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Under construction: Improving arteriovenous fistula maturation

Suzanne Laboyrie

1. Vascular AVF remodelling is a system tightly regulated by both vascular cells and the extra-cellular matrix (ECM) that they produce. It requires an interplay between regulated inflammation and limited cell proliferation to facilitate re-endothelisation, wall thickening, outward remodelling, and ECM turnover (*this thesis*).
2. When looking at the role of VWF, we can conclude that promoting growth and outward remodelling is of utmost importance to achieve AVF maturation, rather than attempting to suppress intimal hyperplasia (*this thesis*).
3. While achieving high blood flow is a major hurdle in creating functional vascular access for hemodialysis, it is equally essential to consider the associated risks, such as altered hemodynamics (*this thesis*).
4. Studying the complex process of AVF maturation requires a clinically relevant end-stage kidney disease model that includes hypertension and progressive uremia-induced vascular damage (*this thesis*).
5. “Many [cellular] secreted factors are integral constituents of the ECM because they bind to glycosaminoglycans and ECM protein domains and act as autocrine or paracrine signals that regulate matrisome gene expression.” (Martinez et. al, Kidney International Reports, 2023). Fistula maturation is not just a cellular event, but a tissue-level orchestration, and the extracellular matrix is its conductor..
6. Living with the need for kidney replacement therapy is extremely challenging: tackling the problem of AVF failure to prevent interventions and delayed access to therapy has a significant impact on the individual.
7. As long as AVF maturation is defined in binary terms, predicted by fixed and isolated variables, and detached from clinical reality, both patient outcomes and scientific progress are at risk.
8. As the majority of risk factors for kidney disease are lifestyle-based, such as smoking, high blood pressure, and sodium and caloric intake, it is crucial for our society and governmental bodies to take ownership of improving health, thereby reducing or even preventing kidney failure and vascular disease.
9. AVF maturation is much like (PhD) life: the outcome is all about how you can handle the pressure and complex dynamics that is your ever-changing environment.
10. Performing research in a laboratory is best supported and represented by melodramatic power ballads: “There are moments of gold, and there are flashes of light. There’ll be things you’d never do again, but then they’d always seemed right” – Adapted from Jim Steinman & Celine Dion