Audience
The course is aimed at graduates or doctorate students, pre- and post-doctoral scientists, in the fields of biology and / or chemistry and / or (bio) medicine. The course also welcomes health professionals and teachers interested in furthering Glycosciences: This course aims to build upon and compliment the participant's previous knowledge of chemistry, molecular and cellular biology.

Selection Criteria
Curriculum vitae and motivation letter

Numerus Clausus
(Minimum and maximum number of entrants admissible to the course)
Minimum: 20
Maximum: 25

Course Dates
From September 6th 2021 up to six months

Application Deadline
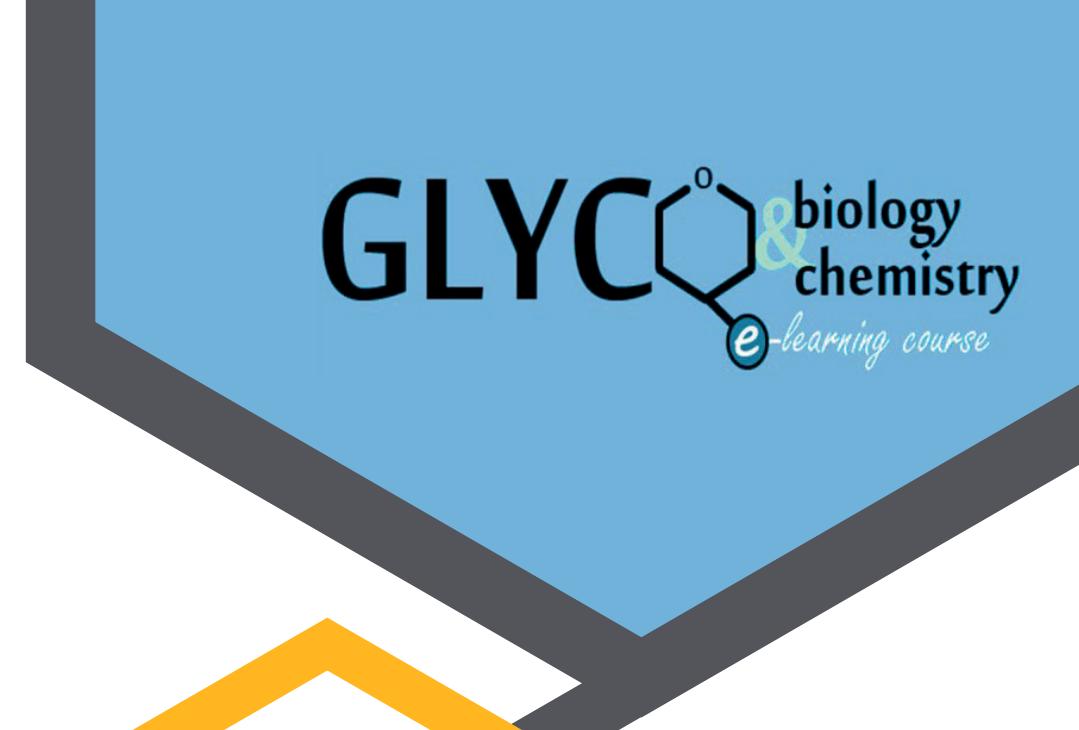1st Stage: April 30th
2nd Stage: August 15th

On-Line Application

Course fees:
Application: 51,00€ (non-refunded)
Registration: 35,00€
General Fee: 470,00€
Students Fee: 399,50€

GLYCO biology & chemistry
e-learning course

6th edition

Course Dates
From September 6th 2021
up to six months

Application Deadline
1st Stage: April 30th
2nd Stage: August 15th

Scientific Coordinators

Paula Videira
Departamento de Ciências da Vida, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal

Amélia Pilar Rauter
Faculdade de Ciências, Universidade de Lisboa, Portugal

Diogo Bogalhão do Casal
NOVA Medical School, Universidade NOVA de Lisboa, Portugal

NOVA MEDICAL SCHOOL   **N:VA** NOVA SCHOOL OF SCIENCE & TECHNOLOGY DEPARTAMENTO DE CIÊNCIA DOS MATERIAIS   UNIVERSIDADE NOVA DE LISBOA

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Glycobiology & Glycochemistry International E-learning Course: 2021 Edition

Scientific Coordinators
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Pedagogical Coordinator
Irene Tomé- Faculdade de Ciências Sociais e Humanas, Universidade NOVA de Lisboa, Portugal

Scientific Advisors
Celso Reis- Instituto de Patologia e Imunologia Molecular da Universidade do Porto, Portugal.
Serge Perez - Centre de Recherches sur les Macromolécules Végétales, Centre National de la Recherche Scientifique. Grenoble, France.
Angelina Palma- REQUIMTE/CQFB Departamento de Química, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.
Nuno Xavier- Faculdade de Ciências, Universidade de Lisboa, Portugal

Presentation
Glycoscience has become a vibrant, expanding and important extension of modern molecular biology and medicine. In this course, a team of acknowledged glycoscientists will demonstrate how interdisciplinary areas in Glycosciences have provided solutions and offered tools for demanding health problems. This is the first course in Glycobiology and Glycochemistry, offered in an e-learning format to enhance the outreach of Glycosciences to the broader scientific community. Funded by the Euroglycoforum and EMBO, this course is also part of the GlycoCan European Training Network and the European Innovation Partnership on Active and Healthy Ageing. This course aims to create a forum of "scientifically bilingual" investigators fluent in glycan chemistry and biology that will sustain and advance the application of Glycosciences to human health.

Objectives
The general aim of this course is to provide an easy-to-understand, succinct, and current overview of the fundamental facts, concepts, and methods in Glycosciences. It aims to encourage research in Glycosciences; by revealing the complex involvement of glycans in distinct human-related physiological and pathological conditions.

Successful learners will be able to:
Describe and compare the different types of glycans.
Design methodologies / technologies to analyse glycans structures or glycans biosynthesis.
Discuss scientific subjects within the scope of Glycosciences.
Explain the relationship between glycan structures and physiological and pathological human conditions.

Competences
Design and development of projects in the areas of Glycosciences and its application in health. Design methodologies/technologies to develop or analyze glycans.

Jobs Opportunities
Research institutions in the area of Glycosciences and in broader areas such as Chemistry, Biology and Biomedicine. Higher education and research institutions. Pharmaceutical and food industry. Diagnostic laboratory.

Study Plan
Module 1: Carbohydrate Structure and Nomenclature
Module 2: Biosynthesis, Metabolism of Carbohydrates
Module 3: Glycan-binding Proteins
Module 4: Glycans in Human Physiological Mechanisms
Module 5: Glycans in Human Pathology
   5.1 Cancer
   5.2 Congenital Disorders of Glycosylation
Module 6: Methods in Glycosciences
Module 7: Applications of Glycosciences
Module 8: Glycochemistry in Medicine
Module 9: Biosynthesis of disease related carbohydrate antigens
Module 10: Glycomics

Assessment
The learner's final grade in the course will be based on performance along the activities included in the course, which includes online examinations and/or a report. The final report will consist on a critical review (limited to 30 pages) or highlights (limited to 15 pages) covering one year or up to 5 years on a particular subject of Glycobiology and/or Glycochemistry research. These highlights are particularly important in presenting the latest findings and the innovation concerning carbohydrate chemistry and biology. The publication of these highlights in peer review journals can be considered upon request to the Editors after submission to refereeing processes.

Teaching staff
- **Alexandre Ferreira**- Institute of Oncology of Porto, Portugal
- **Amélia Pilar Rauter** -Faculdade de Ciências, Universidade de Lisboa, Portugal
- **Angelina Palma**- REQUIMTE/CQFB Departamento de Química, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Portugal
- **Anne Dell**- Imperial College, London, UK
- **Anne Imberty** - Centre National de la Recherche Scientifique. Grenoble, France
- **Antonio Molinaro**- Università di Napoli "Federico II", Napoli, Italy
- **Antoni Planas**- Universitat Ramon Llull, Spain
- **Catherine Ronin**- SiaMed'Xpress, Université de Provence, Marseille, France
- **Celso Reis**- Instituto de Patologia e Imunologia Molecular da Universidade do Porto, Portugal
- **Christelle Breton**- Centre National de la Recherche Scientifique. Grenoble, France
- **Dirk Lefeber**- Radboud University Nijmegen Medical Centre, Netherland
- **Fabio Dall'Olio**- Faculty of Medicine, Bologna University, Italy
- **Hans H. Wandall** - University of Copenhagen, Denmark
- **Jesus Jiménez Barbero**- Consejo Superior de Investigaciones Científicas, Madrid, Spain
- **Joy Burchel** - King's College London, UK
- **Jaak Jaeken**- University Hospital Gasthuisberg, Leuven, Belgium
- **Joseph Lau**- Roswell Park Cancer Institute, Buffalo, USA
- **Koichi Fukase**- Graduate School of Science, Osaka University, Osaka, Japan
- **Marco Trinchera**- The University of Insubria, Italy
- **Michaela Wimmerova**- Central European Institute of Technology, Czech Republic
- **Paula Videira**- Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal
- **Philippe Delannoy**- Université des Sciences et Technologies de Lille, France
- **Richard Schmidt**- University of Konstanz, Germany
- **Rita Francisco** - Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal
- **Robert Sackstein**- Program of Excellence in Glycosciences, Harvard Medical School, USA
- **Rui Vitorino**- University of Aveiro, Portugal
- **Sabine Flitsch**- The University of Manchester, UK
- **Stefan Oscarson**- University College Dublin, Ireland
- **Serge Perez**- Centre National de la Recherche Scientifique. Grenoble, France
- **Ten Feizi** - Imperial College, London, UK
- **Vanessa Ferreira** – CDG Portuguese Association and other metabolic rare diseases (APCDG-DMR), Portugal
- **Yves Queneau**- Centre National de la Recherche Scientifique, Lyon, France
- **Yvette Van Kooyk**- Department of Molecular Cell Biology & Immunology Vumc, Netherland