Overlooked Aspects of Magnetofectin Design and Assessment

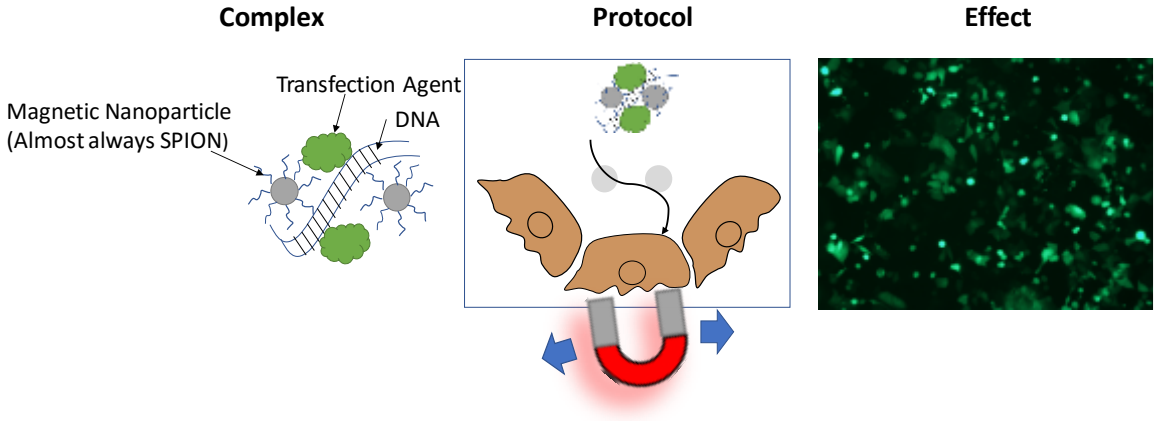
Kerr, R.H., Evans, C.M., St. Pierre, T., Saunders, M., Kretzmann, J., Clemons, T., Iyer, K.S.*

35 Stirling Hwy. Crawley, 6009
University of Western Australia
Perth, Western Australia, Australia

This poster will examine several aspects important for assessment of novel magnetically aided gene delivery agents, while providing some insight into the process of developing new magnetofection agents. Magnetofection is a term used for transfection protocols that rely on magnetic materials associated with gene delivery agents to provide targeting and amplified action through interaction with an external magnetic field. The process is entering the mainstream as a means of preparing transformed cells, and there are a great many pre-clinical projects examining use for *in vivo* treatments of relevant medical targets.

A series of testing and synthetic stages were used to develop new magnetofection platforms intended to integrate with existing high-performance gene delivery agents, and subsequently operate under the effect of an oscillating external applied field. It became apparent that factors such as exposure time and serum presence are important for more than just providing adequate controls in assessing the effectiveness of new magnetofection agent; They can also be relevant in identifying promising applications, and more surprisingly, some present uses where magnetofection does not seem to be an efficient use of resources.

Figure 1: An Overview of Magnetofection



A brief diagrammatic summary of a typical Magnetofection process: A transfectin complex is prepared that packages a means of cellular entry, and DNA, together with magnetic moieties, and this complex is exposed to cells under conditions with a significant external magnetic field, which concentrates the complexes onto the cellular surfaces. This leads to improved expression of transcripts under many circumstances which are normally associated with dissatisfactory transfection efficiency.