Manual of Operations

This document is the Manual of Operations for the University of Pittsburgh Coordinating Center (CC) IRB protocol entitled:

Testicular Tissue Cryopreservation

In addition to this Manual of Operations, the Pittsburgh Coordinating Center will:

- Provide sample templates for the approved IRB protocol and informed consent forms
- Review and approve all IRB and consent forms for each individual recruitment site prior to submission
- Maintain records of IRB approval letters and current approved IRB protocols and consent forms for each individual recruitment site
- Review data safety monitoring minutes for each individual recruitment site and provide an annual summary of all data safety monitoring reports to the University of Pittsburgh IRB and all sites
- Provide annual reports of subject enrollment to all recruitment sites
- Communicate protocol changes to all recruitment sites
PROTOCOL SUMMARY

The “Testicular Tissue Cryopreservation” study is open to a subset of patients facing potentially fertility-threatening treatment regimens.

This study will harvest testicular tissues from eligible patients who are at risk of infertility and do not have standard of care options to preserve their future fertility. Separate portions of the harvested tissue and/or derivative cells will be 1) designated for research and 2) cryopreserved and maintained for participating patients as a resource for future elective procedures to achieve fertility. Research tissue will be de-identified and made available for research through the Coordinating Center at Magee-Womens Research Institute.

Research on testicular tissue will:

1. Optimize techniques for cryopreservation of testicular cells, including spermatogonial stem cells, from patients at high risk for infertility due to disease or prior to the initiation of therapy. Efficacy of cryopreservation techniques will be determined.

2. Assess malignant cell contamination in harvested patient testicular tissues and cells.

3. Develop strategies to isolate/enrich spermatogonial stem cells and/or eliminate malignant contamination in patient testicular cells.
SIGNATURE PAGE

The signature below constitutes the approval of this protocol and the attachments, and provides the necessary assurances that this study will be conducted according to all stipulations of the protocol, including all statements regarding confidentiality, and according to local legal and regulatory requirements and applicable US federal regulations.

By this signature, the recruitment site agrees to comply to the following:

- Provide copies of IRB and consent forms to the CC prior to submission.
- Inform the CC about all modification to the IRB and consent forms in a timely manner and submit up-to-date forms annually.
- Adhere to the approved data safety monitoring procedures and provide meeting minutes and data safety reports to the CC.
- Assure to provide testicular tissue for processing, storage, and research to the CC.
- Immediately report adverse events and unanticipated problems to the local IRB and the CC.

Site Investigator:

Signed: ____________________________ Date: ________________

Name
Title

(For CC use only)

Received and reviewed: Received and reviewed:

Date and Initial CC Official Date and Initial CC IRB
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Study Design

**Recruitment Site**
- ✔ Determine Eligibility
- ✔ Informed Consent
- ✔ Send blood and urine samples
  - Memorial Blood Centers (MBC)
- ✔ Send paperwork and MBC lab results to Reprotech
- ✔ Send de-identified testicular tissue and plasma to CC

**Coordinating Center**
- ✔ Allocate tissue for research (25%) and patient (75%) use
- ✔ Process and freeze tissue
- ✔ Send patient tissue and 1 tube of plasma to Reprotech
- ✔ Store research tissue at CC

**Memorial Blood Centers**
- ➤ Blood and FDA specimen testing

**Reprotech Ltd.**
- ➤ Long term storage site of patient tissue
1 Key Roles

Individuals:

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Institutional Contact: Julie Seifert (as above) or Jennifer Orwig (as above)
2 Background Information and Scientific Rationale

2.1 Background Information

The cure rate of cancer in children, adolescents and young adults continues to increase with advances in chemotherapy and/or radiation protocols. As more oncology patients become long-term survivors, the consequences of their treatment on their quality of life have become an important focus of research in clinical oncology and reproductive medicine. One of the most common and most devastating side effects of cancer treatment is infertility. Many chemotherapy and radiation-containing regimens for cancer or prior to bone marrow transplantation can cause sterility in children and young adults. In addition, some human disease conditions (e.g., Klinefelter's) are associated with infertility. Semen cryopreservation is available as a fertility-preserving option for post pubertal boys and adult men, but many do not take advantage of this option due in part to lack of information, illness, and/or time constraints relative to their treatment plan. Currently, no fertility-preserving options are available for prepubescent boys who are not yet producing sperm. However, experimental techniques are currently being developed to provide future alternatives for patients that preserve their testicular tissue/cells. In order to take advantage of these and future technologies, patients must harvest and preserve their testicular tissue prior to disease or treatment associated fertility decline. This study will be available to males of all ages who have a disease or will undergo a treatment that can cause infertility.

2.2 Scientific Rationale

Over the last 30 years, advances in the survival of oncology patients have been made through the work of cooperative protocol-driven clinical research, particularly in young patient categories. Now that the overall event-free survival rate for child, adolescent and young adult cancer patients surpasses 75%, attention is focused on quality of life and long-term consequences of therapy. In particular, patients receiving chemotherapy and radiotherapy for cancer or other conditions are often at risk for infertility, placing fertility preservation at the forefront of these concerns. Progress to minimize the unwanted side effects of current treatment regimens without decreasing their effectiveness has allowed many cancer survivors to have children following spontaneous recovery of fertility (van den Berg et al., 2004). However, some oncological diseases require rigorous treatment regimens which will almost always lead to permanent infertility of the patient.

The primary causal factor for the risk of infertility in males is considered the treatment modality (i.e. the specific chemotherapy or radiotherapy regimen). Most of the available outcome data relating to fertility sequelae are from studies that examined the effects of single treatment agents.

In men, treatment with some chemotherapeutic agents and regimens induced prolonged azoospermia (complete absence of sperm in the ejaculate). The effects are likely the result of cytotoxicity to the spermatogonial stem cells that are responsible for maintaining spermatogenesis, possibly resulting in permanent infertility (Meistrich et al., 2005). In particular, alkylating chemotherapeutic agents such as procarbazine, busulfan, cyclophosphamide, chlorambucil, and melphalan, along with cisplatin are the most likely to produce prolonged infertility (Meistrich et al., 2005). Radiation fields that include the testes also produce prolonged and often permanent damage to spermatogenesis (Dubey et al., 2000; meistrich and van Beek,
Other agents, particularly topoisomerase inhibitors (e.g., amsacrine), antimetabolites (e.g., methotrexate), and microtubule inhibitors can have additive effects on infertility risk when given with the highly gonadotoxic agents listed above (Meistrich et al., 1989). Combinatorial therapies, such as the busulfan-cyclophosphamide (BuCy) conditioning for bone marrow transplant, often result in permanent infertility (Socie et al., 2003). Furthermore, some agents that are administered in repetitive “fraction” treatments are more toxic in sum than single larger doses, and thus, for these agents a lower cumulative dose can lead to permanent infertility (Pont and Albrecht, 1997).

There is a paucity of data about the risk of infertility in prepubertal male patients. Anti-mitotic therapies (i.e. chemotherapy, radiation) cause infertility by targeting proliferating germ cells (e.g. spermatogonia, spermatocytes), the same mechanism by which they target neoplastic cells. In the prepubertal testis, these agents affect proliferating undifferentiated spermatogonia that are proliferating, but not yet producing complete spermatogenesis and sperm (Simorangkir et al., 2005). Rodent studies concur with this scenario and indicate that germ cells in the fetal, neonatal, prepubertal and adult testis are sensitive to chemotherapy (Brinster et al., 2003). While quantitative clinical data demonstrating the relative risk of male infertility between adults and children are not available, it is our best estimate that prepubertal patients exhibit similar sensitivities to potentially gonadotoxic agents as adults.

The main purpose of the proposed study is to develop techniques for long-term preservation of fertility through cryopreservation (freezing) of testicular tissue and/or cells for patients with diseases (e.g., Klinefelter’s Syndrome) or treatments (e.g., chemotherapy, radiation) that are likely to cause infertility. This study will store frozen testicular tissue and/or cells for male patients as a potential resource to restore their fertility in the future using experimental techniques currently under development. The study will also provide a portion of the patients tissue for research to advance our understanding of:

1. The best techniques for freezing testicular tissue/cells.
2. Methods of identifying and removing contaminating cancer cells in testicular tissue.
2.3 Potential Risks and Benefits

2.3.1 Potential risks

Blood Draw
Common Risks: pain can occur

Infrequent Risks: bleeding can occur

Confidentiality
Common Risks: none

Infrequent Risks: Breach of confidentiality. Participation in this research is confidential and to minimize the risk of breach of confidentiality, all paper and electronic research records that contain identifiable information will be securely stored at the individual sites of recruitment. Access to identifiable information will be limited to the PI, co-investigators, study coordinator and research staff at the individual site. Personnel involved in this study are expected to protect the security and confidentiality of identifiable information. Tissue and blood samples will be de-identified by the individual sites, but in such a way that the Pittsburgh coordinating center will know which site sent the tissue (e.g., CHOC-001 from Children's Hospital of Orange County). Only the individual site PI, co-investigators and research staff will have access to their own files and these will not be available to Pittsburgh or other individual sites.

Authorized representatives of the USDA and the office for human research protections (OHRP) may review and/or obtain identifiable health information for the purpose of monitoring the accuracy of research data and to ensure that the research is being conducted according to FDA regulations. Authorized representatives of Memorial Blood Centers will have access to data, documents and blood samples in association with the FDA-mandated infectious disease screening. Testicular tissue/cells designated for patient use will be stored at Reprotech, LTD, a third party tissue bank. Authorized representatives from Reprotech will have access to data, documents, blood plasma and tissue/cells generated by the study. Patients will sign a separate agreement with Reprotech.

Testicular Tissue Harvesting
Common Risks: none

Infrequent Risks:

- General anesthesia: the patient’s risk of death from anesthesia is less than 1 in 100,000 in children older than 3 years and less than 1 in 10,000 in children less than 3 years (Arbous et al., 2001; Gibbs and Borton, 2006; Kawashima et al., 2003).

- Simple Orchiectomy: Risks of simple orchiectomy are the same as other surgical procedures, including infection and bleeding as a result of surgical incision. The chance of the patient requiring hospitalization for complication(s) is less than 1%. The patient's chance of dying as a result of such complication(s) is less than 1 in 10,000.

- Testicular Wedge Resection: Risks of testicular wedge resection are also the same as other surgical procedures, including infection and bleeding as a result of surgical incision. It is possible that the surgery itself could cause scar tissue or damage to the
remaining testicular tissue, so that chances for producing sperm from that testicle could be reduced. Surgery in the pelvic region or on the testicles can damage the nerves that cause ejaculation. There is also a risk of bleeding within the resected testicle resulting from the surgical removal of tissue. The chance of the patient requiring hospitalization for complication(s) is less than 1%. The patient’s chance of dying as a result of such complication(s) is less than 1 in 10,000.

- **Removal of a Testicle:** There is a theoretical risk that the patient may experience a reduction in fertility due to the removal of a testicle, although the remaining testicle typically compensates for loss of one gonad. In that case, the surgery to remove testicular tissue would then have been unnecessary. Surgery in the pelvic region or on the testicles can damage the nerves that cause ejaculation. Removal of one testicle can lead to temporary reduction in production of testosterone, 90-95% of which is produced by the testicles (the balance is produced by the adrenal glands). The most common side-effects of reduced testosterone levels in adult mean include lost or reduced sexual desire, impotence, hot flashes similar to those in menopausal women, mood swings or depression, enlargement and tenderness in the breasts, weight gain, osteoporosis, and fatigue. To address the potential psychological consequences of removing a testicle, some men opt to have a testicular prosthesis, or artificial testicles, placed inside the scrotum to replace the testicles removed during surgery. The prosthesis makes the scrotum look much as it did before surgery.

- **Beginning therapy 2-3 days after surgery:** Patients will begin their treatments on a time-frame dictated by clinical management of their primary disease or condition, typically within one week after surgery. For patients who will receive chemotherapy or radiation for treatment of their primary disease, the patients’ surgeon(s) will determine hemostasis and provide clearance indicating lack of complications prior to initiating therapy. It has been reported in some cases that chemotherapy or radiation treatments can begin as early as one day following testicular biopsy surgery (Bahadur et al., 2000).

- **Delaying a patient’s primary therapy:** In nearly all cases, there is no indication that there is an increased risk of delaying a patient’s primary therapy for a window of time to permit surgical removal of testicular tissue and recovery (e.g., one day to one week).

**Testicular Tissue/Cell Cryopreservation:**
- **Common Risks:** none
- **Infrequent Risks:** Testicular tissue/cells will be cryopreserved following removal from subjects and, following an extended period of cryogenic storage, may be used for future procedures to attempt restoration of fertility. Although care will be taken, damage to the removed testicular tissue may occur during any part of the cryopreservation (freezing) or storage process. The exact method that might be used by the patient to achieve fertility in the future is unknown and is outside the scope of this protocol. The risk of birth defect(s) and/or genetic damage to any child who may be born following cryopreservation and long term storage of human testicular tissues is unknown. However, thousands of children have been born worldwide from frozen embryos and there only isolated reports of minor increased risk of some specific birth defects in these children (e.g., Angelman syndrome, Prader-Willi syndrome, Beckwith-Wiedeman
syndrome). However, the potential risk of genetic mutations that could contribute to birth defects can only occur if subject tissues are used for experimental procedures to restore fertility, which is outside the scope of this protocol. Subjects will not be at direct risk during participation in this study.

The testicular tissue removed may not yield usable germ cells (i.e., functional spermatogonial stem cell or sperm from the testes), or pregnancy may not result when the spermatogonial stem cells or sperm are ultimately used. Some patients may have particular risks associated with their underlying disease. If a cancer or other disease already affects the testicles, it may reduce the options for using the tissue in the future. This may not be known until the patient wishes to use their tissue. Tissue could be lost or made unusable due to equipment failure, or unforeseeable natural disasters beyond the control of this program.

**Steps to Prevent or to Minimize the Severity of Potential Risks:**
All blood draws, surgical procedures, bone marrow aspirations, and tumor biopsies will be performed by skilled, experienced technicians/surgeons in a controlled environment.

Testicular tissue processing and cryopreservation will be performed in the Fertility Preservation laboratories in the Center for Fertility and Reproductive Endocrinology (CFRE) at Magee-Womens Hospital by certified technicians with experience processing testicular tissue. CFRE is an FDA-compliant and American Association of Tissue Banks-accredited long term storage facility for reproductive tissues and is FDA-registered as a HCT/P manufacturer, and thus, is an appropriate facility in which to process testicular tissue for potential future use by subjects. All tissue processing will be performed in accordance with good clinical practices, good laboratory practices (GLPs) and current good tissue practices (CGTPs) to minimize the risks for testicular tissue processing and cryopreservation. We have communicated our testicular tissue processing protocol to the Office of Cellular, Tissue and Gene Therapy at the FDA’s Center for Biologics Evaluation and Research, which indicated that our protocol would be appropriate for the described homologous reproductive purpose under 21 CFR 1271 regulations. In all cases, suitable reagents and disposables will be employed for tissue processing in accordance with FDA recommendations.

Participation in this research is confidential. All research tissues will be de-identified by the individual centers; participants will be identified by number, not name. The Pittsburgh coordinating center will receive de-identified enrollment information, tissue and blood that is identified with a site-specific identification number. No information by which the patient can be identified will be published in connection with this study. Only the individual recruitment site PI and co-investigators will have access to files matching the patient information with tissue specimen numbers. Tissue and blood samples will be de-identified by the individual sites, but in such a way that the Pittsburgh coordinating center will know which site sent the tissue (e.g., CHOC-001 from Children's Hospital of Orange County or LCH-001 from Lurie Children’s Hospital). Only the individual site PI, co-investigators and research staff will have access to their own files and these will not be available to Pittsburgh or other individual sites. Authorized representatives of the USDA and the office for human research protections (OHRP) may review and/or obtain identifiable health information for the purpose of monitoring the accuracy of research data and to ensure that the research is being conducted according to FDA regulations. Authorized representatives of Memorial Blood Centers will have access to data, documents and blood samples in association with the FDA-mandated infectious disease screening. Testicular
tissue/cells designated for patient use will be stored at Reprotech, LTD, a third party tissue bank. Authorized representatives from Reprotech will have access to data, documents, blood plasma and tissue/cells generated by the study. Patients will sign a separate agreement with Reprotech.

**Steps Taken in the Event that a Clinically Significant, Unexpected Disease or Condition is identified during the Conduct of the Study:**

If a subject is found to have a positive screen for an infectious disease (e.g., HIV), he will be informed and referred to the appropriate specialist. Infectious disease status will not be determined until after study enrollment. The storage of specimens designated for patient use from potentially infectious subjects (subjects for whom testing show a potential for an infectious disease) require certain additional safeguards for potentially infectious specimens only.

**Endpoints:**

Since this is an observational study, there are no experimental endpoints that impact continued study participation. Continued storage of testicular tissue/cells designated for patient use is governed by the ReproTech agreement and is not dependent upon continued study participation. Disposition of tissue/cells designated for patient use at their death is also determined by the ReproTech agreement.

**2.3.2 Potential for Direct Benefit:**

Established fertility preserving therapies are available for males that have undergone puberty, but these therapies are not accessible or appropriate for all adolescent or adult patients. Currently there are no therapies to preserve the future fertility of preadolescent boys. However, new reproductive therapies are under development and may one day offer "fertile hope" to those survivors that do not currently have access to fertility preserving therapies. When no established fertility sparing or preserving options are available, it is reasonable to offer harvesting and cryopreservation of testicular tissue as a possible means of fertility preservation. In this case, the potential direct benefits to the subject are two-fold, regardless of diagnosis or age. First, each subject will have tissue cryopreserved and dedicated for their own future use, a scenario that offers hope for patients that currently have limited prospects for future fertility. Retrospective studies indicate that most parents are interested in preserving fertility on behalf of their children with cancer (Ginsberg, 2011; van den Berg et al., 2007; Wyns et al., 2011). Thus, there is perceived acceptability and desire to undergo experimental therapy to preserve fertility, as long as treatment for the primary disease is not compromised (Oosterhuis et al., 2008). There is also likely a psychological benefit to the patient in terms of raising issues relating to their life after cure from their primary disease (e.g., cancer). Second, the subject may have the opportunity to utilize their stored testicular tissue or cells for fertility restoration procedures in the future.
3 Objectives

The primary objective of the proposed study is to

1) Optimize techniques for processing and cryopreserving testicular tissue,

2) Assess malignant contamination in testicular tissues and

3) Develop methods to enrich spermatogonial stem cells and remove malignant contamination from testicular tissue.

In addition, this study will process and cryopreserve tissue and/or cells for participating patients as a resource for future elective procedures to attempt fertility restoration.
4 Study Population

4.1 Patients in three categories will participate in this study:

4.1.1 Category 1: Patients who are having all or part of one or both testicles removed for the treatment of a disease.
   a. Clinical indications for removal of all or part of one or both testicles include (but are not limited to) the following: Advanced stage/grade testicular cancers; testicular metastases; Treatment of hormonally sensitive cancers (i.e., prostate) that necessitate bilateral orchiectomy
   b. Note: removal of both testicles will limit options for fertility preservation.

4.1.2 Category 2: Patients who are having all or part of one or both testicles removed for the prevention of a disease.
   a. Clinical scenarios for prophylactic bilateral orchiectomy include (but are not limited to) the following: Carriers of genes that predispose to hereditary cancers of the testicles or prostate; Patients with increased risk or personal history of hormonally sensitive cancers.
   b. Note: removal of both testicles will limit options for fertility preservation.

4.1.3 Category 3: Patients having all or part of one testicle removed solely for the purpose of fertility preservation in the setting of a medical or surgical condition where the clinically indicated treatment is likely to cause infertility.
   a. Clinical scenarios include (but are not limited to) the following: high- and intermediate-risk chemotherapy or radiation treatments for a variety of neoplastic and malignant disorders; conditioning for bone marrow transplantation for malignant diseases and non-malignant disorders.

Patients in Categories 1 and 2 will have testicular tissue removed for a clinically-indicated purpose. Only patients in Categories 1 and 2 may have both testes removed, which will only occur in clinically-indicated scenarios. Bilateral orchiectomy will not be performed for patients in Category 3 who are having testicular tissue removed solely for fertility preservation. The amount of tissue removed for clinical purposes will depend on the diagnosis and can include all or some of one or both testes. If there is no clinical indication for a unilateral orchiectomy a wedge resection will be performed. Each subject’s surgeon will decide on a case-by-case basis if additional testicular tissue should be excised for the research purposes outlined in this protocol. Presence and extent testicular pathology in the clinically indicated portion of the gonad removed will help to determine whether additional tissue can or should be removed for the purposes of the research proposed in this protocol.
4.2 Inclusion/Exclusion Criteria

4.2.1 Inclusion Criteria

1. Be male at any age.

2. Be scheduled to undergo surgery, chemotherapy, drug treatment and/or radiation for the treatment or prevention of a medical condition or malignancy with risk of causing permanent and complete loss of subsequent testicular function. Risk categories based on treatment regimens are indicated below. Investigators will utilize 1) the “Fertile Hope – Risks of Azoospermia” brochure that details typical agents and treatment regimens in each risk category (Appendix 1), 2) the Summed Alkylating Agent dose score (Appendix 9; Green et al., 2009) and/or 3) the Cyclophosphamide Equivalent Dose method (Appendix 10; Green et al., 2014) to calculate risk. Because of the complexity of many treatment regimens, patient risk categorization will be at the discretion of the investigators.

   a. High Risk (calculated by one of the following methods):

      i. ≥80% risk of prolonged azoospermia, Fertile Hope Brochure.

      ii. Summed alkylating agent dose score ≥3.

      iii. Cyclophosphamide equivalent dose ≥7,500 mg/m².

   b. Intermediate risk (21-79% risk of prolonged azoospermia, Fertile Hope).

   c. Low Risk (≤20% risk of prolonged azoospermia, Fertile Hope).

   d. For adult subjects (≥18 years old), eligibility is limited to patients in High and Intermediate risk categories.

   e. For children subjects (<18 years old), eligibility is limited to patients in the High risk category.

3. Or, have a medical condition or malignancy that requires removal of all or part of one or both testicles.

4. Or, Have newly diagnosed or recurrent disease. Those who were not enrolled at the time of initial diagnosis (i.e., patients with recurrent disease) are eligible if they have not previously received therapy that is viewed as likely to result in complete and permanent loss of testicular function.

5. Have two testicles if undergoing elective removal of a testicle for fertility preservation only (category 3). Note: removal of both testicles will limit fertility preservation options.

6. Sign an approved informed consent and authorization permitting the release of personal health information. The patient and/or the patient’s legally authorized guardian must acknowledge in writing that consent for specimen collection has been obtained, in accordance with institutional policies approved by the U.S. Department of Health and Human Services.

7. Consent for serum screening tests for infectious diseases [HIV-1, HIV-2, hepatitis B, hepatitis C, RDR (syphilis), CMV, HLTV-1, and HTLV-2], to be performed at the time of testicular tissue harvesting.
8. Undergo a full history and physical examination and obtain standard pre-operative clearance (based on the most recent ACC/AHA Guideline for Perioperative Cardiovascular Evaluation for Noncardiac Surgery) as determined by their primary surgeon.

Eligibility will be recorded using a written checklist based on the criteria listed above and will be verified by the PI or co-investigator prior to initiating experimental interventions.

4.2.2 Exclusion Criteria

Patients will be ineligible for participation in this study if they are:
1. Diagnosed with psychological, psychiatric, or other conditions which prevent giving fully informed consent.
2. Diagnosed with an underlying medical condition that significantly increases their risk of complications from anesthesia and surgery.
5 Study Schedule

5.1 Screening
Local investigators at each site will be informed by clinicians regarding patients who are planned to undergo treatment for a medical condition which may result in infertility; or have a medical condition known to be at high risk for infertility. The clinicians will approach the patient’s family to inform the family about the study and that they may be approached by the investigators for potential enrollment in the study. If the patient’s family agrees to being approached regarding entry into the study, their medical records will be reviewed to determine that all of the inclusion criteria are met and that none of the exclusion criteria are met. If this is so, written informed consent will be gained from the patient or their legal guardians. There are no specific screening tests to be performed for inclusion in the study.

5.2 Enrollment/Baseline
The only evaluation to be performed prior to enrollment is a review of the patient’s medical records and discussion with the treatment team to ensure that the inclusion and exclusion criteria (see section 4.4) are met.

A baseline review will be performed at which time demographic details, past medical history, surgical history; family history, medications, etc. will be obtained and documented.

5.3 Study Procedures
The goal will be to remove healthy tissue for research and future patient use without compromising the health of any remaining tissue. This will be at the discretion of the surgeon and will be educated by discussion with the laboratory researchers listed as investigators on this protocol. Estimates of the amount of tissue that will be removed for fertility preservation only (for future patient use and the research pool) is as follows:

- Testicular tissue from pre-adolescent and adolescent patients: Between 100-500mg of testicular parenchyma.
- Testicular tissue from adult patients: Between 3-6g of testicular parenchyma (more tissue is obtained from adults because cellular yields are lower and spermatogonial stem cells are diluted by differentiating germ cells during spermatogenesis).

The surgical approach for removal of testicular tissue will be performed using the methods determined by the surgeon based on the medical/surgical diagnosis or treatment (see below). For instance, a trans-scrotal approach will be used for testicular tissue retrieval except in cases where an inguinal approach is not indicated (radical orchiectomy). Furthermore, surgery to harvest testicular tissue may be coordinated with another procedure such as placement of a central venous catheter for future chemotherapy, tumor biopsy, or laparotomy for another purpose. Testicular tissue designated for research will be de-identified by an honest-broker system.

Timing of the Surgery and Starting Other Therapy: Whenever possible, surgery to remove testicular tissue will be coordinated with other surgical procedures (e.g., central line placement). Whenever possible, surgery to obtain testicular tissue will be performed prior to any potentially gonadotoxic therapy (e.g., chemotherapy or radiation). Patients with previous exposure to gonadotoxic therapy may still be eligible for this protocol if the previous exposure was not
associated with high risk of infertility (see section 4.4.2). For patients who will receive chemotherapy or radiation for treatment of their primary disease, the patients' surgeon(s) will determine hemostasis and provide surgical clearance for initiation of therapy. Subjects will begin their treatments on a time-frame dictated by clinical management of their primary disease or condition, typically within one week. It has been reported in some cases that chemotherapy or radiation treatments can begin as early as one day following testicular biopsy surgery (Bahadur et al., 2000).

Surgical Procurement of Testicular Tissue: If a male patient chooses to participate and provides informed consent, he will be screened to determine eligibility. At early stages of technology development, simple orchiectomy (removal of one entire testicle) may give the best chance of preserving sufficient cells for effective therapy. However, incisional biopsy of up to 25% of tissue from one testis (wedge resection) will also be presented to the patient as an alternative option. The amount of testicular parenchyma removed will be at the discretion of the surgeon. The duration of surgical testicular tissue procurement is likely to be between 1 and 2 hours. The recovery time required prior to resuming normal activities or initiating other treatments (e.g., chemotherapy or radiation) is expected to be 2-3 days.

Wedge Resection (incisional biopsy) - Scrotal Approach
Incision is made with scalpel in scrotum in direction of rugae. Dartos muscle is divided by electrocautery and the tunica vaginalis is divided sharply. The tunica albuginea is incised sharply with a scalpel and up to 25% of the testicular parenchyma is excised. The tunica albuginea is closed with a 5-0 absorbable suture. Then the tunica vaginalis is closed over the testicle with a 4-0 absorbable suture. Then the skin and dartos muscle are closed in a single layer with a 4-0 absorbable suture in a subcuticular fashion.

Wedge Resection (incisional biopsy) - Subinguinal Approach
Incision with scalpel is made 0.5 cm below external inguinal ring. The subcutaneous fat is divided by electrocautery. The spermatic cord is visualized and freed from its investing fascia by sharp dissection. The testicle is then delivered through the inguinal canal, leaving the gubernacular attachments intact. The tunica albuginea is incised sharply with a scalpel and up to 25% of the testicular parenchyma is excised. The testicle is returned back to its normal anatomic position. Scarpa’s fascia is then closed with a 4-0 absorbable suture and the skin is closed with a 4-0 absorbable suture.

Simple Orchiectomy - The incision is made with scalpel in scrotum in direction of rugae. The dartos muscle is divided by electrocautery. The testicle and spermatic cord are then delivered through the incision. The cord is divided into 2 packets: one packet contains the vas deferens and the other contains the spermatic cord vessels. Each packet is tied off with a 2-0 non-absorbable suture. The skin and dartos are closed in a single layer with a 4-0 absorbable suture in a subcuticular fashion.

Blood collection for infectious disease screening and testing:
Tissue banking and subsequent use of testicular tissue is currently regulated by the Food and Drug Administration (FDA). In order to comply with current tissue banking regulations and to be prepared for any future changes in regulations while these testicular tissues are in storage, patients will be tested and screened for a number of infectious diseases prior to banking testicular tissue. 4 vials of blood (6 ml each) will be collected, including 1 red top tube for serum and 3 purple top tubes (EDTA) for plasma. 1 red top and 2 purple top tubes will be sent to
Memorial Blood Centers for infectious disease testing. Plasma from 1 purple top tube will be frozen and sent with the patient’s frozen testicular tissue/cells to Reprotech to be stored with the tissue to allow for future testing if FDA regulations change. The immediate testing will include but not be limited to testing for Hepatitis B and C and HIV. The screening and testing that will be performed are the same as would be performed on an anonymous reproductive tissue donor and include a physical examination and questions regarding potential high risk behaviors. The testing that will be performed will be testing that is mandated for donors of leukocyte rich tissues and must be performed within 7 days of tissue procurement. In addition, a sample of the patient’s blood plasma will be stored with the testicular tissue to permit any future testing required under federal tissue banking regulations. In spite of storing blood plasma, it is still possible that federal regulations may change and therefore, it may not be possible to perform the appropriate testing to permit heterologous use of the tissue in the future. Infectious disease testing is performed in this study to permit patient use of his own tissue and not for the purposes of research tissue or research study.

**Pathology:** A segment of each testicular specimen (~5%) will be removed, fixed in formalin, and sent to the Pathology Department to assess for contamination by neoplastic (malignant) cells. A full Pathology report detailing results of the histological and morphological examination of each tissue specimen will be included in the patient’s medical record to provide information to counsel patients on the likelihood that the tissue obtained could be used for future fertility restoration. The Pathology report will also be de-identified and included in the research record using the same coding to de-identify the gonadal research tissue in order to protect patient privacy. In cases where surgeons order intraoperative pathological examination of the patient’s testicular tissue, additional tissue will not be reserved for pathological examination.

**Tissue transport:** Testicular specimens will be rapidly submerged in sterile ice-cold medium [Quinn’s Advantage Blastocyst Medium (Irvine Scientific)] containing 10% Serum Substitute Supplement (SSS; Irvine Scientific). The tissue container will be sealed and placed in double-redundant zip lock bags. The testicular tissue specimen and one purple top blood plasma tube will be placed in a Styrofoam shipping container with ice packs for shipment to the coordinating center in Pittsburgh (see shipping address below). Tissue and blood samples will be de-identified at the individual site and labeled with a site specific identification number. No patient identifying information will be shipped to the Pittsburgh coordinating center. The Fertility Preservation Program in Pittsburgh is located in the Center for Fertility and Reproductive Endocrinology (CFRE) at Magee-Womens Hospital in Pittsburgh, PA. CFRE is an FDA-compliant and American Association of Tissue Banks-accredited facility for processing and storage of reproductive tissues and is FDA-registered as a HCT/P manufacturer.

**Tissue processing:** Testicular tissue and blood samples will be processed in the CFRE at Magee-Womens Hospital. Upon arrival at CFRE, testicular tissues will be weighed. A portion of the tissue will be designated for pathological examination (~5%) as determined in consultation with the pathologist at the time of tissue processing (see below). The remaining tissue will be minced and cryopreserved as tissue fragments or digested to produce a cell suspension (see below). Approximately 75% of the resulting tissue/cell suspension will be designated for patient use and 25% will be de-identified and designated for research. The absolute amounts of testicular tissue/cells designated for research and patient use will depend on the actual weight of tissue obtained.
**Testicular Tissue/Cell Storage:** Testicular tissues and cells designated for research use will be stored for a short time at the Center for Fertility and Reproductive Endocrinology (CFRE) at Magee-Women’s Hospital, Pittsburgh, PA and will be subsequently transferred to Magee-Womens Research Institute (MWRI; Pittsburgh, PA) for research use. Research cells/tissue will not be stored with tissue designated for patient use. Cryopreserved testicular tissue/cells designated for patient use will be transferred to Reprotech, Ltd. (RTL) in Roseville, MN for storage and subsequent release. RTL is an FDA-compliant and American Association of Tissue Banks accredited long term storage facility for reproductive tissues. Based on the extended periods of time that these testicular tissues/cells are likely to be stored (patients may wait for five years from cancer treatment to be considered cancer free and begin a family; some may wait longer based on age), RTL provides maximum flexibility for the patients involved. In this way, patients are permitted to store their testicular tissues/cells as long as they wish and ship them to a fertility treatment center of their choice at the time of use. The patient can determine how the testicular tissue designated for his use will be utilized as technology changes and based on his unique circumstances. RTL does not perform fertility treatments and is not affiliated with any fertility center so there is no potential conflict of interest. Patients will execute a separate storage agreement with RTL which defines the length of storage, shipping requirements, infectious disease, screening and disposition of the tissues in the event of their death. In some circumstances, as determined by the subjects, it is possible for patient tissues to be donated to research prior to transfer to Reprotech, at which time the de-identified samples will be transferred to MWRI for storage and research use. Donation of subject tissue to research after transfer to Reprotech is governed by the subjects’ agreement with Reprotech.
Specimen Shipment

Shipping de-identified enrollment forms, tissue and blood to the Pittsburgh Coordinating Center:

Fertility Preservation Program in Pittsburgh
Center for Fertility and Reproductive Endocrinology
Magee-Womens Hospital
University of Pittsburgh Medical Center
Pittsburgh, PA 15213
Phone: 412-641-7475
Email: lenaja@upmc.edu

Shipping blood to Memorial Blood Centers for FDA-mandated infectious disease testing:

Memorial Blood Centers Donor Testing Laboratory
737 Pelham Blvd
St. Paul, MN 55114
Phone: 651-332-7111
Fax: 651-332-7005

Sending Cryostorage Agreement forms to Reprotech:

Attn: Lea Wilcox
33 Fifth Ave NW, Suite 900
St. Paul, MN 55112
888-489-8944 (phone)
651-489-442 x)

5.4 Follow-up and Final Visits, if applicable

The follow up visit is typically done as a phone interview with the patient or their legal guardian. The physical examination of the surgical site is done by the primary treatment team.

After the results of the tissue pathology and lab work are resulted, a copy is made and mailed to the patient or legal guardians for their own personal records. Included in the send out are the FDA screening and lab results, tissue pathology, operative report, Reprotech registration forms, tissue/plasma log of what was sent to Reprotech, and study consents. At this time, information about Verna’s purse, a program offering discounted storage fees, is also sent to the family.
6 Safety Assessment and Reporting

6.1 Data Safety Monitoring Board
The Pittsburgh coordinating center will serve as the central data safety monitoring board (DSMB) for this study for the multicenter sites. The affiliated sites will send their minutes and their adverse events to the coordinating center. The coordinating center will review this data at the bimonthly meeting and provide a summary or a central DSMB report which will be sent to all the centers.

Dr. Orwig together with the other co-investigators and research team members listed on this protocol will meet on a bimonthly basis to conduct the data safety monitoring review for the Pittsburgh site. All affiliated sites will send their data safety monitoring meeting minutes to the center and they will also be reviewed at the bimonthly meeting. A DSMB report from all affiliated sites will be submitted to the IRB at the time of annual renewal.

Adverse events and surgical complications after an elective orchiectomy (Category 3 Patients-those not requiring surgery for clinical management of their primary disease) will be identified using the Common Toxicity Criteria for Adverse Events (CTCAE). A copy of the CTC version 4.0 can be downloaded from the CTEP home page (http://ctep.info.nih.gov). All appropriate treatment areas should have access to a copy of the CTCAE version 4.0. The severity of the event should then be graded using the CTCAE criteria. Determination of whether the event was related to the surgical procedure and whether the adverse event was expected or unexpected will be made. Any instances of grade 3 or 4 adverse events are reported immediately to the University of Pittsburgh IRB using the standard forms and procedures established by the IRB.
7 Data Handling and Record Keeping

**Participation in this research is confidential.** All research tissues will be de-identified by the individual centers; participants will be identified by number, not name. The Pittsburgh coordinating center will receive de-identified enrollment information, tissue and blood that is identified with a site-specific identification number. No information by which the patient can be identified will be published in connection with this study. Only the individual site PI and co-investigators will have access to files matching the patient information with tissue specimen numbers. Tissue and blood samples will be de-identified by the individual sites, but in such a way that the Pittsburgh coordinating center will know which site sent the tissue (e.g., CHOC-001 from Children's Hospital of Orange County or LCH-001 from Lurie Children's Hospital). Only the individual site PI, co-investigators and research staff will have access to their own files and these will not be available to Pittsburgh or other individual sites. Authorized representatives of the USDA and the office for human research protections (OHRP) may review and/or obtain identifiable health information for the purpose of monitoring the accuracy of research data and to ensure that the research is being conducted according to FDA regulations. Authorized representatives of Memorial Blood Centers will have access to data, documents and blood samples in association with the FDA-mandated infectious disease screening. Testicular tissue/cells designated for patient use will be stored at Reprotech, LTD, a third party tissue bank. Authorized representatives from Reprotech will have access to data, documents, blood plasma and tissue/cells generated by the study. Patients will sign a separate agreement with Reprotech.

**Record keeping:**
The Pittsburgh Coordinating Center will maintain records of the IRB approval letter and the current approved IRB protocol and consent forms for each individual recruitment site. The Pittsburgh Coordinating Center will act as the Data Safety Monitoring Board for all sites and will maintain a record of Data Safety Monitoring meeting minutes from each individual recruitment site.

**Reporting:**
The Pittsburgh Coordinating Center will provide annual reports of data safety monitoring minutes from all recruitment sites to the University of Pittsburgh IRB and all sites. The Pittsburgh Coordinating Center will provide an annual summary of subject enrollment to all recruitment sites. The Pittsburgh Coordinating Center will communicate protocol changes to all sites.
8 Appendices

8.1 Eligibility Form (4 pages)
8.2 Testicular Tissue Cryopreservation Study Enrollment Form (1 page)
8.3 Transportation Waiver form (1 page)
8.3 Testicular Tissue Shipping Checklist (1 page)
8.4 Testicular Tissue Shipping Instructions (1 page)
8.5 FDA Lab Specimen Collection Instructions and MBC sample form (2 pages)
8.6 Data Safety Monitoring Minutes Form (1 page)
8.7 Testicular Tissue Cryopreservation Study – Follow-up Script (5 pages)
8.8 Reprotech forms (7 pages)
Eligibility Form

Testicular tissue cryopreservation for fertility preservation
in patients facing infertility-causing disease or treatment regimens

IRB Protocol:               Subject Initials: __________
PI:        Subject #: _______________
Date: __________
DOB: ________________

Treatment Regimen: ____________________________________________

Indication/Usage: Malignancy ☐ BMT/SCT ☐ Other ☐

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Check at least one in each section</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Male any age</td>
<td>☐</td>
</tr>
<tr>
<td>2a. Scheduled to undergo surgery or medical treatment with risk of causing</td>
<td>☐</td>
</tr>
<tr>
<td>azoospermia and infertility.</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>2b. Have a medical condition or malignancy that requires removal of all or</td>
<td>☐</td>
</tr>
<tr>
<td>part of one or both testicles</td>
<td></td>
</tr>
<tr>
<td>3a. Have newly diagnosed disease (see section 4a)</td>
<td>☐</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>3b. Have recurrent disease (see section 4b)</td>
<td>☐</td>
</tr>
<tr>
<td>4. Subjects with recurrent disease or in the early stage of primary treatment</td>
<td>☐ Yes ☐ No ☐ N/A</td>
</tr>
<tr>
<td>are only eligible if they have not previously received therapy that would put</td>
<td></td>
</tr>
<tr>
<td>them at high risk of azoospermia.</td>
<td></td>
</tr>
<tr>
<td>4a. Subject in early stage of primary treatment with high risk regimen?</td>
<td>☐ Yes ☐ No ☐ N/A</td>
</tr>
<tr>
<td>4b. Has subject received a previous high risk treatment regimen?</td>
<td>☐ Yes ☐ No ☐ N/A</td>
</tr>
<tr>
<td>5. Risk category based on previous and current treatment regimens (see</td>
<td>☐ High* ☐ Intermediate** ☐ Low</td>
</tr>
<tr>
<td>risk calculation worksheet on following pages):</td>
<td></td>
</tr>
<tr>
<td>High risk (≥80% risk of prolonged azoospermia)</td>
<td></td>
</tr>
<tr>
<td>Intermediate risk (21-79% risk of prolonged azoospermia)</td>
<td></td>
</tr>
<tr>
<td>Low risk (≤20% risk of prolonged azoospermia)</td>
<td></td>
</tr>
</tbody>
</table>

Qualify: Yes ☐ No ☐  *<18 Must be high risk to participate  ** ≥ 18 High Risk or Intermediate risk to participate

Investigator Signature: __________________________ Date: ________________
Eligibility Form

**Testicular tissue cryopreservation for fertility preservation in patients facing infertility-causing disease or treatment regimens**

<table>
<thead>
<tr>
<th>IRB Protocol:</th>
<th>Subject Initials: __________</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI:</td>
<td>Subject #: ________________</td>
</tr>
<tr>
<td>Date:</td>
<td>DOB: ________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summed Alkylation Agent (SAA) Dose Score&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Cylcophosphamide Equivalent Dose (CED)&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td></td>
</tr>
<tr>
<td>Prolonged azoospermia post-treatment</td>
<td></td>
</tr>
<tr>
<td>□ Total body irradiation (TBI)</td>
<td>□ ≥ 3</td>
</tr>
<tr>
<td>□ Testicular radiation dose ≥ 2.5 Gy in men</td>
<td>□ ≥ 7,500 mg/m&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>□ Testicular radiation dose ≥ 6 Gy in boys</td>
<td></td>
</tr>
<tr>
<td>□ Protocols containing procarbine: C, MOPP, MVPP, ChlVPP, ChlVPP/EVA, MOPP/ABVD, COPP/ABVD</td>
<td>(Instructions on how to calculate SAA can be found on page 4)</td>
</tr>
<tr>
<td>□ Alkylation chemotherapy for transplant conditioning (cyclophosphamide, busulfan, melphalan)</td>
<td>(Instructions on how to calculate the equivalent dose can be found on page 4)</td>
</tr>
<tr>
<td>□ Any alkylating agent (e.g. procarbazine, nitrogen mustard, cyclophosphamide) + TBI, pelvic radiation, or testicular radiation</td>
<td></td>
</tr>
<tr>
<td>□ Cyclophosphamide &gt; 7.5 g/m&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>□ Cranial/brain radiation ≥ 40 Gy</td>
<td></td>
</tr>
</tbody>
</table>

| Intermediate Risk                                    |                                                  |
|------------------------------------------------------|                                                  |
| Prolonged azoospermia not common at standard dose     |                                                  |
| □ BEP x 2-4 cycles (bleomycin, etoposide, cisplatin) |                                                  |
| □ Cumulative cisplatin dose < 400 mg/m<sup>2</sup>    |                                                  |
| □ Cumulative carboplatin dose ≤ 2g/ m<sup>2</sup>     |                                                  |
| □ Testicular radiation dose 1-6 Gy (due to scatter from abdominal/pelvic radiation) |                                  |
Eligibility Form

Testicular tissue cryopreservation for fertility preservation in patients facing infertility-causing disease or treatment regimens

IRB Protocol: Subject Initials: __________

PI: Subject #: _______________

Date: __________ DOB: __________________

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>Temporary azoospermia post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Non-alkylating chemotherapy: ABVD, OEPA, NOVP, CHOP, COP</td>
</tr>
<tr>
<td></td>
<td>□ Testicular radiation dose 0.2 – 0.7 Gy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Very Low/ No Risk</th>
<th>No effects on sperm production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Testicular radiation dose &lt; 0.2 Gy</td>
</tr>
<tr>
<td></td>
<td>□ Interferon –a</td>
</tr>
<tr>
<td></td>
<td>□ Radioactive iodine</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unknown Risk</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Irinotecan</td>
</tr>
<tr>
<td></td>
<td>□ Bevacizumab (Avastin)</td>
</tr>
<tr>
<td></td>
<td>□ Cetuximab (Erbitux)</td>
</tr>
<tr>
<td></td>
<td>□ Erlotinib (Tarceva)</td>
</tr>
<tr>
<td></td>
<td>□ Imatinib (Gleevec)</td>
</tr>
</tbody>
</table>

1How to calculate the summed alkylating agent (SAA) dose score (Green et al., 2009):

Table 1. Tertile Distribution of Alkylating Agents in Cumulative Dose

<table>
<thead>
<tr>
<th>Alkylating Agent</th>
<th>Cumulative Dose by Tertile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First</td>
</tr>
<tr>
<td>BCNU, mg/m²</td>
<td>1300</td>
</tr>
<tr>
<td>Busulfan, mg/m²</td>
<td>1317</td>
</tr>
<tr>
<td>CCNU, mg/m²</td>
<td>1361</td>
</tr>
<tr>
<td>Chlorambucil, mg/m²</td>
<td>1-165</td>
</tr>
<tr>
<td>Parerteral cyclophosphamide, mg/m²</td>
<td>13,704</td>
</tr>
<tr>
<td>Oral cyclophosphamide, mg/m²</td>
<td>14,722</td>
</tr>
<tr>
<td>Ifosfamide, mg/m²</td>
<td>1-16.77</td>
</tr>
<tr>
<td>Melphalan, mg/m²</td>
<td>1-39</td>
</tr>
<tr>
<td>Nitrogen mustard, mg/m²</td>
<td>1-44</td>
</tr>
<tr>
<td>Procarbazine, mg/m²</td>
<td>1-4,300</td>
</tr>
<tr>
<td>Intrathecal thiopeta, mg</td>
<td>180</td>
</tr>
<tr>
<td>Thiopeta, mg/m²</td>
<td>1-77</td>
</tr>
</tbody>
</table>

NOTE: First tertile score is 1; second is 2; and third is 3. Abbreviations: BCNU, carmustine, CCNU, lomustine.

Example: Busulfan 250 mg/m² => First tertile => Score 1
Ifosfamide 25,000 mg/m² => Second tertile => Score 2
Melphalan 25 mg/m² => First tertile => Score 1

SAA dose score: 4 (High Risk!!!)
Eligibility Form

Testicular tissue cryopreservation for fertility preservation in patients facing infertility-causing disease or treatment regimens

IRB Protocol:               Subject Initials: __________
PI:        Subject #: _______________
Date: _______________        DOB: __________________

2How to calculate the Cyclophosphamide equivalent dose (CED) calculation (Green et al., 2014):

CED (mg/m²) =  1.0 * (cumulative cyclophosphamide dose (mg/m²))
              + 0.244 * (cumulative ifosfamide dose (mg/m²))
              + 0.857 * (cumulative procarbazine dose (mg/m²))
              + 14.286 * (cumulative chlorambucil dose (mg/m²))
              + 15.0 * (cumulative BCNU dose (mg/m²))
              + 16.0 * (cumulative CCNU dose (mg/m²))
              + 40 * (cumulative melphalan dose (mg/m²))
              + 50 * (cumulative Thio-TEPA dose (mg/m²))
              + 100 * (cumulative nitrogen mustard dose (mg/m²))
              + 8.823 * (cumulative busulfan dose (mg/m²))

<table>
<thead>
<tr>
<th>Drug</th>
<th>Cumulative Dose</th>
<th>CED Calculation</th>
<th>CED (mg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclophosphamide</td>
<td>2000 mg/m²</td>
<td>1*2000=</td>
<td>2000</td>
</tr>
<tr>
<td>Ifosfamide</td>
<td>5000 mg/m²</td>
<td>0.244*5000=</td>
<td>1220</td>
</tr>
<tr>
<td>CCNU</td>
<td>300 mg/m²</td>
<td>16*300=</td>
<td>4800</td>
</tr>
</tbody>
</table>

CED (mg/m²) = 8020  (High Risk!!!)
Testicular Tissue Cryopreservation Study Enrollment**

Today’s Date:____________________
Expected Date of Surgery:_________________

Site Information
Site Name:_________________________________________________
Primary Contact Person (Name and Phone):_________________________________________________

Patient Information
Patient Number:____________________
Date of Birth:_________________________

Race:
☐ American Indian/Alaska Native
☐ Asian
☐ Native Hawaiian or Other Pacific Islander
☐ Black or African American
☐ White
☐ More Than One Race
☐ Unknown or Not Reported

Ethnicity:
☐ Non-Hispanic
☐ Hispanic

Type of Cancer/Diagnosis:___________________________________________________________
Previous Cancer Treatment:________________________________________________________
Previous Fertility or Fertility Preservation Treatment:___________________________________

Please forward a copy of enrollment form to Julie Seifert, Fertility Preservation Nurse Coordinator, (lenartja@upmc.edu) Phone: 412-641-7475

Version 08/28/2014

**Keep with patient records at recruiting site.
TRANSPORTATION WAIVER**

At your request:

_______________________________________________________________ (Patient)

_______________________________________________________________ (Parents)

We have provided shipping materials and arranged with your medical providers at:

_______________________________________________________________ (Hospital)

to ship testicular tissue (tissue) in a cold storage container to the Center for Fertility and Reproductive Endocrinology at Magee-Womens Hospital in Pittsburgh, Pennsylvania.

It must be understood by the parties signed below that there are inherent risks associated with the transport of the tissue, including but not limited to, container failure, travel delays, forces of nature, Acts of God and deviation in temperature that can cause adverse affects on the tissue.

Because of these possible transportation circumstances, the parties acknowledge that the events could compromise the viability of the tissue and that the Fertility Preservation Program in Pittsburgh, The Center for Fertility and Reproductive Endocrinology, Magee-Womens Hospital or UPMC Health System and its affiliates, can not make any representation or warranty of any kind concerning the quality of the tissue or any services related to the tissue.

____________________________________________________________________
Signature and Date

____________________________________________________________________
Signature and Date

____________________________________________________________________
Witness

**Keep with patient records at recruiting site.
Testicular Tissue Cryopreservation shipping Checklist for ___________(case number):

You will receive the following contents:

1. Folder containing written instructions for testicular tissue collection and FDA lab testing collection, extra biohazard bags, and FDA examination form. Patient or legally authorized representative should fill out the FDA questionnaire (provided by staff of the Center for Fertility and Reproductive Endocrinology, Magee-Womens Hospital, Pittsburgh) and bring it to the hospital day of surgery for review.

2. A specimen transport jar (red cap) with 4 purple and 2 red top blood collection tubes. There is 1 extra of each tube.

3. A 250 ml flask of media. Please remove flask upon arrival and keep in refrigerator so media is cold day of surgery.

4. A bag containing the Gen Probe urethral swab kit, and a Gen Probe urine specimen collection kit. We have also enclosed a sterile container to collect the urine specimen if you are collecting urine. REMINDER-only urethral specimen or urine specimen is needed, not both.

5. 1 specimen cup (blue cap) for testicular tissue.

6. Ice packs. Please place ice packs in freezer upon receipt so they are frozen and can be reused for shipment of tissue and specimens to Pittsburgh.

7. FedEx Return label.

For shipment to Pittsburgh, please place the following contents in styrofoam box along with frozen ice packs:

1. Sterile specimen cup(s) - containing testicular tissue, labeled and identified as right or left. The container should be placed in a biohazard bag and sealed prior to shipment.

2. Specimen transport jar (red cap) containing 1 filled purple top tub. Please make sure that the specimen is not labeled with patient name or identifiable information.

3. Paper work: Testicular Tissue Collection and Transport Form with the “blanks” filled in. FDA form and questionnaire will be kept with patient record, a copy sent to Reprotech as well as a copy to the family for personal records.

4. Please surround the testicular tissue and the specimen transport jar with frozen ice packs. Please add packing material as needed to stabilize the contents for shipping.
Testicular Tissue Collection and Transport for patient_____________ (Case number)
Date of Surgery: _____________________________________________________________________
Surgeon: ___________________________________________________________________________
Time testicular tissue removed: ________________________________________________________
Name /Phone number of person shipping tissue: __________________________________________
___________________________________________________________________________________
Comments: _________________________________________________________________________
___________________________________________________________________________________

1. Please use the sterile blue cap specimen cup provided for the testicular tissue. Please pour cold media provided into the specimen cup (about 2/3 full) prior to placement of tissue. The tissue should be placed into the container using sterile technique, and the tissue should not come in contact with formalin.

2. The container should be labeled with patient tissue identification number.

3. Once pathology sample has been collected, please place the remaining testicular tissue in specimen cup and send for the testicular tissue cryopreservation study. The specimen cup with the tissue should be place in a biohazard bag and sealed. Place specimen cup with tissue in the Styrofoam box surrounded by frozen ice packs for transport to Pittsburgh.

4. The tissue and 1 plasma tube (purple top) should be placed in the shipping container as described on the attached sheet and shipped to Pittsburgh. Add packing material to minimize shifting of samples during transport. Blood samples (1 serum, 2 plasma) and urine specimen (or urethral swab) should be sent separately to Memorial Blood Center.

5. Please place FedEx label that was supplied on the box for FedEx **First Overnight** delivery to:

Magee-Womens Hospital of UPMC
The Center for Fertility and Reproductive Endocrinology (CFRE)
300 Halket Street
Suite 5150, IVF Lab
Pittsburgh, PA 15213

6. Please fax the filled out portion of this form to 412-641-1077, attention: Julie Seifert, CRNP or Sandi Alway, CRNP.

7. If there are any questions, please call Kyle Orwig at 412-849-4335, Julie Seifert, CRNP 412-641-7475 or Sandi Alway, CRNP at 412-641-7487.
FDA Lab Specimen Collection

*Please note you may submit either a urethral specimen or urine specimen for the gonorrhea/chlamydia testing*

Male urethral swab collection for Gonorrhea & Chlamydia:

1. Patient should not have voided 1 hour prior to sample collection.
2. Insert specimen collection swab 2-4 cm into urethra.
3. Gently rotate swab for 2-3 seconds to ensure adequate sampling.
4. Withdraw swab carefully.
5. Remove the cap from the swab specimen transport tube and immediately place the specimen collection swab into the transport tube.
6. Carefully break the swab shaft at the score line, use care to avoid splashing of contents.
7. Recap the specimen transport tube tightly. Apply name label.

Urine specimen for Gonorrhea and Chlamydia:

1. Prior to collecting specimen, patient should NOT have voided at least 1 hour before collection. NO cleaning of urethra is required. Patient should provide the first catch urine (20-30 ml is OK) into sterile urine container.
2. Transfer 2 ml of urine into the urine specimen transport tube. Be sure volume of urine added places fluid level between the black lines.
3. Please label the urine transport tube with name label.
4. Specimen will need to be transported to Memorial Blood Centers with other blood work.

Testicular Tissue Cryopreservation Study FDA Lab Work

1. Please collect one (1) red top tube (serum) and three (3) purple top EDTA tubes (plasma). All the tubes you need are enclosed as well as 1 extra of each in case there is a tube issue. Each tube requires 6ml of blood. Please fill entire tube. This recommendation ensures there is enough volume for repeat and confirmatory testing. The red top should be drawn first followed by the purple tops. Each purple top tube should be gently inverted 8 times to properly distribute the additive. Apply patient name label to red tube and 2 purple tubes. Apply the de-identified patient number to remaining purple tube.
2. There is no need to centrifuge the tubes.
3. The 1 red tube and 2 purple tubes, along with the urethral swab or urine need to be shipped to Memorial Blood Centers. The testicular tissue needs to be shipped along with 1 purple blood tube to the CFRE lab in Pittsburgh (see attached).
### Required Information

<table>
<thead>
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<th>Source ID</th>
<th>Additional Information</th>
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<tbody>
<tr>
<td>(Customer Discreet/Unique Patient ID)</td>
<td>DOB (Patient Date of Birth)</td>
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<tr>
<td></td>
<td>SSN (only)</td>
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<td></td>
<td>Patient ID</td>
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</table>

<table>
<thead>
<tr>
<th>Patient Last Name</th>
<th>Patient First Name</th>
<th>Date Drawn</th>
<th>Date Frozen</th>
</tr>
</thead>
</table>

### Test(s) Requested:

- **Hepatitis B Virus**
  - X HBsAg – Reflex (Neutralization performed if reactive)
  - ☐ HBsAg Neutralization
  - X Anti-HBc Total

- **Nucleic Acid Testing**
  - ☐ MPX PCR – Reflex (HBV/HCV/HIV) (Sent for PCR identification if reactive)
  - ☐ WNV PCR

- **Hepatitis C Virus**
  - X Anti-HCV

- **HIV Virus**
  - X Anti-HIV-1,2 plus O – Reflex (Western Blot performed if reactive)
  - ☐ Anti-HIV-2
  - ☐ Anti-HIV-2 – Reflex (Sent for HIV-2 Immunoblot if reactive)
  - ☐ HIV-1 Western Blot

- **HTLV Virus**
  - ☐ Anti-HTLV I/II
  - ☐ Anti-HTLV I/II – Reflex (Sent for ChLIA HTLV if reactive)

- **SeroLogic Test for Syphilis**
  - ☐ Syphilis TP – Reflex (Sent for FTA if reactive)
  - ☐ Syphilis RPR – Reflex (non-treponemal) (Sent for FTA if reactive)

- **Miscellaneous**
  - ☐ T. Cruzi – Reflex (Chagas) (RIPA performed if reactive)
  - ☐ ABO Rh
  - ☐ Red Cell Antibody Screen

- **Cytomegalovirus**
  - X CMV Total
  - ☐ CMV Total – IgM Reflex (Sent for CMV IgM if reactive)
  - ☐ CMV Total – IgM/IgG Reflex (Sent for CMV IgM and IgG if reactive)

### Testing sent to an external reference laboratory

- ☐ HIV-2 Immunoblot
- ☐ ChLIA Anti-HTLV I/II
- ☐ HTLV Immunoblot
- ☐ Syphilis FTA
- ☐ T.cruzi RIPA
- ☐ Sickle Cell Screen
- ☐ HLA Class I Antibody
- ☐ HLA Class II Antibody
- ☐ CMV IgM
- ☐ CMV IgG

### Client Code/Physician ID:

```
MW
```

### Accession #/Patient ID:

- To be completed by person submitting:
  - 1 ___ # of Serum Tubes (Red)
  - 2 ___ # of Plasma Tubes (Purple)
  - ___ # of Unknown Tube Type
  - 1 ___ # of Urine  or
  - 1 ___ # of Swab
## Data Safety Monitoring Minutes

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<thead>
<tr>
<th>Date</th>
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<th>Enrollment Issues</th>
<th>Unanticipated Problems/ Adverse Events</th>
<th>Confidentiality Issues</th>
<th>Data Issues</th>
<th>Comments</th>
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*Version 7/30/14*
Testicular Tissue Cryopreservation Study - Follow-up Call Script

Subject Name: _______________________________  Date of Birth: __________________

Research ID Number: _________________________  Date of Interview: ________________

*Note for patients under the age of 18:
○ Survey is completed with the patient’s parent/legal guardian
○ If the patient has not yet reached puberty, mark question as “N/A”

If Applicable, name of patient’s parent/legal guardian: _______________________________

Interviewer: “Hi (patient’s/parent’s name). This is (your name) from (your institution). I am calling to ask you about the clinical tissue that you had frozen at the University of Pittsburgh. I would like to ask you to complete a 5-10 minute telephone survey to update your contact and health information and to ask you for some extra information for our research. Your participation in this survey is completely voluntary. This means that you do not have to participate in this survey unless you want to. You may end the phone conversation at any point in time. There is a small chance that some of the questions may make you feel uncomfortable. You do not have to answer those questions if you do not want to. All the information I receive from you by phone will be strictly confidential. Would you be willing to participate?”*

Participant: “Yes.”

Interviewer: “Thank you. I’d like to start by updating your contact information.”

1. “Is there another phone number that you prefer we call?”

2. “Can you verify your home address?”

3. “Is there an email address that we can have on file?”

Interviewer: “Thank you for updating your contact information. May I proceed with the survey now?”

4. “Do you have any questions?”

Go to Question 5.
OR

Participant: “No.”
Interviewer: “Is there a better time that I can call back?”

NOTE: Answers to questions 1-4 should be stored separately from the answers to the questions below to protect subject confidentiality. Please store pages 1-2 separately from those that follow.

*If the patient is deceased, please begin with Question 5 on the next page
5. **Participant**: “The patient is deceased.”

**Interviewer**: “Was the patient’s tissue designated for research? How was the patient’s tissue allocated?”

________________________________________________________________________

**Interviewer**: Go to Question 19.

6. “What is your [son’s] diagnosis and scheduled treatment?”

Diagnosis: __________________________________________________________________

Treatment:

☐ Chemotherapy ONLY
☐ Chemotherapy + radiation
☐ Radiation ONLY
☐ Surgery ONLY
☐ Surgery + chemotherapy
☐ Surgery + chemotherapy + radiation
☐ Bone marrow transplant
☐ Stem cell transplant
☐ Other (specify): _____________________________________________________________

7. “Have you [Has your son] finished your [his] treatment yet?”

☐ Yes  ☐ No

8. Have you [has your son] been diagnosed with any other disease or condition since you [he] stored tissue here?

☐ Yes  ☐ No

**If no, Interviewer** go to question 10.

9. “What is your [son’s] diagnosis and scheduled treatment?”

Diagnosis: __________________________________________________________________

Dates of diagnosis and treatment: _______________________________________________

Treatment:

☐ Chemotherapy ONLY
☐ Chemotherapy + radiation
☐ Radiation ONLY
☐ Surgery ONLY
☐ Surgery + chemotherapy
☐ Surgery + chemotherapy + radiation
☐ Bone marrow transplant
☐ Stem cell transplant
☐ Other (specify): __________________________________________________________________
10. “How would you describe your [son’s] current health?”
   - Excellent
   - Very good
   - Good
   - Fair
   - Poor

**Interviewer:** For Adult subjects, go to question 13.

11. “Has your son started puberty?”
   - Yes
   - No
   - N/A

12. “Has your son’s pediatrician told you anything about his growth and development?”
   - Yes
   - No
   - N/A
   
   a. “If so, what were you told about your son’s growth and development?”
   
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

13. “Have you [Has your son] tried to get your [his] pregnant since treatment stopped?”
   - Yes
   - No
   - N/A

14. “Are you [Is your son] actively trying to get your [his] partner pregnant now?”
   - Yes
   - No
   - N/A

15. “Is your [Is your son’s] partner currently pregnant?”
   - Yes
   - No
   - N/A

16. “Has your [Has your son’s] partner been pregnant since you [he] started treatment?”
   - Yes
   - No
   - N/A

17. “Do you [Does your son] anticipate using your [his] stored tissue in the future?”
   - Yes
   - No
   - N/A
   
   a. If NO, “why not?”
   
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

18. “Do you [Does your son] know how to use/access your [his] tissue?”
   - Yes
   - No
   - N/A
   
   a. “If you [your son] wanted to access your [his] tissue, how would you [he] proceed?”
   
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
19. Your [your son’s] tissue was initially shipped to Reprotech, Ltd for long-term storage.
   a. “Is your [your son’s] tissue still stored at Reprotech?”
      □ Yes □ No □ N/A
   b. “How has your interaction been with Reprotech?”
      _______________________________________________________________________
      _______________________________________________________________________

20. “Although I cannot give you specific information on your [son’s] tissue, would you like to
    have information about the research?”
    □ Yes → Give website or email website to participant
    □ No

21. “Now that you’ve had some time to think about your decision, how are you feeling
    about the decision to store tissue?”
    _______________________________________________________________________
    _______________________________________________________________________
    _______________________________________________________________________

22. “What would you recommend to a friend who was diagnosed with cancer and
    concerned about preserving his fertility?”
    □ Store tissue
    □ Do not store tissue
    □ Don’t know

23. “Is there anything else I can help you with?”
    _______________________________________________________________________
    _______________________________________________________________________
    _______________________________________________________________________

Interviewer: Thank you for completing this survey. I appreciate you taking the time to
answer my questions. I would like to contact you in one year, and annually after that, to
repeat this survey. Is that acceptable to you?
    □ Yes □ No
REGISTRATION

PATIENT INFORMATION

Name __________________________ Date of Birth ________ SS# __________________________

Address ______________________ Street __________ City __________ State __________ Zip ________________________

Home Phone (________) ________________________

Name of Partner (if applicable) ________________________ Partner’s SSN ________________________

Work Phone (________) ________________________ Cell Phone Number(s) (________) Email Address ________________________

Have you ever tested positive for HIV, Hepatitis B, Hepatitis C, or HTLV I & II? __________________________

If yes, please specify __________________________

What month(s) and year(s) were your specimens cryopreserved? __________________________

Privacy Policy: RTL requires a Personal Identification Number (PIN) for release of information about your account. Please enter your PIN (may be Social Security Number): __________________________

To whom, other than yourself, may we release information about your account (Print name & relationship): __________________________

PERSON RESPONSIBLE FOR THIS ACCOUNT

Name __________________________ Relationship to patient __________ Home Phone __________________________

Address __________________________ Work Phone __________________________

SS# __________________________

PAYMENT POLICY

Please indicate the billing interval for storage fees that you elect. Unused storage fees are non-refundable. Storage and shipping fees must be prepaid.

☐ Quarterly ☐ 1 year ☐ 2 year ☐ 3 year

CREDIT CARD AUTHORIZATION: Your signature here authorizes ReproTech, Ltd. to charge your credit card for shipping and storage fees. ☐ Check here if you are only authorizing RTL to use your credit card for the first annual or multi-year storage period and the shipping fees. Please note that quarterly storage fees are automatically billed and are not eligible for a one-time authorization.

Signature: __________________________ Date: __________________________

Account Number __________________________ Name on Card __________ Expiration Date __________

PHYSICIAN/CLINIC WHERE SEMEN/TESTICULAR TISSUE IS STORED

Name __________________________ Telephone __________________________ Fax __________________________

Address __________________________ Street __________ City __________ State __________ Zip __________________________

PATIENT SIGNATURE BELOW IS REQUIRED

Your signature below acknowledges acceptance of our payment and privacy policies and agreement to keep ReproTech, Ltd. updated with current address and contact information.

Signature of Patient __________________________ Date: __________________________

If the Patient above is a minor, a parent or guardian of the minor must sign below:

Signature of Parent or Guardian, if applicable: __________________________

The Cryostorage & Compliance Experts

Florida 888-953-9669 • Fax 954-332-6655 Minnesota 888-489-8944 • Fax 651-489-0442 Nevada 888-831-2765 • Fax 775-284-2799

C ACQ 100 Registration semen/testicular tissue Page 1 of 1 Release Date: 12/15/2010

Revision: Q Effective Date: 12/15/2010
The undersigned client depositor requests the transfer of his semen/testicular tissue specimens to ReproTech Ltd. (RTL) from the cryobank/physician (herein called the cryobank) listed below in accordance with RTL's current policies and procedures.

It is understood that the undersigned cryobank acknowledges this request and will assist in the transfer of the specimens. Furthermore it is recognized by the client depositor that events, beyond RTL's and the cryobank's control, may occur during transfer and it is understood by all parties that neither the cryobank nor RTL are responsible for any losses associated with the shipment of the specimens.

Upon receipt of the specimens by RTL, RTL's Semen/Testicular Tissue Cryostorage Agreement is in effect as between RTL and client depositor. The client depositor releases RTL from any responsibility and liability resulting from long-term storage of the specimens cryopreserved by the cryobank. It is further understood that the client depositor(s) have declined the use of two shipping tanks and accept the potential added liability of using one shipping tanks.

To authorize the transfer of the client depositor’s semen/testicular tissue specimens from the cryobank to RTL, please provide the requested information below. Have the document witnessed and return it to RTL in advance of the transfer date.

I declare that the reason for specimen transfer is continued long-term storage at RTL.
I understand that if no test specimens of sperm are shipped with the sperm specimen(s) being placed in long-term storage, RTL cannot verify, nor guarantee, the viability of the transferred sperm being placed into long-term storage.

The risk of long term storage of such specimens is assumed by me.
I agree to hold RTL harmless for any damage done to specimens prior to RTL's possession of such specimens.
I also release RTL for any liability for mislabeled specimens which are transferred to RTL for long-term storage.
I have read and understand the policies above and hereby authorize the cryobank to release my specimens to ReproTech Ltd.
I authorize the undersigned cryobank to release to ReproTech, Ltd. medical data, including but not limited to:
Personal biographical/medical data, Serology/virology testing data, and semen/testicular tissue processing/cryopreservation data. This includes information about human immunodeficiency virus-HIV, acquired immunodeficiency syndrome-AIDS, and AIDS related complex-ARC, as defined by Department of Community Health rules (1989 Public Act 174).

Name: 
(Print or Type)

Signature: 

Address: 

Street Address  City  State  Zip  Telephone

If the Patient above is a minor, a parent or guardian of the minor must sign below:

Signature of Parent or Guardian, if applicable:

The undersigned Witness affirms that he/she knows the client depositor and parent or guardian, if applicable, and that he/she was present and witnessed the client depositor’s signature and parent’s or guardian’s signature, if applicable, on this document.

Name of Witness (Printed)  Signature of Witness

Signatures:  

Cryobank/Physician: ReproTech, Ltd.

Address:  

Telephone:  

Optional Insurance Coverage:
If you wish to purchase optional insurance as described on the attached flyer, please initial your choice below and RTL will add the charge for the insurance to your invoice. Optional insurance coverage will be in effect only if payment is received by RTL prior to the shipment.

Sperm Account - Tier 1 Charge $19.50 (initial here), Tier 2 Charge $32.50 (initial here)
TREATMENT HISTORY

All information is REQUIRED, where applicable

Name: ___________________________ Account: ____________________

Clinical Diagnosis: __________________________

Referring Physician (i.e. Oncologist, Urologist) who referred you for cryobanking:
Name: ___________________________ Clinic Name: ___________________________
Address: ___________________________
Phone #: __________________________

Reason for Semen/Testicular Tissue Cryobanking (Please check the applicable selections.)

- Vasectomy: __
  - Pre-vasectomy __
  - Post-vasectomy __
- Cancer Treatment: __
  - Pre-Radiation Therapy __
  - Pre-Surgery __
  - Pre-Chemotherapy __
  - Between Treatments __
- Fertility Treatment: __
  - IVF Backup __
  - Donation __
  - Use by a Friend __
  - Use by a Surrogate __
  - Use by a Gestational Carrier __
  - Other, Please specify ___________________________
- High Risk Occupation: __
  - Military Service/Deployment __
  - Other (Hazardous chemicals, etc.), Please specify ___________________________

Treatment History: Please indicate applicable treatments or therapies and dates:

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<th>Treatment</th>
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<tr>
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<td>Chemotherapy</td>
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<tr>
<td>Surgery</td>
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Fertility History:
Number of pregnancies: _______  Number of live births: _______

Comments: __________________________

Your signature below acknowledges that the semen/testicular tissue specimens provided to RTL for the purpose of long term storage have been produced by and are the property of the undersigned. It is understood and agreed that future serology testing may be required for storage and/or release of these specimens.

Signature ___________________________ Date ____________

If the Patient above is a minor, a parent or guardian of the minor must sign below:

Signature of Parent or Guardian, if applicable: ____________________________
SEMEN/TESTICULAR TISSUE CRYOSTORAGE AGREEMENT

This AGREEMENT, Made between ReproTech, Ltd., a Minnesota corporation (the "Company"), and the person named below (the "Client Depositor").

1. Collection and Storage: With the assistance of the Client Depositor, and in accordance with the procedures for identification and testing established by the Company (as set forth in the Company’s brochure and web site, www.reprot.com), the Company shall receive the Client Depositor’s semen/testicular tissue, which has been cryopreserved by the Client Depositor’s physician/clinic (the “Clinic”), for long-term cryostorage until this Agreement is terminated pursuant to Paragraph 4. All procedures established by the Company may be modified at the sole discretion of the Company to reflect changes in industry practices, laws, or regulations.

2. Storage Fees and Records: The fee for each Storage Period shall be payable in advance and shall be adjusted from time to time by the Company based upon market factors. The current fees are set forth in the Company’s brochure and web site, www.reprotech.com. A "Storage Period" begins with the month in which the Company receives specimens for storage. Unused storage fees are non-refundable. The Client Depositor shall keep the Company informed at all times, in writing, of his current address and telephone number for billing purposes and any other matter requiring notice to the Client Depositor. The Client Depositor’s name and address, as well as other records relating to the subject of this Agreement, shall be kept on file at the Company.

3. Account in Default: If at any time the Company has not received full payment of all amounts due to the Company from the Client Depositor on or before the 60th day after the beginning of any Storage Period, then the Client Depositor is in “default”. In the event of default, the Company may, in its sole discretion, refer the Client Depositor’s account to any attorney or collection agency for collection, and the Client Depositor agrees to pay all costs of such collection, including but not limited to any reasonable fees charged by the collection agency and reasonable attorney’s fees. If the Client Depositor is in default, the Company may discard all stored specimens. The term “discard” means that the Company will thaw and destroy the specimens in a professional and ethical manner, as determined solely by the Company. Discarded specimens cannot and will not be used for reproductive purposes by or on behalf of any person or persons.

4. Termination of Agreement: This Agreement shall terminate and the Company’s responsibilities for storage of specimens hereunder will cease:

   (1) upon the release of all specimens stored by the Company pursuant to Conditions of Release; or
   (2) upon the disposition of all specimens stored by the Company pursuant to a default under Paragraph 3; or
   (3) upon the notarized execution of Company’s separate termination agreement by the Client Depositor or his Surviving Spouse; or
   (4) if the Client Depositor dies without leaving a Surviving Spouse, as established by evidence deemed sufficient by the Company.

5. Responsibilities and Liabilities of the Company: The Client Depositor acknowledges that he has been fully advised concerning the state of the art of cryopreservation of specimens of semen. The Client Depositor acknowledges that he understands that the viability of the semen and the results from subsequent insemination depend almost in their entirety upon the Client Depositor and the recipient. Accordingly, the Client Depositor understands and agrees that the Company’s responsibilities shall be limited hereunder solely to the adequate cryostorage of said semen consistent with the state of the art at the date of entering into this Agreement. The Client Depositor agrees to hold the Company harmless for any damage sustained while the semen specimens are not in the possession and control of the Company. In any event, the total liability of the Company for failure to meet any of its responsibilities to the Client Depositor shall not exceed the amount of storage and/or shipping fees theretofore paid by the Client Depositor. The parties agree that any claims relating to or arising out of this Agreement will be brought in the state courts of Minnesota. In the event the Company terminates the operation of its storage facility, it may, 30 days after written notice to the Client Depositor at his last known address, assign and transfer its obligations hereunder and the semen held on behalf of the Client Depositor to a similar storage facility.

6. Additional Terms: The Client Depositor promises and agrees to indemnify and save harmless the Company from any loss and/or expenses incurred in connection with the defense or payment of any claim by any other party relating to the subject of this Agreement. The Agreement shall be binding upon the Client Depositor and his assigns, heirs, executors, and administrators.

7. CONDITIONS OF RELEASE OF SEMEN/TESTICULAR TISSUE SPECIMENS FROM STORAGE DURING LIFETIME OF CLIENT DEPOSITOR

Release of semen/testicular tissue may occur during the lifetime of the Client Depositor, only upon the occurrence of the following conditions;

   i. only to a licensed physician, and
   ii. only for use by the Client Depositor’s spouse or sexually intimate partner ("Recipient"),
   iii. upon the express notarized authorization of the Client Depositor, and
   iv. upon the authorization of the Recipient’s clinic, and
   v. upon the completion of serology/virology tests required by the Company.

N ACQ 100 Semen/Testicular Tissue Cryostorage Agreement Release Date: 12/10/2012
Revision: T Page 1 of 2 Effective Date: 12/10/2012
8. ADVANCED DIRECTIVES FOR SEMEN/TESTESTICULAR TISSUE SPECIMENS IN EVENT OF DEATH OF CLIENT DEPOSITOR

If the Client Depositor is a minor, this Advanced Directives section does not need to be completed. When the Client Depositor is an adult and/or marries, ReproTech, Ltd. strongly recommends completing a new Semen/Testicular Tissue Cryostorage Agreement including the Advanced Directive Section.

A. If the Client Depositor is not married at the time of his death: The Client Depositor directs that, upon his death, his semen/testicular tissue specimens be discarded, as established by evidence deemed sufficient by the Company, unless, prior to his death, the Company has received from the Client Depositor a written and notarized notice (ReproTech form or document provided by Client Depositor) signed by the Client Depositor identifying his sexually intimate partner and directing that his semen/testicular tissue specimens shall become the property of his sexually intimate partner and may be used by her for the purpose of procreation, upon her written and notarized acceptance of and agreement to be bound by the terms of this Agreement.

B. If the Client Depositor is married at the time of his death: The Client Depositor directs, upon his death, as established by evidence deemed sufficient by the Company, the following disposition for his semen/testicular tissue specimens:

Choose one of the following by marking your choice with a check and signing and dating below your choice.

- □ A. The Client Depositor directs that his semen/testicular tissue specimens shall become the property of the surviving spouse and may be used by her for the purpose of procreation, upon her written and notarized acceptance of and agreement to be bound by the terms of this Agreement.

Client Depositor Signature ___________________________ Date

- OR -

- □ B. The Client Depositor directs that his semen/testicular tissue specimens be discarded.

Client Depositor Signature ___________________________ Date

BY MY WITNESSED SIGNATURE BELOW, I ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND THE TERMS OF THIS AGREEMENT. I ACKNOWLEDGE THAT I FURTHER UNDERSTAND THAT MY CRYOPRESERVED SPECIMENS CANNOT BE USED IN THE EVENT OF MY DEATH UNLESS ALL CONDITIONS IN SECTION 7, CONDITIONS OF RELEASE, AND SECTION 8, ADVANCED DIRECTIVES, ARE COMPLETED.

By: ___________________________ Signature of Client Depositor ___________________________ Date

NOTE: The dates of all signatures must be the same, as this document is to be signed in the presence of the Witness.

If the Client Depositor is a minor, a parent or guardian of the minor must sign below:

Name of Parent/Guardian, if applicable (Printed) ___________________________ Signature of Parent/Guardian, if applicable ___________________________ Date

The undersigned Witness affirms that he/she knows the Client Depositor and Parent/Guardian, if applicable, and that he/she was present and witnessed the Client Depositor’s signature and Parent’s/Guardian’s signature, if applicable, on this document.

Name of Witness (Printed) ___________________________ Signature of Witness ___________________________ Date

By: ___________________________ Account # assigned by RTL: ___________________________

ReproTech, Ltd. Representative Signature ___________________________ Date

The Cryostorage & Compliance Experts
Florida 888.953.9669 • Minnesota 888.489.8944 • Nevada 888.831.2765 • Texas 888.350.3247

N ACQ 100  Semen/Testicular Tissue Cryostorage Agreement  Release Date: 12/10/2012
Revision: T  Page 2 of 2  Effective Date: 12/10/2012
TESTICULAR TISSUE (UNDER 18 YEARS OLD) CRYOSTORAGE AGREEMENT

This AGREEMENT, Made between ReproTech, Ltd., a Minnesota corporation (the "Company"), and the person named below (the "Client Depositor").

1. Collection and Storage: With the assistance of the Client Depositor, and in accordance with the procedures for identification and testing established by the Company (as set forth in the Company’s brochure and web site, www.reprotech.com), the Company shall receive the Client Depositor's testicular tissue, which has been cryopreserved by the Client Depositor’s physician/clinic (the “Clinic”), for long-term cryostorage until this Agreement is terminated pursuant to Paragraph 4. All procedures established by the Company may be modified at the sole discretion of the Company to reflect changes in industry practices, laws, or regulations.

2. Storage Fees and Records: The fee for each Storage Period shall be payable in advance and shall be adjusted from time to time by the Company based upon market factors. The current fees are set forth in the Company’s brochure and web site, www.reprotech.com. A "Storage Period" begins with the month in which the Company receives specimens for storage. Unused storage fees are non-refundable. The Client Depositor shall keep the Company informed at all times, in writing, of his current address and telephone number for billing purposes and any other matter requiring notice to the Client Depositor. The Client Depositor’s name and address, as well as other records relating to the subject of this Agreement, shall be kept on file at the Company.

3. Account in Default: If at any time the Company has not received full payment of all amounts due to the Company from the Client Depositor on or before the 60th day after the beginning of any storage period, then the Client Depositor is in "default". In the event of default, the Company may, in its sole discretion, refer the Client Depositor’s account to any attorney or collection agency for collection, and the Client Depositor agrees to pay all costs of such collection, including but not limited to any reasonable fees charged by the collection agency and reasonable attorney’s fees. If the Client Depositor is in default, the Company may discard all stored specimens. The term “discard” means that the Company will thaw and destroy the specimens in a professional and ethical manner, as determined solely by the Company. Discarded specimens cannot and will not be used for reproductive purposes by or on behalf of any person or persons.

4. Termination of Agreement: This Agreement shall terminate and the Company’s responsibilities for storage of specimens hereunder will cease:

   (i) upon the release of all specimens stored by the Company pursuant to Conditions of Release; or
   (ii) upon the disposition of all specimens stored by the Company pursuant to a default under Paragraph 3; or
   (iii) upon the notarized execution of Company’s separate termination agreement by the Client Depositor; or
   (iv) if the Client Depositor dies, as established by evidence deemed sufficient by the Company.

5. Responsibilities and Liabilities of the Company: The Client Depositor acknowledges that he has been fully advised concerning the state of the art of cryopreservation of specimens of testicular tissue. The Client Depositor acknowledges that he understands that the viability of the testicular tissue and the results from subsequent use depend almost in their entirety upon the Client Depositor and the recipient. Accordingly, the Client Depositor understands and agrees that the Company’s responsibilities shall be limited hereunder solely to the adequate cryostorage of said testicular tissue consistent with the state of the art at the date of entering into this Agreement. The Client Depositor agrees to hold the Company harmless for any damage sustained while the testicular tissue specimens are not in the possession and control of the Company. In any event, the total liability of the Company for failure to meet any of its responsibilities to the Client Depositor shall not exceed the amount of storage and/or shipping fees therefore paid by the Client Depositor. The parties agree that any claims relating to or arising out of this Agreement will be brought in the state courts of Minnesota. In the event the Company terminates the operation of its storage facility, it may, 30 days after written notice to the Client Depositor at his last known address, assign and transfer its obligations hereunder and the testicular tissue held on behalf of the Client Depositor to a similar storage facility.

6. Additional Terms: The Client Depositor promises and agrees to indemnify and save harmless the Company from any loss and/or expenses incurred in connection with the defense or payment of any claim by any other party relating to the subject of this Agreement. The Agreement shall be binding upon the Client Depositor and his assigns, heirs, executors, and administrators.

7. CONDITIONS OF RELEASE OF TESTICULAR TISSUE SPECIMENS FROM STORAGE DURING LIFETIME OF CLIENT DEPOSITOR

Release of testicular tissue may occur during the lifetime of the Client Depositor, only upon the occurrence of the following conditions:

i. only to a licensed physician, and
ii. only for use by the Client Depositor’s spouse or sexually intimate partner ("Recipient"),
iii. upon the express notarized authorization of the Client Depositor, and
iv. upon the authorization of the Recipient’s clinician, and
v. upon the completion of serology/virology tests required by the Company.
8. ADVANCED DIRECTIVES FOR TESTICULAR TISSUE SPECIMENS IN EVENT OF DEATH OF CLIENT DEPOSITOR

When the Client Depositor is an adult and/or marries, ReproTech, Ltd. strongly recommends completing a new Semen/Testicular Tissue Cryostorage Agreement including the Advanced Directives Section.

In the event of the death of the Client Depositor: The client depositor directs upon his death, as established by evidence deemed sufficient by the company, the following disposition for his testicular tissue specimens:

Choose one of the following by marking your choice with a check and signing and dating below your choice.

- A. The Client Depositor directs that his testicular tissue specimens shall be donated to Magee-Womens Hospital for research.

  Client Depositor Signature ___________________________ Date __________

- OR -

- B. The Client Depositor directs that his testicular tissue specimens be discarded.

  Client Depositor Signature ___________________________ Date __________

BY MY WITNESSED SIGNATURE BELOW, I ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND THE TERMS OF THIS AGREEMENT. I ACKNOWLEDGE THAT I FURTHER UNDERSTAND THAT MY CRYOPRESERVED SPECIMENS CANNOT BE USED IN THE EVENT OF MY DEATH UNLESS ALL CONDITIONS IN SECTION 7, CONDITIONS OF RELEASE, AND SECTION 8, ADVANCED DIRECTIVES, ARE COMPLETED.

By: ___________________________ Signature of Client Depositor ___________________________ Date __________

Client Depositor Name (Print)

NOTE: The dates of all signatures must be the same, as this document is to be signed in the presence of the Witness.

If the Client Depositor is a minor, a parent or guardian of the minor must sign below:

Name of Parent/Guardian, if applicable (Printed) ___________________________ Signature of Parent/Guardian, if applicable ___________________________ Date __________

The undersigned Witness affirms that he/she knows the Client Depositor and Parent/Guardian, if applicable, and that he/she was present and witnessed the Client Depositor's signature and Parent's/Guardian's signature, if applicable, on this document.

Name of Witness (Printed) ___________________________ Signature of Witness ___________________________ Date __________

By: ___________________________ Account # assigned by RTL: ___________________________ Date __________

ReproTech, Ltd. Representative Signature

The Cryostorage & Compliance Experts
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