

The Hepatic Matrisome: From Regenerative Hepatology to Drug-Discovery

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ABSTRACT

The extracellular matrix (ECM) is a fundamental component of multicellular organisms that provides mechanical and chemical cues that orchestrate cellular and tissue organization and functions. Increasing attention is dedicated to the matrix proteome, or “matrisome” of normal and diseased tissues as a source of mechanistic insights in disease pathophysiology and of biomarkers and drug targets. Indeed, the matrisome is the protein expression of an ensemble of genes encoding ECM and ECM-associated proteins which are significantly affected by chronic inflammatory diseases and cancer. Major recent advancements are derived from decellularization technologies which allow to obtain a structurally and biochemically conserved ECM scaffold from healthy or diseased tissue. ECM scaffolds can be employed for two main uses: a) regenerative medicine (i.e., cell repopulation to create tissue implants), and b) matrisome analysis, 3D tissue disease models and development of bio-inks for 3D printing and high-throughput research. These latter approaches can overcome many of the limitations of the current methodologies for drug target screening since most screening cascades employ nonhuman species, raising the concern that animal disease models currently in use do not recapitulate human disease and, therefore, are of limited translational predictive value.

The seminar will illustrate about ten years of work of my laboratory, starting from projects with a primary approach for regenerative Hepatology and continuing with the introduction of all-human 3D model for drug target and biomarker discovery for fibrogenesis in chronic liver diseases and the foundation of a successful UCL spin-out dedicated these applications.

BIOSKETCH

Massimo Pinzani is a Professor of Medicine, clinical hepatologist, Director of the UCL Institute for Liver and Digestive Health and the Sheila Sherlock Chair of Hepatology at UCL. His current research interests are:

1. Cell and molecular biology of fibrogenic disorders of the gastrointestinal tract, liver and intestinal fibrosis in particular;
2. Alcohol and lipotoxicity-induced liver fibrosis
3. Pathophysiology of cirrhosis and portal hypertension with emphasis on tissue hypoxia, neo-metabolism and neo-angiogenesis
4. Liver regenerative medicine: from bio-scaffolds to cell re-population with iPSc
5. Liver stroma and cancer: mechanisms responsible for the development of primary liver cancer, particularly hepatocellular carcinoma and cholangiocarcinoma as a complication of chronic liver damage and inflammation
6. Diagnostic and prognostic tools for the assessment of the rate of progression of advanced chronic liver disease.

Professor Pinzani has served in the governing and scientific boards of major international organization in the area of Hepatology and Gastroenterology, and as Associate Editor of top peer reviewed international journals in the area of Medicine. He is currently Editor in Chief of “Fibrogenesis & Tissue Repair”, an open access journal aimed at bringing new acquisitions in the area of fibrogenesis, repair and cancer across different areas of Medicine.

Attendance is free, but registration is required.

Please confirm your attendance by **September 11th**, 2023, filling out the registration form on the **Ri.MED web site** (N.B.: in the section “Other” please select the date and then select **how you want to participate - in presence or on remote**).