ASHP 2020 Midyear abstract:

Human Colorectal Cancer cells express multiple ZNF292 circular RNAs

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Purpose:
Within the United States, colorectal cancer ranks as the third-leading cause of mortality amongst deaths caused by cancer. ZNF292 encodes a zinc finger protein that regulates both growth hormone expression and tumor formation. ZNF292 has been shown in humans to produce an abundance of circular RNA (circRNA) in endothelial and cancer cells. Little is known about the role of circRNA in cancer, but certain circRNAs appear to be overexpressed under hypoxic conditions.

Methods:
To determine whether or not untreated *colorectal* cancer cell lines (CaCo-2 and HCT116 cells) produce circRNA and which products are produced, we examined circZNF292 expression using RT-PCR. IRB approval was deemed unnecessary. Amplification was conducted using primers flanking the unique circular junction of hZNF292 circRNA yet would not yield products from linear ZNF292. Linear and circular ZNF292 primer sets used in previous studies each produced predicted products. However, amplification with newly created *divergent* circular primers yielded multiple products suggesting that several circZNF292 RNAs are present. To confirm that products were circRNA, products were treated with an enzyme called RNase R that would remove only linear RNA prior to amplification.

Results:
Both published primer sets and newly-designed primers gave products after RNase R treatment, confirming circular origin. Again, multiple product sizes were found after removal of linear RNA. Product bands are being sequenced to determine the specific splicing sites that give rise to this family of related circRNAs.

Conclusion:
Further investigation will concentrate on the expression of circular ZNF292 RNA after chemotherapy treatment and whether individual species vary independently. The role of circRNA in cancer is an emerging area of research and may provide useful oncological drug targets.