Cesar Augusto Tischer, J Biotechnol Biomater 2017, 7:6 (Suppl)
DOI: 10.4172/2155-952X-C1-085



## Bacterial cellulose as matrix to functionalize macromolecules

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**Statement of the Problem:** Cellulose corresponds to the most abundant biopolymer on earth, constituting all plant cells walls, exceeds the biological significance and play and important role as industrial product. The cellulose is biocompatible and the interest for biomedical purposes has grown recently being studied as scaffold for tissue regeneration as well the nanocellulose and for these reasons, a plenty of studies can be found testing cellulose pure, blended or chemically modified on *in vitro* models. Nanocelluloses are the highly ordered α-(1→4) glucan chains produced naturally or by chemical processes and that are in nanometric size in at least one dimension.

**Methodology & Theoretical Orientation:** Different strategies for functionalization of bacterial cellulose could be used, covalently linked or not, directly on the hydroxyl group, or in more steps. Weak forces as hydrogen linkages or ionic forces could trap small or bigger molecules as proteins as aggregates to membranes. Less labile option is introducing a linker as the succinic acid between cellulose chain and the functional compound, that give steric freedom for the last to act. Different technics could reach it with the advantage that the coupling product results in a pendant carboxylic acid, which provides a site for further chemical reactions.

**Findings:** Proteins and enzymes could be immobilized in nanocelulose, his activity remains or are improved taking advantage of the persistent suspension formed by nanofiber.

**Conclusion & Significance:** Bacterial cellulose is a versatile material that is being reinvented by physical and chemical ways creating very attractive new materials.

### Biography

Cesar Augusto Tischer works as Professor at Biochemistry and Biotechnology Department of State University of Paraná. He has completed his Doctorate in 2002 in Biochemistry, in the field of structural analysis of glycoconjugates. Leader of the research group called Biotechnology and Glycoconjugates (CNPq certified, CNPq - National Council for Scientific and Technological Development), with founds approved in course on research councils operating in Brazil, CNPq in projects for cellulose modification, CAPES/Araucária foundation, with changes on cellulose for your use as sun blocker activity, both with industry collaboration. He works to develop functionalized nanocellulose with proteins or aggregated with charged polysaccharides as hyaluronic acid.

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