

Online Radiation Modules

Radiation training modules 0 (Orientation) and 11 (Electron Capture Detectors) are now available online, via the RCO website. The lab worker must login with a CSU id to complete the training. If he does not have

one, please contact the RCO to schedule an appointment to watch the video at our office. The online module-8 (X-rays) will be coming up soon.

[Take the Module-0 online >>>](#)

[Take the Module-11 online >>>](#)

Online RF-13B

The RCO is going green! The RF-13B, RCO's form for the inside of the package inspection, is now available online only. If the Qualified User in your lab does not have a login and password

yet, please have them contact the RCO to obtain one. Please use wipe tests as a preferred survey method and do not forget to e-sign the document: all you need to do is type your name.

What's Hot in the Wilusz Lab?

Radiation Research at CSU

By Drs. Jeff and Carol Wilusz

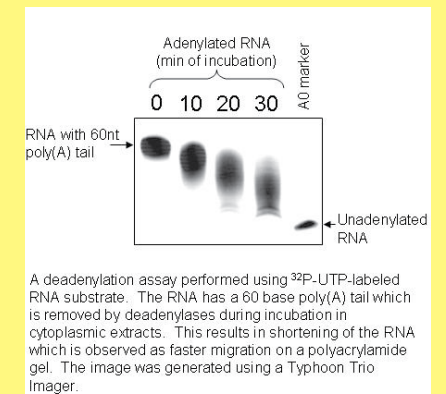
As it turns out, quite a lot! The Wilusz Lab (run by Drs. Jeff and Carol Wilusz) in the Department of Microbiology, Immunology & Pathology is one of the biggest users of ³²P-labeled nucleotides on campus – our dedicated researchers plow through about a millicurie a week of α -³²P-UTP to generate radio-labeled RNA molecules for their experiments. And after we've very carefully made our hot RNAs in a ribonuclease free environment, what do we do with them? We degrade them of course! Most labs take great care to treat their RNA well and keep it intact, but in our lab a lot of our experiments are

aimed at understanding how RNAs are degraded by cellular enzymes. We use radio-labeling to allow us to follow RNA substrates as they are decayed by enzymes in nuclear or cytoplasmic extracts from HeLa cells. After we incubate the hot RNAs in extracts we can easily retrieve them by phenol extraction and ethanol precipitation and then separate them on a denaturing polyacrylamide gel. The dried gel is exposed to a storage phosphor screen and within an hour or two we can scan the screen on the departmental Typhoon Trio Imager to see how the hot transcript was degraded. Our favorite thing about many of our decay assays is that we can get the results in the same day!

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Sai Palusa and Fumi Sagawa at the Wilusz Lab



Click with magnifying glass tool to enlarge image

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What's Hot in the Wilusz Lab? (continued)

So what exactly are we looking for? Right now, we're interested in how viral RNAs evade the cellular RNA decay machinery. Sai Palusa PhD, John Anderson MS and grad student Kevin Sokoloski are using the in vitro RNA decay assay to identify RNA sequences that allow viral transcripts to evade degradation. Once we find those sequences we hope to isolate cellular factors that interact with them, as these are likely blocking decay and could be good targets for novel antivirals. Other projects in the lab are examining how changes in regulated RNA stability contribute to the molecular mechanisms underlying myotonic dystrophy as well as a project to determine how the oncoprotein nucleophosmin contributes to the post-transcriptional regulation of gene expression.

Wouldn't it be better to avoid using radioactivity for these studies? It's not really an

option for us. Non-radioactive methods simply can't compete with ^{32}P labeling for sensitivity or ease of detection. In addition, a lot of non-isotopic labeling methods actually modify the RNA structure which would likely alter its susceptibility to decay enzymes and invalidate all our results. There are indirect detection protocols that might work for some of our experiments, but they add extra steps, cost and time to every assay. Basically, for what we do, radio-labeling is by far the best choice. Of course, we're careful to minimize the exposure of lab personnel by using shielding, gloves and lab coats, and we have five Geiger counters to provide real time monitoring of radioactivity that is in use to help ensure there's no contamination when we're done. We're so into minimizing exposure that there's a grassroots effort ongoing to name the next lab offspring 'ALARA'!

What's New in Health Physics

[Cadmium-Induced Adaptive Response In Cells of Chinese Hamster Ovary Cell Lines with Varying DNA Repair Capacity >>>](#)

[A Cohort Study of Childhood Cancer Incidence after Postnatal Diagnostic X-Ray Exposure >>>](#)

[Reduction in Mutation Frequency by Very Low-Dose Gamma Irradiation of *Drosophila melanogaster* Germ Cells >>>](#)

Radiation Do's and Don'ts



IMPROPERLY STORED LINERS

Make sure to place the plastic liner back inside of all buckets and drums before closing the top. Leaving the liner exposed is an easy way to spread contamination around the laboratory and to individuals.



DON'T: Example of improperly stored liner