Course： Glycobiology – Principle, Disease and Application
醣類生物學 –
原理·疾病及應用Lecturer：Wen-guey WU 吳文桂 (LS Build I: room 419) Time: Thursday afternoon R6R7 (14:20-16:10) **This lecture time is only tentative and could be re-adjusted depending on the student's need**

Cell consists of biomolecules of DNA/RNA, protein, lipid and carbohydrates for its function, but our understandings of cellular structure and function have been mainly focused on DNA/RNA and proteins. Recent technological advances in knock-out mice, siRNA and MASS spectroscopy, however, have gradually changed the situation to allow the structural and functional characterization of lipidomics and glycomics. In this course, we will provide the historical background and evaluate the structural basis and functional role of several biologically important glycoconjugates such as N-Glycans, O-Glycans, Glycosphingolipids and Proteoglycans. Issues relating to the role of glycans in cell signal/development and human disease will then be discussed by using literatures available within the last couple years.

1st Week Sep14 Historical Background & Structural Diversity
2nd Week Sep21 Glycoconjugates I: Structure and Function of N-Glycan
3rd Week Oct05 Glycoconjugates II: Structure and Function of O-Glycan
4th Week Oct12 Glycoconjugates III:Structure and Function of Glycolipids
5th Week Oct19 Midterm (20%)
6th Week Nov02 Glycoconjugates IV: Glycosaminoglycans and GPI anchor
7th Week Nov09 Oral Report I(30%)
8th Week Nov16 Glycosylation effect on Structure and Function
9th Week Nov23 Glycosylation on protein secretion and quality control
10th Week Nov30 Glycan recognition I: Cell adhesion
11th Week Dec07 Glycan recognition II: Cell signaling
12th Week Dec14 Glycobiology of Plant, Bacteria and Virus
13th Week Dec21 Glycobiology and Development
14th Week Dec28 Glycobiology and Disease
15th Week Jan04 Oral Report II(30%)
16th Week Jan11 Final (20%)

1. Introduction to Glycobiology (3rd Edition) (by Maureen E. Taylor Kurt Drickamer,Oxford) (2011)
2. Essentials of Glycobiology (3rd Edition) (by Ajit Varki, Cold Spring Harbor, NY,USA: Cold Spring Harbor Laboratory Press) (2017) (NCBI download http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=glyco2)
3. Assigned reading and review articles

Grade: (I)Midterm(20%)、(II)Oral(60%)、(III)Final(20%)