



Decoding the extracellular matrix to identify novel targets in cancer and fibrosis

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Abstract

The extracellular matrix (ECM) is a dynamic network of proteins and glycoproteins that regulates cell behaviour, nutrient exchange, and tissue repair. In chronic disease it becomes thicker and stiffer, amplifying pathological signalling, impeding repair, and actively driving inflammation, fibrosis, and tumour progression. Yet most in vitro models used for target discovery lack human ECM and therefore poorly reproduce human physiology. Engitix, a London-based biotech, addresses this gap by decellularising human tissues, including healthy and cirrhotic liver, pancreas, kidney, and intestine, to obtain acellular scaffolds that preserve native, tissue- and disease-specific matrix composition and architecture.

Comparative matrisome proteomics and transcriptomics of healthy versus diseased scaffolds map how the ECM is remodelled, revealing the structural proteins and remodelling regulators that distinguish pathological matrix and constitute candidate targets and biomarkers. Candidates are then validated by repopulating scaffolds with disease-relevant cells in 3D culture and by using human ECM hydrogels in cell-based high-throughput assays, so that target modulation is tested on healthy or diseased matrix. This ECM-centric strategy yields three classes of therapeutic opportunity (structural, cellular, and bioactive), spanning anti-fibrotic approaches aimed at fibrosis regression and, in oncology, matrix-anchored targets for antibody-drug conjugates in solid tumours. The diseased matrix itself thus becomes a primary, druggable therapeutic target.

Biosketch

Sonia Quaratino has recently joined Engitix as Executive Vice President and Chief Medical Officer, having served on its board of directors since 2023. An immunologist with more than 35 years of experience across academia, pharma, and biotech, her expertise spans chronic inflammatory diseases, autoimmunity, and oncology. She was previously Chief Medical Officer at Innate Pharma (France), Georgiamune (USA), and Kymab (UK), and before that led clinical development of immuno-oncology programmes at Novartis and at Merck Serono. As Professor of Immunology at the University of Southampton, she studied the pathogenic mechanisms of chronic inflammatory disease and the interface between autoimmunity and cancer. She holds a medical degree and a doctorate in haematology-oncology from the University of Palermo and a PhD in immunology from Imperial College London. She also sits on the Board of Advisors at Pureos Bioventures in Switzerland.