

10<sup>th</sup> International Conference & Exhibition on

# PHARMACEUTICS & NOVEL DRUG DELIVERY SYSTEMS

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### Age-related sight loss: Novel drug delivery strategies to the anterior and posterior segments of the eye

Ageing is associated with drastic optical and biochemical changes in the eye often leading to a decline in visual acuity where vision worsens. Such eye disorders impose a financial burden on the health sector worldwide. Recent estimates of the global cost of sight loss - up to the year 2010- suggest an annual figure of over US\$3 trillion (£2.4 trillion). The main disorders leading to sight loss are cataract, glaucoma, age-related macular degeneration (AMD) and diabetic retinopathy. Pharmaceutical formulation and drug delivery research has introduced promising eye treatments into the market; nevertheless, there remain unmet clinical needs and limitations associated with performance of conventional ocular dosage forms like eye drops and ointments. Compromised adherence and/or persistence with conventional eye drops that are applied topically to the surface of the eye is primarily related to the need to be applied once, twice (or even up to four times) daily, often as a combination of multiple drugs, to achieve their intended purpose. The intravitreal injection of Anti-Vascular Endothelial Growth Factor (VEGF) for AMD treatment requires clinical intervention every 4-8 weeks. Therefore, achieving therapeutics drug concentrations at the target site and maintaining such concentration over extended time intervals with minimal undesirable effects, offer renewed opportunities for ophthalmic product research and development, especially when using already approved drugs with well-established safety and efficacy profiles. This talk will review and provide insights withdrawn from our own research on ophthalmic drug delivery systems that are aimed at age-related eye disorders such as dry eye, glaucoma, corneal keratopathy and cataract. Phase-transition microemulsion, *in-situ* gelling systems, polymeric and inorganic nanoparticles, personalised ocular inserts and modified contact lenses are amongst the delivery system that we have researched over the past two decades.

### Biography

Raid Alany is a registered New Zealand Pharmacist with a PhD from the University of Otago, Dunedin, New Zealand. He is the Head of School of Life Sciences, Pharmacy and Chemistry at Kingston University London, UK; holds an honorary professorship at the University of Auckland, New Zealand. He is the Editor-in-Chief of Pharmaceutical Development and Technology (Taylor and Francis) and Immediate Past President of the New Zealand Chapter of the Controlled Release Society. Raid's research is on ophthalmic drug delivery, lipid and surfactant-based systems, *in-situ* gels and animal health. He holds international patents that have been commercialized in New Zealand and Australia where he consults for animal health companies, regulatory bodies and IP-specialized law firms. His ResearchGate score is 35.34 and his h-index is 21 (google scholar).

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