GSTP
Seminar Series

University of Wisconsin-Madison
Genomic Sciences Training Program

Fostering new paradigms for the biological sciences

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Room 1408, Genetics/Biotechnology Center, 425 Henry Mall

S. cerevisiae-based Biosensors for the Detection of DNA Damage

Abstract:

Humans come into contact with thousands of chemicals each year and that number is increasing with the regular synthesis of new compounds; clearly, it is important to accurately assess the risk of DNA damage and carcinogenicity resulting from this exposure. Typically DNA mutagenicity assays utilize prokaryotic testing subjects. As an alternative, we are developing a *S. cerevisiae*-based biosensor, because as eukaryotes, yeasts have DNA-damage sensing and repair mechanisms very similar to those of humans. Using NimbleGen microarrays, we have performed global transcriptional analysis of *S. cerevisiae* in response to various DNA-damaging agents to identify genes whose transcription showed a dose-dependent response to DNA damage. We have created reporter genes by combining the promoters of DNA-damage sensitive genes with green fluorescent protein. In this talk, I will discuss how our biosensors were created, give some early assessment of their performance, and plans for their future improvement.
