

UC Riverside Graduate Student Wins the First Place Award for Research on Harm Reduction Cigarettes

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Sabrina Lin, a graduate student in TRDRP-funded principal investigator Dr. Prue Talbot's lab at UCR, received the First Place Award this year for her presentation at the 10th Annual Cell, Molecular, and Development Biology Research Symposium.

Sabrina, whose presentation was titled "Determining the effects of cigarette smoke on early development using a novel time lapse assay and human embryonic stem cells as a model for pre-implantation embryos", is a fourth year PhD student in the Cell, Molecular and Developmental Biology Graduate Program. She has been instrumental in developing stem cell technology to access the effects of cigarette smoke and other environmental toxicants on the prenatal stages of human development. Humans are more sensitive to environmental toxicants during prenatal development than at any other time in the life cycle, but in the past, this developmental stage has been difficult to study directly.



During her presentation, Sabrina first presented a new method for assaying the toxicity of environmental chemicals, including cigarette smoke, using human embryonic stem cells (hESC). Sabrina used hESC in conjunction with novel BioStation technology to collect video data from live cells in an incubator during treatment with sidestream cigarette smoke (the smoke is inhaled by passive smokers). She also made comparisons between sidestream smoke from a conventional brand of cigarettes and three harm reduction brands. Harm reduction products have been introduced and advertised as being safer to use than conventional brands, although there are not studies that actually support this claim. Using novel technology, Sabrina was able to show that sidestream cigarette smoke from three harm reduction cigarettes was in fact more

potent than sidestream smoke from a widely used conventional brand. The most cytotoxic of all brands tested was a harm reduction brand. Moreover, all three harm reduction brands were more potent than the traditional brand in a stem cell attachment assay. This work is important in showing that tobacco products often sold as "safe" are not necessarily less dangerous and may in fact be more dangerous than conventional brands.