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| Title of module                  | Glycobiology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |     |
| Term/semester                    | Winter term / 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |     |
| VAK-Number                       | Will be assigned centrally                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |     |
| Credit points                    | 9 ECTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |     |
| Compulsory/ elective course      | Elective course within module B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |     |
| Teaching methods                 | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SWS        | CP  |
|                                  | Lecture                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.5 (7 h)  | 0.5 |
|                                  | Exercises                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3.0 (42 h) | 2.5 |
|                                  | Seminar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2.0 (28 h) | 3.0 |
|                                  | Lab course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5.0 (70 h) | 3.0 |
| Self studies                     | protocols 20 h<br>preparation of poster 40 h<br>preparation of the talk 70 h                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |     |
| Module representative            | Prof. Sørge Kelm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |     |
| Instructor                       | Prof. Sørge Kelm (Biochemistry)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |     |
| Examiner                         | Prof. Sørge Kelm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |     |
| Objectives                       | The objectives of this course are to provide <ul style="list-style-type: none"> <li>a basic understanding of concepts in the area of glycobiology, the structures, biosynthesis and function of complex carbohydrates</li> <li>develop the practical skills of experimental work with glycoconjugates.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |     |
| Content of teaching              | Protein glycosylation in eukaryotic cells is one of the most common forms of post-translational modification, and carbohydrates on glycoproteins and glycolipids are involved in pleiotropic biological functions.<br>Theoretical part of the course will be covered in lectures and seminars: <ul style="list-style-type: none"> <li>Principles of glycobiology</li> <li>Structures of complex carbohydrates</li> <li>The glycosylation process in eukaryotic cells</li> <li>Carbohydrate-binding proteins</li> <li>The impact of carbohydrates in important biological functions</li> <li>The use of carbohydrates and glycoproteins in biomedicine</li> </ul> The following techniques will be applied in the practical part of the course: <ul style="list-style-type: none"> <li>Experimental approaches addressing scientific questions in glycobiology</li> <li>recombinant purified lectins will be used for interaction studies.</li> <li>Analytical methods (chromatography, FACE, mass spec) used to characterise carbohydrates.</li> </ul> |            |     |
| Learning results                 | <ul style="list-style-type: none"> <li>Ability to comprehensively understand contents of glycobiology covering the above topics in the context of cell biology and biochemistry.</li> <li>Capacity to perform the methods used in the course.</li> <li>Competence to develop a strategy and experiments addressing questions in the area of glycobiology.</li> <li>Competence to present and discuss a project addressing a scientific question within glycobiology.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |     |
| Control of the learning progress | Lab protocols, poster presentation, seminar presentation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |     |
| Grading                          | Lab protocol (30%); poster presentation (30%); seminar presentation (40%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |     |
| Frequency                        | Each winter term                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |     |
| Use in other study courses       | Open to students of other M.Sc. courses in biology and chemistry                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |     |
| Requirements                     | Basic biochemistry in theory and practice                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |     |