

Monday 21 February 2011

11.00 am - Room 531

**Professor Nicolai Bovin**

Institute of Bioorganic Chemistry, Moscow, Russia

and

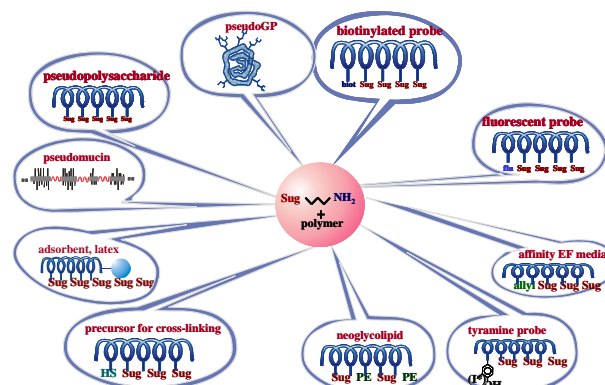
**Professor Stephen Henry**

KODE Biotech Limited and AUT Biotechnology Research Institute

## ***Synthetic Glycoconjugates: From Simple Multivalent Constructs Towards Glycolandscape***

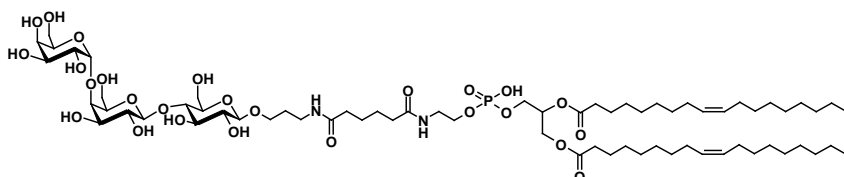
Study of glycan-protein interaction requires multivalent presentation of glycans. For this purpose for 20 years we use soluble polyacrylamide conjugates possessing number of properties unique for biological tests, first of all absence of unspecific binding. Simple and reliable chemistry (see Fig.) allows us to synthesize diversity of glycoprobes. Similar approach gives a possibility to modify surface of any material (glass, gold, steel, etc., microchips, affinity media) with complex glycans (chains of glycoproteins and glycolipids) in a tailor fashion.

### Diversity of PAA-based carbohydrate probes



Second class of synthetic glycomolecules is known as Function-Spacer-Lipid constructs (FSL).

Example of such molecules (F = Gb3 glycan, S = simple spacer, L = dioleoylphosphatidylethanolamine) is shown below.



As all FSL constructs are dispersible in biological media and spontaneously incorporate into cell membranes in vitro and in vivo, they have the ability to create novel artificial glyco-landscapes on living cells. Using a variety of different spacers, we can "deliver" glycan(s) and also other ligands (peptides, tags, labels) at different distance from phospholipids membrane: in tight proximity to it, at glycocalyx periphery, and in an intermediate position. This opens unlimited possibilities for studying and modelling glycan-dependent events on living cells.

Finally, recent progress in construction and applications of glycoarray in form of microchip will be presented.