

Researchers study tobacco use, cancer connection

October 20 2020, by Katie Pence



Maria Czyzyk-Krzeska, MD, PhD, professor in the UC Department of Cancer Biology, who studies kidney cancer within the UC Cancer Center. Credit: UC Creative + Brand

Researchers at the University of Cincinnati have identified new clues into ways tobacco use impacts patients with kidney cancer.

The study, published in the *Journal of Clinical Investigation*, provides the first steps in developing personalized treatments for patients with this type of cancer.

Expanding on previous work that identified the mutations of [kidney cancer](#) cells, this study reveals metabolic fingerprints that distinguish cancers from nonsmokers compared to smokers.

"Standard analysis of mutations may not have detected the effects of tobacco smoking in kidney cancer, so these results and this study provides important steps toward new and better therapeutic strategies for kidney cancers in both smoking and nonsmoking populations," says Maria Czyzyk-Krzeska, MD, Ph.D., professor in the UC Department of Cancer Biology.

The disease studied, called "clear cell [renal cell carcinoma](#)," is the most common type of kidney cancer, but there are few chemotherapy options for advanced cancers, she says.

A multidisciplinary team of UC researchers led by Czyzyk-Krzeska in Cancer Biology, Jarek Meller, Ph.D., in Environmental and Public Health Sciences, and Julio Landero Figueroa, Ph.D., in Chemistry, analyzed tissues of patients who were tobacco users as well as those who were not, uncovering the widespread effects of smoking in this form of kidney cancer.

"Importantly, this integrated approach was key to identifying the major metabolic reprogramming in energy and biosynthesis, associated with the presence of cadmium and [inorganic arsenic](#) found in cigarettes, together with a distinct signature of copper in tumors from tobacco smokers," says Maria Czyzyk-Krzeska.

The data show that tumors from longtime smokers represent a separate

metabolic subtype of [kidney](#) cancer with different weaknesses and which could require a dedicated treatment strategy.

"There is a need for an in-depth analysis of metabolic subtypes of these cancers to establish the best way to treat each individual tumor," she says. "This is one of the earliest studies to establish that this type of analysis is necessary. Personalized, or precision medicine, has the promise of offering a specific and unique therapy based on the molecular landscape of each patient's [cancer](#)."

"This has huge potential to change outcomes for patients, leading to better and longer lives."

More information: James Reigle et al, Tobacco smoking induces metabolic reprogramming of renal cell carcinoma, *Journal of Clinical Investigation* (2020). [DOI: 10.1172/JCI140522](https://doi.org/10.1172/JCI140522)

Provided by University of Cincinnati

Citation: Researchers study tobacco use, cancer connection (2020, October 20) retrieved 25 April 2024 from <https://medicalxpress.com/news/2020-10-tobacco-cancer.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.