Rapid Fire Science

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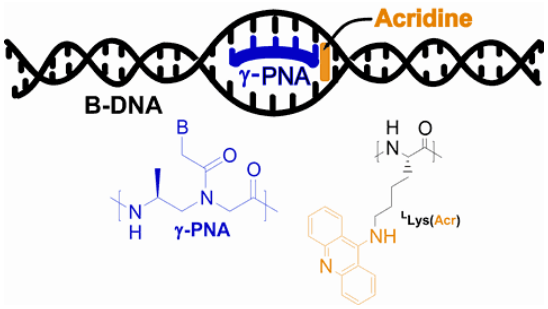
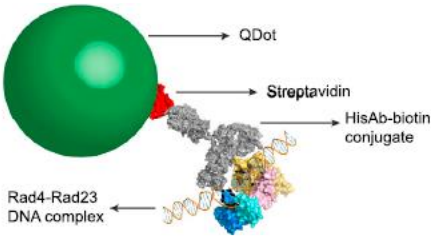
The Science 2017 conference at the University of Pittsburgh is an opportunity for scientists and the public to gather and learn about research being conducted from the investigators themselves. I attended the spotlight session on gene editing and DNA fidelity where four Pittsburgh scientists gave twenty minutes presentations on their research.

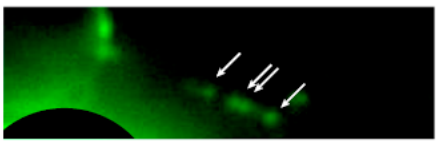
Dr. Danith Ly was the first speaker with *In Vivo Correction of Anemia in Beta-Thalassemia Mice: The Other Method*. His presentation focused on a new way to edit the genome in vivo using a "strand invasion method" to fix a defective hemoglobin that causes anemia. The significance of this "strand invasion method" was the minimum off target effect compared to Cas9 based methods. Additionally, multiple treatments to the same patient had a cumulative effect. This cumulative effect would allow the 5 -10% of genes needed to cure the anemia to be reached over time.



The next two speakers Dr. Jianhua Luo with *Targeting Chromosome Breakpoint of Fusion Gene through Genome Editing*, and Dr. Christopher Bakkenist with *ATR Kinase Inhibition Induces Unscheduled Replication Origin Firing* had similar talks. Both focused on cancer and the markers involved with identifying them. However, they glossed over or failed to explain a lot of the technical jargon they used during their presentations. This made it hard to follow and the only real take away I obtained from each talk was Dr. Luo found a way to predict cancer formation using Men2A and Fer, and Dr Bakkenist found a ATR kinase inhibitor that selectively kills cancer cells.

Dr Bennett Van Houten with *Watching DNA Repair Proteins Search for Damage at the Single Molecule Level: Seeing is Believing,* was much easier to follow. The focus of his talk was the development of a quantum nano dot tag his lab used to tag Rad4, a yeast DNA repair protein. They were then able to visualize single molecule interactions between DNA and the protein. This allowed them to observe and characterize the behavior of the protein. They are now working to build a model on how Rad4 responds to DNA damage in relation to localization and the overall repair systems.





Overall, I found the spotlight sessions pretty informative, and a good introduction to some of the cutting-edge research being conducted in the area. I think the format could be improved if more time was given for questions, and the researchers tuned their presentations for a general audience.

References:

Kong, M., Liu, L., Chen, X., Driscoll, K. I., Mao, P., Böhm, S., ... & Min, J. H. (2016). Single-molecule imaging reveals that Rad4 employs a dynamic DNA damage recognition process. Molecular cell, 64(2), 376-387. (Qdot figures)

http://www.chem.cmu.edu/groups/ly/research/double-strand.html (strand invasion diagram)