Therapeutics & Vaccines

Cytotoxic Ribonuclease Variants

View U.S. Patent No. 7,416,875 in PDF format.

WARF: P04427US

Inventors: Ronald Raines, Julie Mitchell, Thomas Rutkoski

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing new, highly cytotoxic variants of the bovine ribonuclease A (RNase A) superfamily of ribonucleases.

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 the bovine ribonuclease A (RNase A) superfamily of ribonucleases. They used the Fast Atomic Density Evaluation (FADE) algorithm for molecular interaction analysis to model the locations where RNase A and RI are in molecular contact. The amino acid sequence of RNase A was then modified at these locations so it could not be easily bound by RI. 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
- 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

For More Information About the Inventors

- Julie Mitchell

Related Technologies

- See WARF reference number P05341US for highly cytotoxic variants of the human ribonuclease, RNase 1.

Related Intellectual Property

- 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