The 2015 Innovation Awards Are Here

Ophthalmology is one of the most intense incubators of innovation in all of medicine. Competition is driving not just incremental improvements in products that you might expect, but also some big, game-changing leaps too. Here, we recognize a year’s worth of innovation. Apps, IOLs, imagers, lasers, devices and drugs – the latest and greatest are all here. But which one came out on top this year?
2. F4H5 WashOut
Amphiphilic surfactant for complications in silicone oil removal
Produced by: Geuder

Detail: F4H5 WashOut (perfluorobutylpentane – C4F9-C5H11) is a semifluorinated alkane that is able to dissolve silicone oil. F4H5 WashOut is similar to another solvent for silicon oil, F6H8 (perfluorohexyloctane—C6F13-C8H17) but is more amphiphilic (i.e. both hydrophilic and lipophilic) and therefore a superior solvent for silicone oil. Crucially, F4H5 forms no potentially reactive structures, and should therefore ensure biocompatibility. F4H5 WashOut is able dissolve silicon oil in balanced salt solution at any mixing ratio – a situation where conventional surfactants have limited success.

Impact: Tamponades like silicone oil and perfluorocarbon liquids (PFCL) are today’s gold standard in modern vitreoretinal surgery. But although they are necessary, and can positively impact clinical results, there are also potential side effects, such as emulsified oil, unwanted mixtures of silicone oil and PFCL, and residual oil that remains in the eye. This situation can entail unwanted clinical manifestations, including glaucoma, inflammation and formation of fibrosis, and proliferative vitreoretinopathy, so it’s important to eradicate silicon oil completely to avoid risking these complications.

Increased use of PFCL and silicone oil, as well as increasingly smaller incision sizes (which can make it more complicated to completely remove the vitreous, as well as inducing tamponades) can increase the incidence of adverse effects – making a biocompatible, effective detergent a necessity.

The judges said: “This is a very clever chemical solution to a difficult problem.”
“Touches upon an unmet clinical need. Persisting postoperative oil and perfluron remnants might cause toxic and visual problems. This innovation seems to solve that.”

The Judges

Florian Kretz
Eye Clinic Ahaus-Raesfeld Rheine, Ahaus, Germany

Keith Barton
Moorfields Eye Hospital, London, UK

Kuldev Singh
Stamford School of Medicine, Palo Alto, California, USA

Michael Koss
Goethe University, Frankfurt-am-Main, Germany

Michael Mrochen
IROC Science, Zürich, Switzerland

Bill Trattler
Center for Excellence in Eye Care, Miami, Florida, USA