

SEMESTER I
LSM3217 HUMAN AGEING

Prerequisite: LSM2233 Cell Biology

Workload: 30 lecture hours + 6 tutorial hours + 14 hours self-directed study

Course description:

This module introduces human ageing theories, molecular basis of ageing, system level effects of ageing, ageing related diseases, and interventions that increase longevity. Major topics to be covered in the first half include biology of ageing theories (Oxidative stress, Genetic, Autoimmune and Neuroendocrine), with an emphasis on molecular pathways such as telomere shortening, mitochondrial and ER stress, sirtuins and mTOR and autophagy. The second half of lectures include ageing brain, heart and related diseases, health implications for the individual and interventions that increases longevity such as hormesis, dietary restriction, resveratrol, rapamycin and growth hormones.

S/N	Topics	Lecture hours
1.	Biology of Ageing Theories -The programmed theory -The damage or error theory - Ageing and Immunity	4 (TVA)
2.	Cell Stress Pathways -ER, Mitochondria, NF kappa-B, Sirtuins, Epigenetics and Autophagy	6 (TVA), 2 (MPH), 2 (SHM)
3.	Ageing Related Diseases and Animal Models -Age related Brain diseases -Age Related Heart Diseases	2 (RF), 2 (TVA)
4.	Animal Models of Ageing	4 (TVA)
5.	Anti-Ageing -Dietary Restriction -Resveratrol and Rapamycin -Growth hormones -Hormesis	8 (TVA)
		Total lecture hours: 32h Total tutorial hours: 6h Self-directed study: 12h
	Total hours:	50h

Text Books: TBA

Mode of Assessment: 20% CA (report based on SDL), 20% CA1 (MEQs - answer 4/6 questions), 60% Final Exam (60 MCQs)

Module Coordinator:

A/Prof Thiruma Arumugam (TVA)

Lecturers:

A/PThiruma Arumugam (TVA)	(phstva@nus.edu.sg)
Prof Shen Han-Ming (SHM)	(phsshm@nus.edu.sg)
A/P Roger SY Foo (RSYF)	(mdcrfsy@nus.edu.sg)
A/P Manoor Prakash Hande (MPH)	(phsmph@nus.edu.sg)