

“How complex should an *in vitro* model be?”

Gutleb A.C.

Department of Environmental Research and Innovation, Luxembourg Institute of Science and Technology, Luxembourg

Classically, *in vitro* models were based on single cell-type based models cultured submerged in a well ranging in size from 6-well to 96-well formats. In recent years complex models using more than one cell type have become more and more common. Such complex models need careful characterization of the properties of the cell types used for their assembly. However, there is more than just the individual cell type property that needs to be characterized as cells start to change properties and behavior once cultured in co-culture as gene expression and functional responses start to change under such conditions. In addition, the similarities and discrepancies of 3D-models and the human *in vivo* tissue needs to be understood. Models should be as complex as possible and as complex as necessary to mimic physiological responses.