

MODULE DESCRIPTOR

Module Title

Nutrigenetics And Molecular Nutrition

Reference	AS3007	Version	2
Created	August 2021	SCQF Level	SCQF 9
Approved	June 2018	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.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	55	N/A
Non-Contact Hours	95	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:	Examination	Weighting:	70%	Outcomes Assessed:	1, 2, 3, 4
Description:	An unseen, closed book examination.				

Component 2

Type:	Practical Exam	Weighting:	30%	Outcomes Assessed:	5
Description:	A public health nutrition debate.				

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

The first grade represents Component 1 (examination, EX1) weighted as major and the second, Component 2 (debate, PE1), weighted as minor. A minimum of Module Grade D is required to pass the module, with compensation of grade E in Component 1 or Component 2 permitted. Non-submission of either component will result in an NS grade.

Module Grade	Minimum Requirements to achieve Module Grade:
A	AA, AB
B	AC, AD, AE, BA, BB, BC, CA
C	BD, BE, CB, CC, CD, DA, DB
D	CE, DC, DD, DE, EA, EB, EC
E	AF, BF, CF, DF, ED, EE, EF, FA, FB, FC, FD
F	FE, FF
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	Successful completion of Stage 2 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.