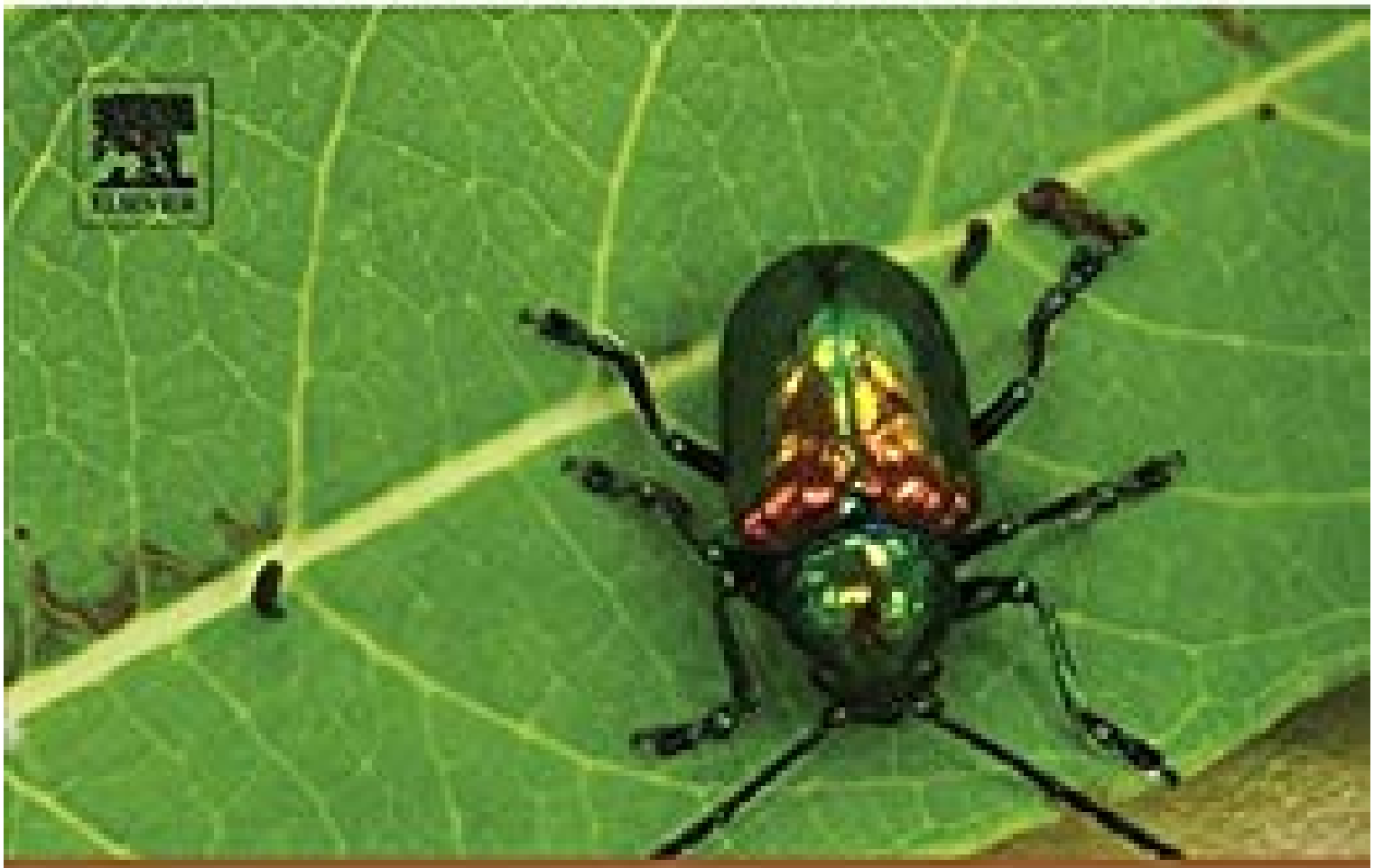

Engineered Biomimicry

Edited by
Akhilesh Lakhtakia
Raúl J. Martín-Palma

Princeton Carter and

Engineered Biomimicry: Chapter 7. Bioscaffolds: Fabrication and Performance

The fabrication of three-dimensional (3D) scaffold architectures that closely approximate or effectively mimic indigenous tissue extracellular matrix (ECM) is essential for regenerative success., to improve desired cell activity and enhance cells growth. A 3D architecture is established by utilizing materials with specific surface properties, porosity, mechanical strength, etc. Materials used for the 3D scaffold construction should be biocompatible and bioresorbable to minimize adverse reactions during cells regeneration. In tissue engineering, native differentiable cells are integrated into 3D scaffolds along with development factors and other proteins. Ideal 3D scaffolds should also not only have hierarchical macroporous structures much like those of living tissue, but they should also have surface area features on the nanometer scale to improve cell adhesion and accelerate cell in growth.