

Report of the conference Extracellular Matrix: New Perspectives for Translational Medicine, Freiburg, March 03-05, 2016

I am currently a Postdoc in the lab of Fiona Watt, KCL in London and work on how different dermal fibroblast lineages contribute to neonatal wound repair and dermal maturation in the skin. This matrix biology conference was the perfect place to present my recent findings. The German and French Societies for Matrix biology held a joined meeting in Freiburg, bringing together many international speakers and over 80 posters. The conference was well organized, had the right size and there were no difficulties to meet other scientists during the coffee breaks and poster sessions. The many cutting-edge talks kept a familiar atmosphere, covering a wide variety of exciting research fields in matrix biology from basic science to translational approaches. There was a strong focus on how extracellular matrix components have huge impact on cell behavior and cellular processes. Thus, in the FRIAS lecture Renato Iozzo, Philadelphia, emphasized the role of proteoglycans, specifically Decorin and Perlecan, in controlling cell autophagy. In the first session I enjoyed the talk of Beate Eckes, Cologne, showing how latent TGF β 1 is secreted by fibroblasts via autophagy, pointing to the possibility that inhibition of the autophagosome might help to modulate TGF β signaling in disease in the future. Further, I was impressed by the discovery of Chris Overall's lab, that extracellular MMPs can exert transcriptional activity. They showed that MMP12, secreted from macrophages, translocate to the nucleus and is able to modulate I κ B α gene transcription by binding to its promoter. Intriguingly, MMP12 is able to bind to the DNA through its catalytic domain. Chris talk sparked a vivid discussion about the mechanism of nuclear transport and molecular regulation, which are still unknown. In my view this unexpected discovery opens a whole new research field. In the System biology of the ECM section I was intrigued by the talk of Ulrich auf dem Keller, Zurich, presenting an elegant proteomic approach to monitor the proteolysis of distinct MMPs and how this can lead to the identification of new MMP substrates. In the same section Mattia Botto, Boston, described the exciting role of secreted kinases in the extracellular environment. How these kinases are able to phosphorylate extracellular matrix components was extensively discussed at the meeting. In the inflammation and fibrosis section it was interesting to see the multiple ways how immune cells influence and modulate the extracellular matrix. For example Sabine Eming, Cologne, presented how macrophages, via Interleukin-4 Receptor α signaling, are able to modulate endothelial cell matrix interactions and collagen fibril assembly during wound healing. Further in the Musculoskeletal biology section I was impressed by the work of the Gerard Karsenty lab, New York, who have uncovered a central role of glucose, the main osteoblast nutrient, in the initiation of osteoblast differentiation. They were able to show that glucose is taken up via Glut1 receptor in an insulin independent manner and modulates AMPK activity in osteoblasts, which prevents Runx2 degradation (marker for osteoclast differentiation) and promotes bone formation. This direct interplay of bone development and glucose metabolism fascinated me. In the basement membrane and kidney function section it was interesting to see the advances achieved by Jeff Miner, St Louis, and Tobias Huber, Freiburg, using super-resolution and scanning electron microscopy to dissect the molecular composition of kidney filtering barrier at the basement membrane cell interface with an incredible resolution.

Finally the Young investigator award session was very exciting for me because the travel grant allowed me to be part of the committee and to actively participate in the decision making process. In summary I was very impressed by the conference, the high level of science and the many stimulating talks. I am sure I will be able to translate this experience and the many inspirations into my own science at KCL.

Emanuel Rognoni, Center for Stem Cell and Regenerative Medicine, KCL, London, UK