Therapeutics & Vaccines


# Cytotoxic Ribonuclease Variants

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**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing new, highly cytotoxic variants of human RNase 1.**

## Overview

Ribonucleases are enzymes that catalyze the degradation of RNA. Levels of RNase activity are controlled *in vivo* by a ribonuclease inhibitor (RI), which binds strongly to an RNase to completely inhibit its catalytic activity. An RNase can be made cytotoxic by modifying its amino acid sequence so RI can't bind to it.

## The Invention

UW-Madison researchers have developed new, highly cytotoxic variants of human ribonuclease (RNase 1). They determined—for the first time—the three dimensional atomic crystal structure of human RI (hRI) bound to RNase 1 and then used this structure to modify the amino acid sequence of RNase 1 so it could not be easily bound by hRI. The modified ribonucleases retain their catalytic properties and are more cytotoxic than previously engineered ribonucleases.

## Applications

- Cancer treatment

## Key Benefits

- More toxic to cancer cells than other known ribonucleases
- Because RNase 1 is a human protein, cross-species antigenic issues are avoided.
- Likely to exhibit a more favorable therapeutic index (ratio of toxic to effective dose) than a current cancer therapeutic based on a frog homolog of RNase A

## Additional Information

**Related Intellectual Property**

- View Continuation Patent in PDF format.
- View Continuation Patent in PDF format.
- View Continuation Patent in PDF format.

**Tech Fields**

- Therapeutics & Vaccines : Oncology

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854