

# Protecting Ovaries from Chemotherapy Damage Using Proteasome Inhibitors

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**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method for reducing chemotherapy damage to ovarian cells regardless of patient age or cancer type.**

## OVERVIEW

Primary ovary insufficiency (POI) caused by chemotherapy treatment is experienced by many cancer survivors, including up to 40 percent of reproductive-age breast cancer survivors and eight percent of childhood cancer survivors. The condition can lead to infertility and premature menopause, which increases a woman's risk for osteoporosis, mental health problems and cardiovascular disease.

Fertility preservation options—like the freezing of embryos and oocytes—are invasive, do not preserve endogenous estrogen and are not viable for young girls. Surgical removal and later re-implantation of ovarian tissue is available for children and women but is considered experimental and necessitates surgery to harvest and later transplant ovarian tissues.

There is a clear need to develop drug-based options aimed at preserving the long-term reproductive and endocrine health of female cancer survivors.

## THE INVENTION

UW-Madison researchers have developed a method to reduce ovarian damage in cancer patients by administering a proteasome inhibitor prior to chemotherapy.

The inhibitors work by binding to a cell's proteasome –the large complex of enzymes found in the cytoplasm that degrades and disposes old proteins. This binding action blocks chemotherapeutic agents from invading the cell nucleus.

To shield ovaries from chemotherapy toxicity, an effective dose of a proteasome inhibitor like bortezomib (Bort) or MG-132 is injected about an hour before treatment.



## THE WARF ADVANTAGE

### **WARF: A Leader in Technology Transfer Since 1925**

Since its founding as a private, nonprofit affiliate of the University of Wisconsin-Madison, WARF has provided patent and licensing services to UW-Madison and worked with commercial partners to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.

### **The University of Wisconsin and WARF – A Single Location to Accelerate Translational Development of New Drugs**

UW-Madison has the integrative capabilities to complete many key components of the drug development cycle, from discovery through clinical trials. As one of the top research universities in the world, and one of the two best-funded universities for research in the country, UW-Madison offers state-of-the-art facilities unmatched by most public universities.

These include the Small Molecule Screening Facility at the UW Comprehensive Cancer Center; the Zeeh Pharmaceutical Experiment Station, which provides consulting and laboratory services for developing formulations and studying solubility, stability and more; the Waisman Clinical Biomanufacturing Facility; the Wisconsin Institute for Medical Research, which provides UW-Madison with a complete translational research facility; and the innovative, interdisciplinary Wisconsin Institutes for Discovery, home to the private, nonprofit Morgridge Institute for Research and its public twin, WID, part of the university's graduate school. The highly qualified experts at these facilities are ready to work with you to create a library of candidates for drug development.

## APPLICATIONS

- Preserving ovarian health and fertility for cancer survivors without diminishing cancer care
- Preserving ovarian endocrine function and preventing chemotherapy-induced premature menopause in cancer survivors
- Preventing chemotherapy-induced delayed puberty in children diagnosed with cancer

## KEY BENEFITS

- Potential to reduce or prevent chemotherapy damage to human ovaries
- Preserves fertility
- Protects all types of ovarian cells
- Helps combat early menopause and risk to offspring
- Could work regardless of patient age or form of cancer
- Method is drug-based, hence non-invasive and cost-effective.

## ADDITIONAL INFORMATION

### Publications

Roti Roti E.C., Leisman S.K., Abbott D.H. and Salih S.M. 2012 Acute Doxorubicin Insult in the Mouse Ovary is Cell- and Follicle-Type Dependent. PLoS One.7(8):e42293

### Tech Fields

Pharmaceuticals & Vitamin D - Oncology & hematology

Pharmaceuticals & Vitamin D - Reproduction & infertility

## CONTACT INFORMATION

For current licensing status, please contact Rafael Diaz at [rdiaz@warf.org](mailto:rdiaz@warf.org) or 608-960-9847.

