



MMI 291 Seminar Series

Current Theme: Interdisciplinary Research

Fall Quarter 2022 – CRN 41473

Friday Seminar – 12:10-1 p.m.

“RNA Recombination in Coronaviruses”

Research / Bio

Dr. Andrew Routh is an Associate Professor at the University of Texas Medical Branch Galveston in the department of Biochemistry and Molecular Biology. He has a broad scientific background, starting his Ph.D. work using Cryo-EM and biophysical approaches to study the compaction and structure of the ‘30nm’ chromatin fiber at the Laboratory of Molecular Biology (LMB, University of Cambridge) then moving to study RNA virus structure and assembly at Scripps Research, La Jolla. During this time, he developed novel Next-Generation Sequencing approaches and complementary bioinformatic pipelines to study RNA virus genome packaging, which seeded his current interests in RNA virus evolution and pathogenesis. In his lab at UTMB, he combines molecular and cellular virology, next-generation sequencing and computational biology to study model RNA viruses such as Flock House virus and cricket paralysis virus, as well as human pathogens including alphaviruses and HIV. Together, these provide clinically relevant and experimentally tractable model systems for the exploration of the principles of RNA virus biology and evolution. His latest work has been focused on applying ‘ClickSeq’ methods for virus genomics to study RNA recombination of SARS-CoV-2 in the current pandemic.

Publications

Jaworski E., Langsjoen R.M., Mitchell B.M., Judy B., Newman P., Plante J.A., Plante K.S., Miller A.L., Zhou Y., Swetnam D., Sotcheff S.L., Morris V.G., Saada N.I., Machado R.R., McConnell A.J., Widen S., Thompson J.K., Dong J., Ren P., Pyles R.B., Ksiazek T., Menachery V.D., Weaver S.C., **Routh A.*** - ClickSeq for targeted sequencing of complete coronavirus genomes with simultaneous capture of RNA recombination and minority variants. [eLife, Sept 2021, 10:e68479](#)

Gribble J., Pruijssers A.J., Agostini M.L., Anderson-Daniels J., Chappell J.D., Lu X., Stevens L.J., **Routh A.***, Denison M.R.*

The coronavirus proofreading exoribonuclease mediates extensive viral recombination [PLoS Pathogens, Jan, 2021, 19;17\(1\):e1009226](#)

Johnson B.A.§, Xie X.§, Bailey A.§, Kalveram B., Lokugamage K.G., Muruato A., Zou J., Zhang X., Juelich T., Smith J.K., Zhang L., Bopp N., Schindewolf C., Vu M., Vanderheiden A., Winkler E., Swetnam D., Plante J.A., Aguilar P., Plante K.S., Lee B., Weaver S.C., Suthar M.S., **Routh A.L.**, Ren P., Ku Z., An Z., Debbink K., Diamond M., Shi P-Y.* , Freiberg A.N.* , Menachery V.D.*
Furin Cleavage Site Is Key to SARS-CoV-2 Pathogenesis Furin Cleavage Site Is Key to SARS-CoV-2 Pathogenesis [Nature, Jan, 2021, 591, 293-299](#)

October
14



Andrew Routh, Ph.D.

Assistant Professor
Department of Biochemistry
& Molecular Biology;
Sealy Center for Structural Biology

October 14, 2022
12:10 – 1 p.m.
ZOOM Meeting

Medical Microbiology
& Immunology
School of Medicine

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We hope to see you there!