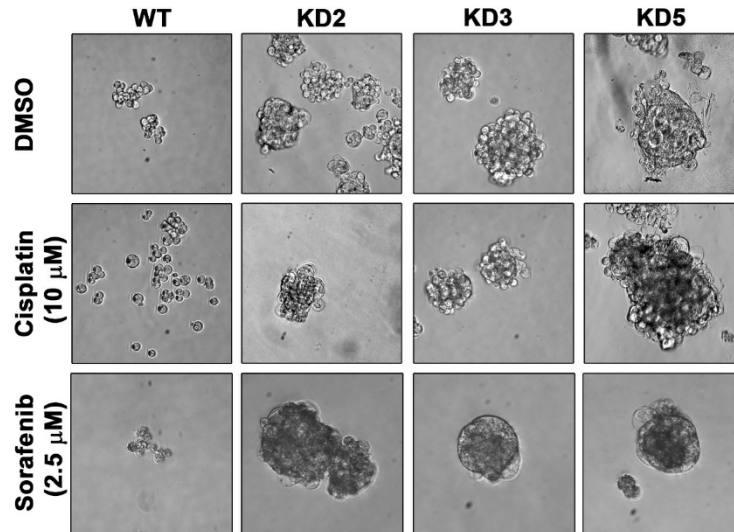
HepAD38

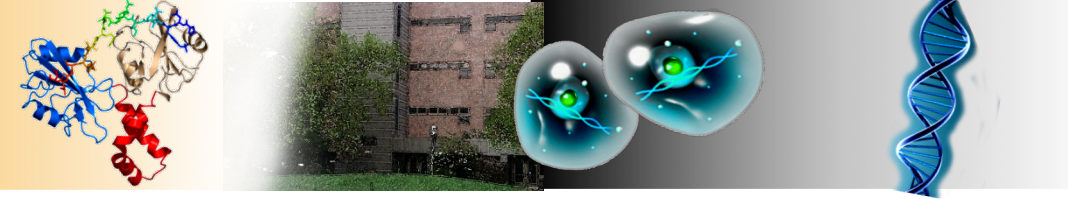
A



Hepatospheres

B





Institute for Cancer Research

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R21 AI17712

Purdue Institute for Cancer Research