

# ART of Reproductive Medicine Curriculum



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- **Introduction to ART of Reproductive Medicine** – define fertility and causes of infertility
- **Mitosis** – slides showing stages of mitosis, cell size & rate of diffusion lab
- **Cancer** – PowerPoint from [www.cancer.gov](http://www.cancer.gov) called Understanding Cancer Series: Cancer and other sources – DNA structure and beta-globin gene exercise using 3-D Molecular Designs showing translation, mutations, frameshifts, exons, introns, BRCA gene activity, p53 tumor suppressor
- **Cancer treatment and the effect on reproduction**– how chemotherapies and radiation affect reproductive tissues
- **Meiosis** – slides showing stages of meiosis
- **Female and male reproductive system** – ELISA assays, staining of ovarian tissue, and dissection of female and male mice
- **Pregnancy – what is normal, what can go wrong, and how can we assist infertile couples?** – ultrasound images, sea urchin egg fertilization and development, assisted reproductive technologies (ART) - IVF, ICSI
- **Cryobiology** – slow freezing vs vitrification, time reduced motility by frozen and thawed sperm, vitrification lab, compare structures in fresh and frozen tissue slides, unthawing of female and male tissue

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- **Fertility preservation options for cancer patients under 40 years old** – current technologies for female and male cancer patients under 40 years old prior to receiving chemotherapy, radiation therapy, and bone marrow treatment, alginate lab, implantation, S1P studies in non-human primates
- **Stem Cells** - application to oncofertility, ethical issues associated with stem cell research, stem cell lab activities
- **Ethical frameworks** – PowerPoint from ONSEN ethicist, ethical issues of assisted reproductive technologies (ART)
- **Epigenetics** – effect of epigenetics on cancer and other human diseases and inheritance
- **Student case study and poster presentations** – suggestions for patient profile and report, poster topics, and web resources
- **Biomedical Careers** – explore careers that support biomedical research
- **Additional teacher resources** – pre- survey, pre-and post-tests, additional suggested equipment