

MODULE DESCRIPTOR

Module Title

Nutrigenetics And Molecular Nutrition

| | | | |
|-----------|-------------|-------------|---------|
| Reference | PL4007 | Version | 1 |
| Created | May 2022 | SCQF Level | SCQF 10 |
| Approved | June 2022 | SCQF Points | 15 |
| Amended | August 2021 | ECTS Points | 7.5 |

Aims of Module

To provide students with the ability to evaluate the effects of nutritional factors on gene expression at the cellular level, the effect of genetic polymorphisms on the response to nutritional factors, how nutrient-gene interactions affect the organism and the impact these interactions have on health at the organismal and population level.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Explain the principles of the regulation of gene expression.
- 2 Discuss the proposed mechanisms by which nutrients alter gene expression.
- 3 Evaluate critically the effects of nutritional modification of gene expression from the cellular to organismal level.
- 4 Discuss the impact of inheritance and polymorphisms in modifying the response to nutritional factors and the diet.
- 5 Evaluate critically the impact that nutrient-gene interactions have on public health.

Indicative Module Content

Regulation of gene expression: replication; transcription; translation; cell-cycle control; signal transduction; transcription factors; transcriptional processing; up-regulation; down regulation; histones; DNA repair; mitochondrial DNA; epigenetics; acetylation; methylation; genomic stability; nutrient-sensitive response elements; non-coding RNAs; apoptic genes; oncogenes; nutrient- and diet-related congenital disorders; nutrient-sensitive polymorphic genes; nutrient-gene interactions; personalized nutrition.

Module Delivery

Theoretical material is delivered by lectures and tutorials.

Module Ref:

PL4007 v1

Indicative Student Workload

| | Full Time | Part Time |
|--|-----------|-----------|
| Contact Hours | 30 | N/A |
| Non-Contact Hours | 120 | N/A |
| Placement/Work-Based Learning Experience [Notional] Hours | N/A | N/A |
| TOTAL | 150 | N/A |
| <i>Actual Placement hours for professional, statutory or regulatory body</i> | | |

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

| | | | | | |
|--------------|----------------|------------|------|--------------------|---------------|
| Type: | Practical Exam | Weighting: | 100% | Outcomes Assessed: | 1, 2, 3, 4, 5 |
| Description: | Presentation | | | | |

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

Component 1 (PE1) comprises 100% of the module grade. A minimum of Module Grade D is required to pass the module

| Module Grade | Minimum Requirements to achieve Module Grade: |
|--------------|--|
| A | A |
| B | B |
| C | C |
| D | D |
| E | E |
| F | F |
| NS | Non-submission of work by published deadline or non-attendance for examination |

Module Requirements

| | |
|--------------------------|---|
| Prerequisites for Module | None, in addition to SCQF level 10 entry requirements or equivalent |
| Corequisites for module | None. |
| Precluded Modules | None. |

INDICATIVE BIBLIOGRAPHY

- 1 BERDANIER, C.D. and BERDANIER, L., 2019. *Advanced Nutrition: macronutrients, micronutrients and metabolism*. 2nd edition. Boca Raton, Fla: Taylor and Francis Ltd.
- 2 BERDANIER, C.B. and MOUSTAID-MOUSSA, N., 2019. *Genomics and Proteomics in Nutrition*. 2nd edition. Boca Raton, Fla: Taylor and Francis Ltd.
- 3 CATERINA, R. De, MARTINEZ, J.A. and KOHLMEIER, M, 2019. *Principles of Nutrigenetics and Nutrigenomics: Fundamentals of Individualized Nutrition*. 1st edition. London: Academic Press.
- 4 KOK, F, BOUWMAN, L and DESIERE, F., 2019. *Personalized Nutrition: Principles and Applications*. 1st edition. Boca Raton, Fla: Taylor and Francis Ltd.
- 5 Detailed reading lists (including papers published in scientific journals) will be provided by academic staff.