Pregnancy

WHAT IS NORMAL, WHAT CAN GO WRONG, AND HOW CAN WE ASSIST INFERTILE COUPLES?

PART 1

When Does Pregnancy Occur?

- Pregnancy can occur when the oocyte (egg) is released during ovulation and sperm is present.
- Ideally, the sperm fertilizes the oocyte in the fallopian tubes so the developing embryo has time to mature before reaching the uterus for implantation.
- Fertilization can occur ectopically (in the abdomen) and also in the uterus but these do not usually result in successful pregnancies.

Ultrasound of a Non-Pregnant Uterus in Rhesus Macaque

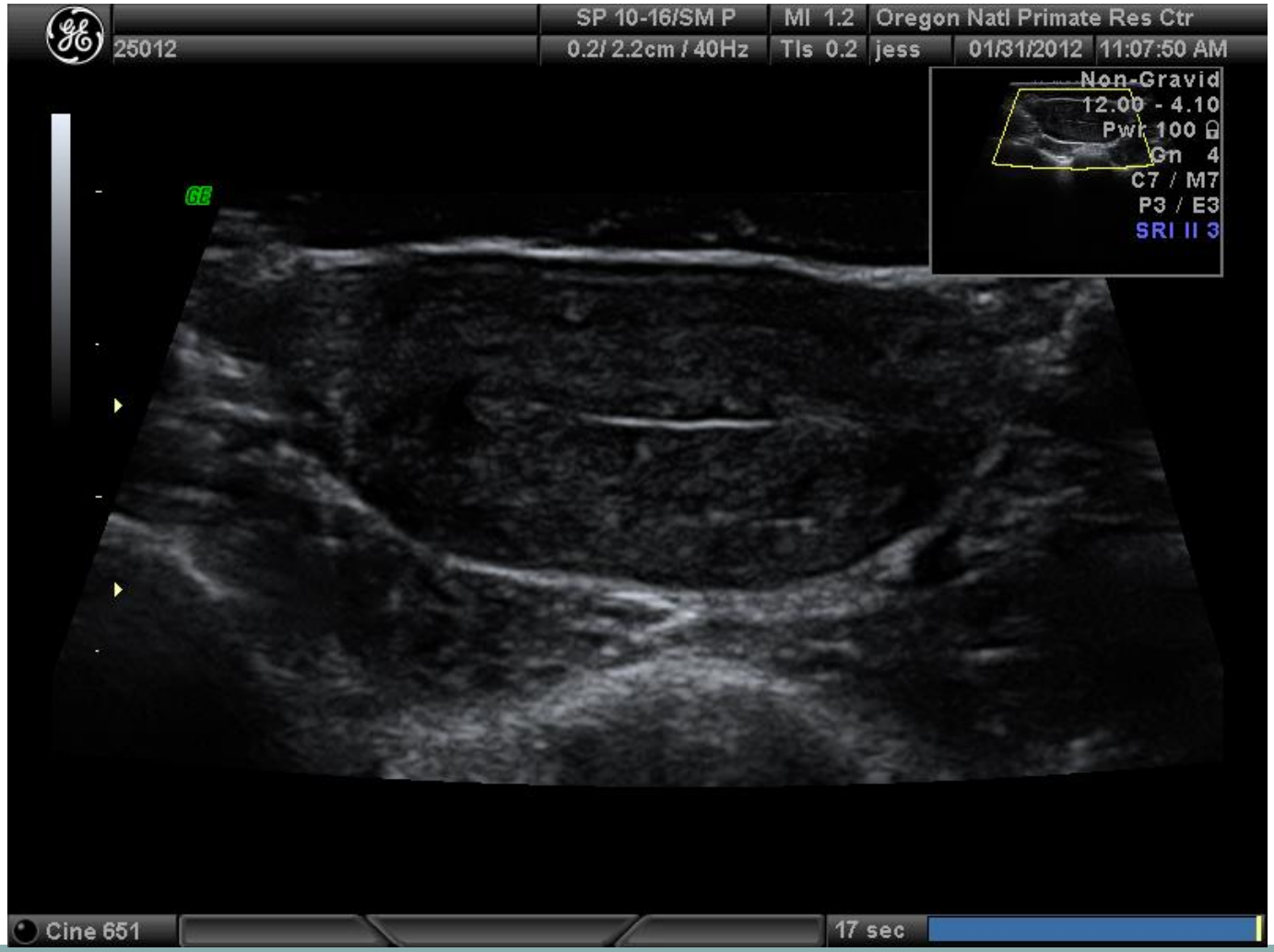
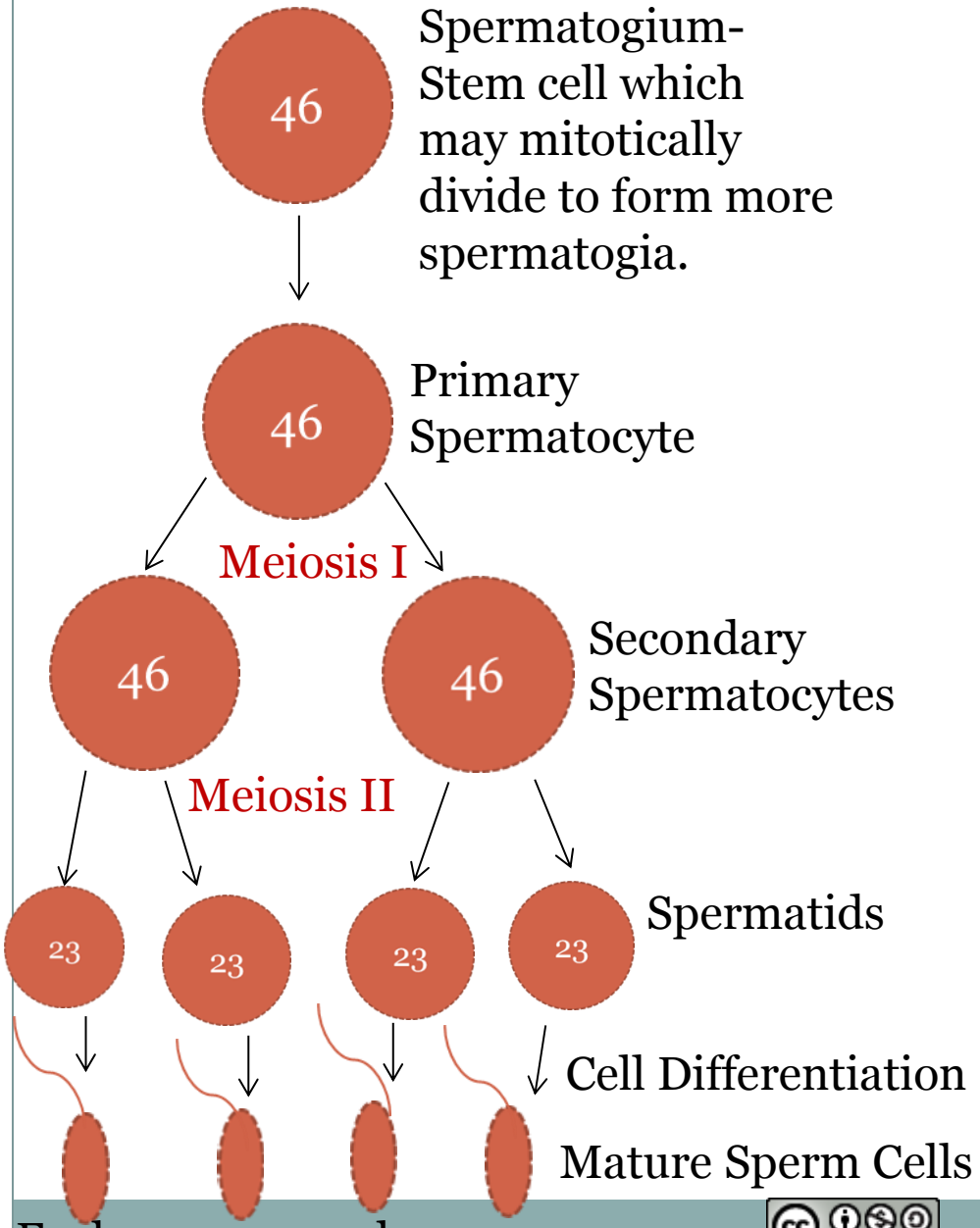


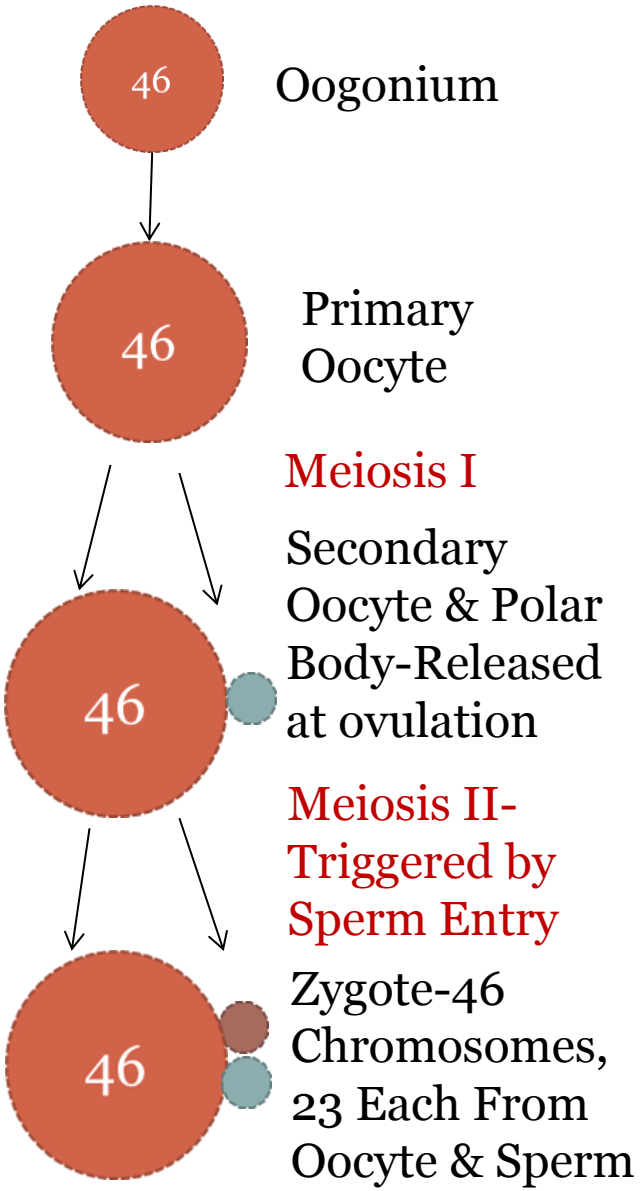
Photo: Mary Zelinski, PhD, ONPRC

Spermatogenesis in Males



Each sperm=23 chromosomes

Oogenesis in Females

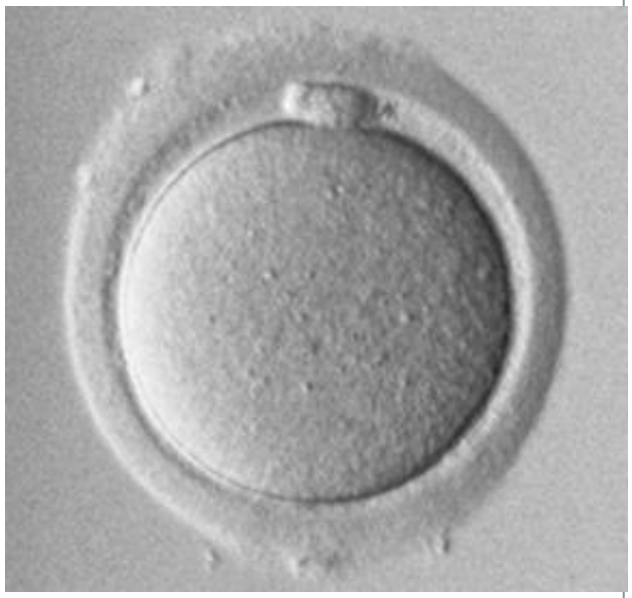


Drawing: Lynda Jones, MS, ONPRC

How do Oocytes Develop?

Primary oocyte with its nucleus arrested at prophase I of meiosis I. Clinically called **Germinal Vesicle (GV).**

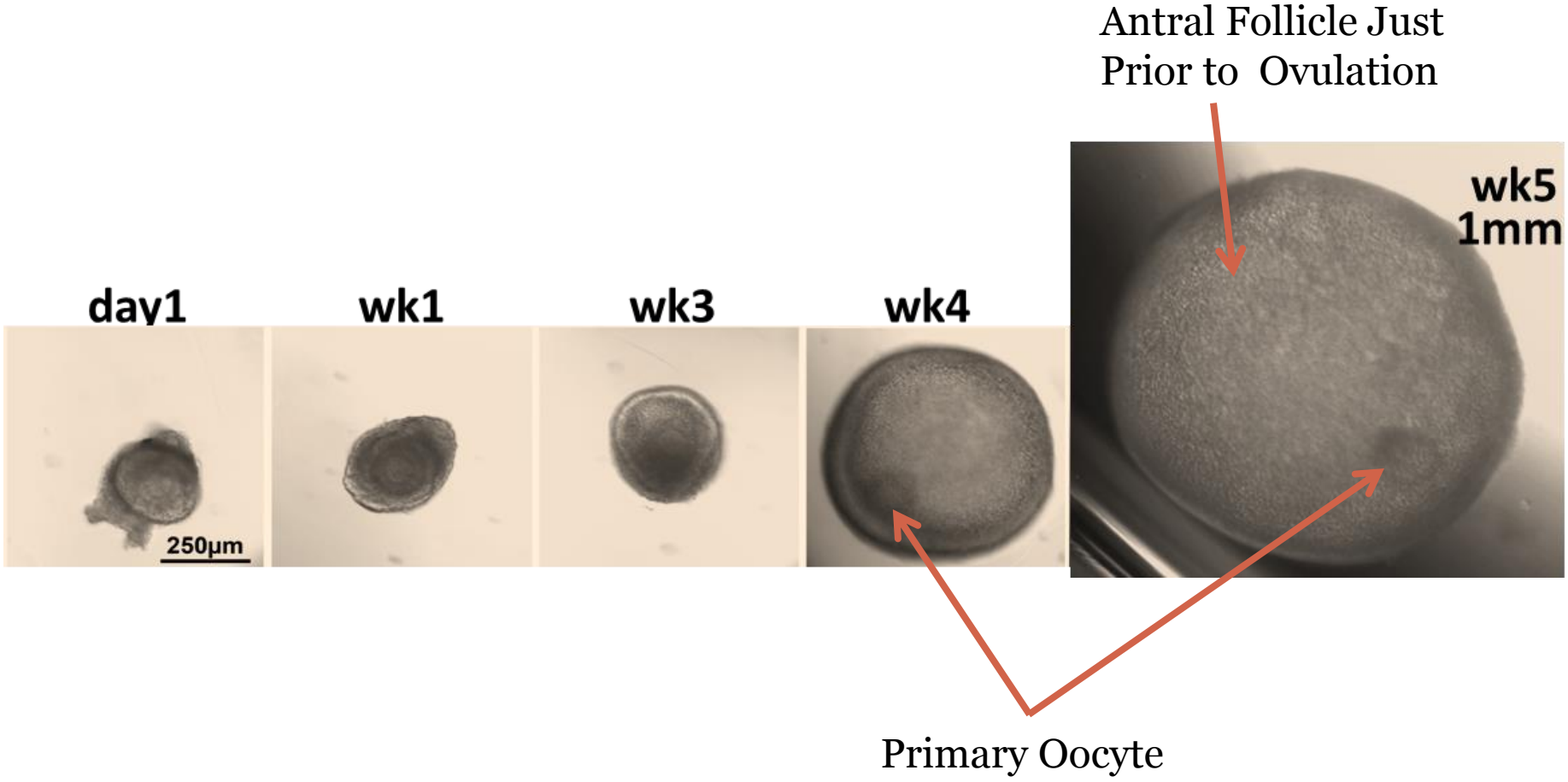
Primary oocyte undergoing meiosis I – nucleus and nucleolus have disappeared. Clinically called **Metaphase I (M1).**



Secondary oocyte with first polar body resulting from meiosis I. Clinically called **Metaphase II (M2).**

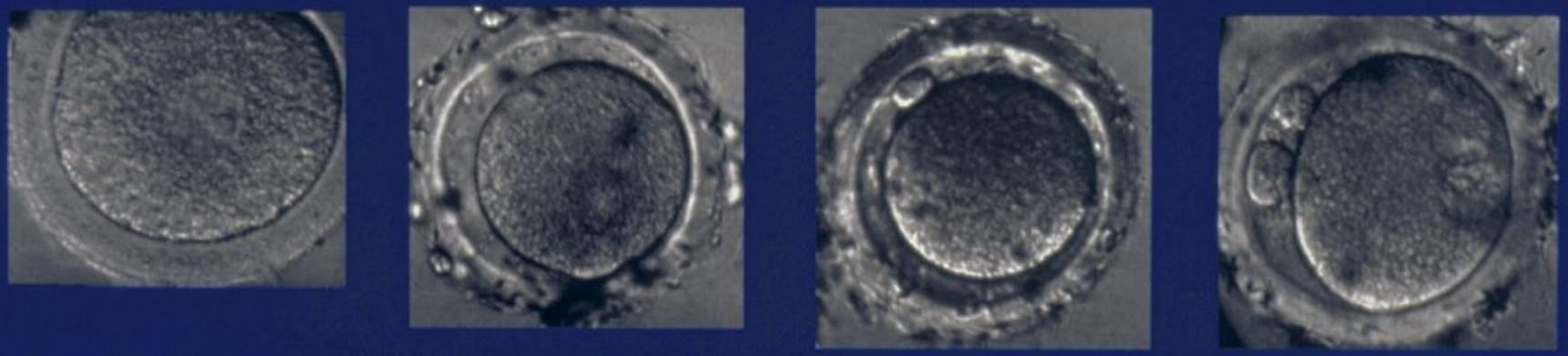
Photos: Dr. Mary Zelinski, PhD, ONPRC

In Vitro Primary Oocyte Growth in Its Follicle

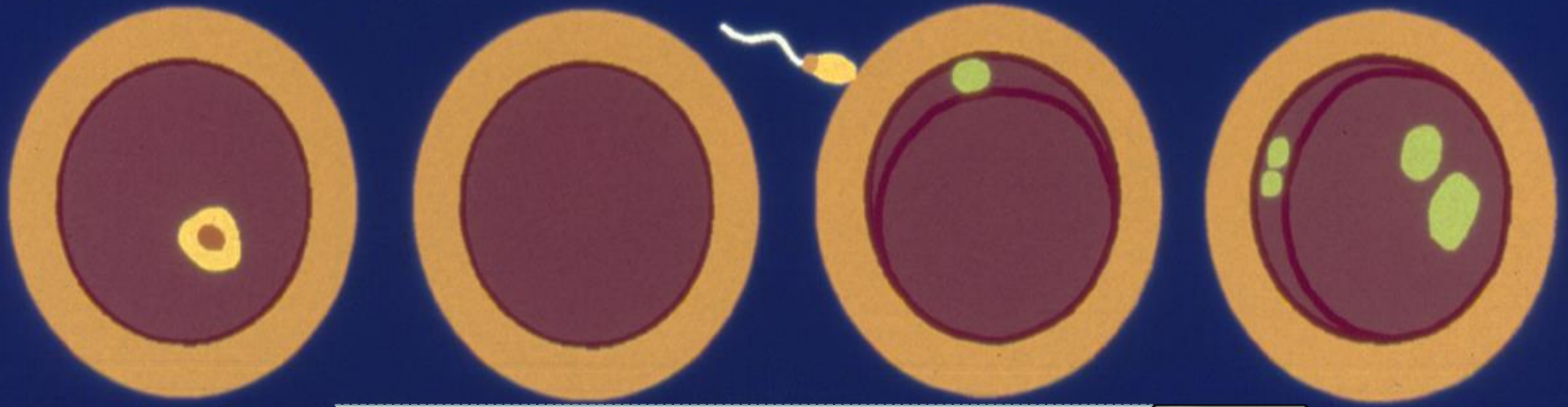


Photos: Mary Zelinski, PhD, ONPRC

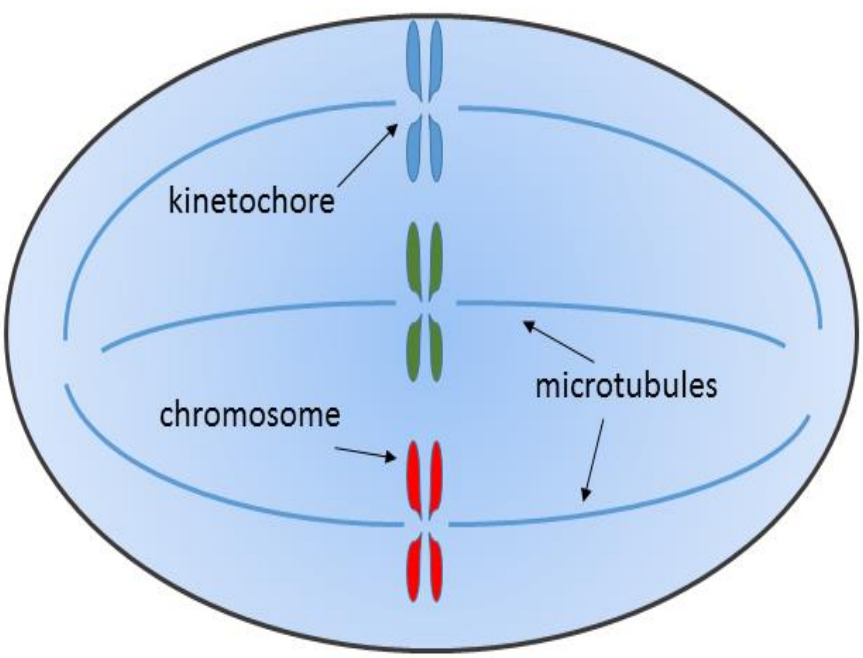
Oocyte Maturation & Fertilization



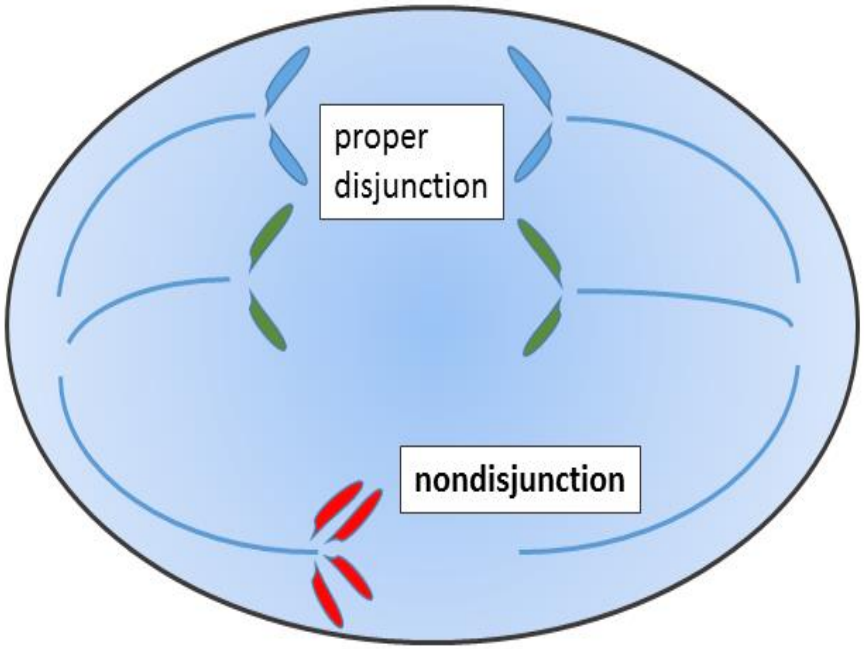
GV M1 M2 2PN



What Types of Genetic Errors Can Occur As Ooctyes and Sperm Develop?

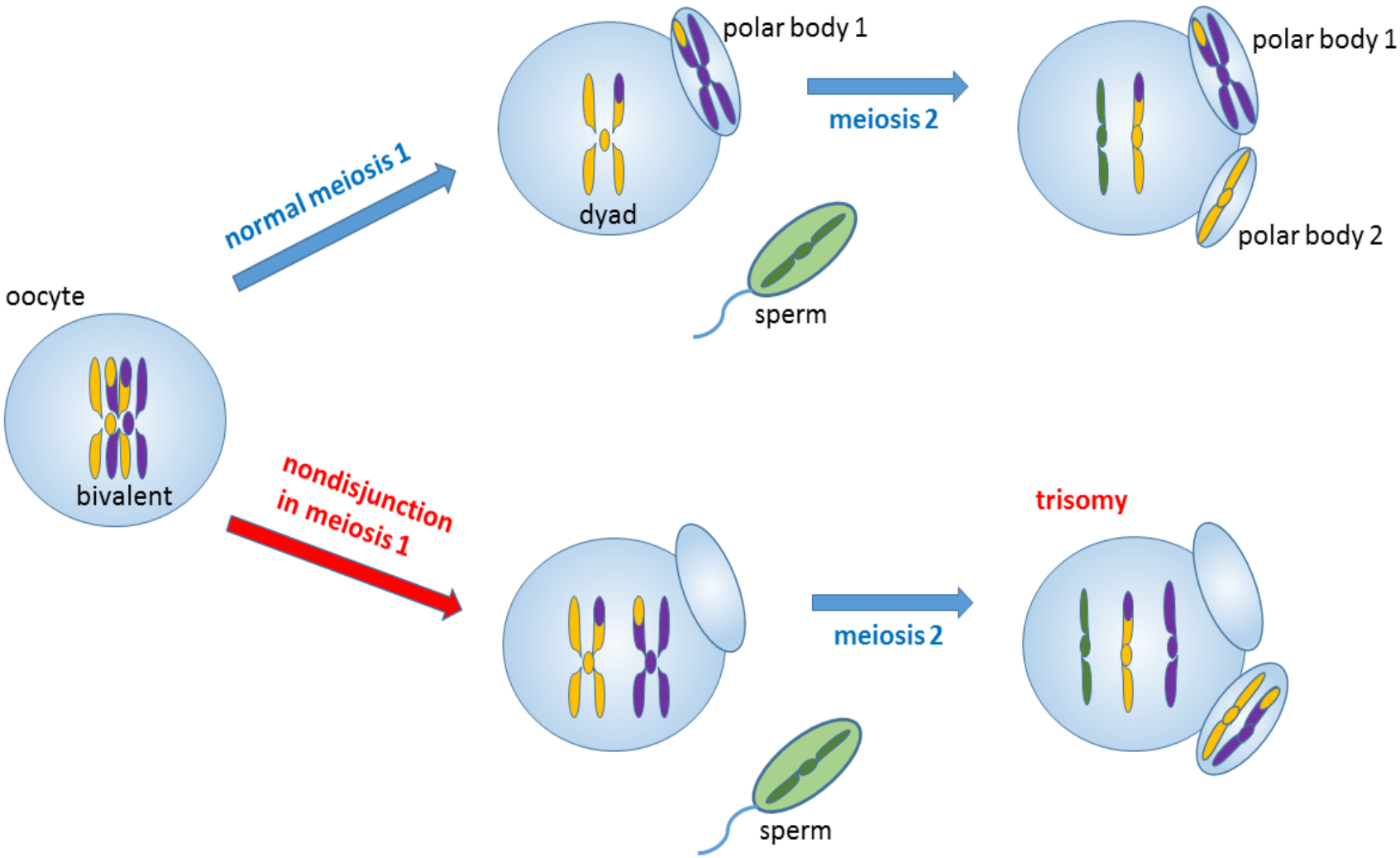


metaphase

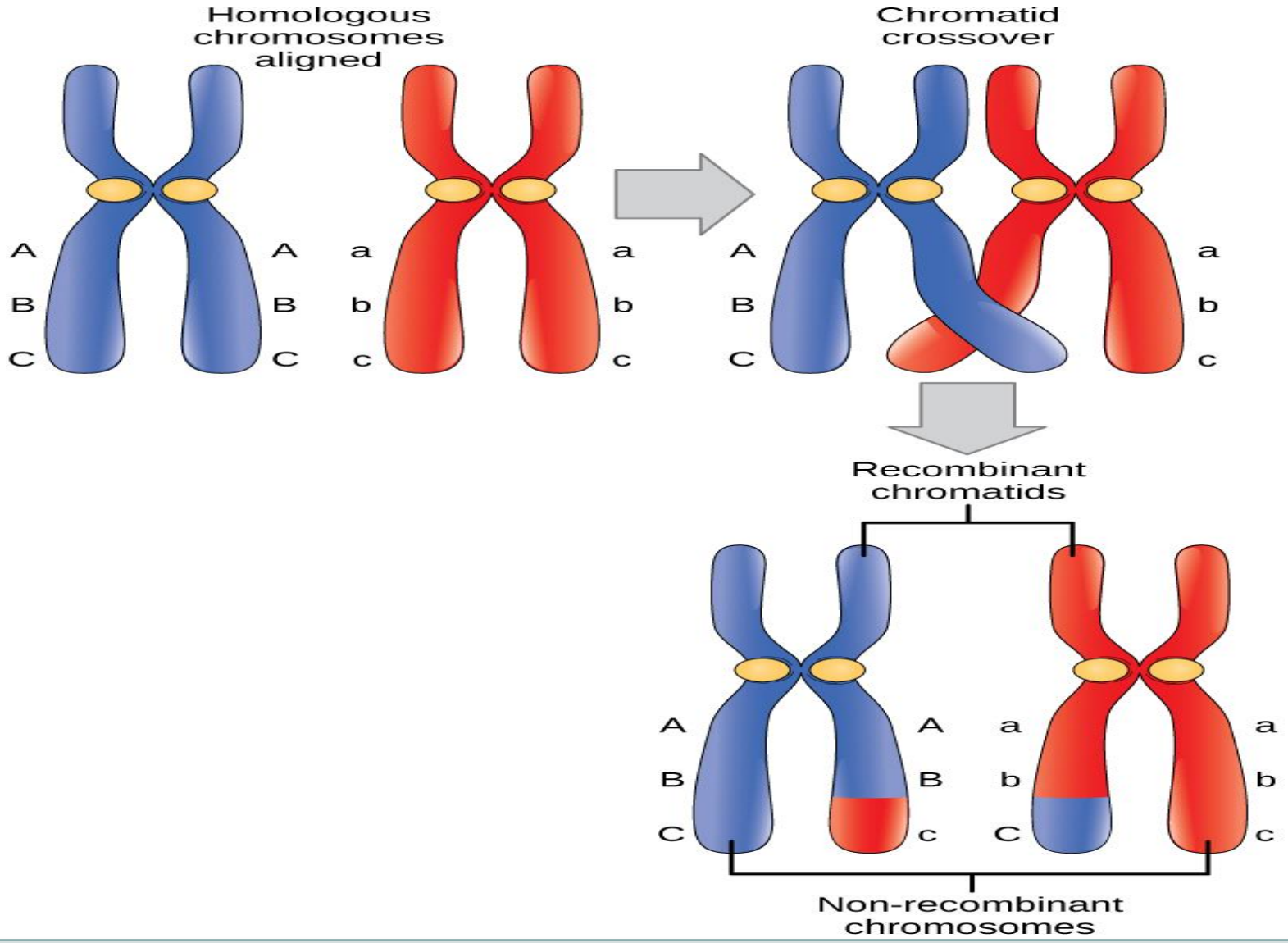


anaphase

The Origin of Aneuploidy Gametes by Nondisjunction at the First or Second Meiotic Division



Crossing Over in Meiosis I



Translocation Between Chromosomes 9 and 22

A metaphase cell positive for the BRC/ABL translocation (shown as green and red fused together) using FISH.