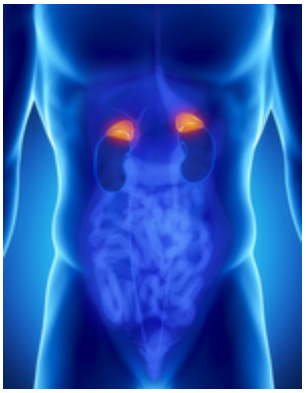
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

# Compositions and Methods for Treating Adrenocortical Carcinoma and Excess Steroid Production

**TECHNOLOGY NUMBER: 7401**



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**Category**
Therapeutics and Vaccines
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## OVERVIEW

A novel approach to addressing the pathologic effects of adrenocortical carcinoma

- Decreases cholesterol levels, inhibits cortisol secretion, and lowers mitochondrial activity
- Concurrent administration of two or all three of these drug classes is effective

## MODALITY

Systemic administration (oral or injectable therapeutics, depending on specific agent selection)

## INDICATION

Adrenocortical carcinoma (ACC) and other conditions involving excess steroid hormone production

## PUBLICATIONS

"ATR-101 inhibits cholesterol efflux and cortisol secretion by ATP-binding cassette transporters, causing cytotoxic cholesterol accumulation in adrenocortical carcinoma cells"

## INTELLECTUAL PROPERTY

US10512667 "Compositions and methods for treating conditions related to adrenocortical activity and/or excessive steroid production"

## BACKGROUND

The adrenal gland produces hormones that affect development, handling stress, growth, and the regulation of kidney function. Adrenocortical carcinoma (ACC) can arise from the cortex of the adrenal gland, though it is often difficult to diagnose by either radiographic or pathologic evaluation when compared to more commonly occurring and benign adrenal adenomas. ACC causes severe issues related to excess steroid production that suppresses immune responses and disrupts multiple physiological functions. Symptoms may include weight gain, muscle weakness, insomnia, abdominal pain, and weight loss. Therefore, a great need exists for agents which can address the physiologic effects of ACC and treat the underlying cancer.

## INNOVATION

Researchers at the University of Michigan describe improved control of ACC symptoms through the use of two or more of the following three classes of drugs: 1) an agent capable of inhibiting cholesterol efflux, 2) an agent capable of inhibiting cortisol secretion, and 3) an agent capable of inhibiting mitochondrial activity. The medicine which addresses increases in cholesterol levels does so by inhibiting cholesterol cell membrane transporters named ABCA1 and ABCG1. The treatment that decreases cortisol secretion inhibits the multi drug resistant gene (MDR1) related cortisol secretion and MDR1 P-glycoprotein multiple drug transporter activity. The agent that decreases mitochondrial activity or ATP synthesis does so by inhibiting mitochondrial electric chain activity related to cholesterol accumulation. Treatment regimens may include the concurrent use of two or all three of these classes of drugs.