

The Continuum of Life: From Blueprints to Complexity

A visual exploration of the strategy of survival—from the splitting of a single cell to the complex orchestration of human development

The Cost of Immortality

Individual Survival



Nutrition & Respiration:
Necessary for the Individual.

The Biological Imperative:

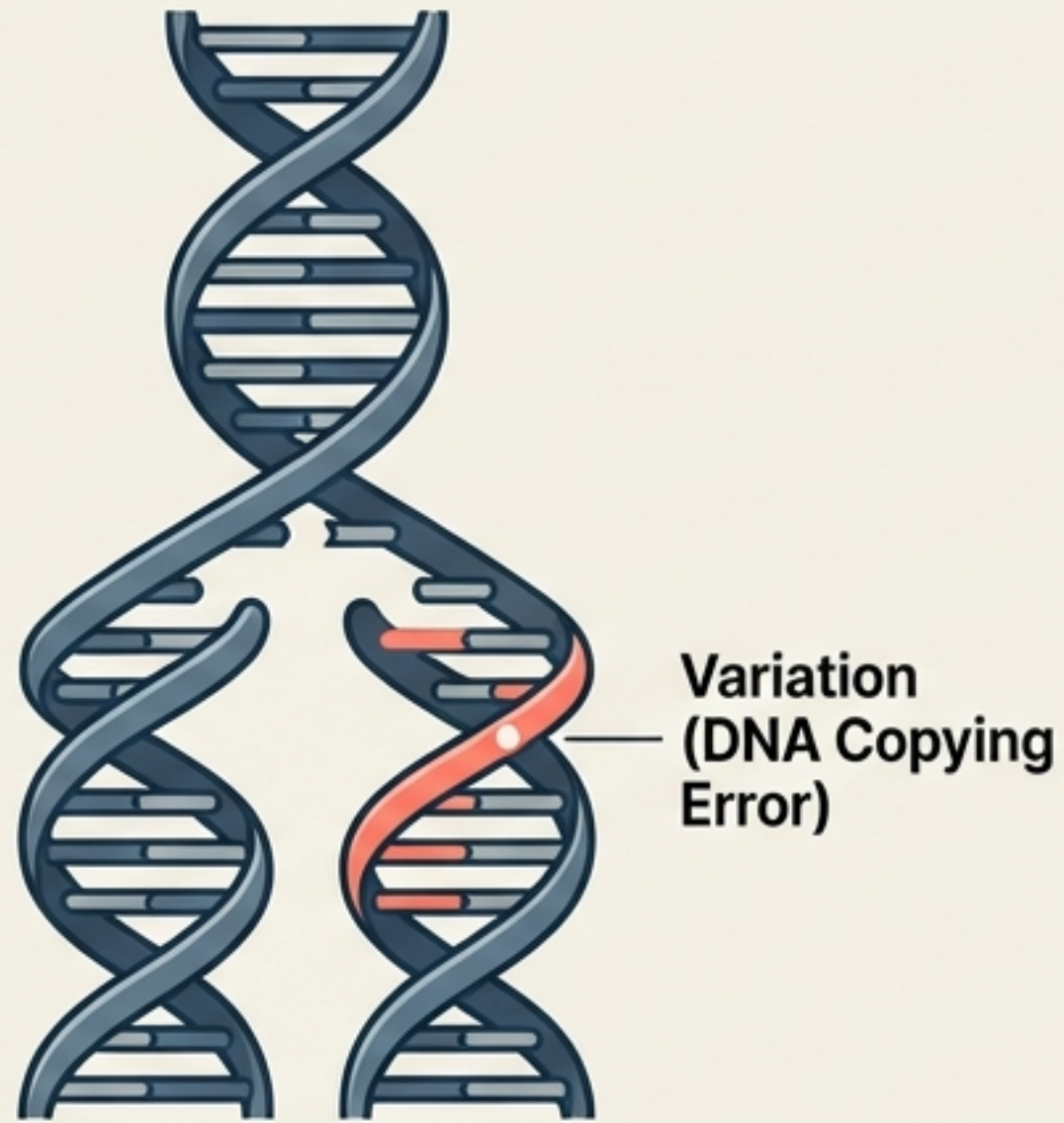
Organisms reproduce not to stay alive, but to ensure their species does not vanish.

Species Survival

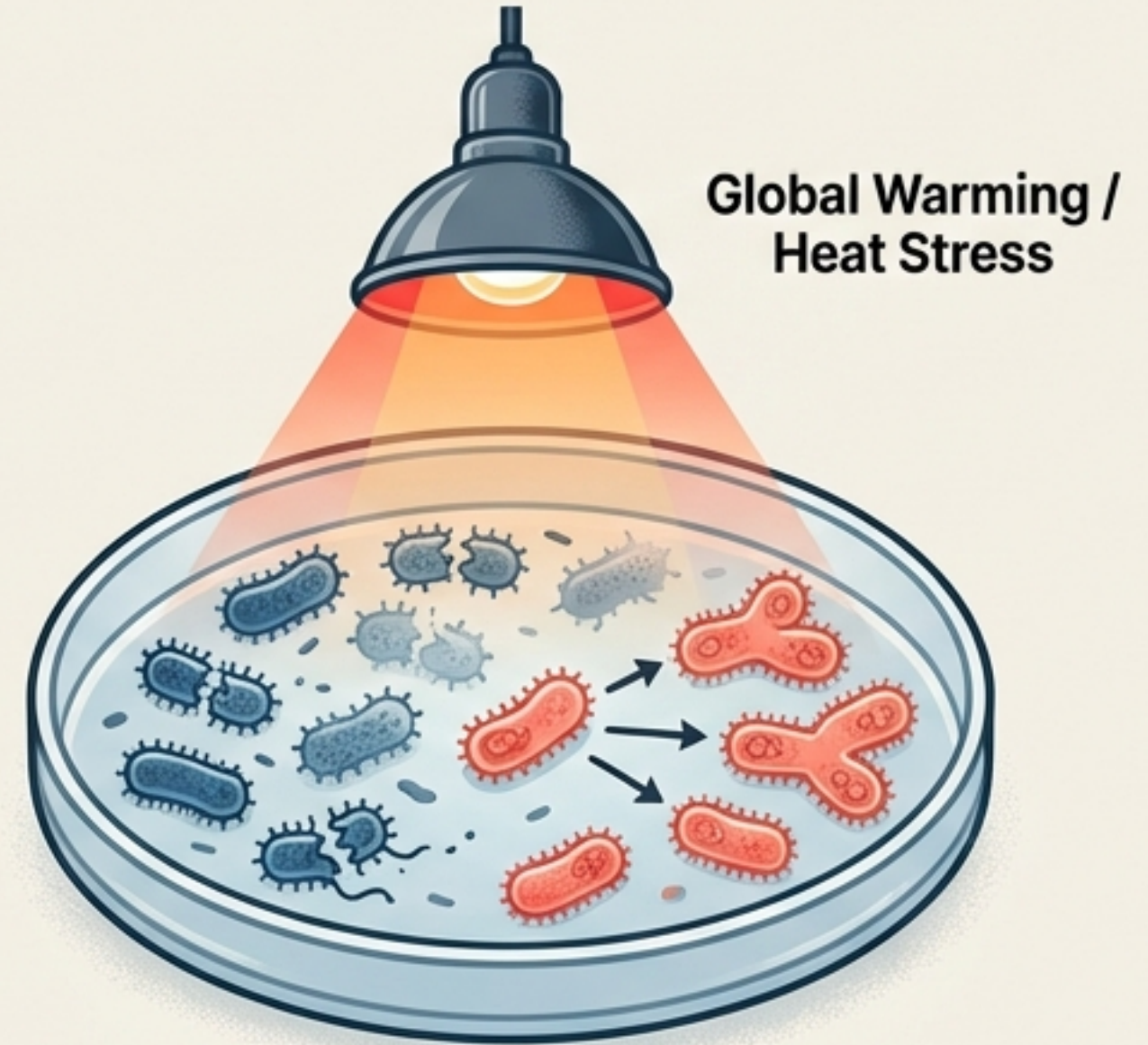


Reproduction: Energy Expensive &
Not Essential for the Individual.

The Blueprint and the Glitch



The Blueprint: DNA replication copies genetic instructions, but occasional errors introduce variation.

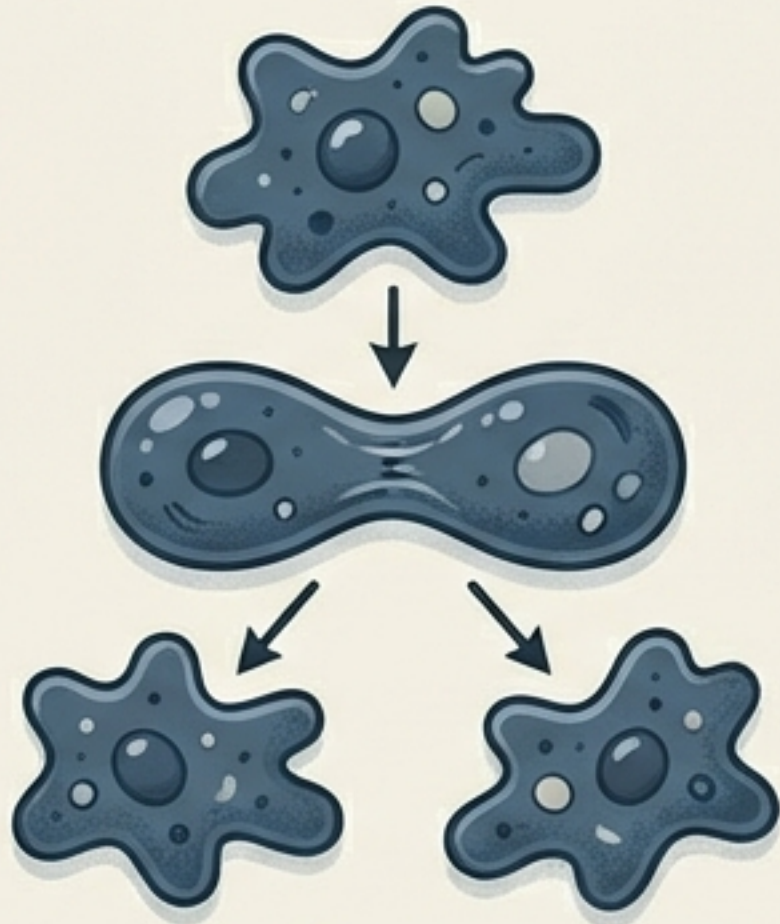


The Glitch: Most bacteria perish in extreme heat, but rare mutants with heat resistance survive and thrive.

Why Variation Matters: In a population of bacteria, a heat-resistant variant—born from a copying error—survives a heat wave. Variation is the insurance policy of the species.

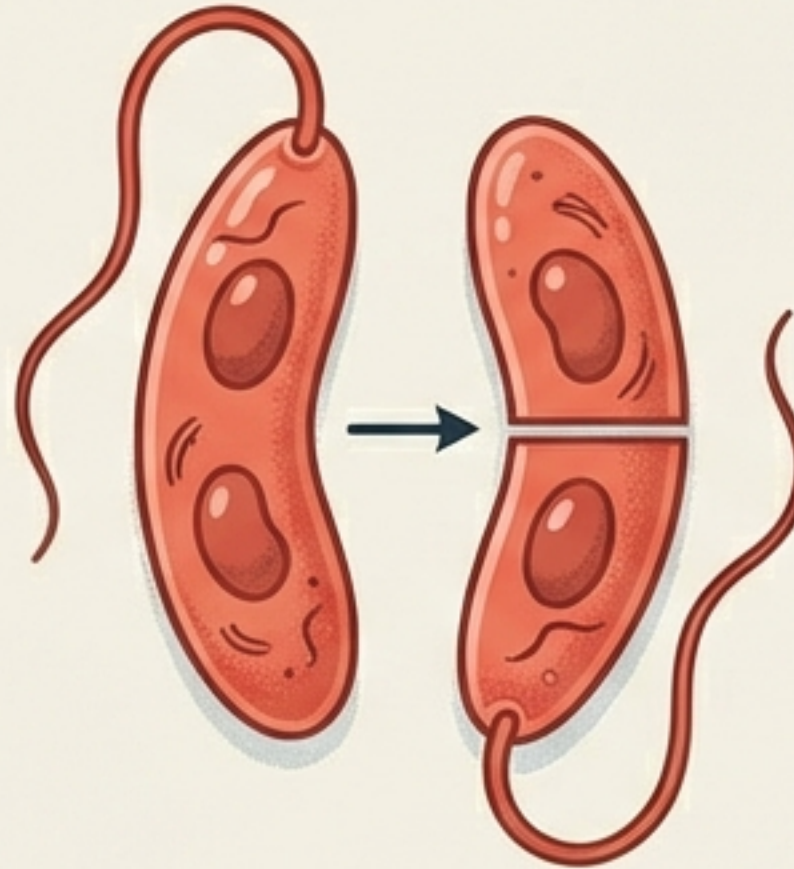
Strategy A: Fission – The Art of Splitting

**Binary Fission
(Random Plane)**



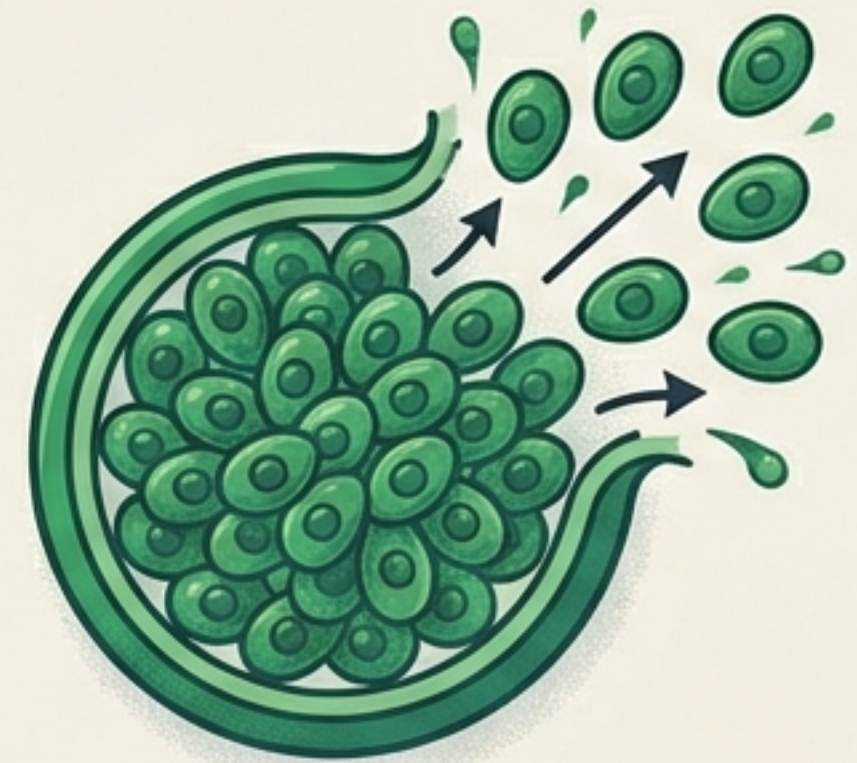
Amoeba

**Binary Fission
(Oriented)**



Leishmania

Multiple Fission



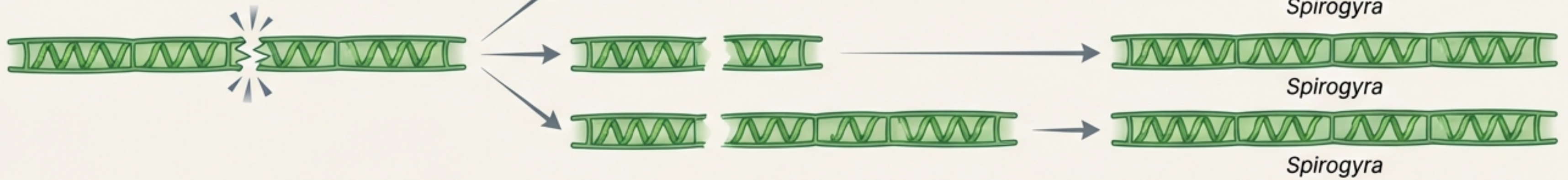
Plasmodium

For unicellular organisms, cell division is the mode of reproduction.

Fragmentation and Regeneration

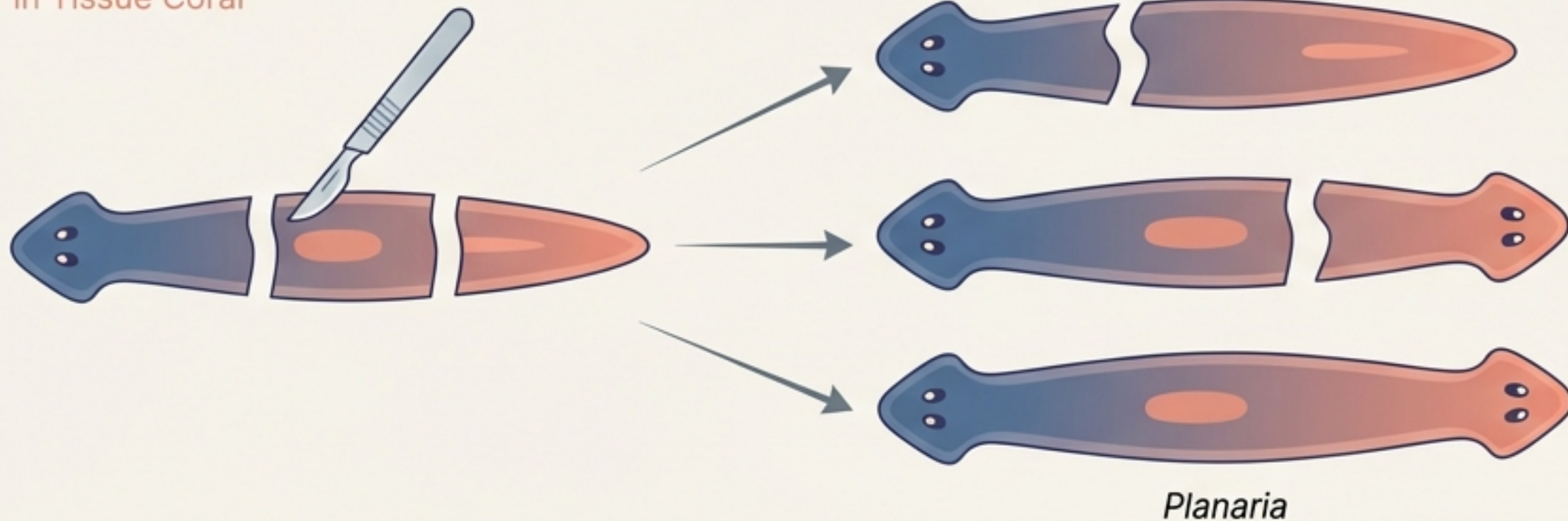
Fragmentation (Simple)

in Venous Blue



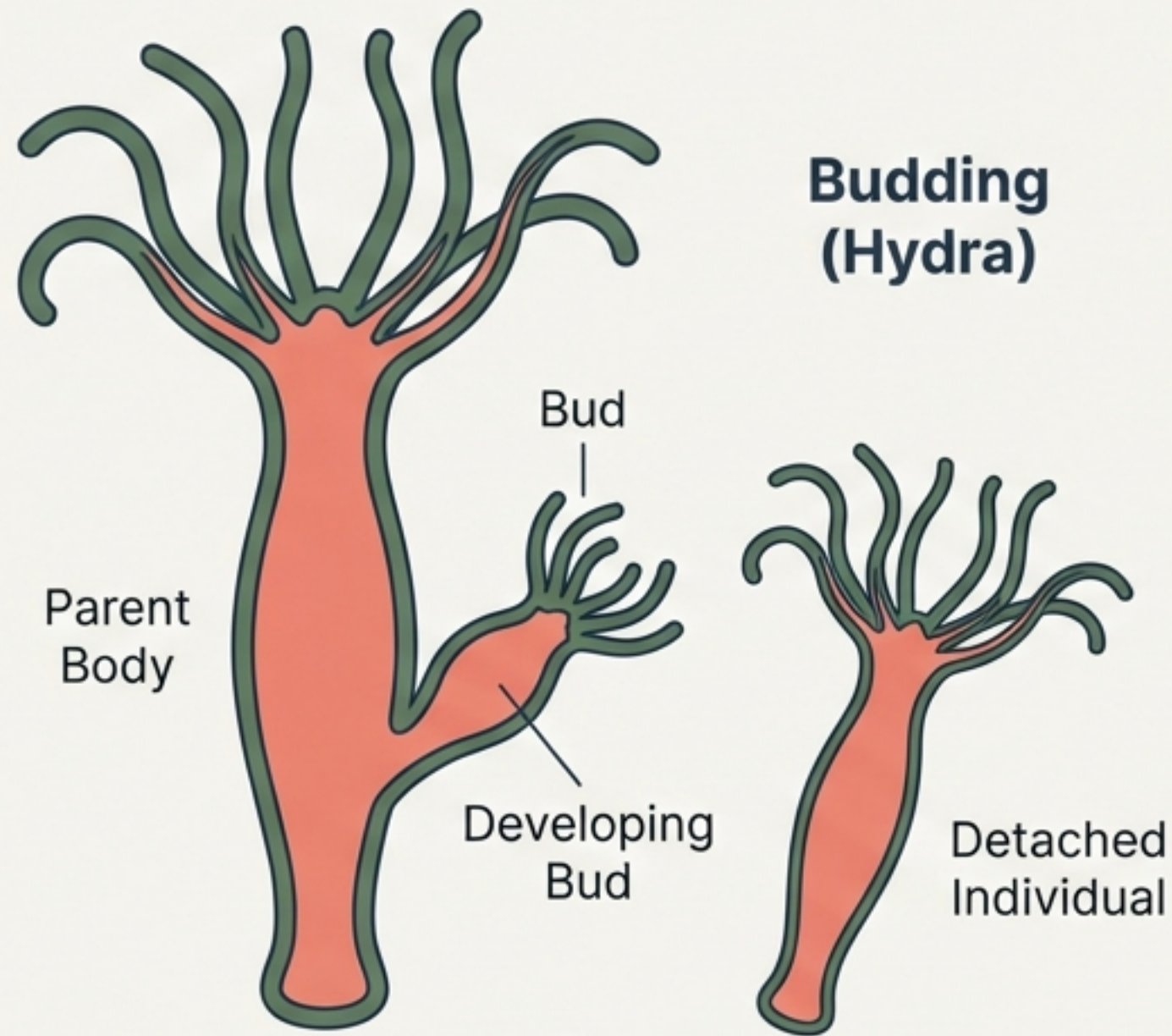
Regeneration (Complex)

in Tissue Coral

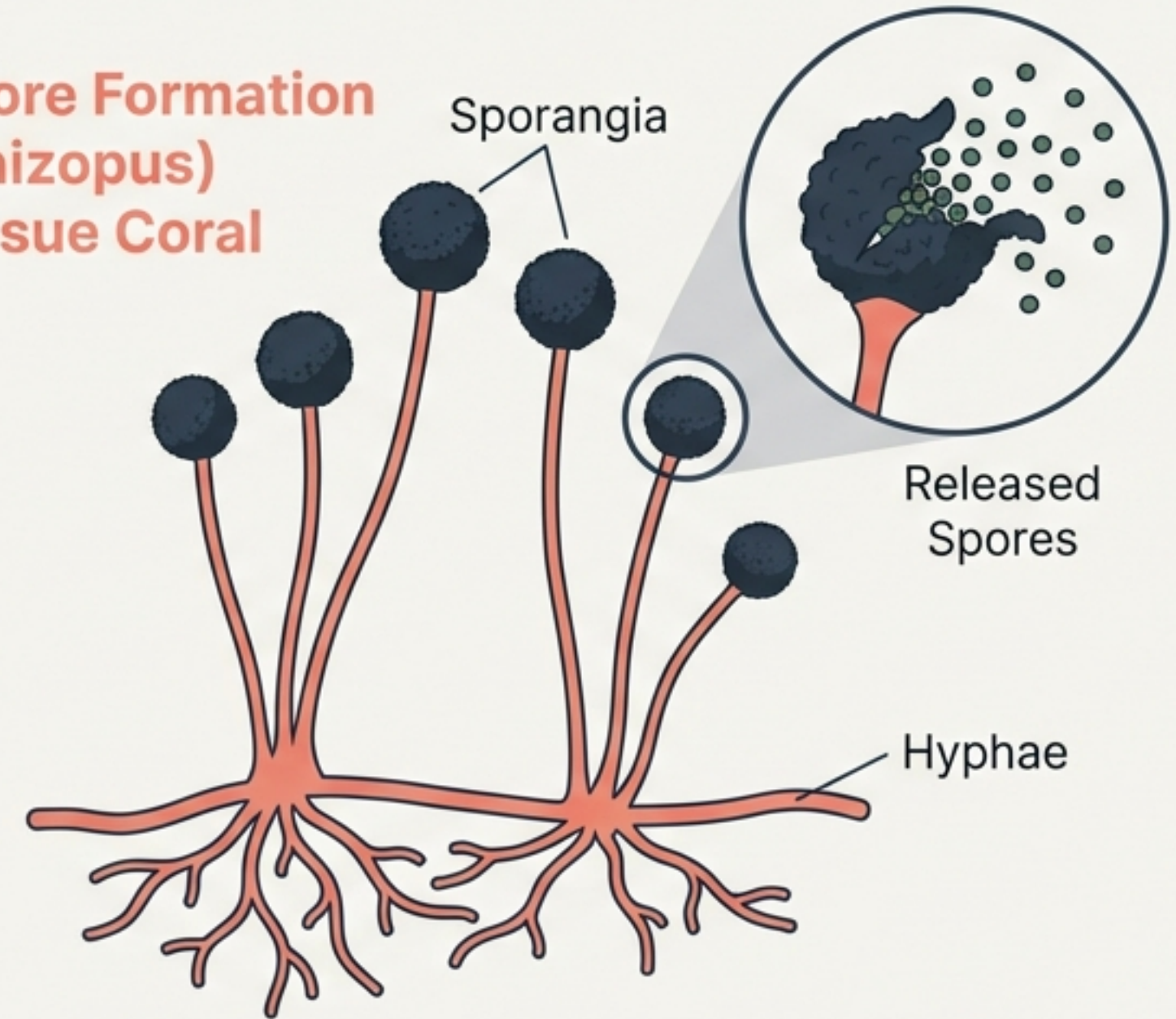


Crucial Distinction: Regeneration is a survival capability of specialized cells, whereas Fragmentation is a method for simple bodies. Most organisms do not wait to be cut into pieces to reproduce.

Specialized Structures: Buds and Spores

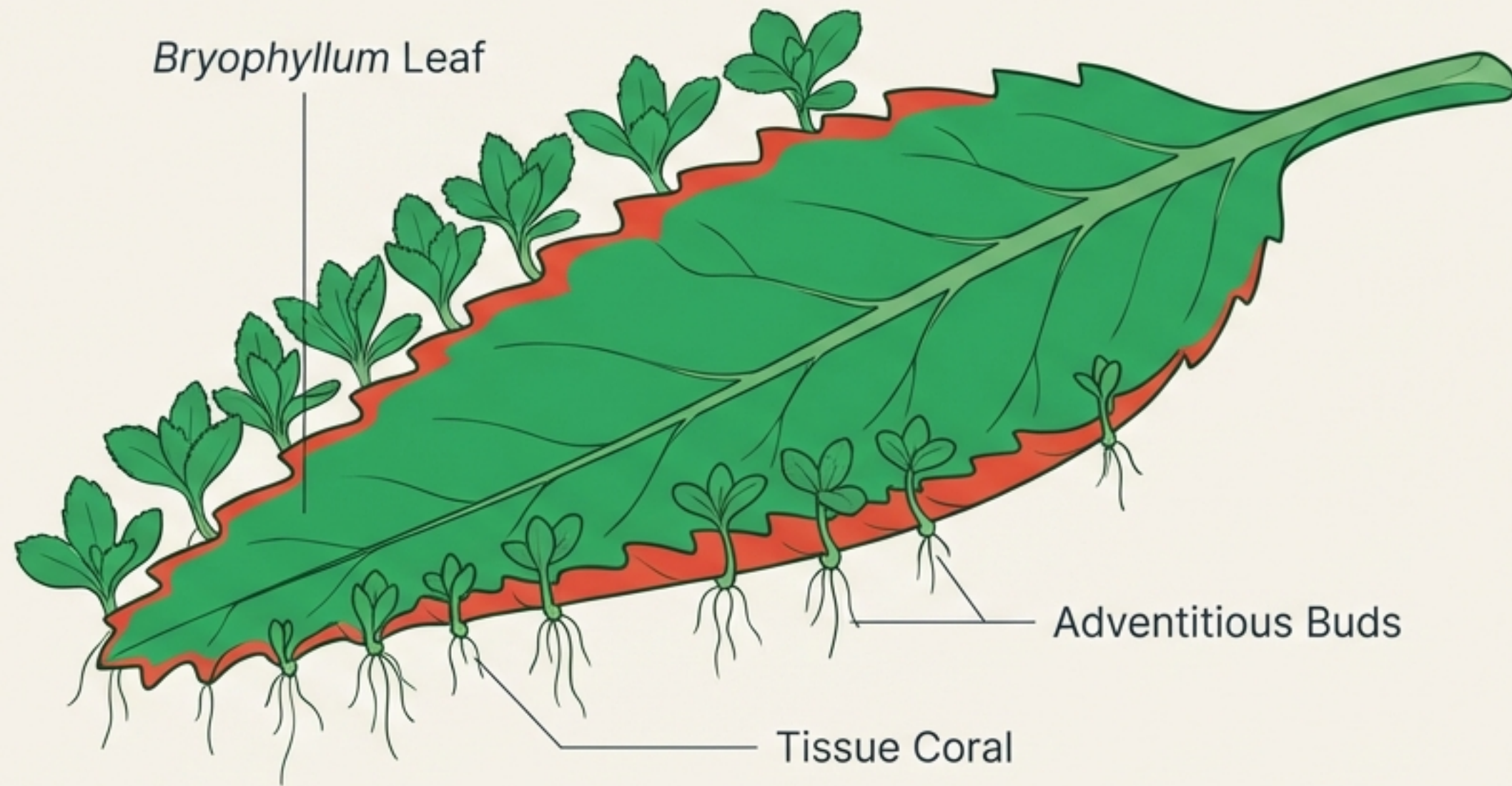


Spore Formation (Rhizopus) Tissue Coral



Unlike accidental regeneration, these are structures evolved specifically for reproduction.

Vegetative Propagation: Cloning in Nature



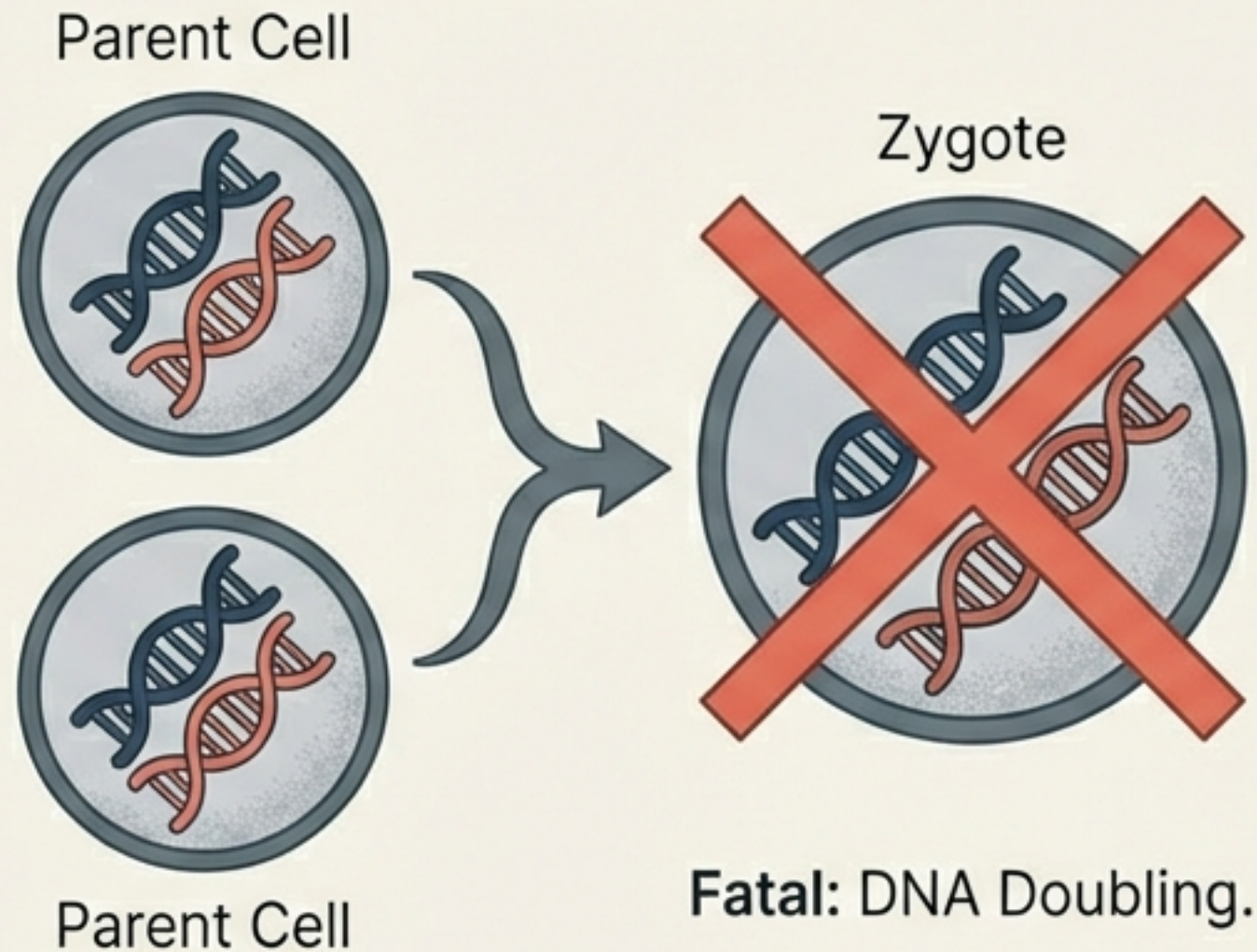
Human Applications

1. **Consistency:** Genetically identical crops.
2. **Speed:** Faster fruit and flower production than from seeds.
3. **Utility:** Propagation of seedless varieties (Banana, Rose, Jasmine). 🍌 🌹

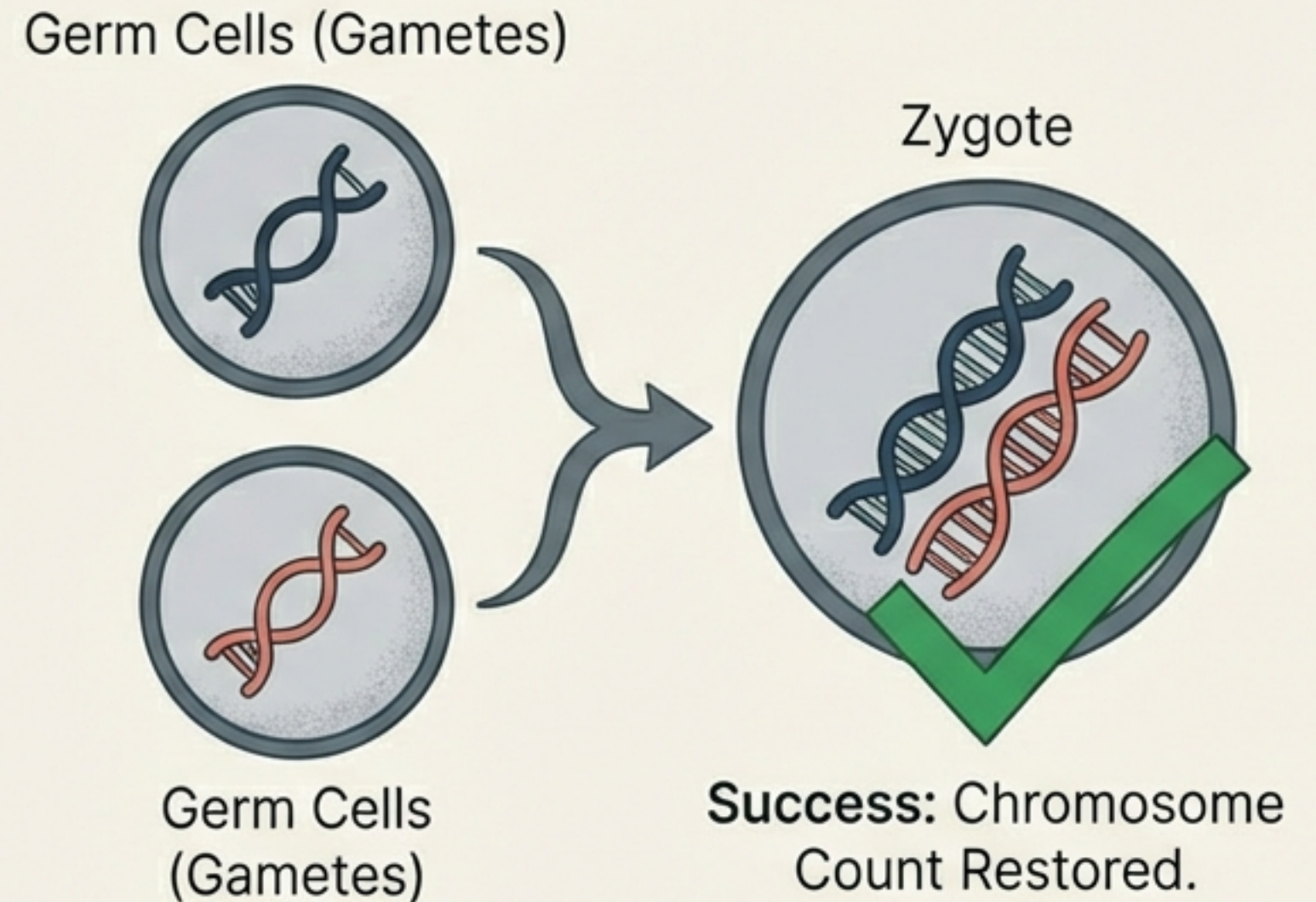
Strategy B: The Sexual Remix

Logic of sexual reproduction is the same cyberspace and removers that are fused to low mprepare a chronoft from the l'nollizing reproduction.

The Problem

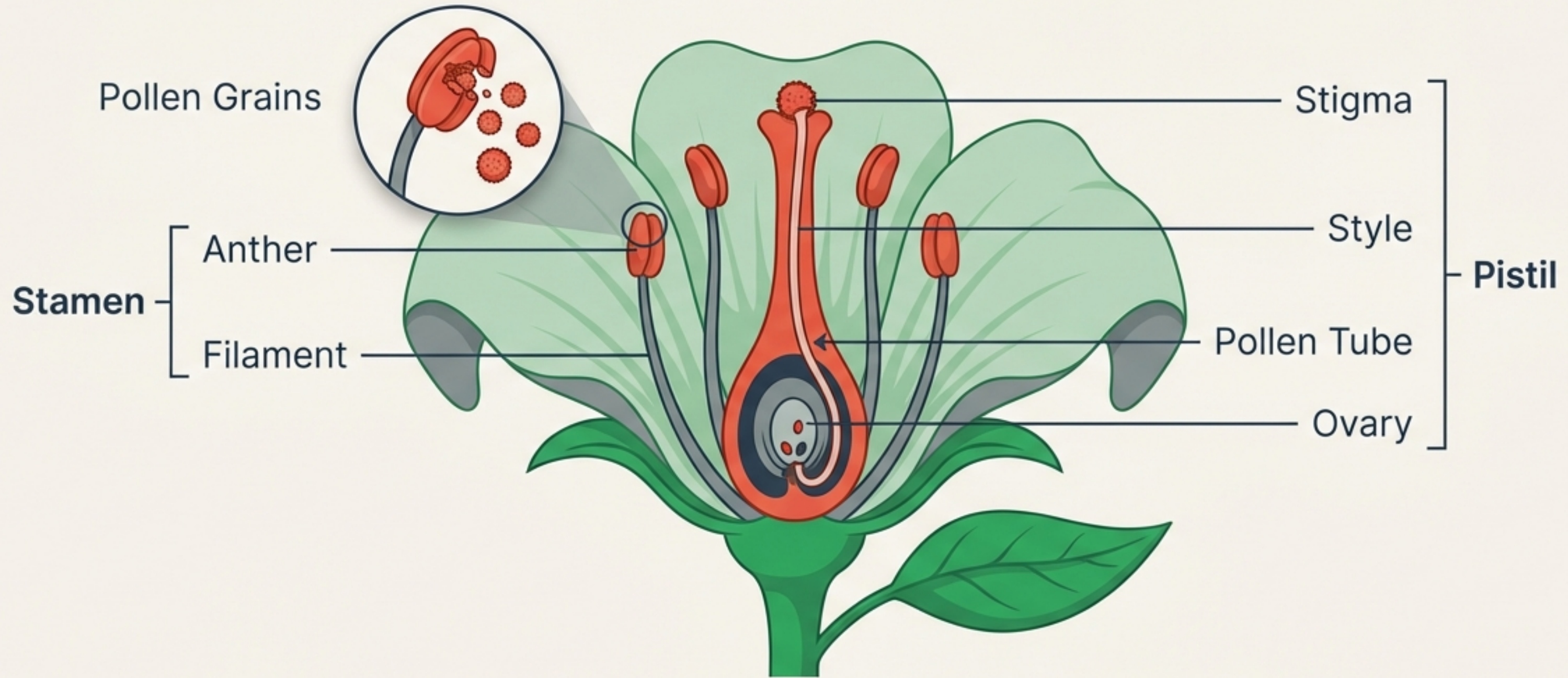


The Solution - Meiosis



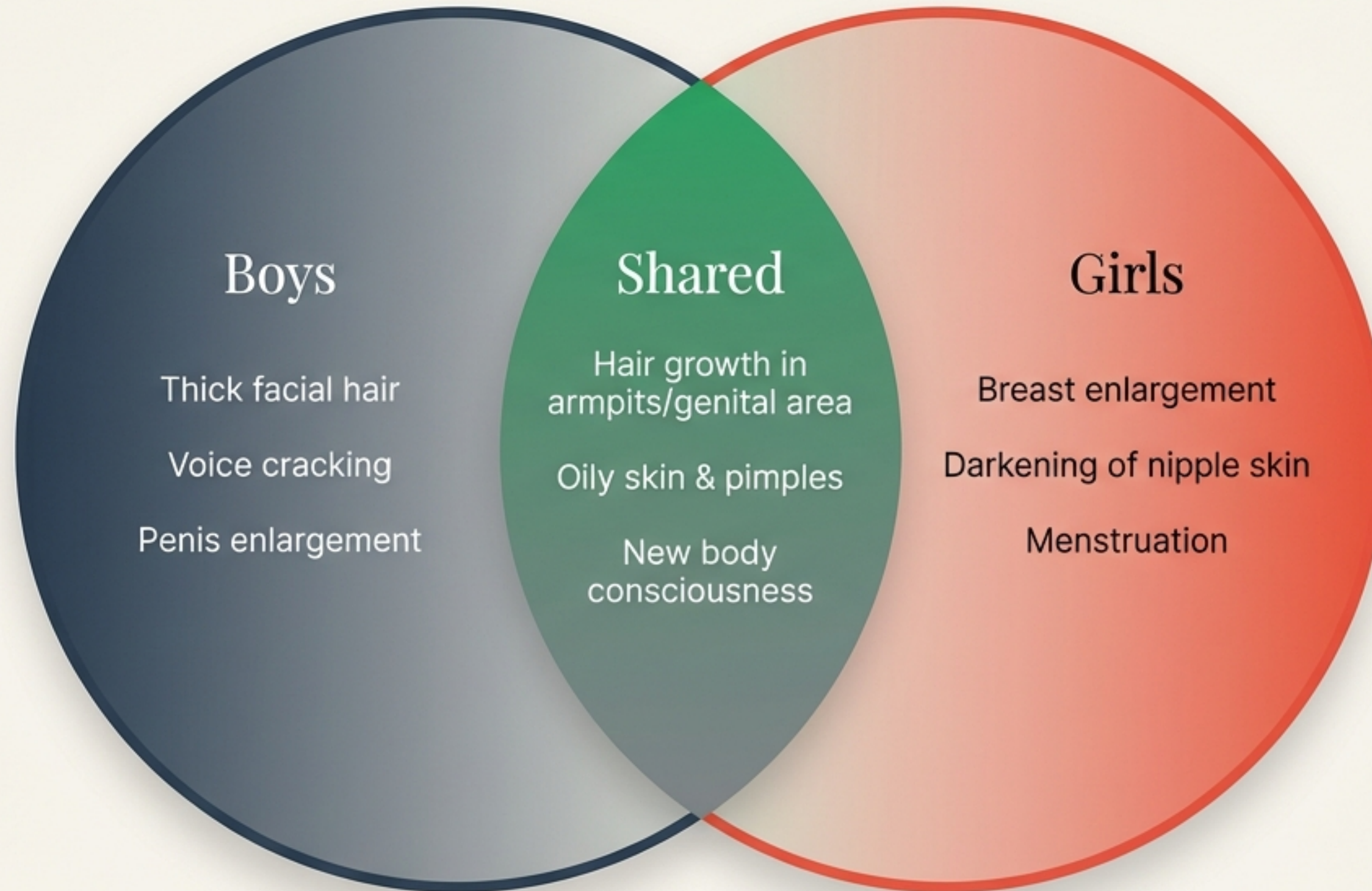
Specialization: One gamete is large and nutritive (Female/Egg), the other is small and motile (Male/Sperm).

Sexual Reproduction in Flowering Plants



Pollination (Transfer) → **Fertilization** (Fusion via Pollen Tube) → **Seed Formation** (Embryo)

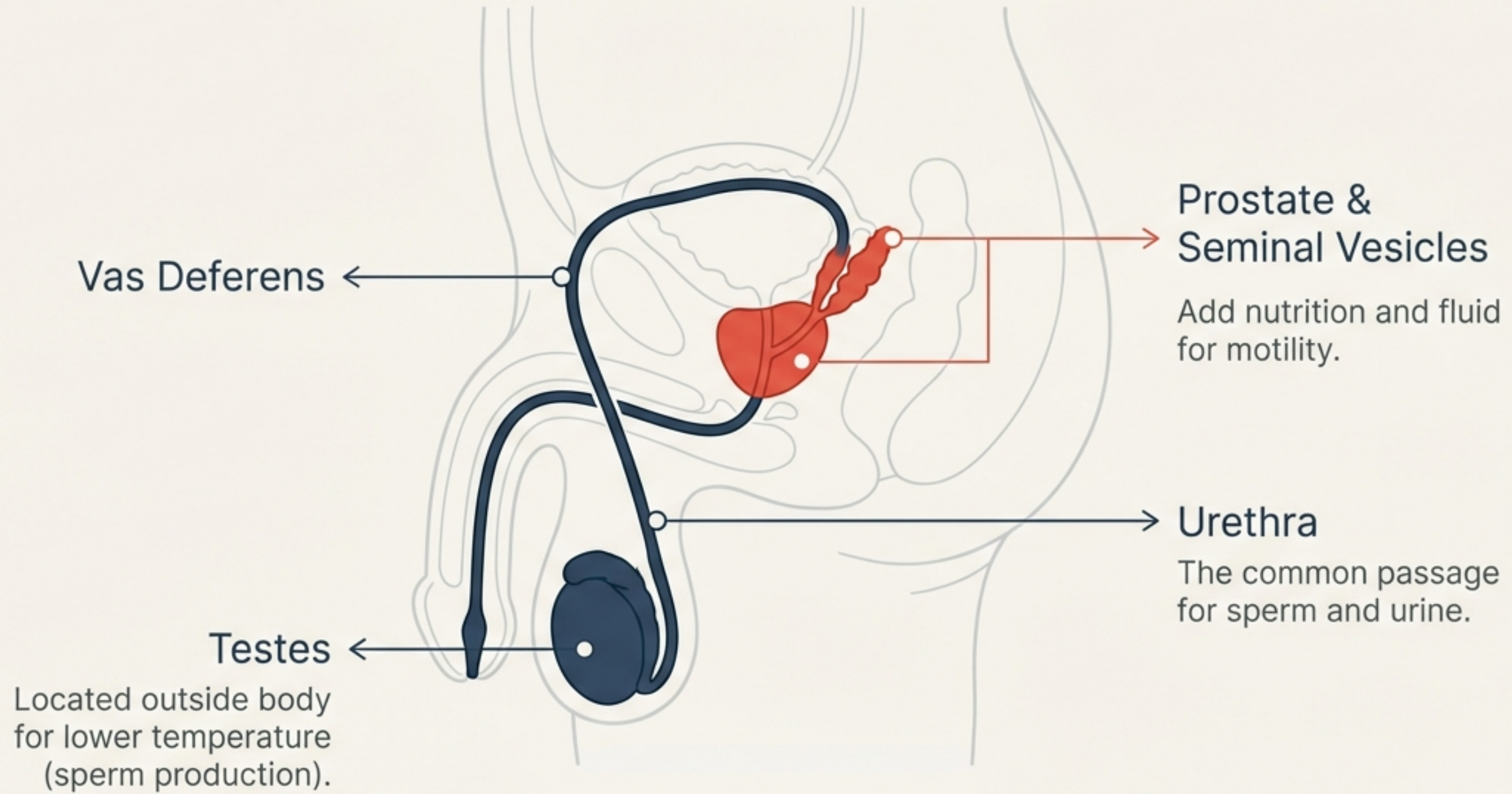
Puberty: The Threshold of Maturity



Puberty marks the shift in energy allocation from general body growth to the maturation of reproductive tissues.

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The Male System: Production and Delivery



The Female System: Reception and Nurture

Ovaries

Note: Produce eggs and hormones

Oviduct (Fallopian Tube)

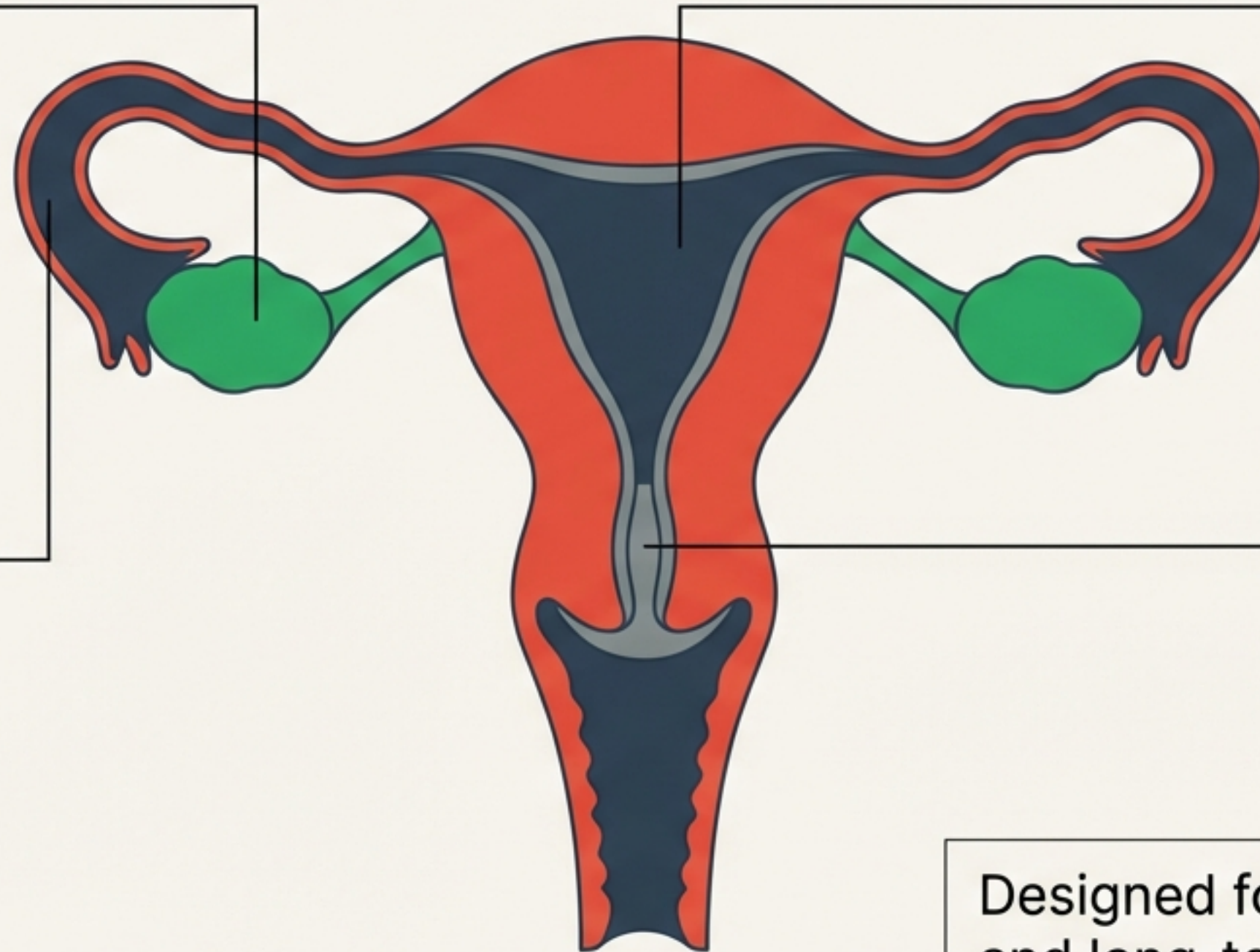
Note: Site of Fertilization

Uterus

Note: Elastic bag-like structure for embryo development

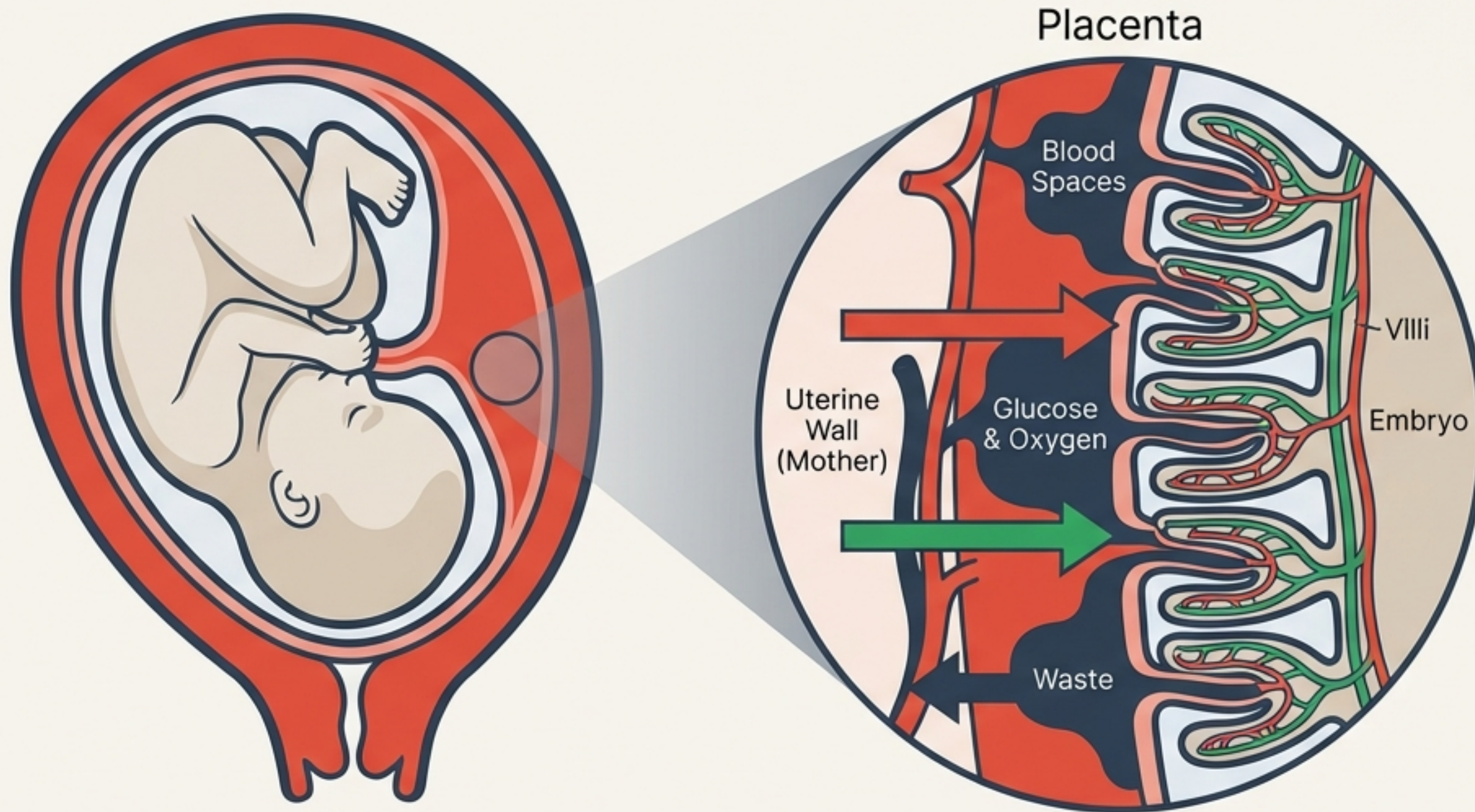
Cervix & Vagina

Note: The entry pathway



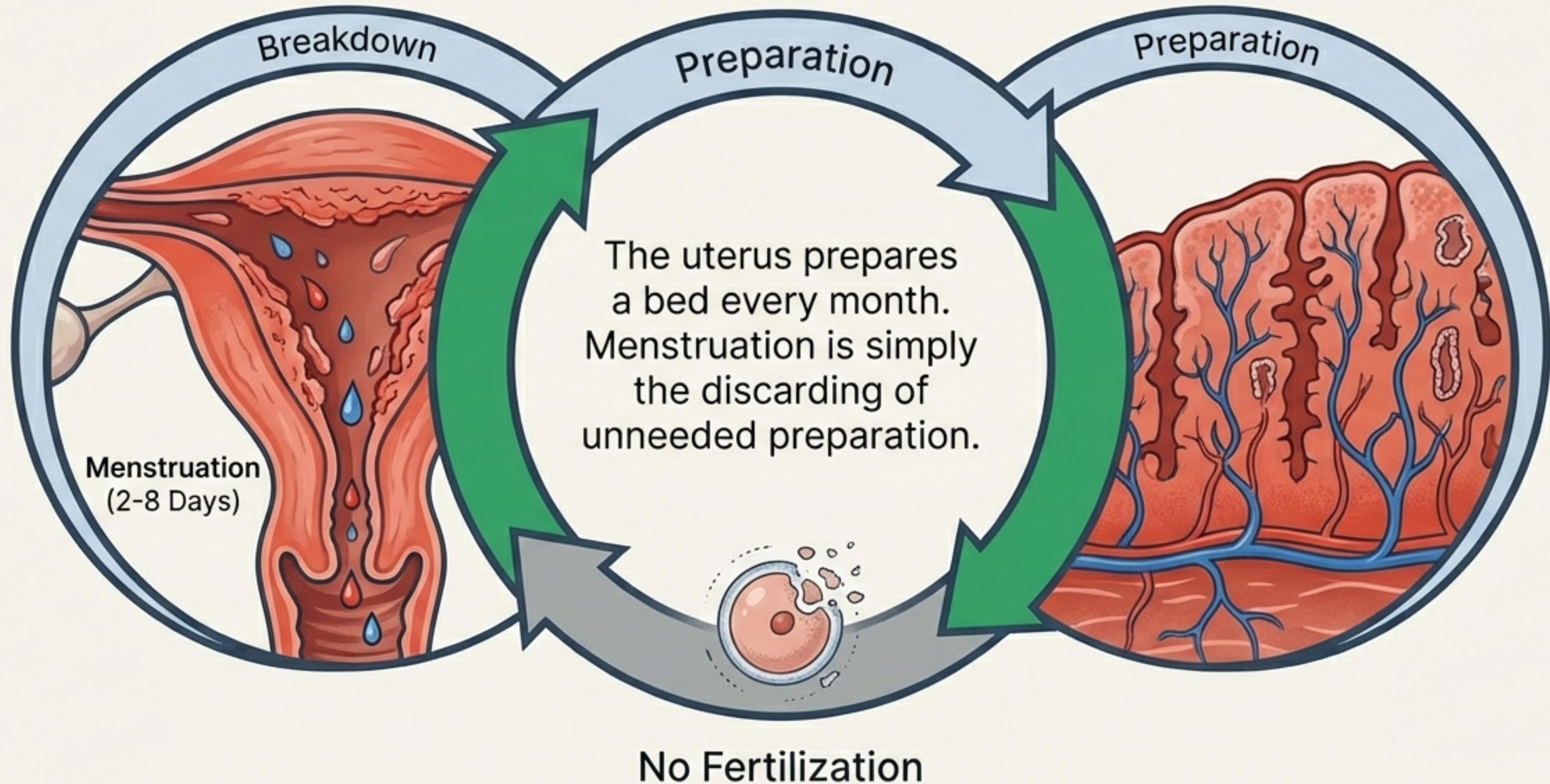
Designed for internal fertilization and long-term gestation.

The Mechanics of Gestation



Zygote → Embryo (Implantation) → Fetus (9 Months) → Birth (Muscular Contractions)

The Cycle of Preparation: Menstruation



Reproductive Health and Agency

1

Health



STDs
(Bacterial & Viral)
Prevention & Management

- e.g., Chlamydia, Gonorrhea, HIV, HPV

2

Contraception



Mechanical
Barrier
(Condom)



Chemical
(Oral Pills)



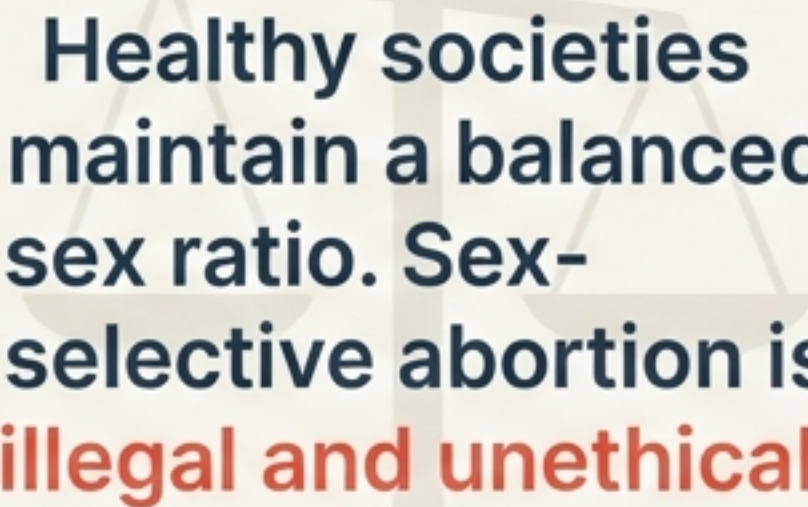
Intrauterine
Device
(Copper-
T/Loop)



Surgical
(Vasectomy/
Tubectomy)

3

Social Responsibility



Healthy societies
maintain a balanced
sex ratio. Sex-
selective abortion is
illegal and unethical.

Reproduction ensures continuity; Agency ensures quality of life