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Abstract

'Formation of Bone from Injectable Biomaterials'

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Liquid formulations that generate a gel depot after subcutaneous injection, also termed implants, are an attractive delivery system for a number of reasons. First, the application is less invasive and painful as compared to implants, which require surgical interventions. Secondly, localized or systemic delivery can be achieved for prolonged periods of time ranging from days to months.

Out of several polymers that have been employed in gel for in vivo use only a few have shown both high compatibility with tissues and cells, and at the same time natural cell controlled biodegradability. While collagen and fibrin are relatively easy to prepare into formulations that may produce gels, their relatively complicated chemical structure prevents facile post-modifications to tailor properties. Conversely, hyaluronan has a well defined and simple structure based only on two saccharide units and has been the target for significant efforts in producing degradable gels. It is produced in high purity in cell culture at industrial scale. However, the production of liquid hyaluronan formulations that may form gels under physiologic conditions suitable for injection has been a significant challenge. In this presentation we will present our new injectable material with preclinical data.

Speaker biography

Professor Jöns Hilborn



Jöns Hilborn is since 2001 the head of the Polymer Chemistry program at the Department of Materials Chemistry, Uppsala University in Sweden. Currently he serves president of TERMIS which he was a part of initiating. His research interests are in the design, synthesis and preparation of polymers and specifically materials for tissue scaffolds and as delivery vehicles. Special focus is on cell free injectables for bone formation. Effort is also being placed on the reason for the formation of a fibrotic capsule around implants where recent findings suggest that biomechanics is one key promoter. He received his PhD from the Royal Institute of Technology in Stockholm which was followed by seven years in industry before he joined the Swiss Federal Institute of Technology in Switzerland for eight years. He has published some 150 scientific papers, 25 patents and has started 4 companies.