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Silk fibroin: a new carrier of drugs for tissue (re)generation

Silk-fibroin (SF) is an exceptional biomaterial in terms of mechanical performance, biocompatibility, and as drug delivery carrier for biologics. This presentation is reviewing the recent successes in bone and cartilage tissue (re-)generation, when SF is decorated with regulatory molecules, gradients thereof, peptide sequences enhancing cell compatibility or when patterned with geometrical cues which translate into engineered tissue geometries in bioreactor cultures. A particular focus is on the recent successes in deploying SF as a drug carrier and by means of translating Nature's blueprint provided by the spinning process in the spinning duct of the silkworm *Bombyx mori* (L., 1754) into advanced designs of drug delivery systems. The talk will close with an outlook for this exciting material at the interface of pharmaceutical and biotechnological application.

CV

Qualification	2007	Habilitation in Pharmaceutics, ETH Zürich <i>Biomaterials and Drug Delivery Systems</i>
	2002-2005	Dr. rer. med., U Frankfurt, Department of Orthopedics <i>Engineering of bone- and cartilage like tissue</i>
	1999-2002	Dr. sc. nat., ETH Zürich, Drug formulation and delivery <i>Development of Advanced Drug Delivery Systems</i>
	1999	Licensed pharmacist
Career	2010-today	Director and Chair for Pharmaceutics and Biopharmacy
	2005-2010	Director at Novartis Pharmaceuticals, Basel, Switzerland
	2004-2005	Lab Head at ETH Zürich, Zürich, Switzerland
	2002-2005	Doctoral student at University of Frankfurt, Orthopedics
	2002-2004	PostDoc at MIT, Cambridge, MA
	1999-2002	Doctoral student at ETH Zürich
	1993-1998	Student at the University of Würzburg
Prices	2005	Dissertation price of the University of Frankfurt <i>summa cum laude</i>
	2005	Price of AFOR (Association for Orthopedic Research)
	2004	Phönix Price for Pharmaceutical Sciences
	2002	Feodor Lynen Stipend of the Alexander v. Humboldt Foundation
	2002	Price for outstanding Ph.D. thesis by ETH Zürich
	2001	Leonardo Price, Pharmacia Pharmaceuticals
	2000	IAMS Award
Research		Formulation of poorly water soluble compounds – an ionic liquid approach Formulation of protein drug delivery systems – bioresponsive drug delivery systems Primary packaging materials with sensory function – detecting degradation products of pharmaceuticals

Most important projects

2010-today Formulation development for poorly water soluble compounds and proteins

1999-2010 Polymer based drug delivery systems

2004-2009 Biomaterials for optimized tissue regeneration

2003-2009 Osteochondral tissue engineered implants