

The ART of Reproductive Medicine: Oncofertility

AN INTRODUCTION TO A NEW APPROACH IN MEDICINE

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Fred

55 year old leukemia survivor

Was treated with chemotherapy

Angry that he had not been able to become a parent




Photo: Microsoft Clip Art & iCLIPART

Adam

3 years old and diagnosed with leukemia

He has just started chemotherapy treatment.

Parents are worried about his future prospects of fatherhood.




Photo: Microsoft Clip Art & iCLIPART

Angela


15 years old and has just been diagnosed with leukemia

Has been scheduled for chemotherapy and radiation therapy.

Hopeful due to new research to preserve her fertility after surviving her cancer



Photo: Microsoft Clip Art & Fotolia



1 of 49 human females in the USA between the ages of birth and 40 are diagnosed annually with cancer

70,000 patients exposed to chemotherapy or radiation therapy

Breast Cancer	30,000 cases/year
Lymphoid malignancies	30,000
Childhood cancers	6,500
Solid tumors (cervical, osteosarcoma)	5,000

Graphic: Microsoft Clip Art

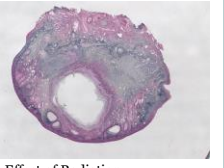
5 Year Cancer Survival Rate

All cancers	64%
Breast cancer	90%
Childhood cancers	75%


2015 – 1 person in 285 children in the USA will be diagnosed with cancer

Attempts to Preserve Fertility Have Met with Little Success – There Are Only a Few Current Clinical Options

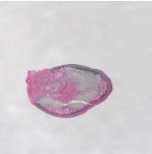
Effect of Chemotherapy on the Ovary



Effect of Radiation Therapy on the Ovary




Premature Ovarian Failure (no eggs) - Infertility



Testicular Failure (no sperm) - Infertility

Photos: Dr. Mary Zelinski, PhD, ONPRC

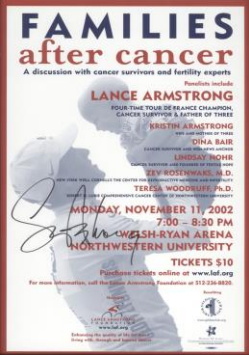


The Oncofertility Consortium: The Preservation of Fertility for Cancer Patients


An Interdisciplinary Research Consortium

T.K. Woodruff,
Northwestern University,
Principal Investigator (PI)

<http://oncofertility.northwestern.edu/>
www.MyOncofertility.com



Our mission: Exploring and expanding options for the reproductive future of cancer survivors




Developing strategies to preserve fertility in women and men - real and theoretical (research)

What Are The Obstacles?

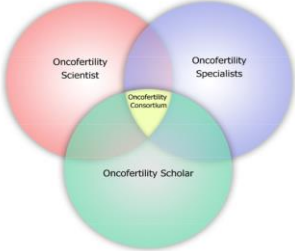

Option Gap

Data Gap

Information Gap




Oncofertility Represents a New Way to Span the Gaps

Considerations of Oncofertility

- What is the specific fertility threat of the life-preserving cancer drugs? Can we predict how new cancer drugs will affect fertility?
- How do we optimally store and recover gonadal tissue? Can we cryopreserve and grow human ovarian follicles?
- What are the key concerns and treatment decisions that are made at diagnosis and how do gender, race/ethnicity, socioeconomic and family status factor into decisions?



Further Considerations

- What role do healthcare practitioners and religious counsel play in the decision?
- What are the ethical and legal concerns regarding the use of advanced reproductive technologies in cancer patients?
- How do families facing a child's cancer diagnosis decide whether or not to participate in the ovarian cryopreservation work?
- What is the cost/benefit analysis of fertility preservation?



Research Grants for Oncofertility



R01 grants

Novel Methods for Cryopreservation and Recovery of Female Follicles

M. Zelinski, ONPRC, OHSU

Bioengineering Primate Follicles

R.L. Stouffer, M.B. Zelinski, D.H. Lee, ONPRC, OHSU

Preserving and Growth of Human Follicles

R.J. Chang, University of California, San Diego; T. Woodruff, Northwestern

Discovery in the Humanities and Social Science of Oncofertility

L. Zoloth, Northwestern

P30 grants

Biomaterials Core – L. Shea, Northwestern

National Physicians Cooperative – M. Gerrity, Northwestern

Training modules

R25 grant– Learning Modules in Oncofertility – Northwestern, ONPRC, UCSD

T90/R90 grants - Training the Globally-ready Oncofertility Scholar –

C. Coutifaris, U. Pennsylvania



Bioengineering Primate Follicles: From Immature Eggs to Live Births and Assessment of Ovarian Tissue Cryopreservation Methods in Nonhuman Primates



Northwestern University



From Bench to Bedside



This research will aid in developing safe and effective ways to protect human ovaries from damage by anti-cancer therapies and to restore fertility to these patients.



Photos: Microsoft Clip Art

