in vivo conditions. However, experimental technique, tissue species, and tissue storage condition (fresh/frozen) vary widely and there is debate on the most appropriate model system. Additionally, there is still no clear overarching framework with which to predict solute transport properties based on molecular characteristics. This review aims to develop such a framework, and to assess whether experimental procedure affects trends in transport data. METHODS: Solute data from 31 published papers that investigated transport in healthy articular cartilage were obtained and analyzed for trends. RESULTS: Here, we show that diffusivity of spherical and globular solutes in cartilage can be predicted by molecular weight (MW) and hydrodynamic radius via a power–law relationship. This relationship is robust for many solutes, spanning 5 orders of magnitude in MW and was not affected by variations in cartilage species, age, condition (fresh/frozen), and experimental technique. Traditional models of transport in porous media exhibited mixed effectiveness at predicting diffusivity in cartilage but were good in predicting solute partition coefficient. CONCLUSION: Ultimately, these robust relationships can be used to accurately predict and improve transport of solutes in adult human cartilage and enable the development of better optimized arthritis therapeutics.

DiDomenico, C. D. et al. (2018). "Molecular transport in articular cartilage—what have we learned from the past 50 years?" *Nat Rev Rheumatol* 14(7):393–403.

Developing therapeutic molecules that target chondrocytes and locally produced inflammatory factors within arthritic cartilage is an active area of investigation. The extensive studies that have been conducted over the past 50 years have enabled the accurate prediction and reliable optimization of the transport of a wide variety of molecules into cartilage. In this Review, the factors that can be used to tune the transport kinetics of therapeutics are summarized. Overall, the most crucial factor when designing new therapeutic molecules is solute size. The diffusivity and partition coefficient of a solute both decrease with increasing solute size as indicated by molecular mass or by hydrodynamic radius. Surprisingly, despite having an effective pore size of ~6 nm, molecules of ~16 nm radius can diffuse through the cartilage matrix. Alteration of the shape or charge of a solute and the application of physiological loading to cartilage can be used to predictably improve solute transport kinetics, and this knowledge can be used to improve the development of therapeutic agents for osteoarthritis that target the cartilage.

Enache, M. et al. (2016). "Mitoxantrone-surfactant interactions: A physicochemical overview." *Molecules* 21(10):1356.

Mitoxantrone is a synthetic anticancer drug used clinically in the treatment of different types of cancer. It was developed as a doxorubicin analogue in a program to find drugs with improved antitumor activity and decreased cardiotoxicity compared with the anthracyclines. As the cell membrane is the first barrier encountered by anticancer drugs before reaching the DNA sites inside the cells and as surfactant micelles are known as simple model systems for biological membranes, the drugs–surfactant interaction has been the subject of great research interest. Further, quantitative understanding of the interactions of drugs with biomimicking structures like surfactant micelles may provide helpful information for the control of physicochemical properties and bioactivities of encapsulated drugs in order to design better delivery systems with possible biomedical applications. The present review describes the