

GS03 1011

Emerging Fields in Biochemistry and Molecular Biology: *RNA Biology - SPRING 2021*

Course Description: The goal of this mini-course is to learn cutting edge RNA biology within a historical context. This course will focus on recent research in RNA biology: differential RNA processing and stability (splicing, polyadenylation, and turnover), the functional significance of various classes of non-coding RNAs (microRNAs, lncRNAs, cRNAs, ceRNAs, eRNAs, etc...), the CRISPR/Cas9 system, and RNA epitranscriptomics (RNA methylation and terminal uridylation). Class lectures and discussions will be predominantly student led with assistance of topic area experts. Overall, there will be 12 class meetings (two meetings per week) at 1.25 hours each.

Course Objectives

- A) Learn basic tenets of RNA Biology
- B) Explore emerging topics in RNA Biology including CRISPR/Cas9, differential RNA processing and stability, RNA Epitranscriptomics, and functions of diverse classes of non-coding RNAs

Course Instructors:* John Hagan (John.P.Hagan@uth.tmc.edu; Course Director), George Calin (gcalin@mdanderson.org), Yiwen Chen (ychen26@mdanderson.org), Nicholas De Lay (Nicholas.R.DeLay@uth.tmc.edu), Ambro Van Hoof (Ambro.Van.Hoof@uth.tmc.edu), Tae Jin Lee (Tae.Jin.Lee@uth.tmc.edu), Wenbo Li (Wenbo.Li@uth.tmc.edu), Tingting Mills (Tingting.Weng@uth.tmc.edu), Ann-Bin Shyu (Ann-Bin.Shyu@uth.tmc.edu)

Course Requirements: This course is graded A-F and will be evaluated as follows:
70% Attendance and class participation
30% Class presentations

All classes to be held on Tuesdays and Thursdays, 3-4:15 PM
Course Director: John Hagan, Ph.D. (MSE R158, 713-500-6137)

Day	Date	Topic*	Instructor*
Tuesday	1/19/2021	Course Introduction	John Hagan
Thursday	1/21/2021	No class	No class
Tuesday	1/26/2021	No class	No class
Thursday	1/28/2021	CRISPR/Cas9 & lncRNA	John Hagan
Tuesday	2/2/2021	Non-coding RNA-based Cancer Therapy	Tae Jin Lee
Thursday	2/4/2021	Alternative Polyadenylation	Tingting Mills
Tuesday	2/9/2021	Differential mRNA Turnover	Ambro Van Hoof
Thursday	2/11/2021	microRNAs	George Calin
Tuesday	2/16/2021	ceRNAs	Yiwen Chen
Thursday	2/18/2021	eRNAs	Wenbo Li
Tuesday	2/23/2021	Non-canonical	Nicholas De Lay
Thursday	2/25/2021	Student Choice	TBD
Tuesday	3/2/2021	RNA Methylation	Ann-Bin Shyu
Thursday	3/4/2021	Terminal RNA Uridylation	John Hagan

* The topic schedule and specific instructors are subject to change