



# SYNGAMY

**FERTILIZATION**

**SYNONYMOUS**

**SYNGAMY**



# FERTILIZATION

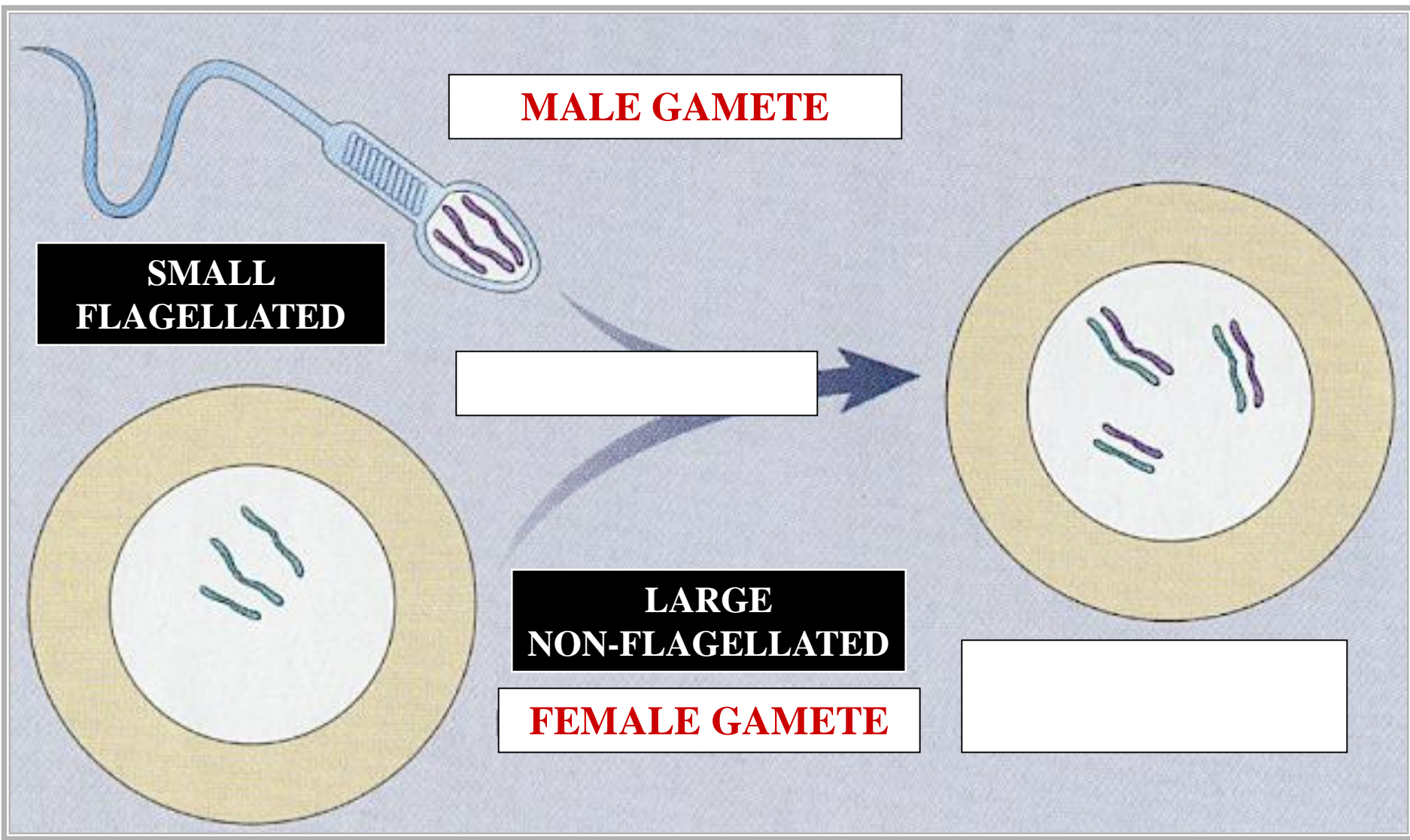
# SYNGAMY

# APPLIED



# FERTILIZATION

## SYNGAMY



**MALE GAMETE**

**SMALL  
FLAGELLATED**

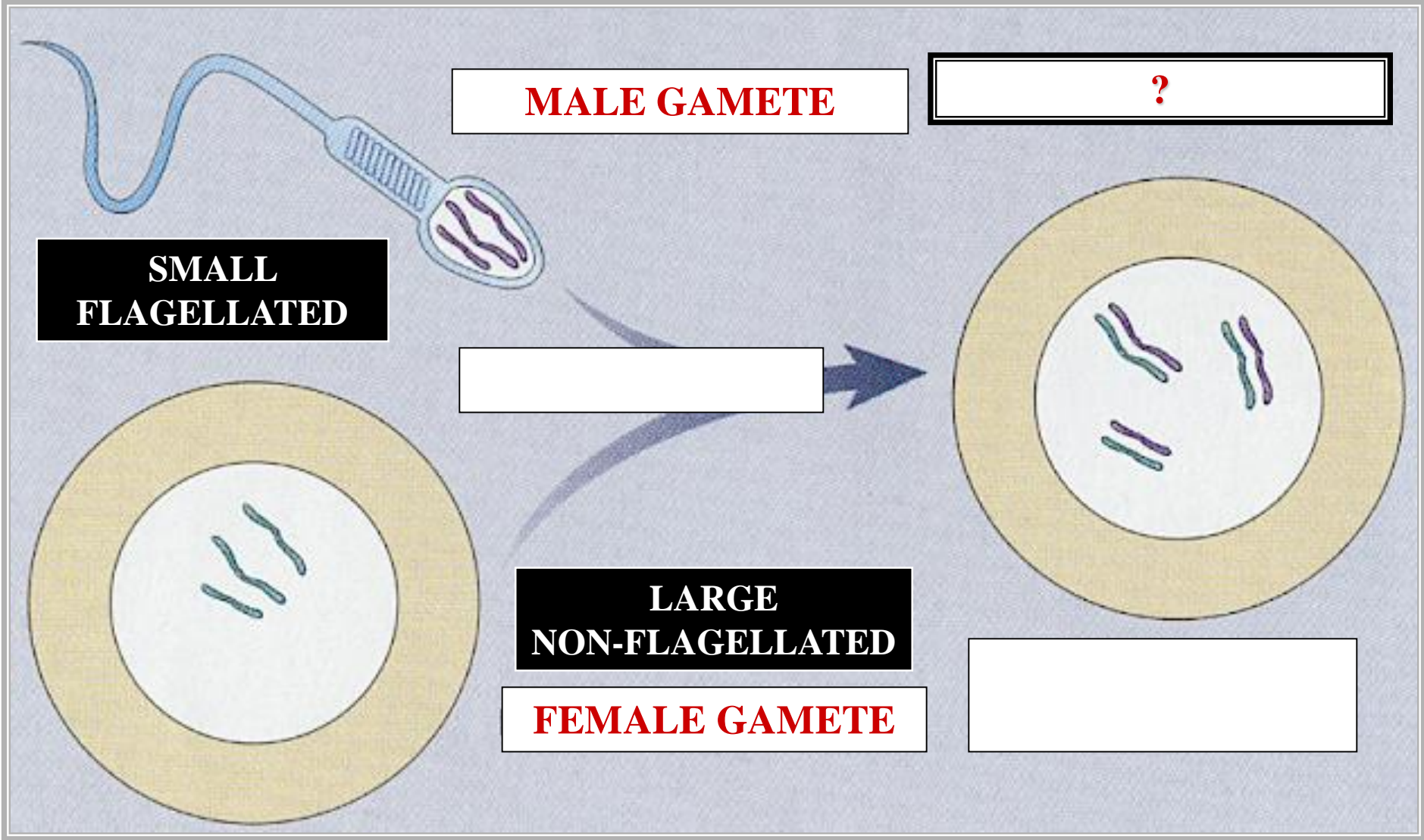
**LARGE  
NON-FLAGELLATED**

**FEMALE GAMETE**

**ZYGOTE**

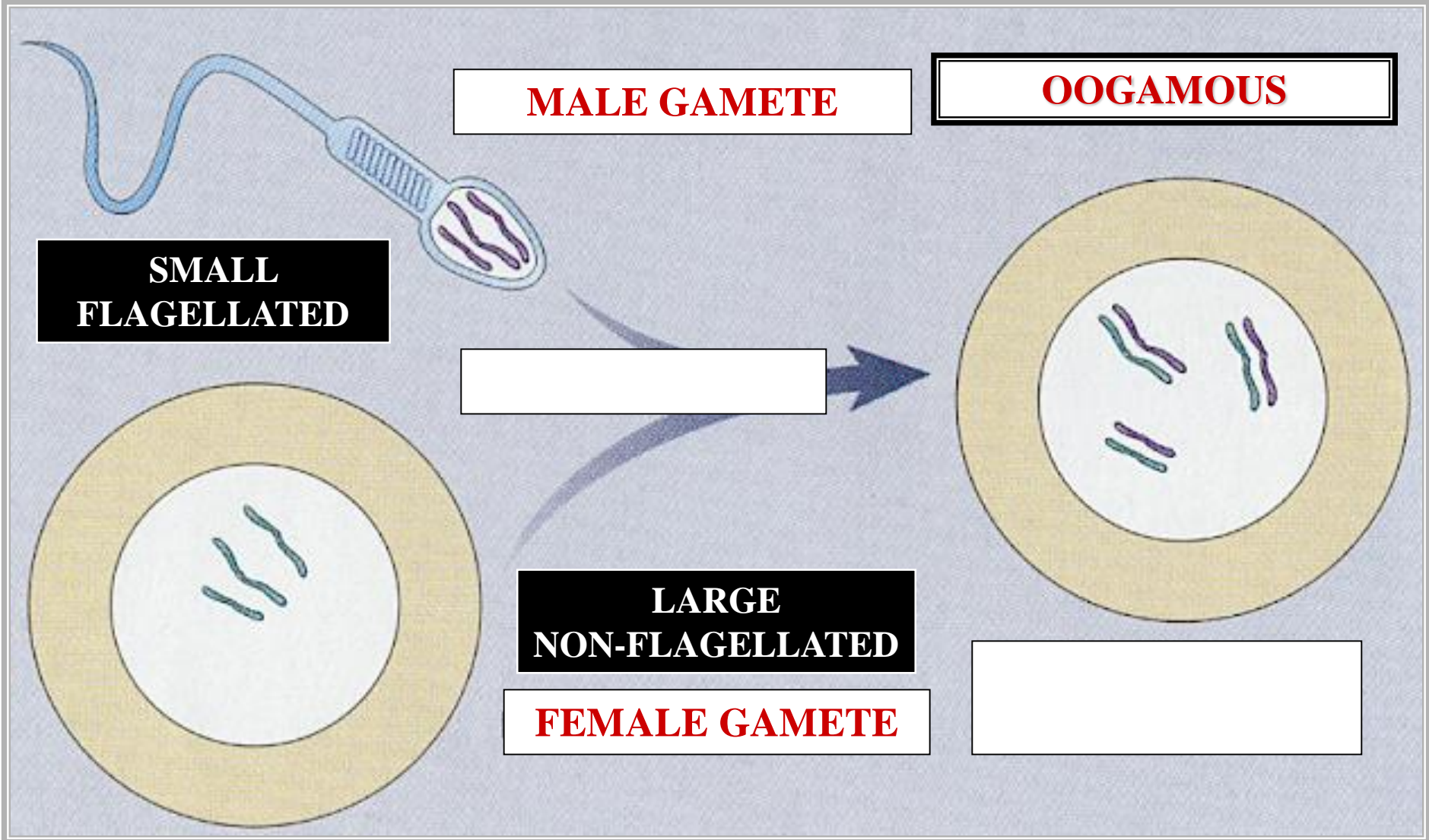
# FERTILIZATION

## SYNGAMY

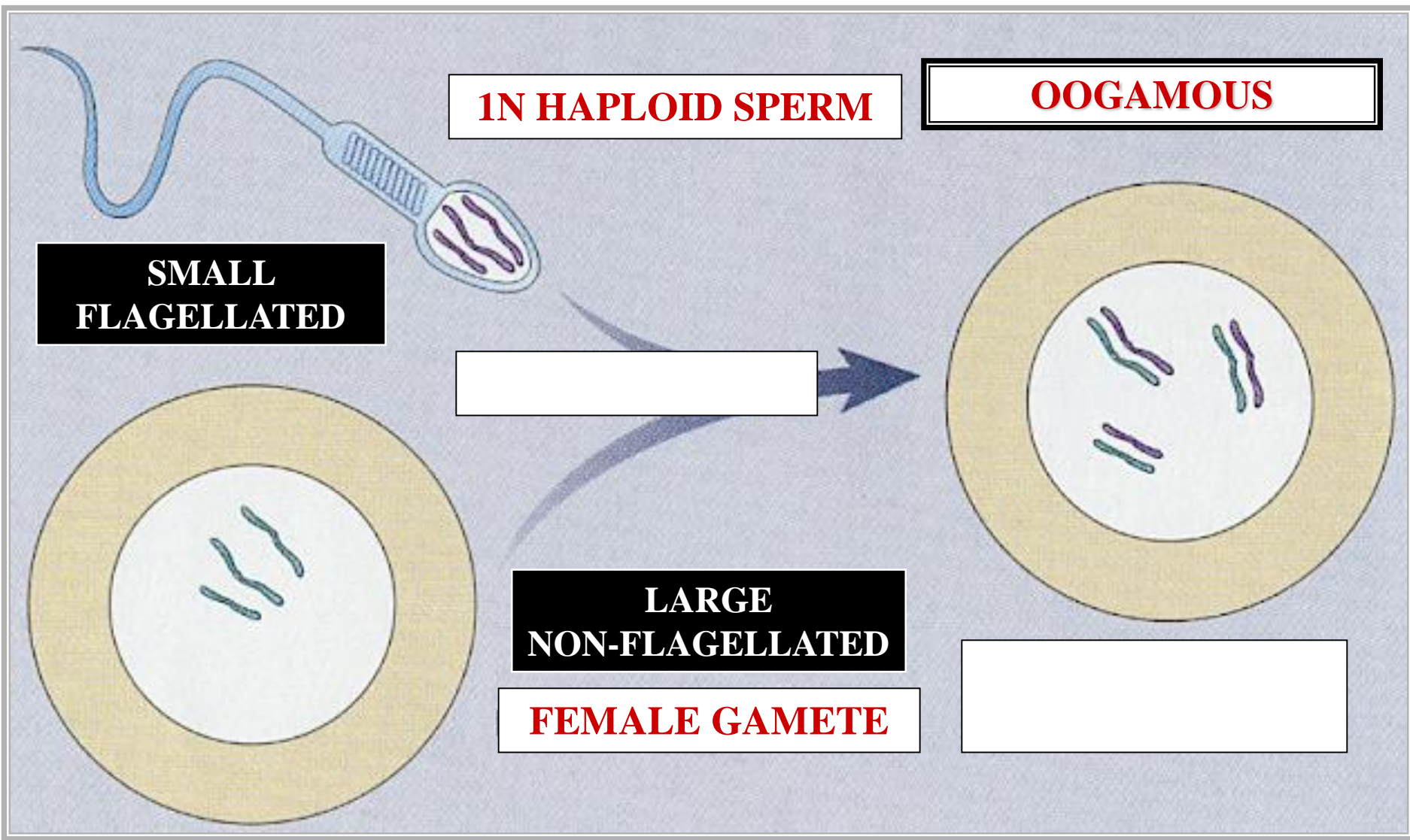


# FERTILIZATION

## SYNGAMY

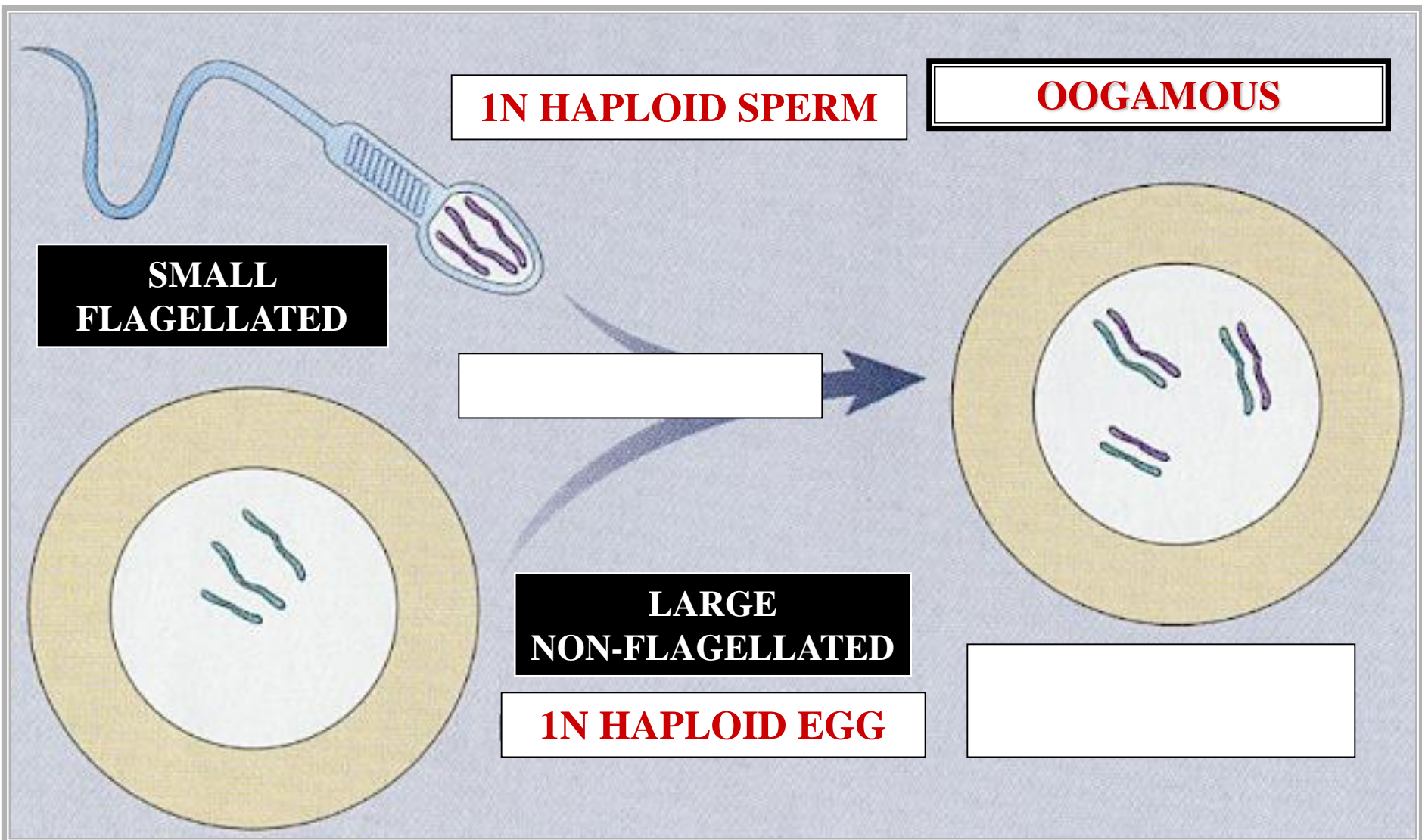


# FERTILIZATION SYNGAMY



# FERTILIZATION

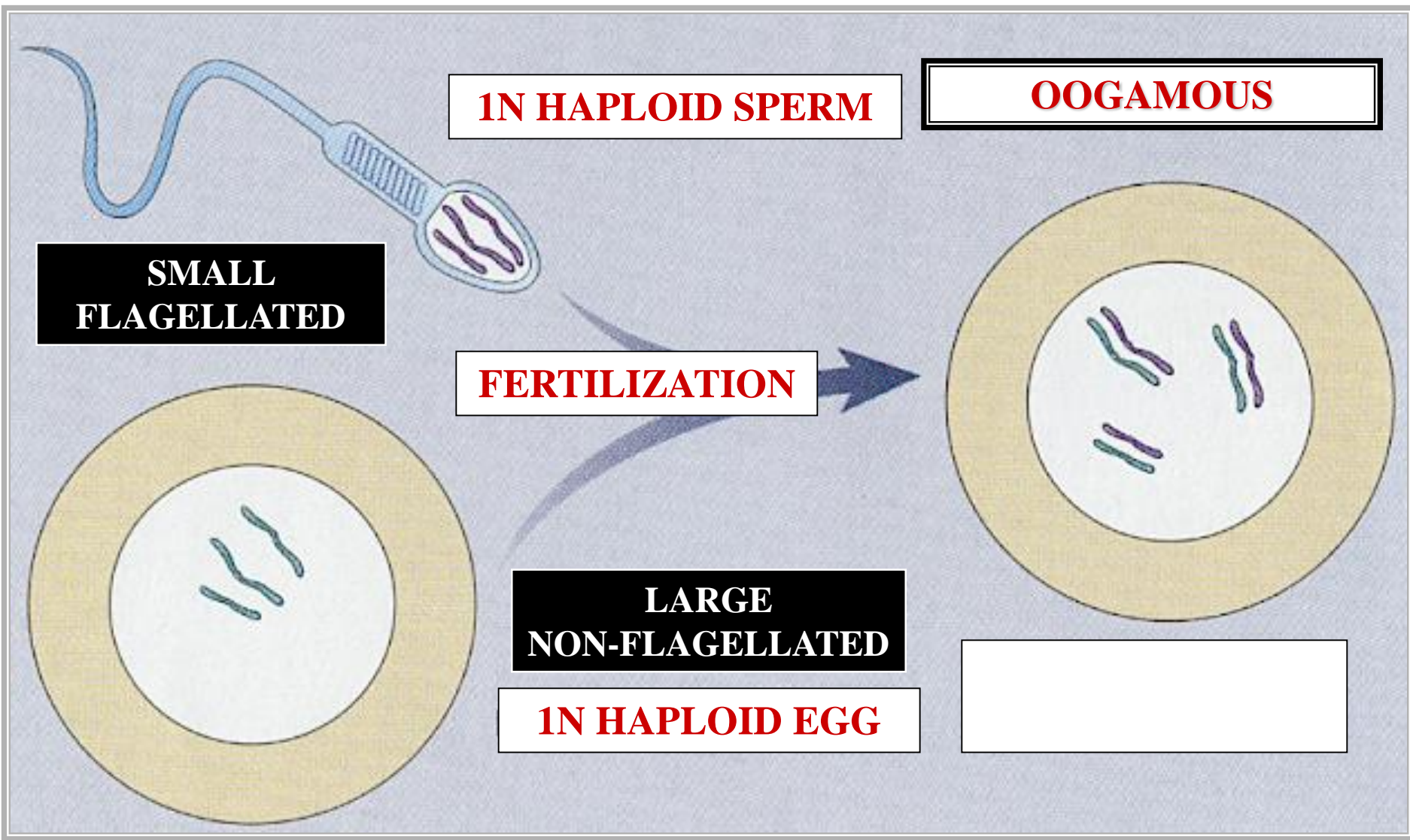
## SYNGAMY





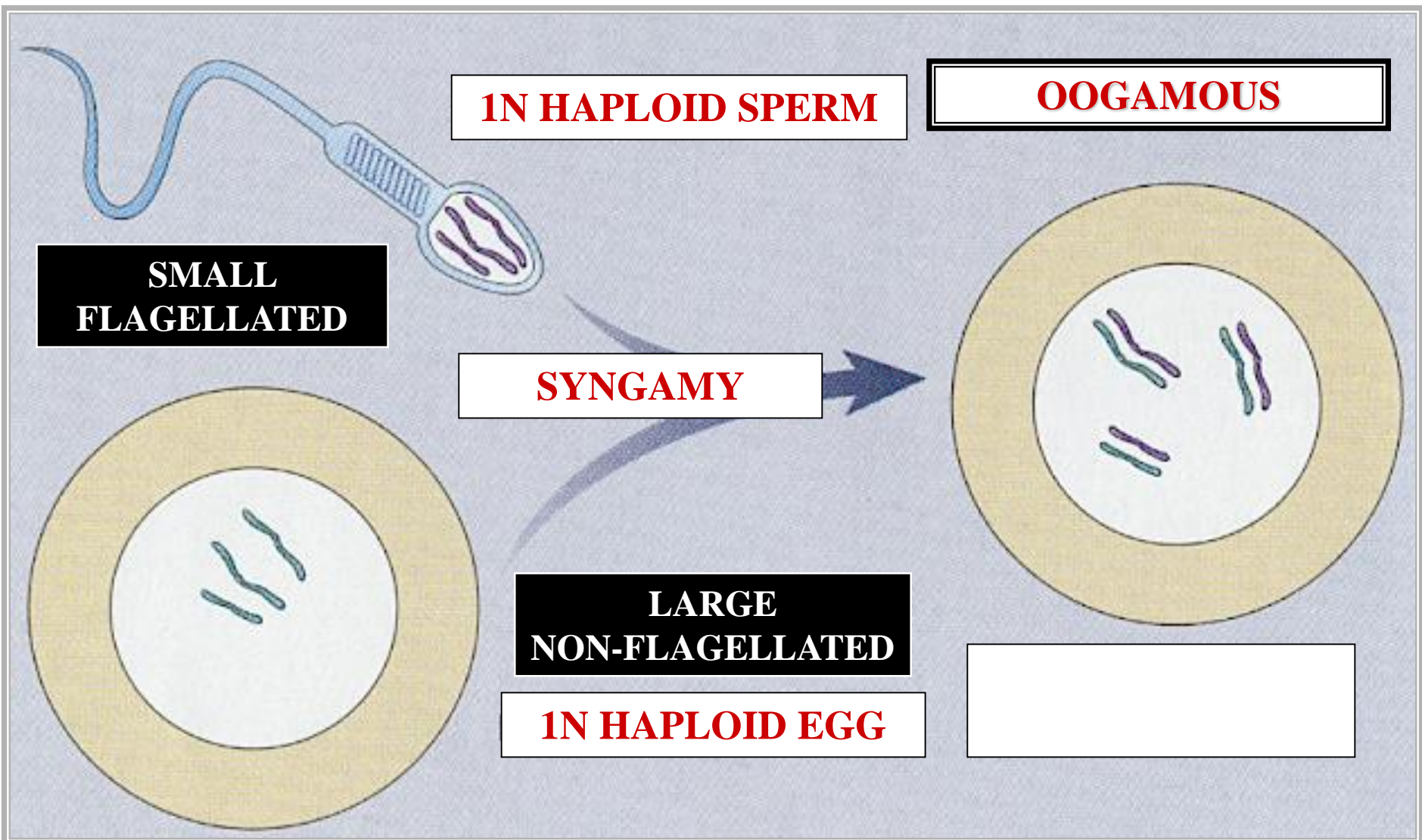
# FERTILIZATION

## SYNGAMY



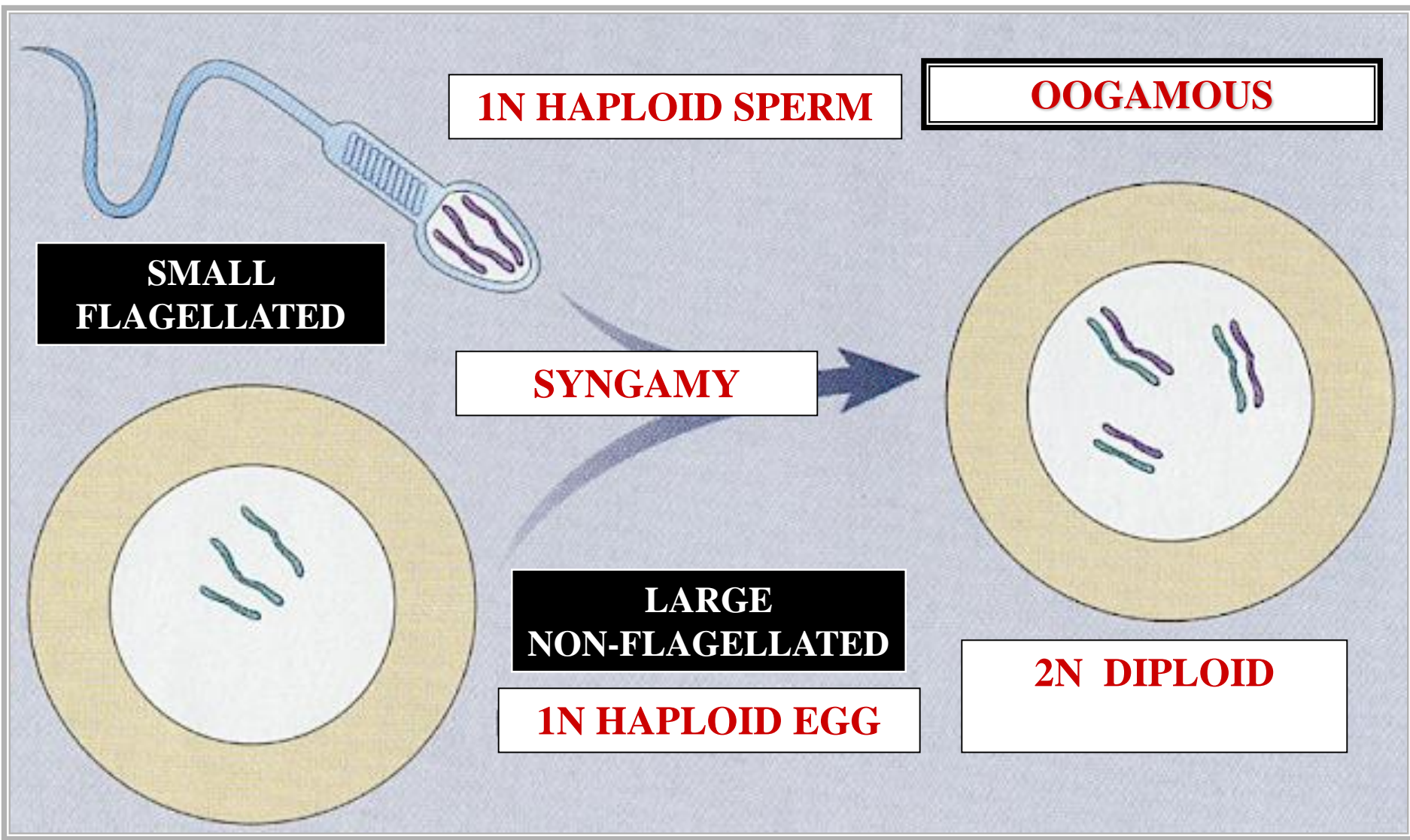
# FERTILIZATION

## SYNGAMY



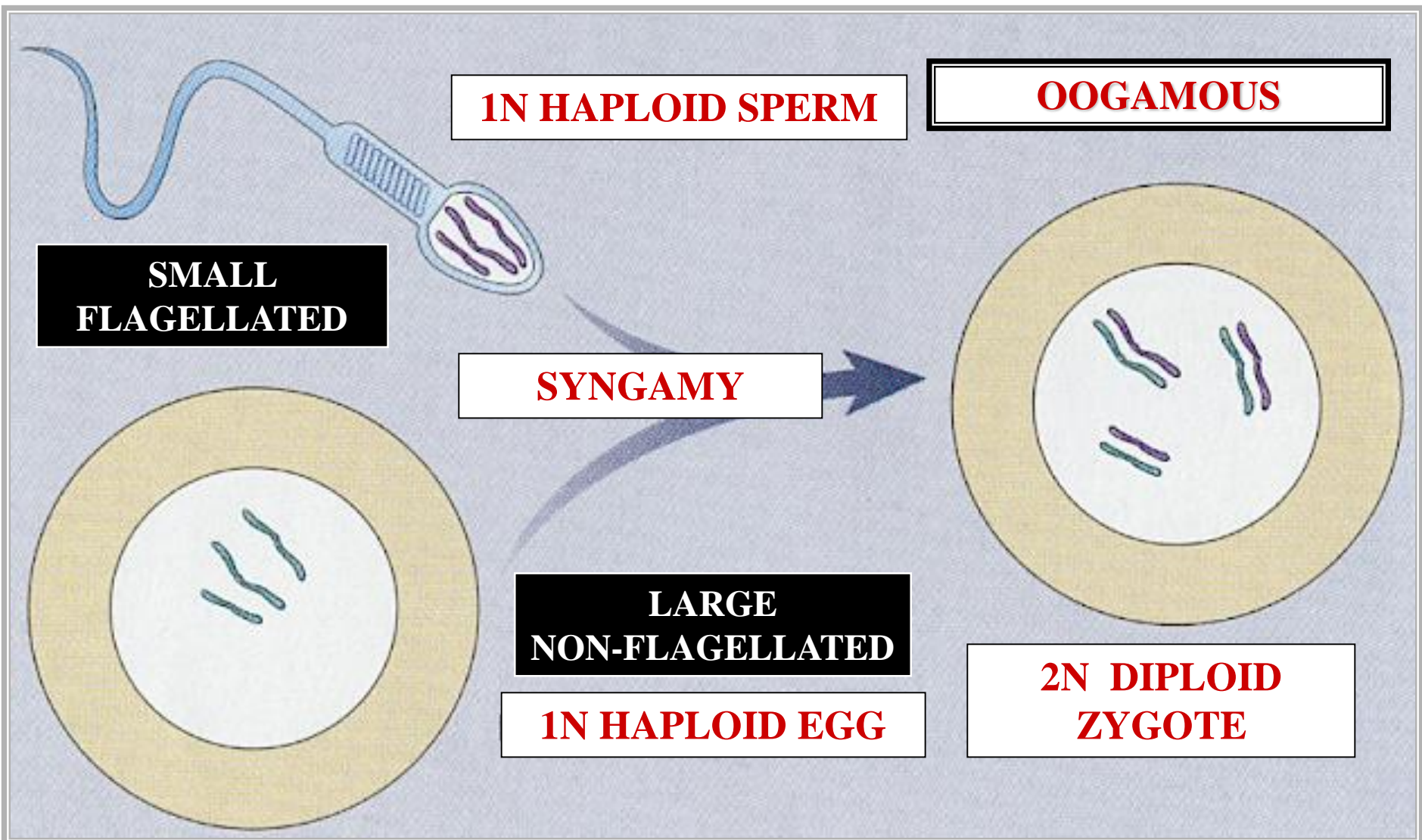
# FERTILIZATION

## SYNGAMY



# FERTILIZATION

## SYNGAMY



**1N HAPLOID SPERM**

**OOGAMOUS**

**SMALL  
FLAGELLATED**

**SYNGAMY**

**LARGE  
NON-FLAGELLATED**

**1N HAPLOID EGG**

**2N DIPLOID  
ZYGOTE**



# VASCULAR PLANT EVOLUTION



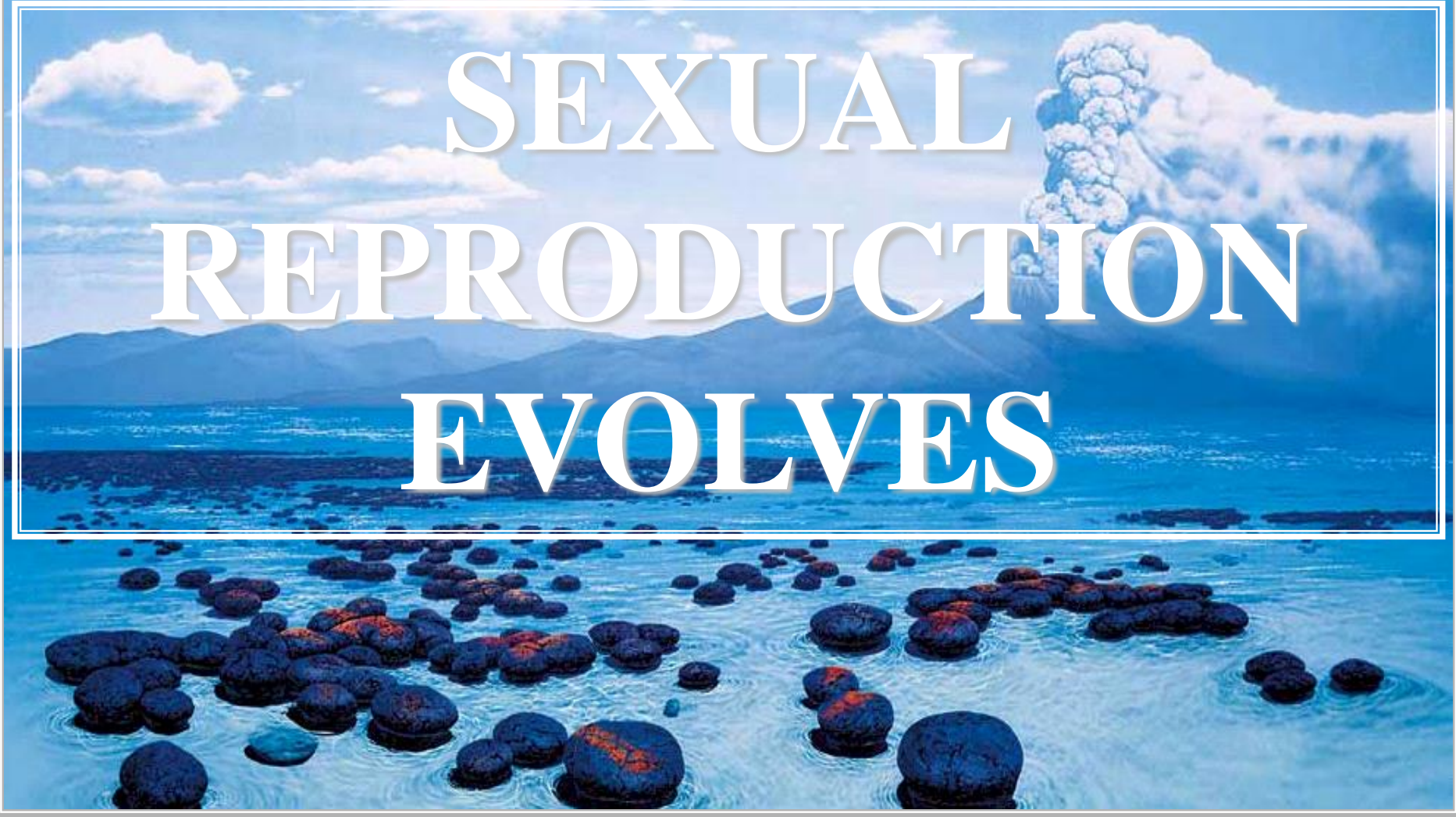
**~570**

**MILLION YEARS**

~570 MILLION YEARS AGO



# SEXUAL REPRODUCTION EVOLVES





# **EUKARYOTE SEXUAL LIFE CYCLES**



# SEXUAL LIFE CYCLE TYPES

# **SEXUAL LIFE CYCLE TYPES**

**GAMETIC LIFE CYCLE**

**SEXUAL LIFE CYCLE  
TYPES**

# **SEXUAL LIFE CYCLE TYPES**

**GAMETIC LIFE CYCLE  
ZYGOTIC LIFE CYCLE**

**SEXUAL LIFE CYCLE  
TYPES**

# **SEXUAL LIFE CYCLE TYPES**



**GAMETIC LIFE CYCLE**  
**ZYGOTIC LIFE CYCLE**  
**SPORIC LIFE CYCLE**

**SEXUAL LIFE CYCLE  
TYPES**

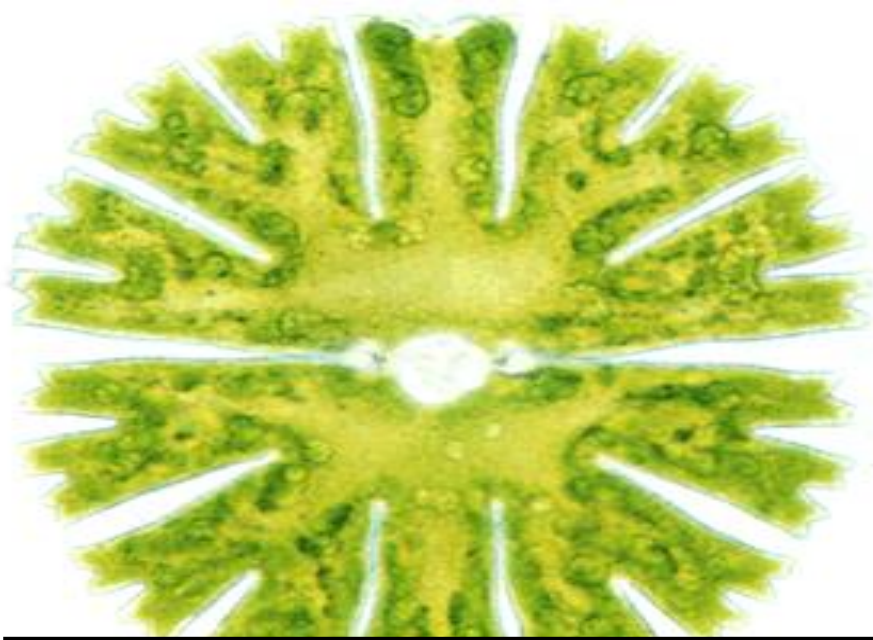


# GAMETIC LIFE CYCLE



# ANIMAL LIFE CYCLE





# GREEN ALGAE



*ACETABULARIA*  
GREEN ALGA  
GAMETIC LIFE CYCLE





# *ACETABULARIA*

## GAMETIC LIFE CYCLE



# *ACETABULARIA*

## GAMETIC LIFE CYCLE



# *ACETABULARIA*

## GAMETIC LIFE CYCLE



# *ACETABULARIA*

## GAMETIC LIFE CYCLE



GAMETANGIA

# *ACETABULARIA*

## GAMETIC LIFE CYCLE



GAMETOCYTES

# *ACETABULARIA*

## GAMETIC LIFE CYCLE



GAMETOCYTES 2N

# *ACETABULARIA*

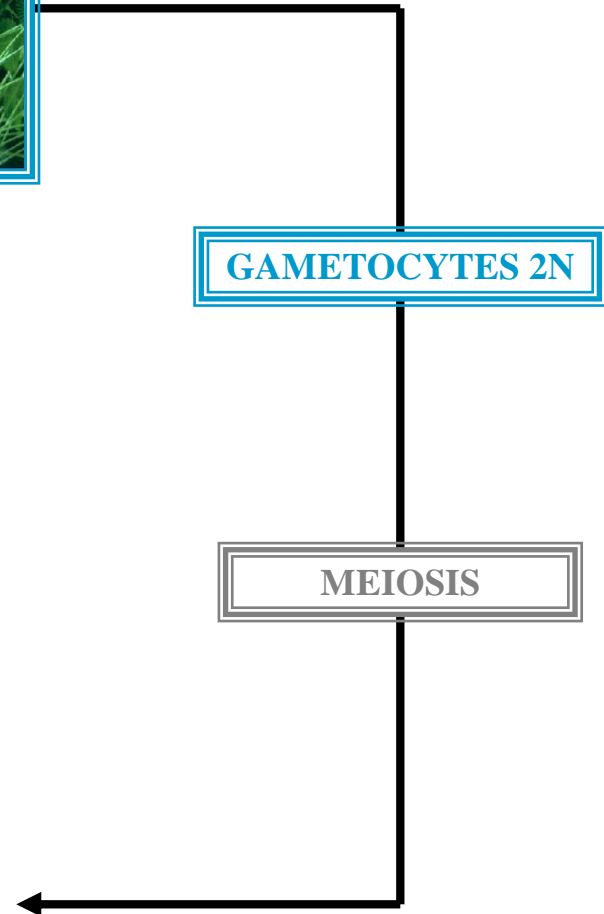
## GAMETIC LIFE CYCLE



GERM CELLS

# *ACETABULARIA*

## GAMETIC LIFE CYCLE





# *ACETABULARIA*

## GAMETIC LIFE CYCLE



GAMETOCYTES 2N

MEIOSIS

GAMETES

# *ACETABULARIA*

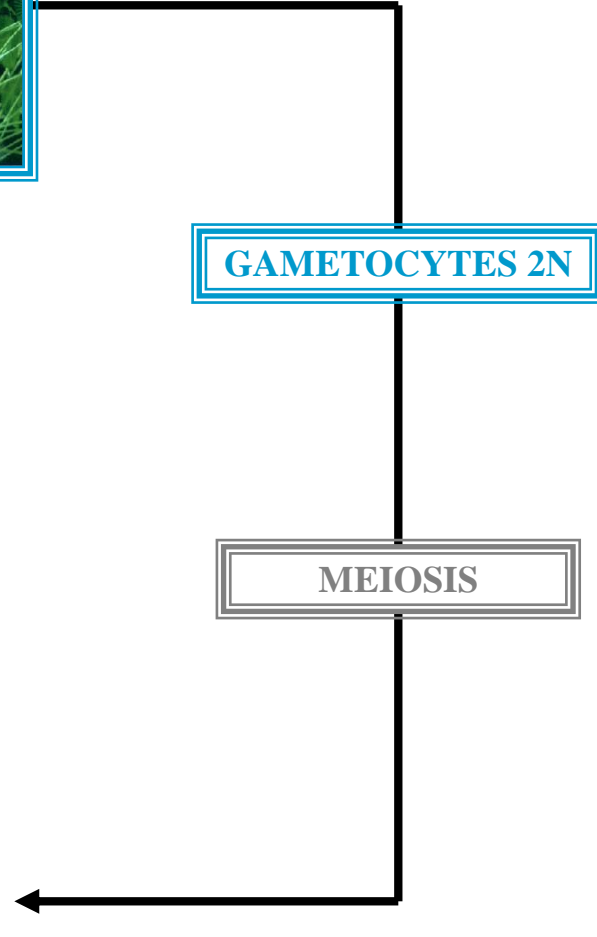
## GAMETIC LIFE CYCLE



GAMETOCYTES 2N

MEIOSIS

GAMETES 1N



# *ACETABULARIA*

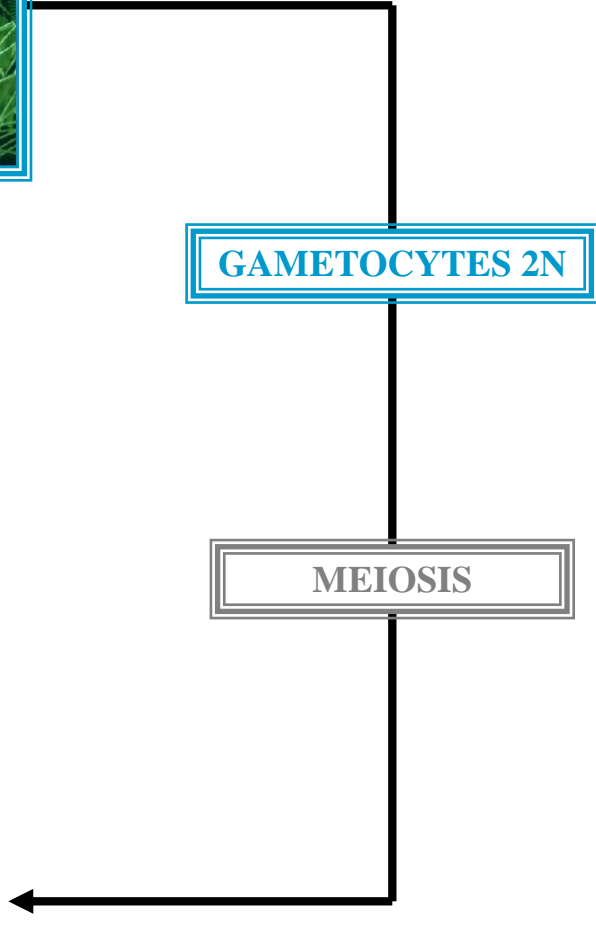
## GAMETIC LIFE CYCLE



GAMETOCYTES 2N

MEIOSIS

1N PHASE



# *ACETABULARIA*

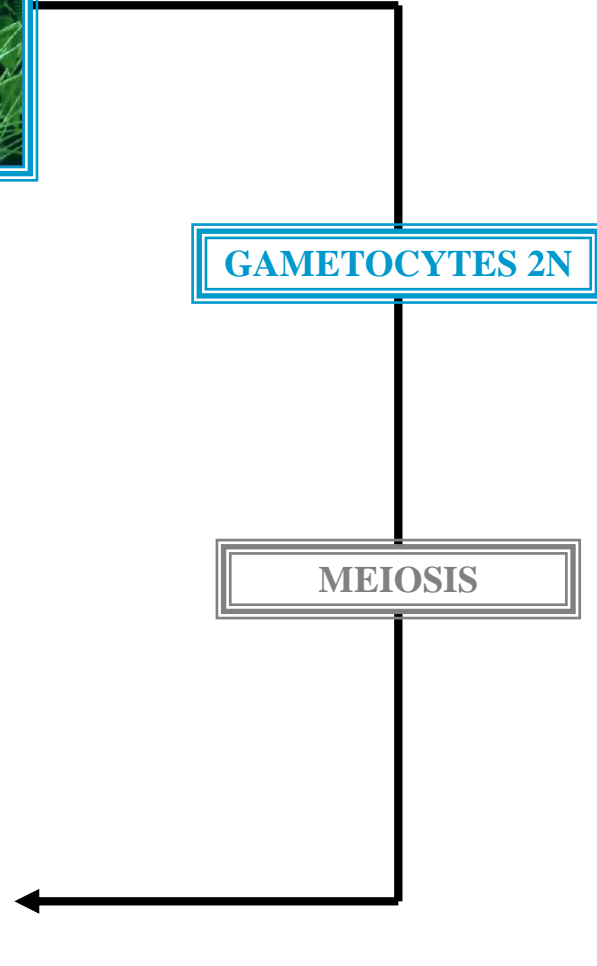
## GAMETIC LIFE CYCLE



GAMETOCYTES 2N

MEIOSIS

1N PHASE  
UNICELLULAR



# *ACETABULARIA*

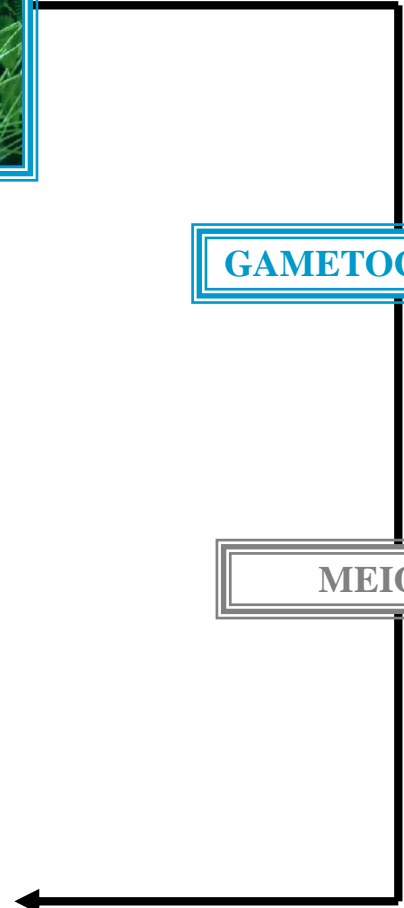
## GAMETIC LIFE CYCLE



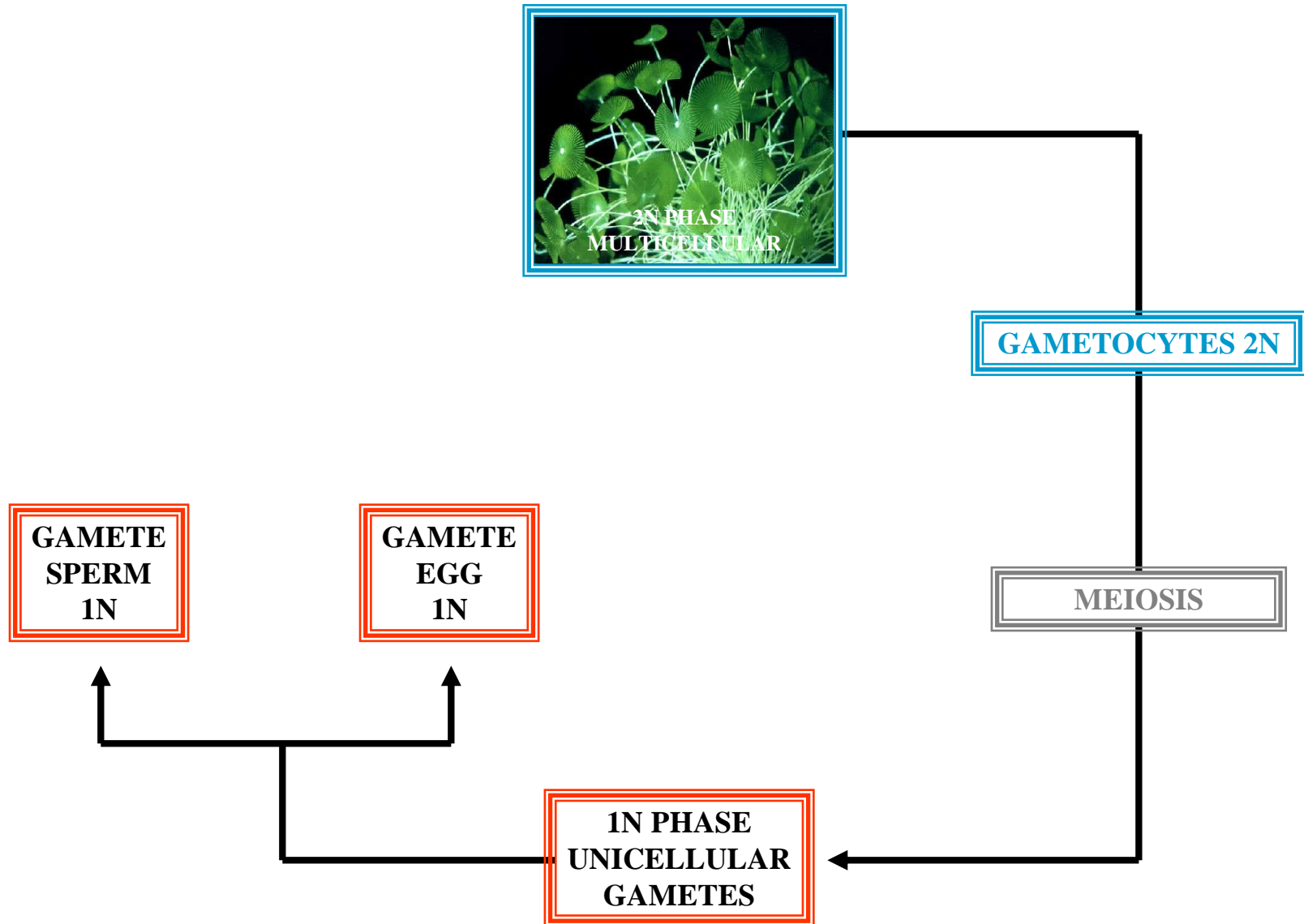
GAMETOCYTES 2N

MEIOSIS

1N PHASE  
UNICELLULAR  
GAMETES

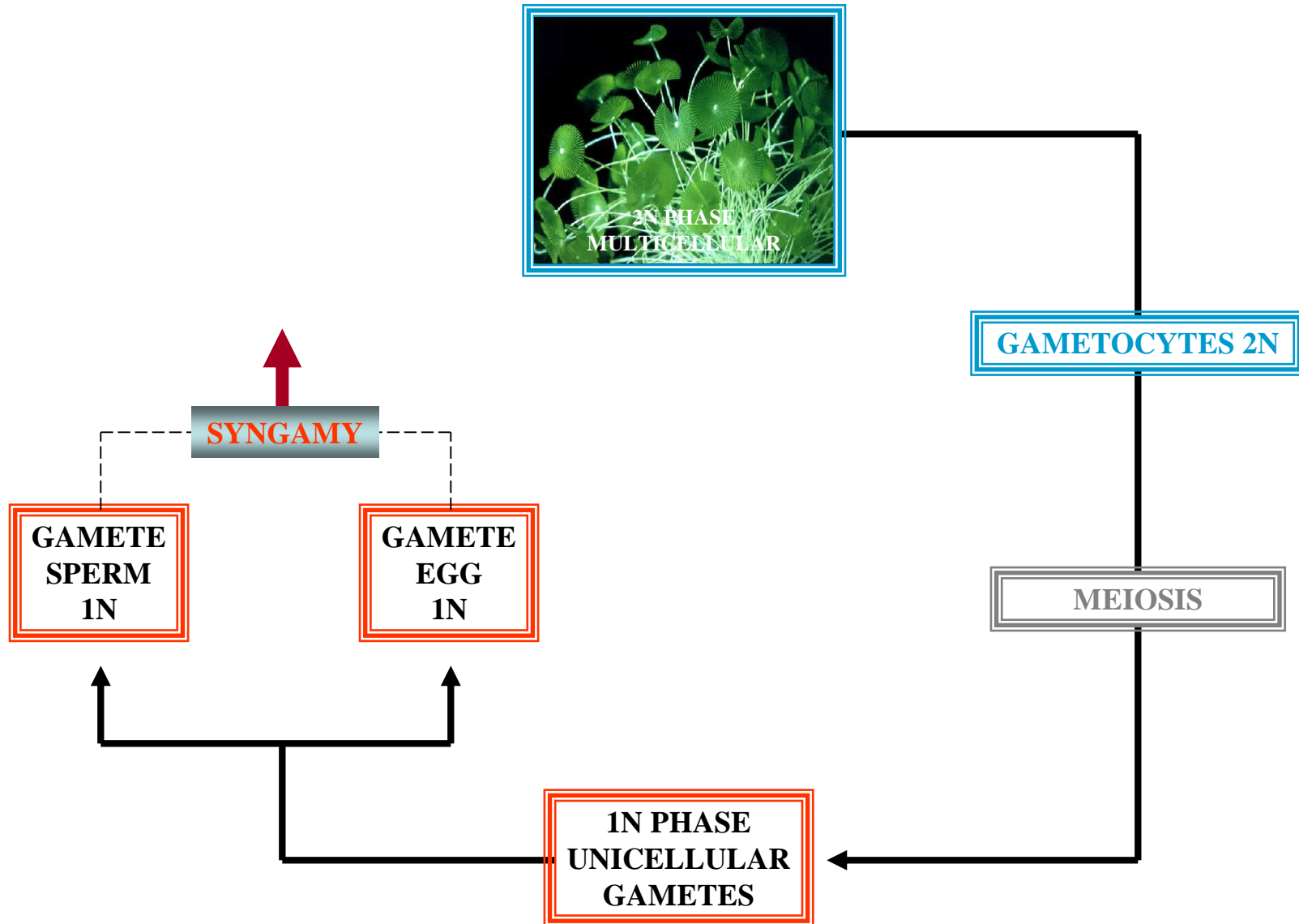


# *ACETABULARIA* GAMETIC LIFE CYCLE



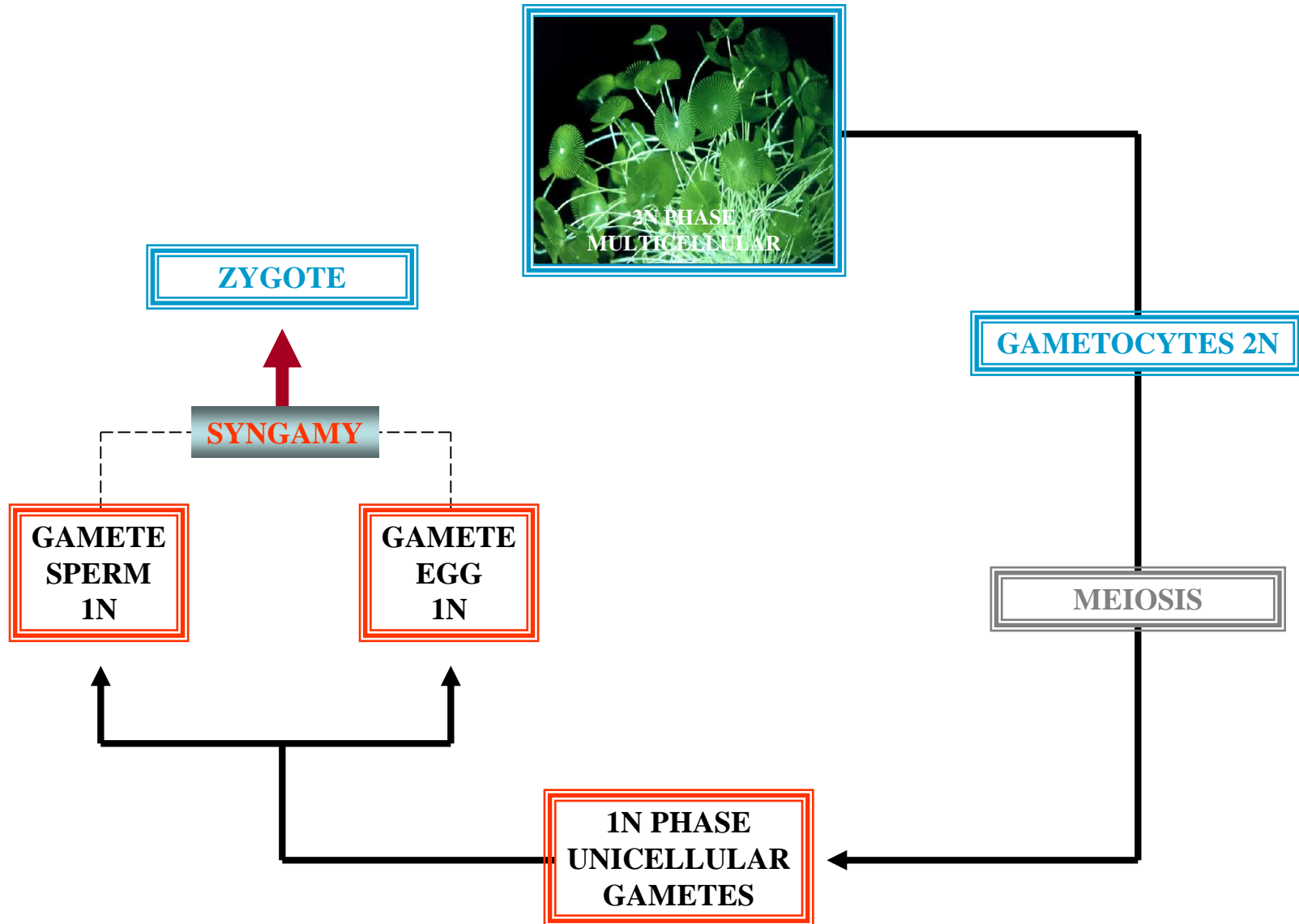
# ACETABULARIA

## GAMETIC LIFE CYCLE



# ACETABULARIA

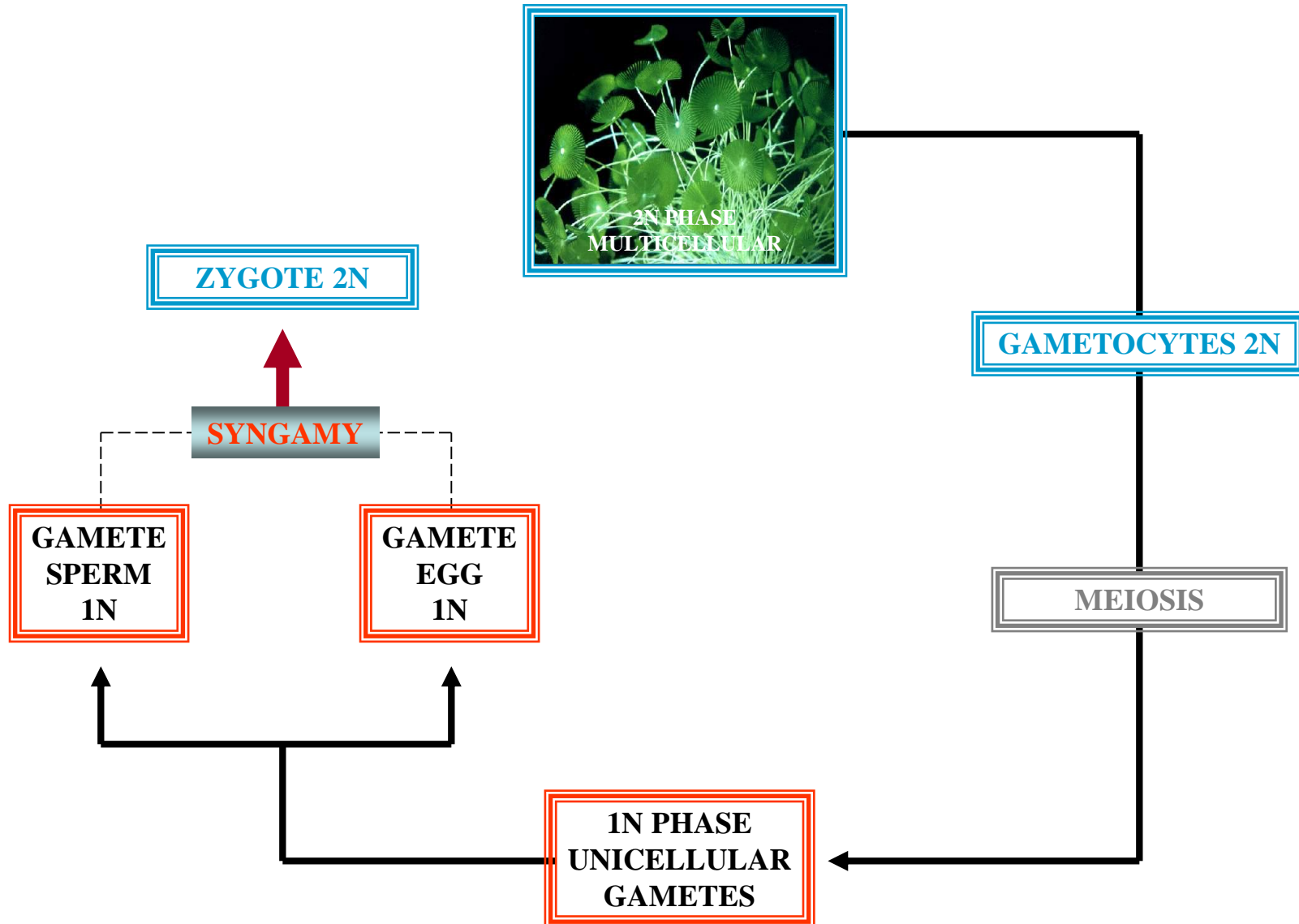
## GAMETIC LIFE CYCLE





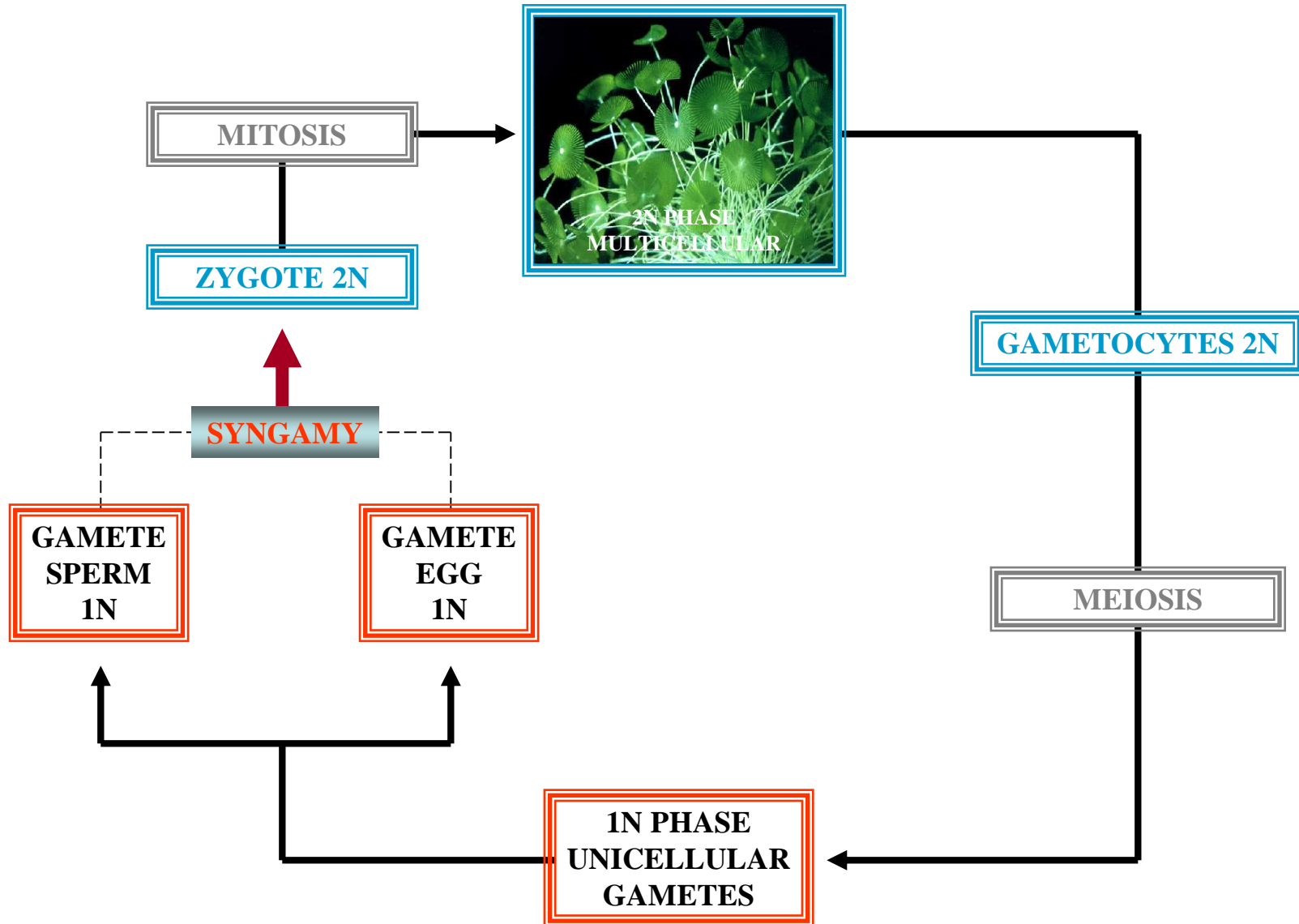
# ACETABULARIA

## GAMETIC LIFE CYCLE



# ACETABULARIA

## GAMETIC LIFE CYCLE



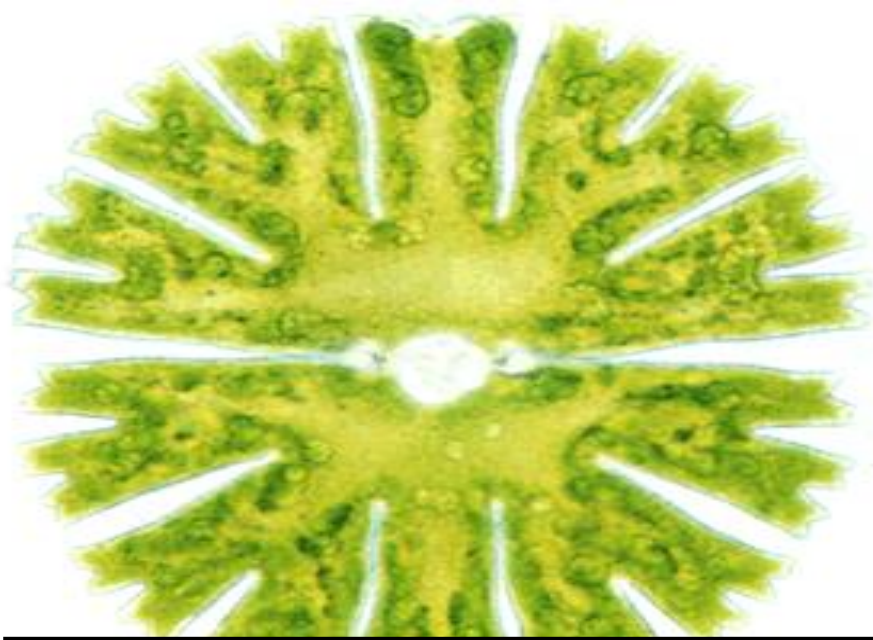


# ZYGOTIC LIFE CYCLE



# FUNGUS LIFE CYCLE





# GREEN ALGAE





*CHARA*  
GREEN ALGA  
ZYGOTIC LIFE CYCLE



# *CHARA* ZYGOTIC LIFE CYCLE



# *CHARA* ZYGOTIC LIFE CYCLE





# *CHARA* ZYGOTIC LIFE CYCLE



IN PHASE  
MULTICELLULAR

# *CHARA* ZYGOTIC LIFE CYCLE

**GAMETANGIA**



IN PHASE  
MULTICELLULAR

# *CHARA* ZYGOTIC LIFE CYCLE

**GAMETOCYTES**



IN PHASE  
MULTICELLULAR

# *CHARA* ZYGOTIC LIFE CYCLE

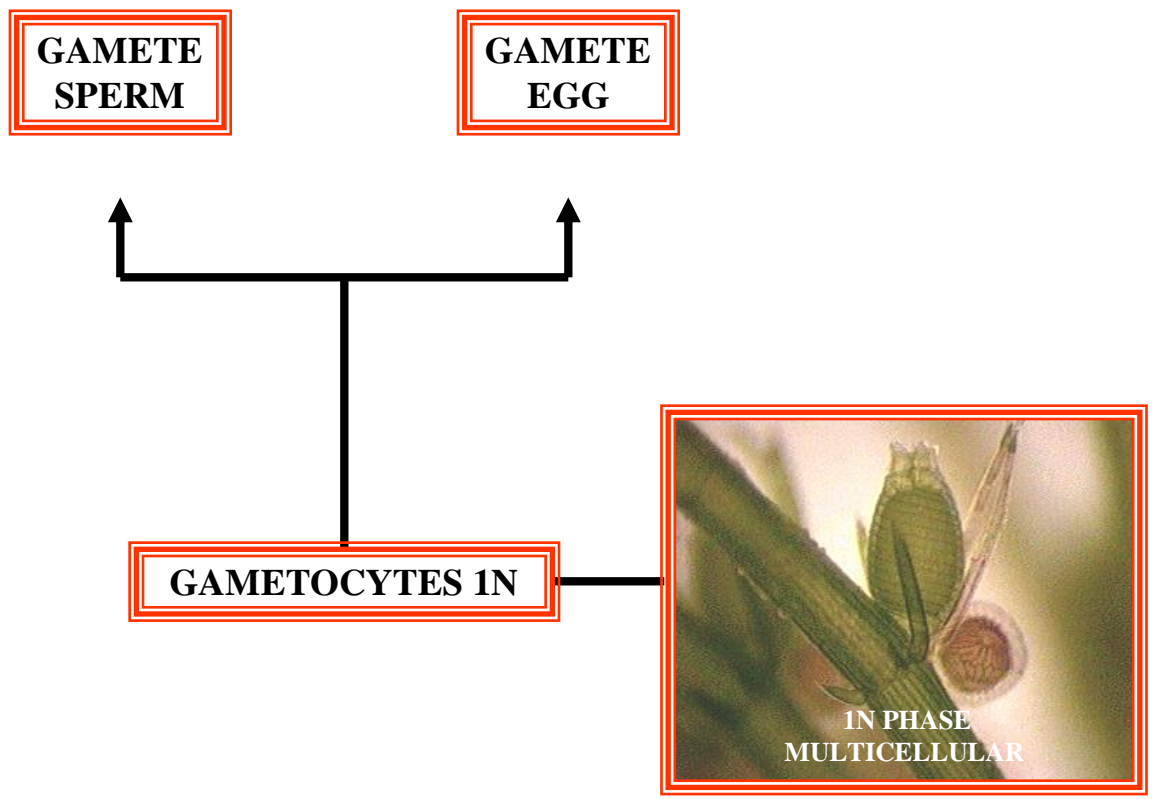


**GAMETOCYTES 1N**

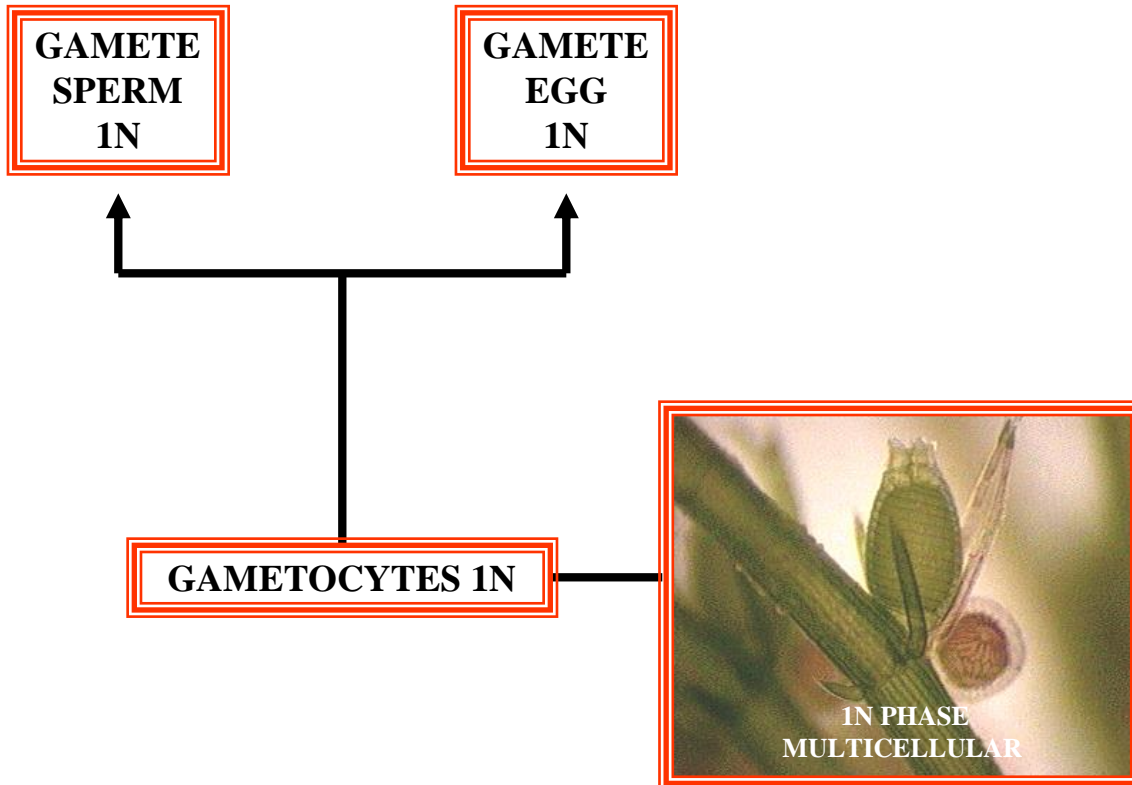


1N PHASE  
MULTICELLULAR

# CHARA ZYGOTIC LIFE CYCLE

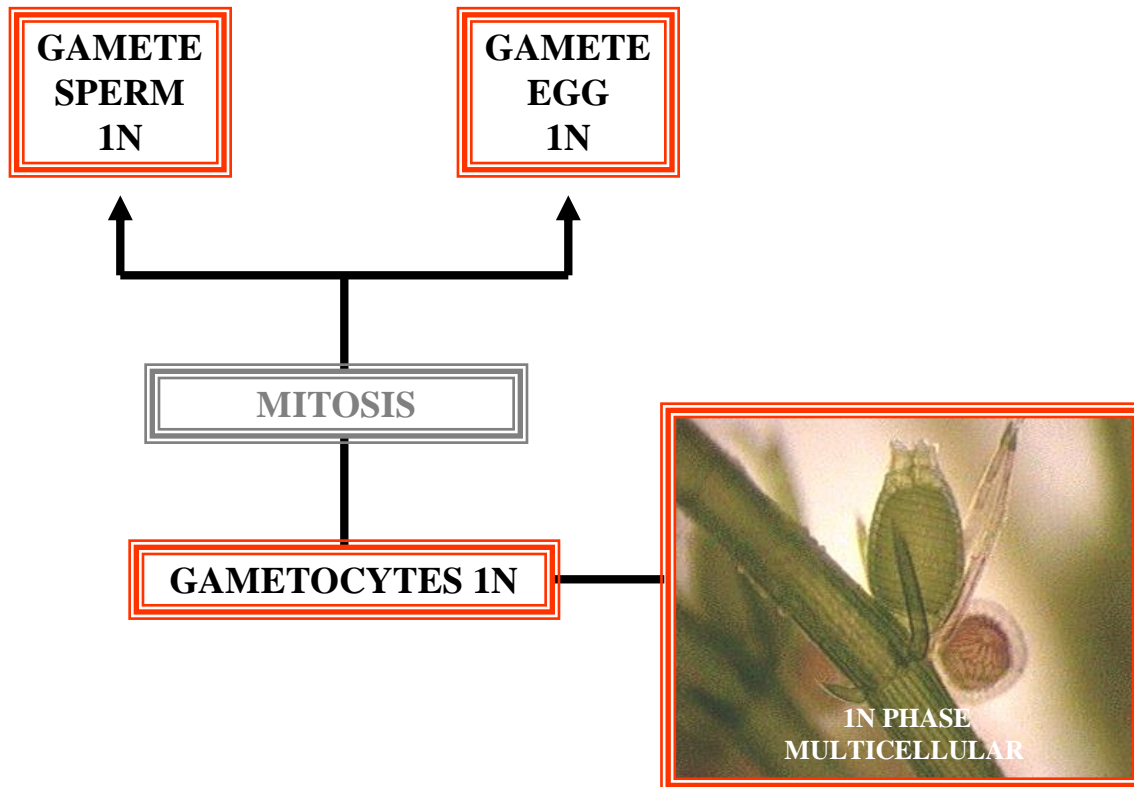


# CHARA ZYGOTIC LIFE CYCLE



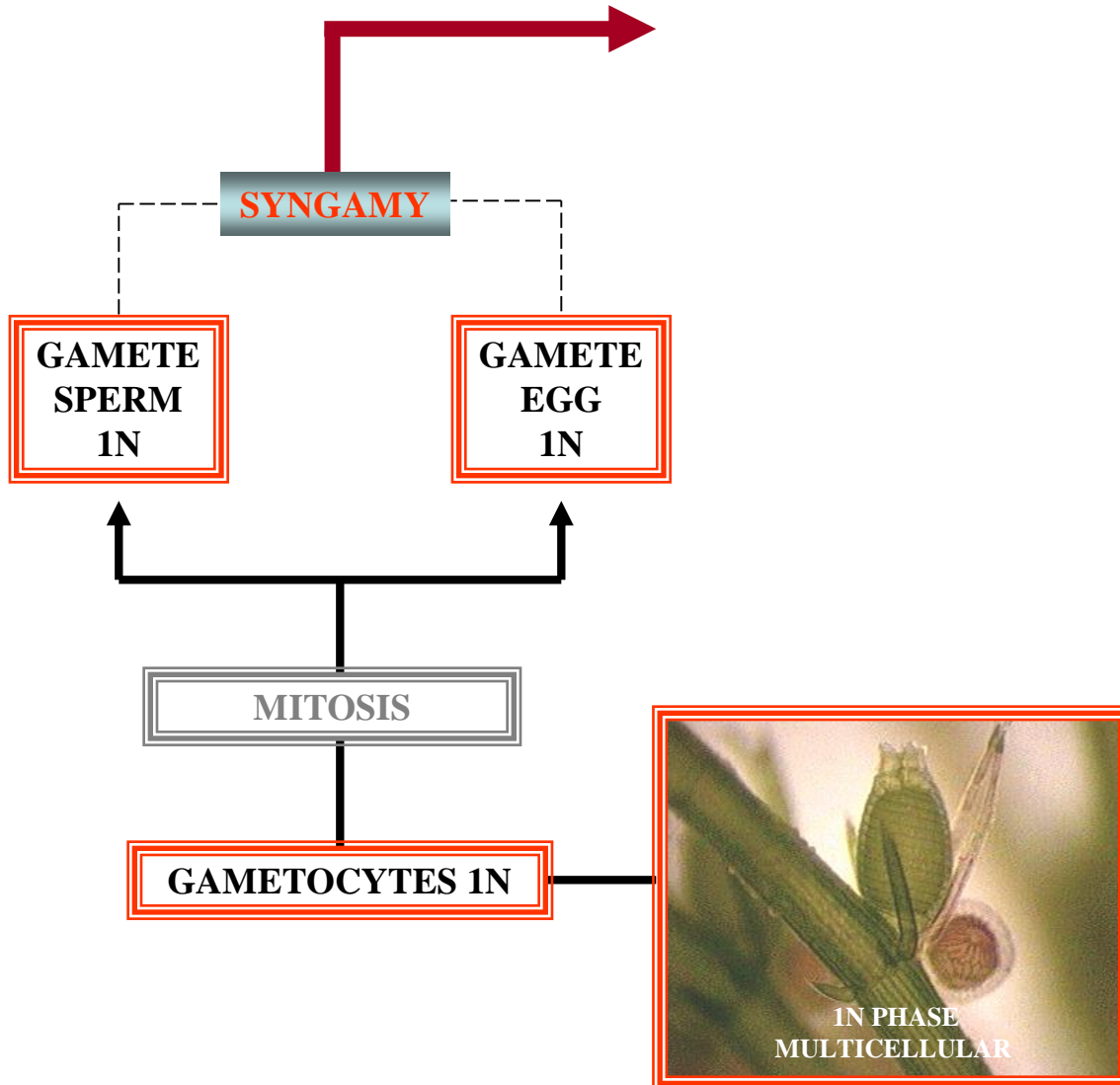
# CHARA

## ZYGOTIC LIFE CYCLE



# CHARA

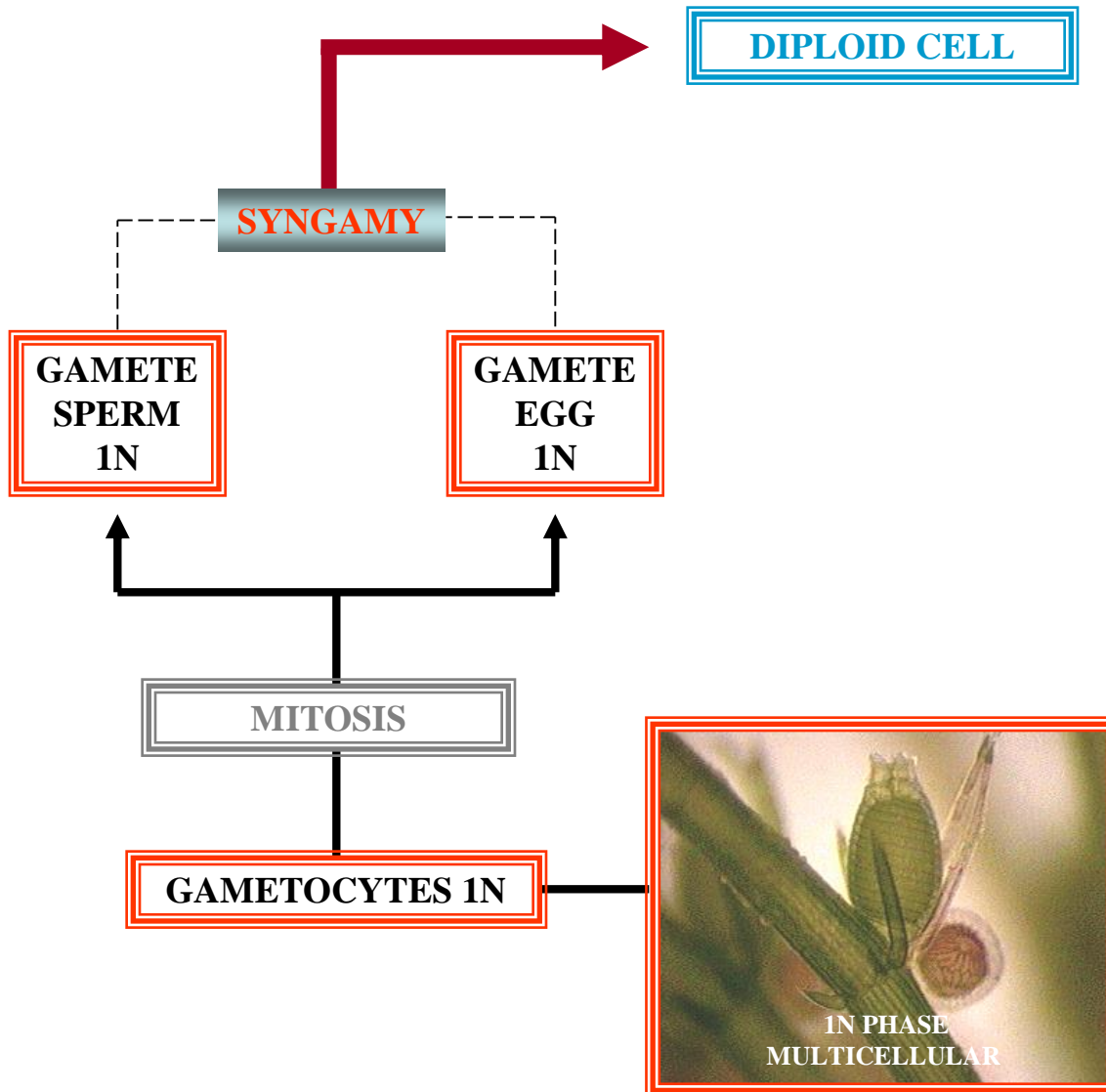
## ZYGOTIC LIFE CYCLE





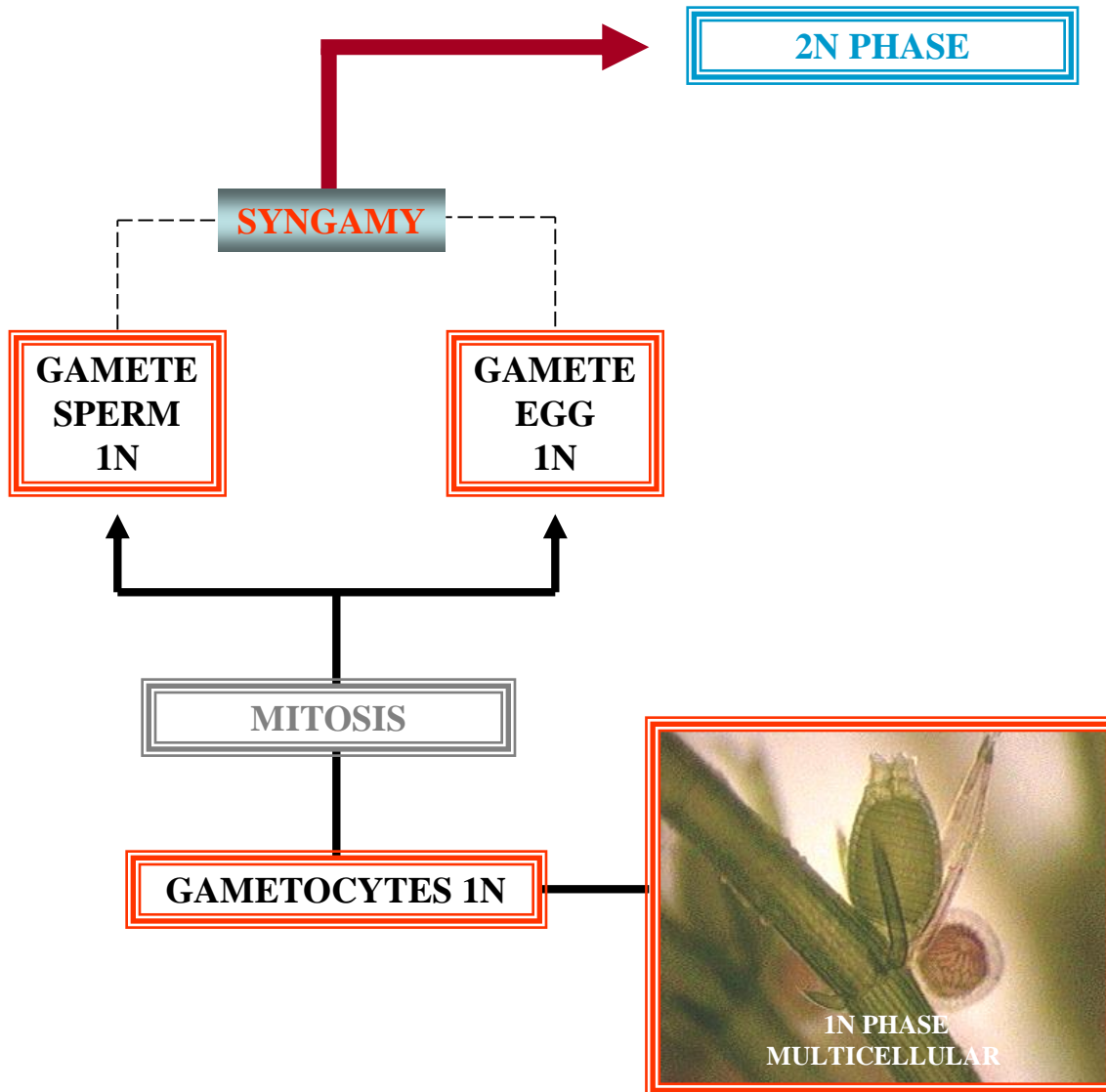
# CHARA

## ZYGOTIC LIFE CYCLE



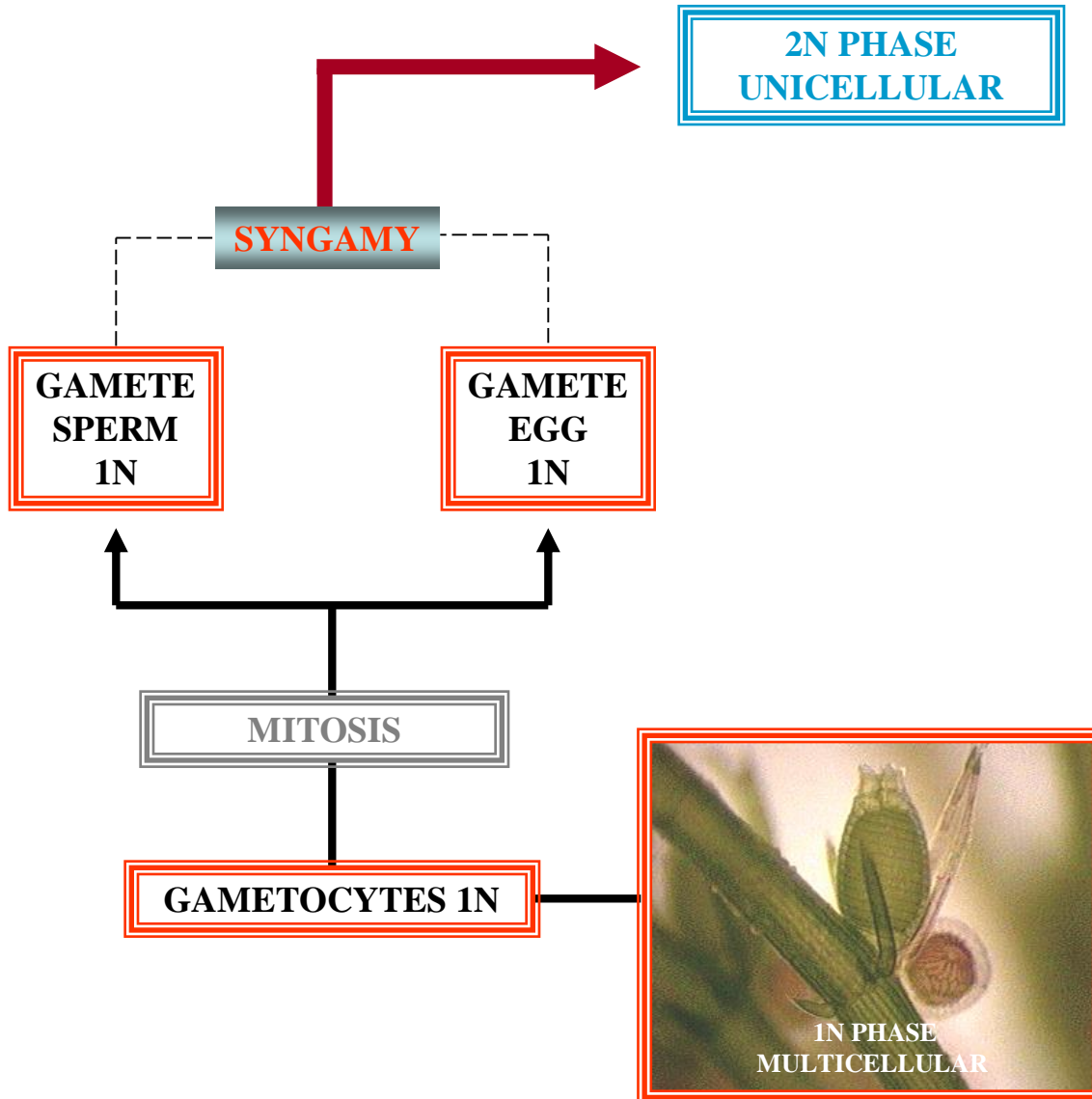
# CHARA

## ZYGOTIC LIFE CYCLE



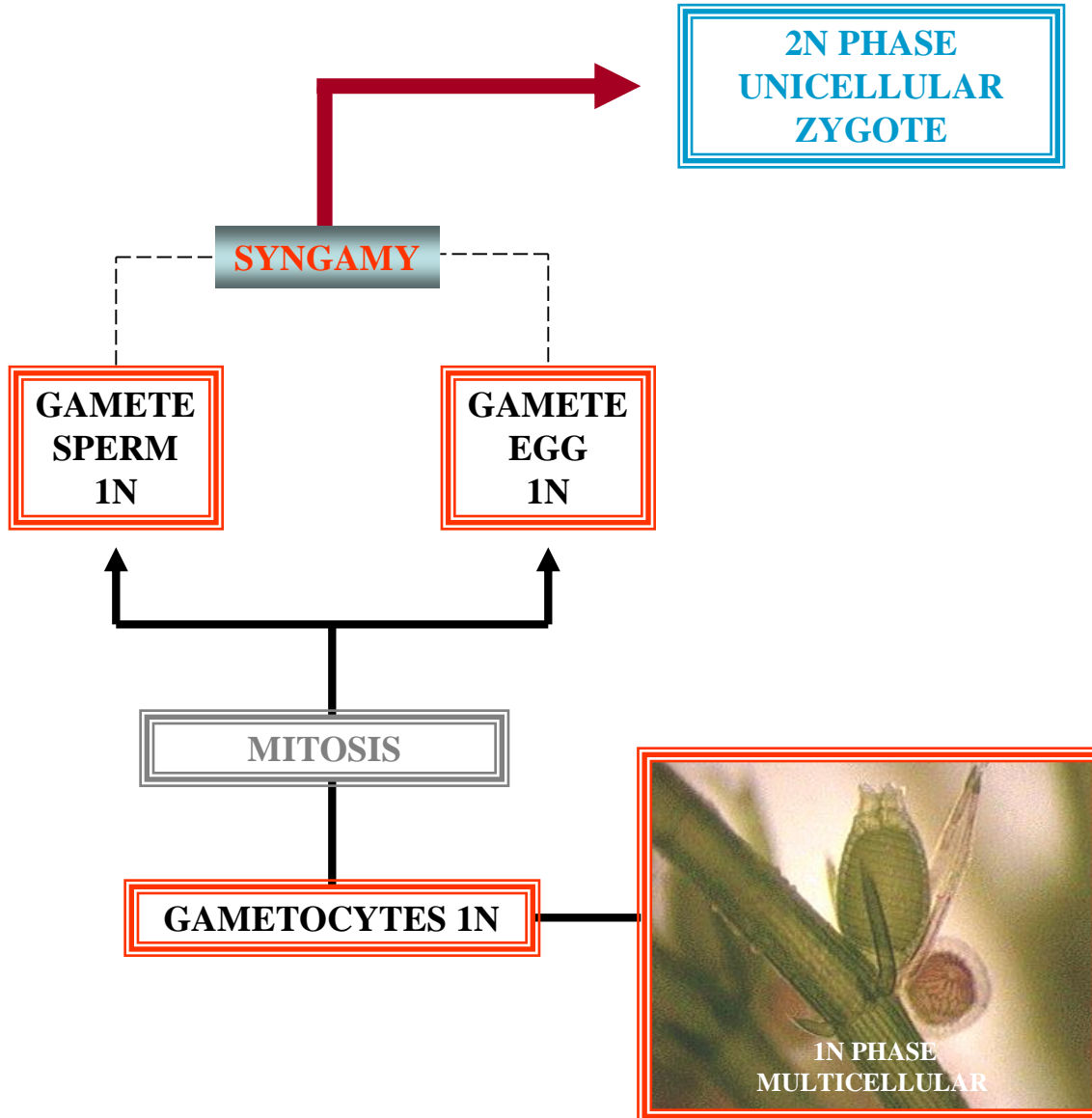
# CHARA

## ZYGOTIC LIFE CYCLE



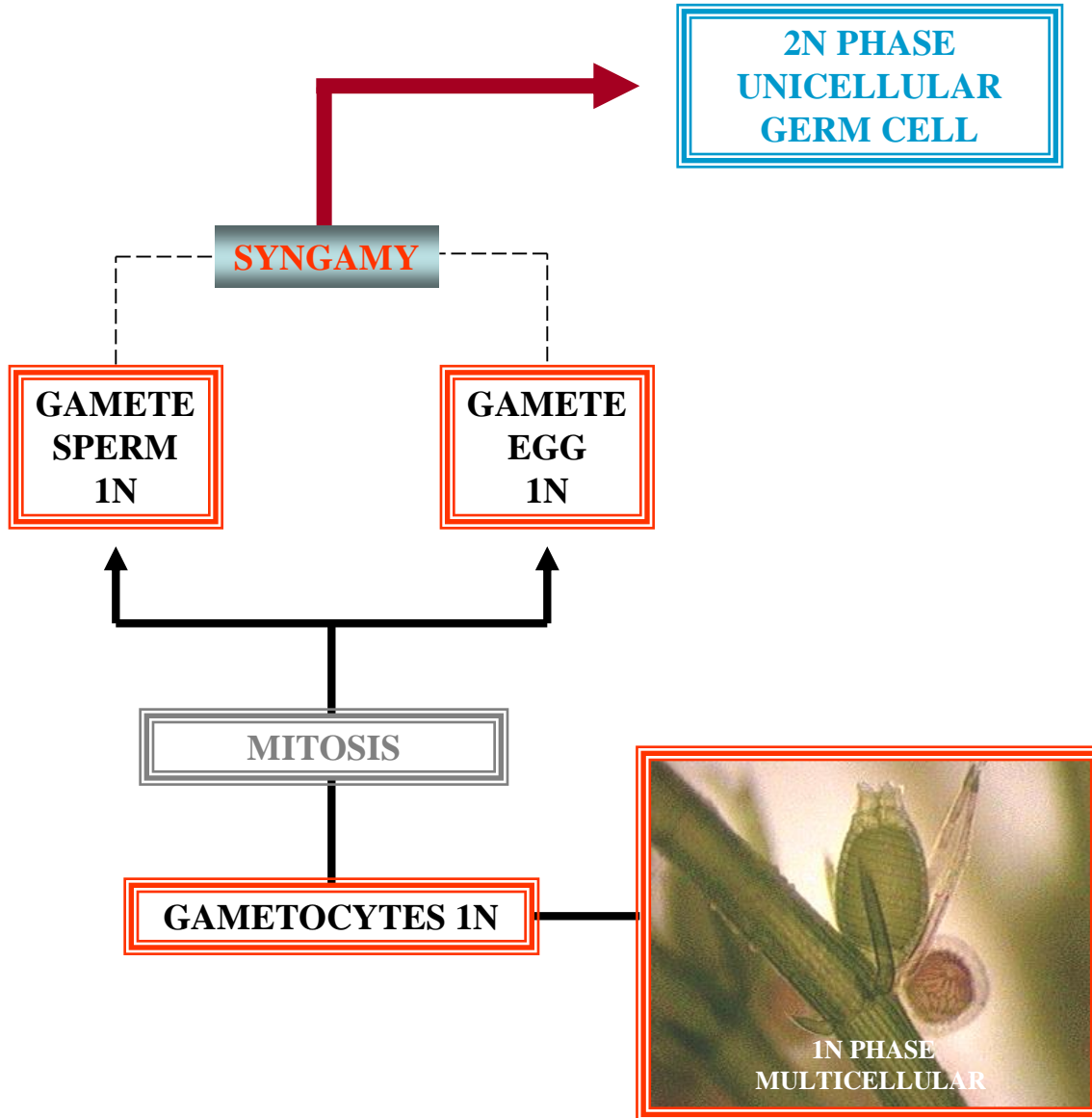
# CHARA

## ZYGOTIC LIFE CYCLE



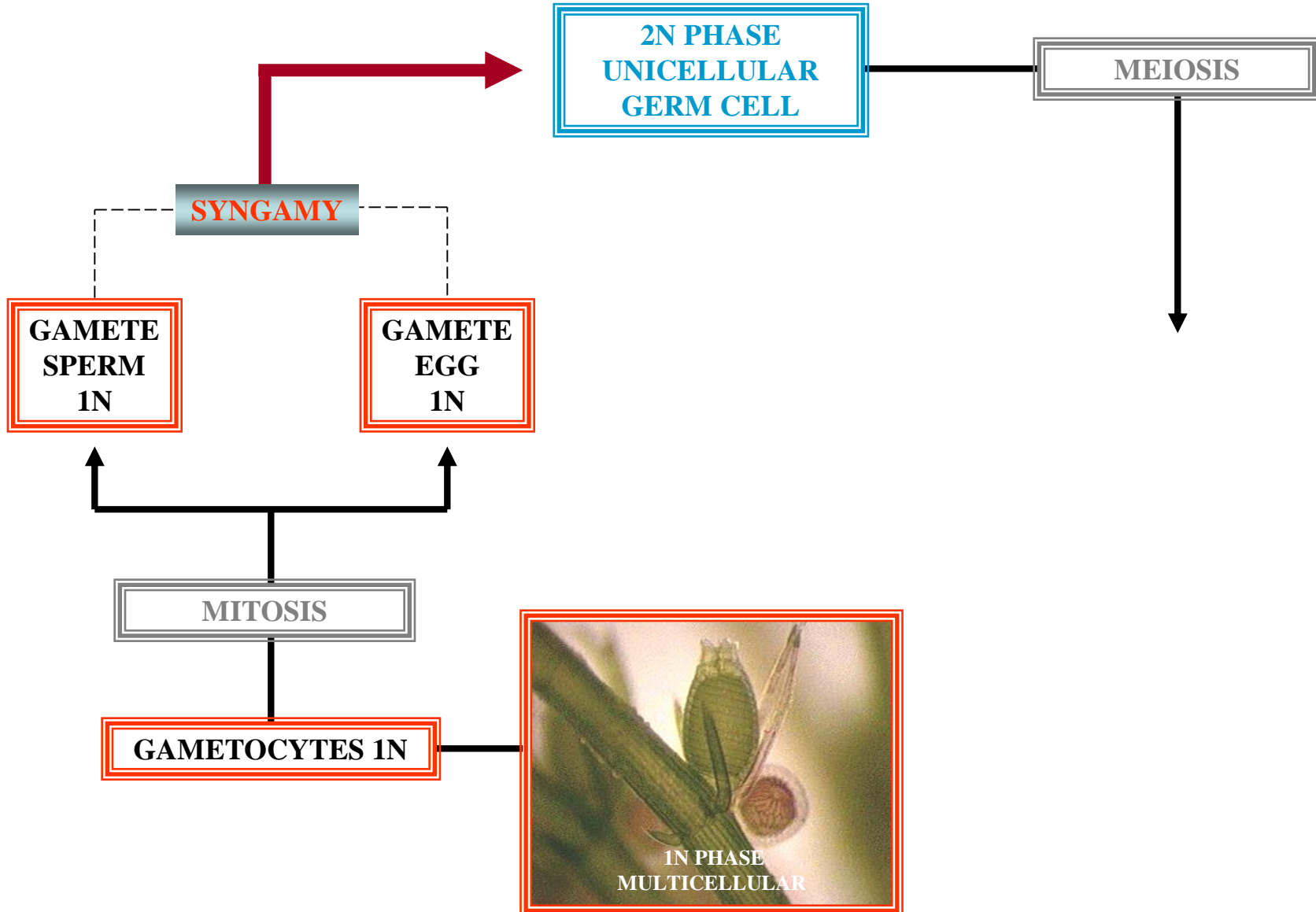
# CHARA

## ZYGOTIC LIFE CYCLE



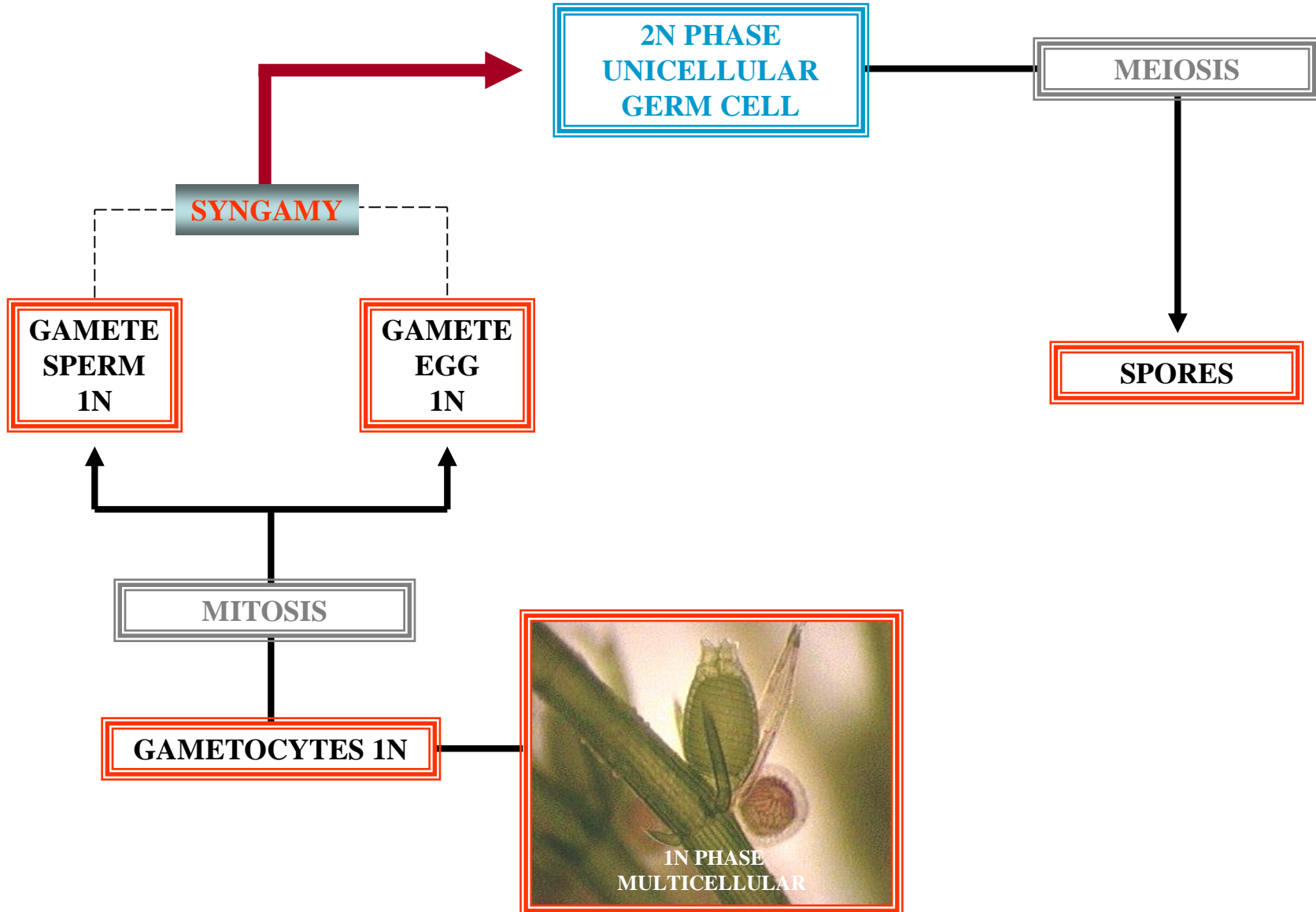
# CHARA

## ZYGOTIC LIFE CYCLE



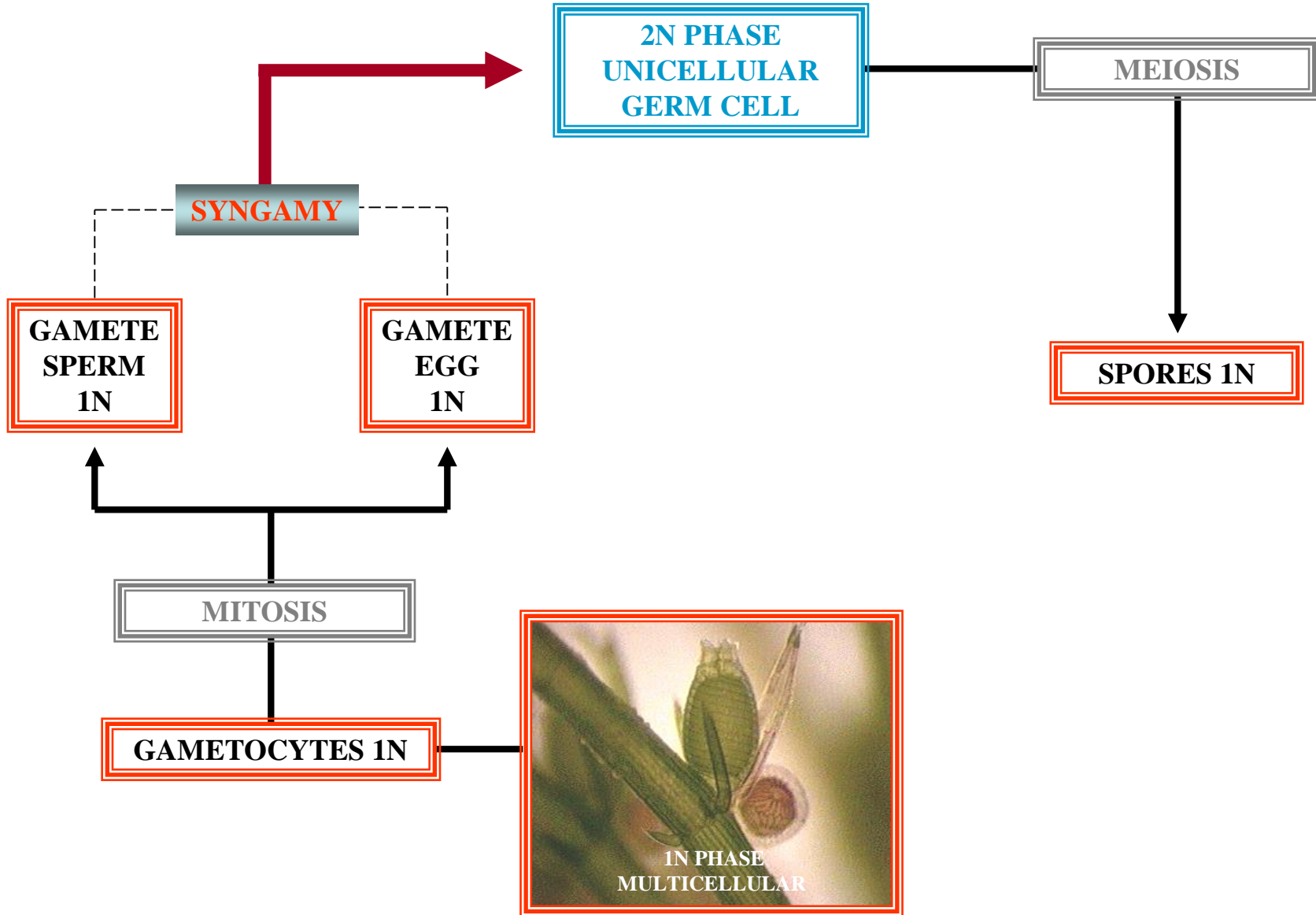
# CHARA

## ZYGOTIC LIFE CYCLE



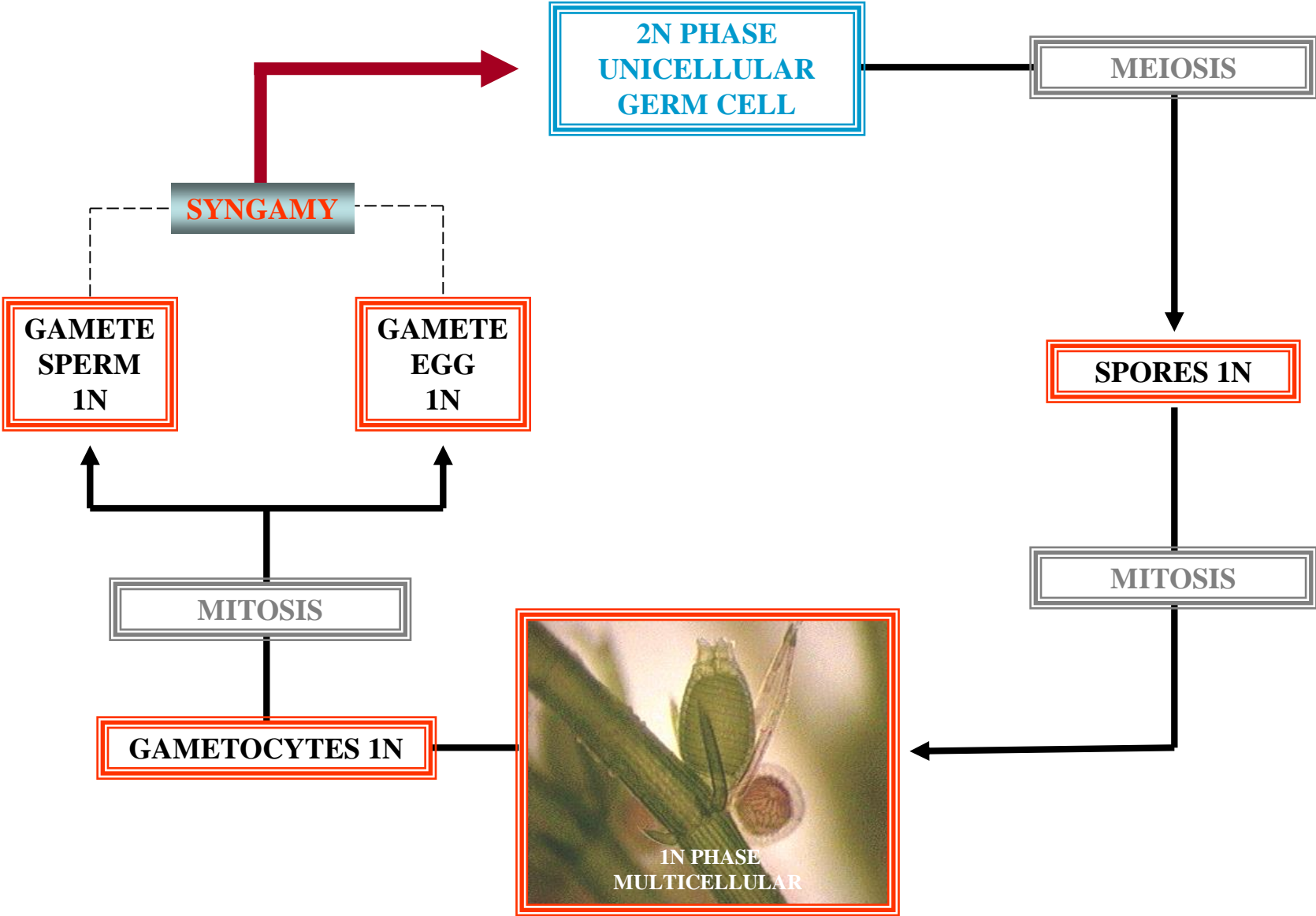
# CHARA

## ZYGOTIC LIFE CYCLE





# CHARA ZYGOTIC LIFE CYCLE





**GAMETIC  
LIFE CYCLE  
VS  
ZYGOTIC  
LIFE CYCLE  
SUMMARY**

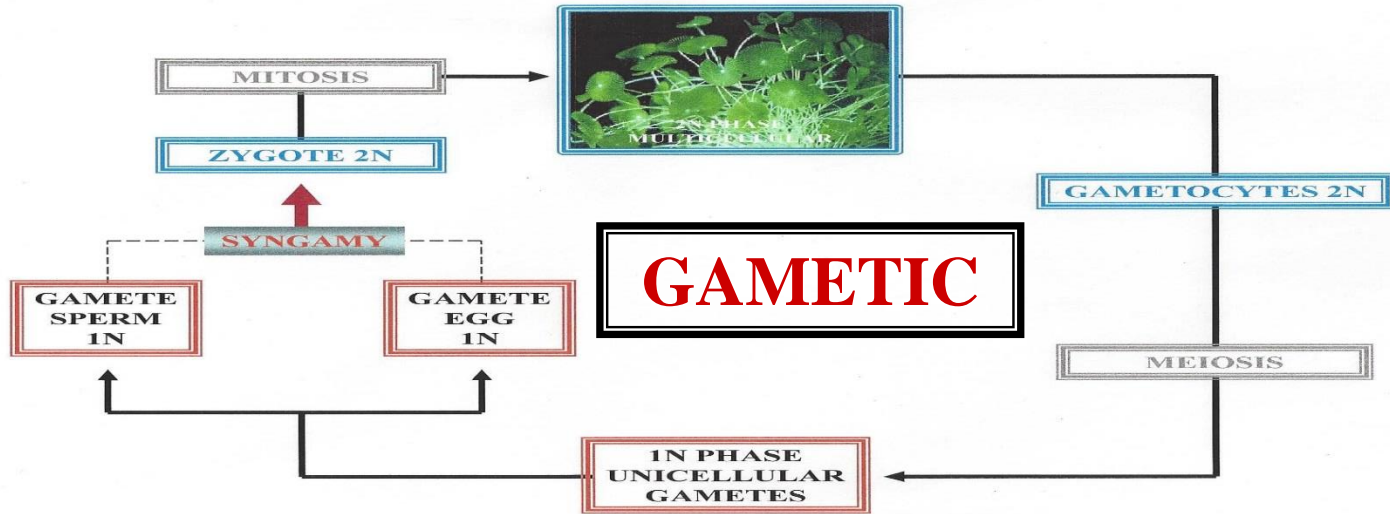


**QUESTION**

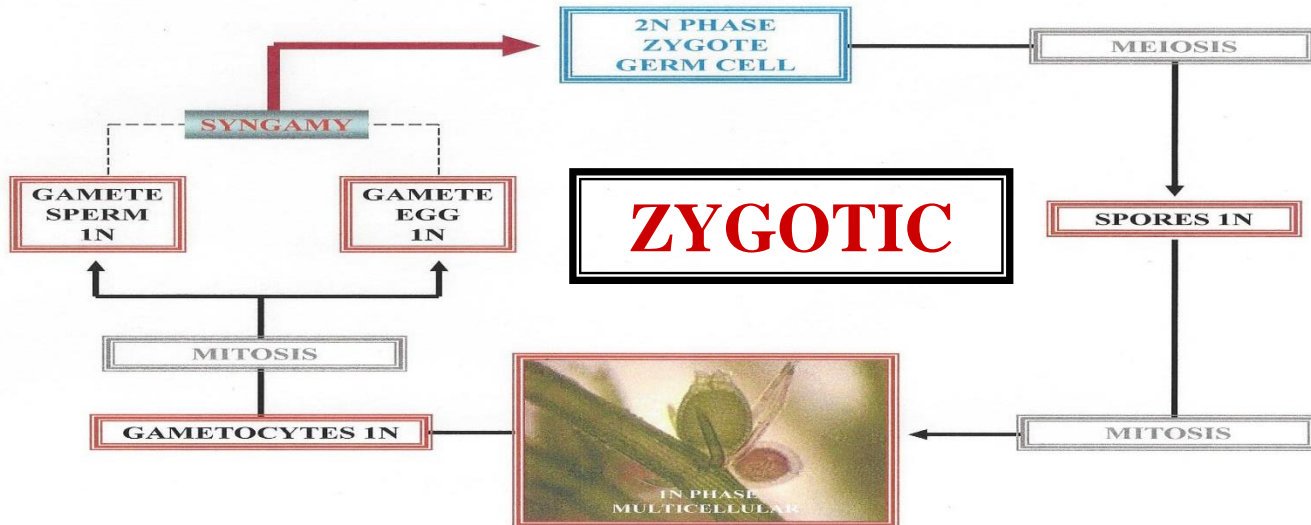
**WHICH LIFE CYCLE  
IS THE  
MULTICELLULAR  
PHASE DIPLOID?**

**QUESTION**

# ACETABULARIA GAMETIC LIFE CYCLE

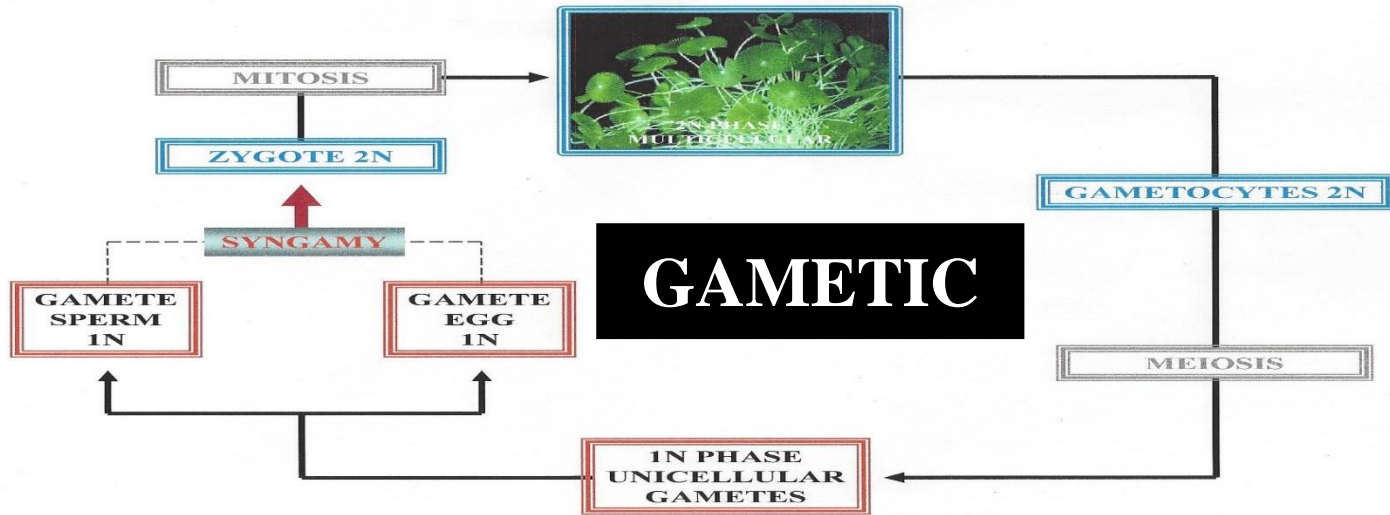


# CHARA ZYGOTIC LIFE CYCLE

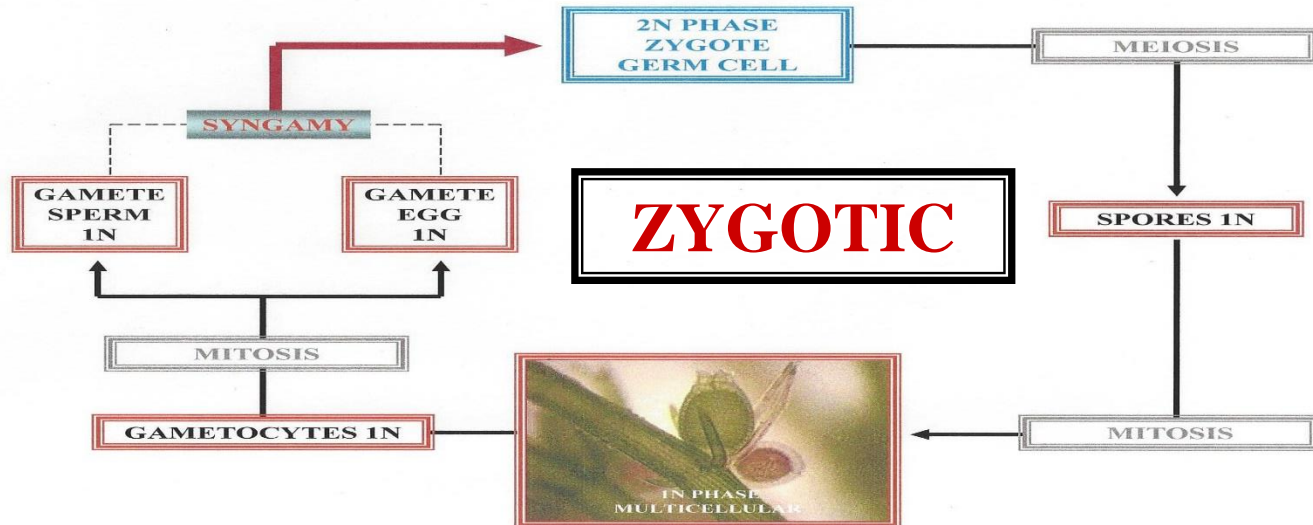




# ACETABULARIA GAMETIC LIFE CYCLE



# CHARA ZYGOTIC LIFE CYCLE



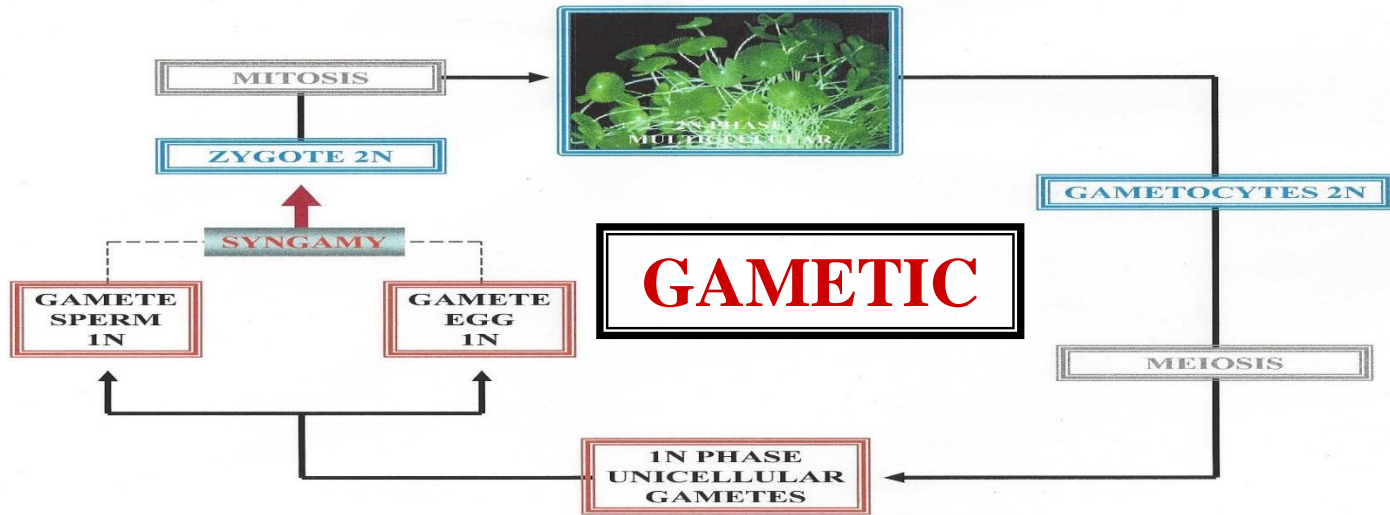


**QUESTION**

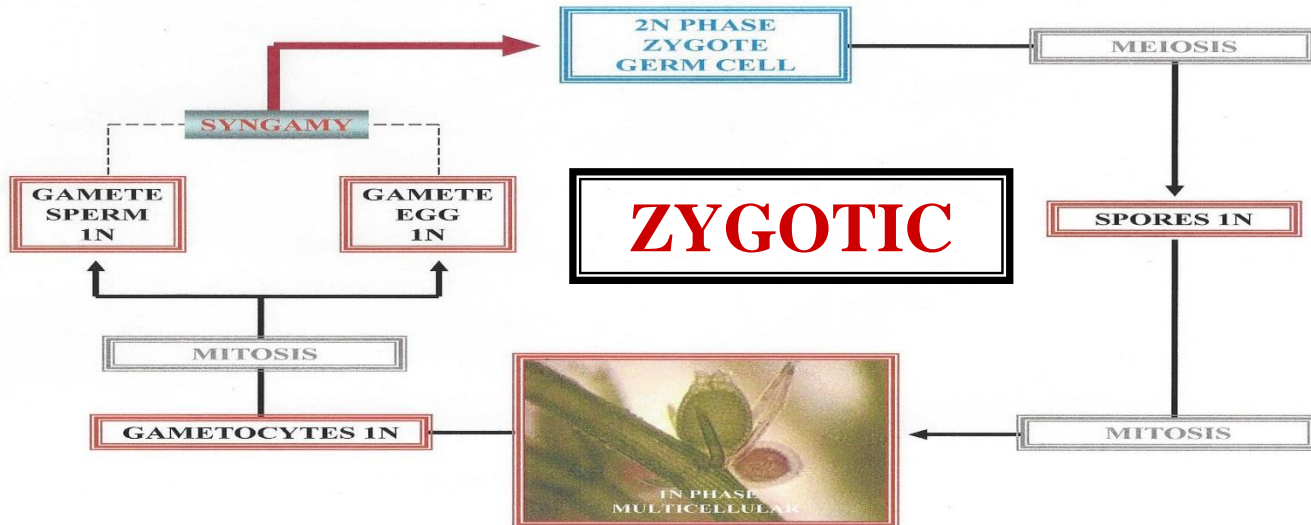
**WHICH LIFE CYCLE  
IS THE  
MULTICELLULAR  
PHASE HAPLOID?**

**QUESTION**

# ACETABULARIA GAMETIC LIFE CYCLE

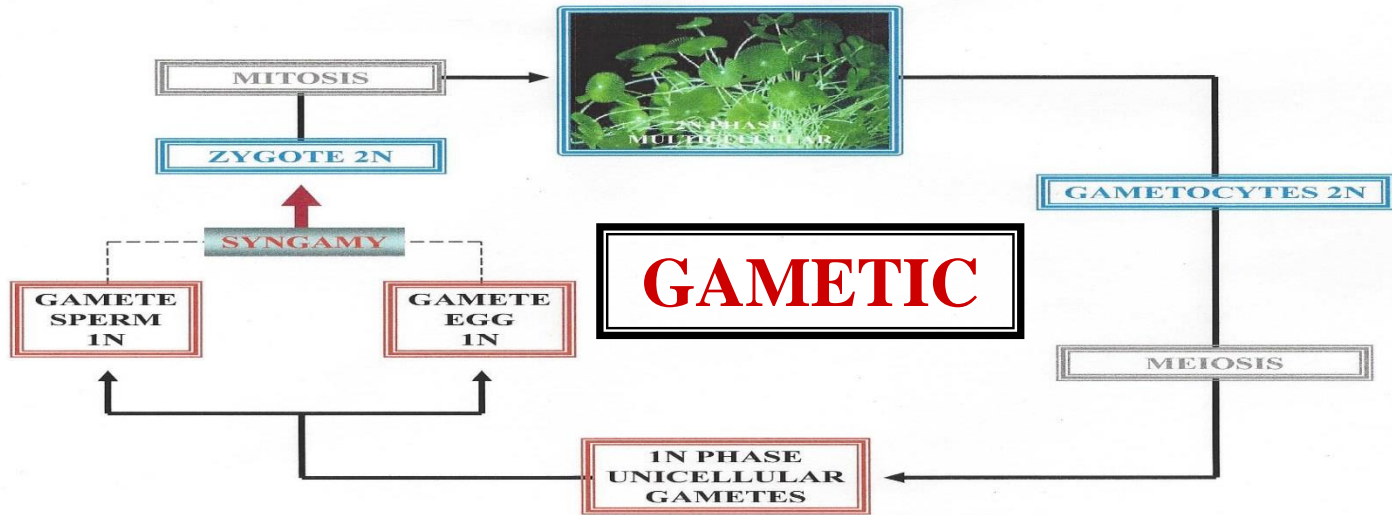


# CHARA ZYGOTIC LIFE CYCLE

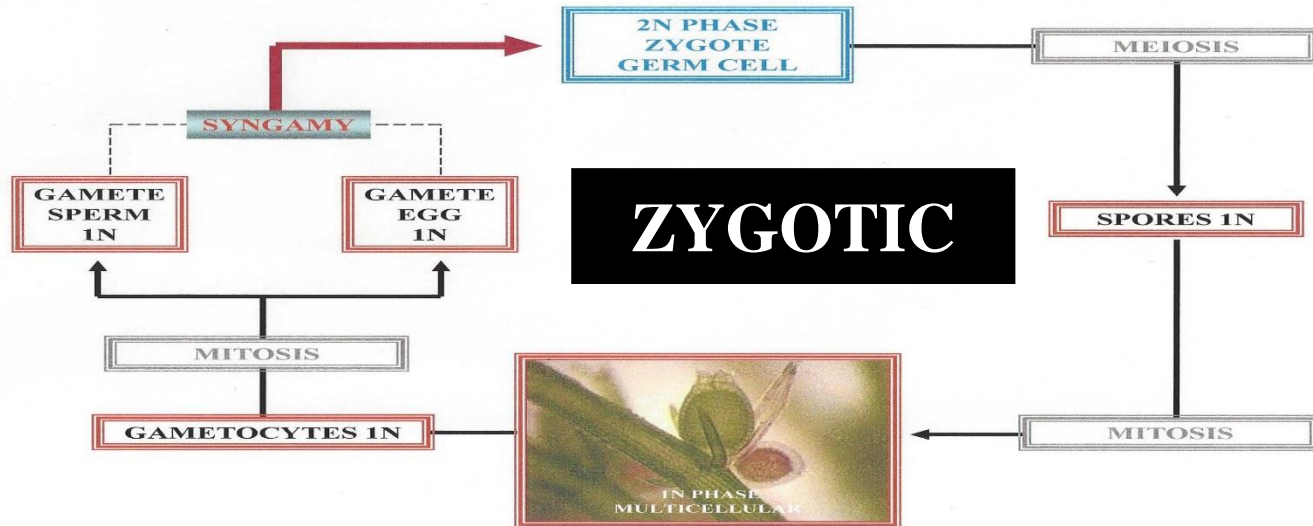




# ACETABULARIA GAMETIC LIFE CYCLE



# CHARA ZYGOTIC LIFE CYCLE





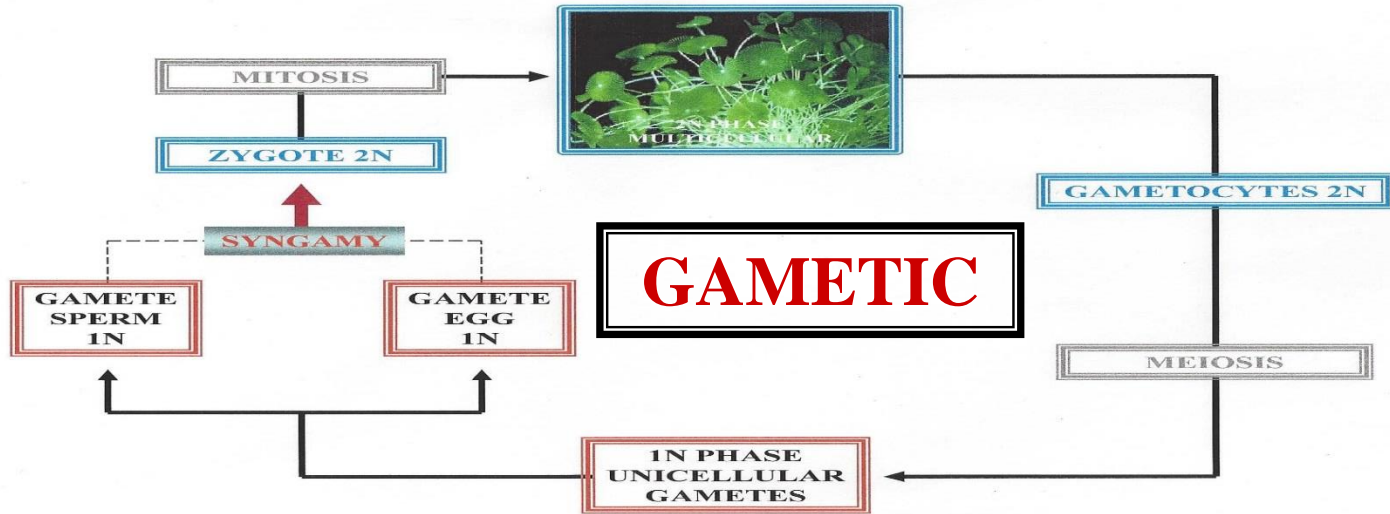


# QUESTION

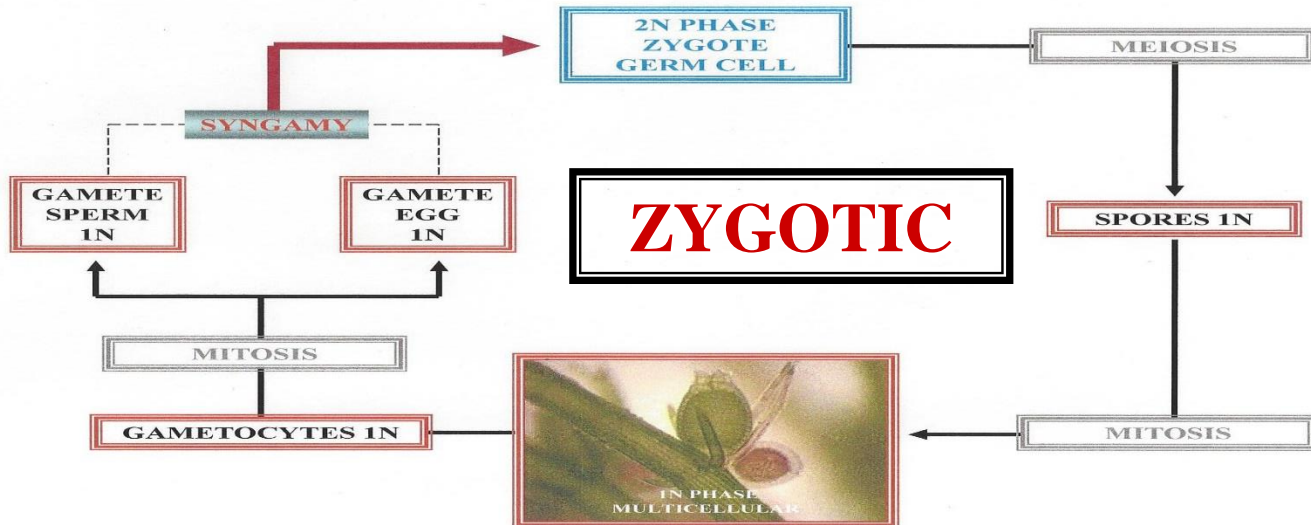
WHICH LIFE CYCLE  
ARE THE GAMETES  
DERIVED BY  
MEIOSIS?

# QUESTION

# ACETABULARIA GAMETIC LIFE CYCLE

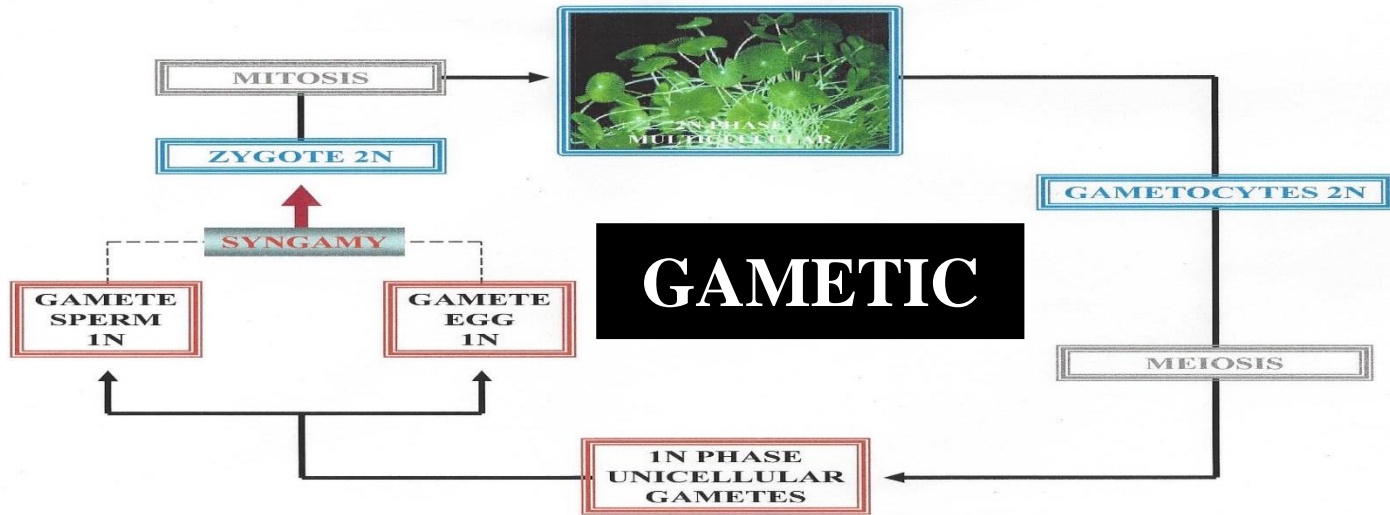


# CHARA ZYGOTIC LIFE CYCLE

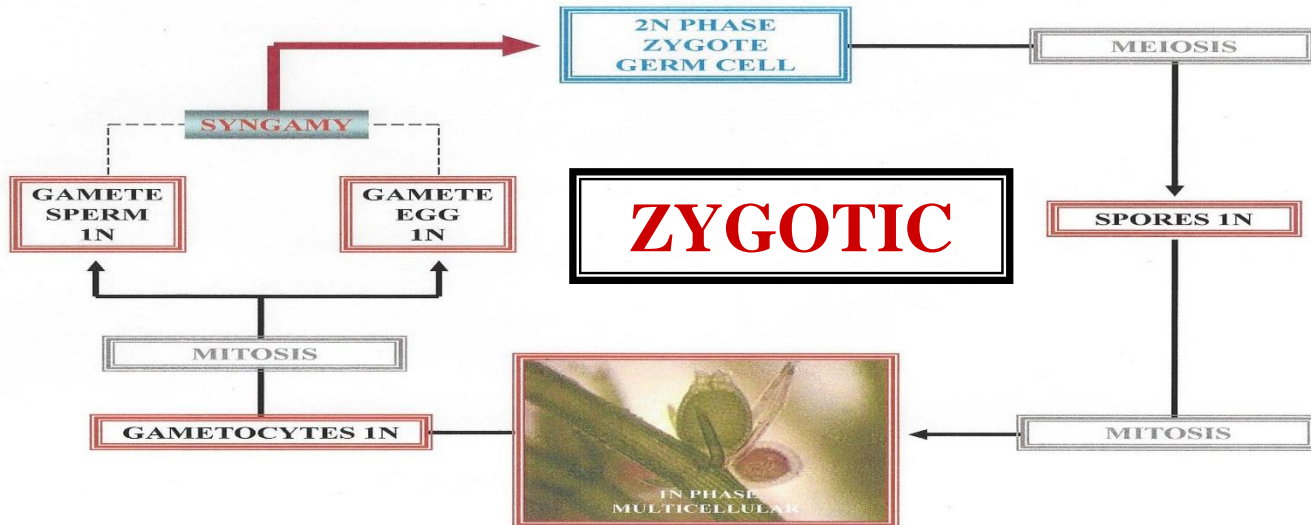




# ACETABULARIA GAMETIC LIFE CYCLE



# CHARA ZYGOTIC LIFE CYCLE



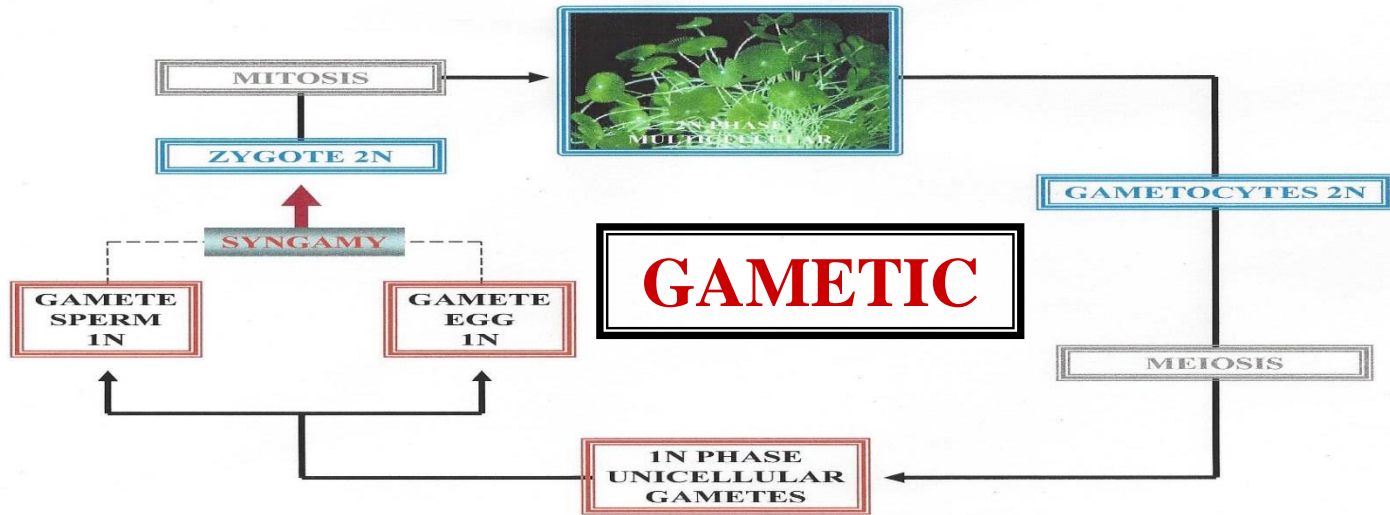


# QUESTION

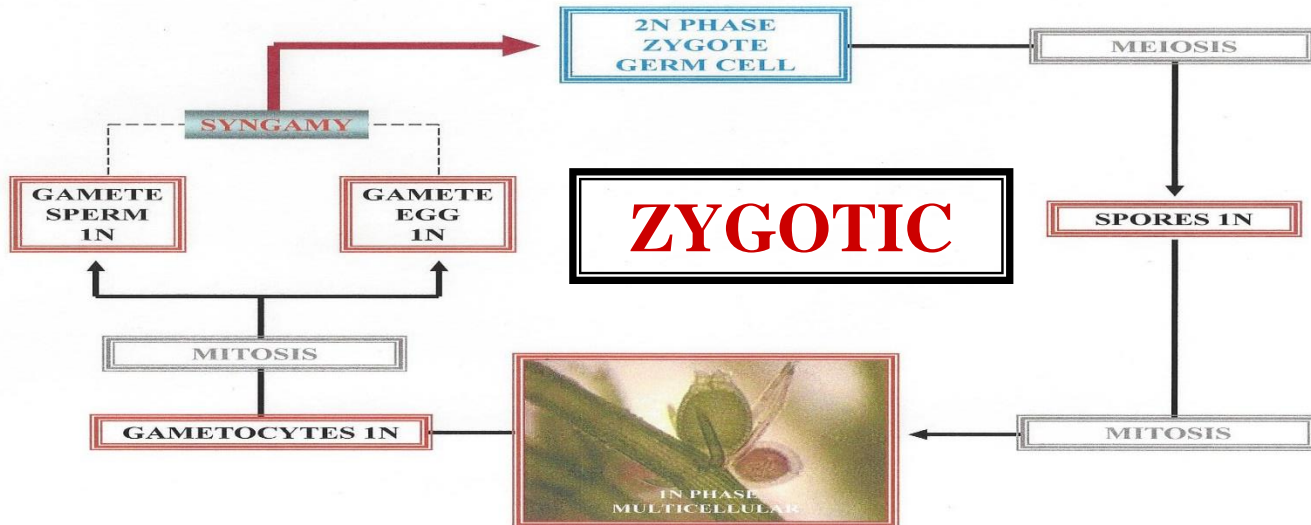
WHICH LIFE CYCLE  
ARE THE GAMETES  
DERIVED BY  
MITOSIS?

# QUESTION

# ACETABULARIA GAMETIC LIFE CYCLE

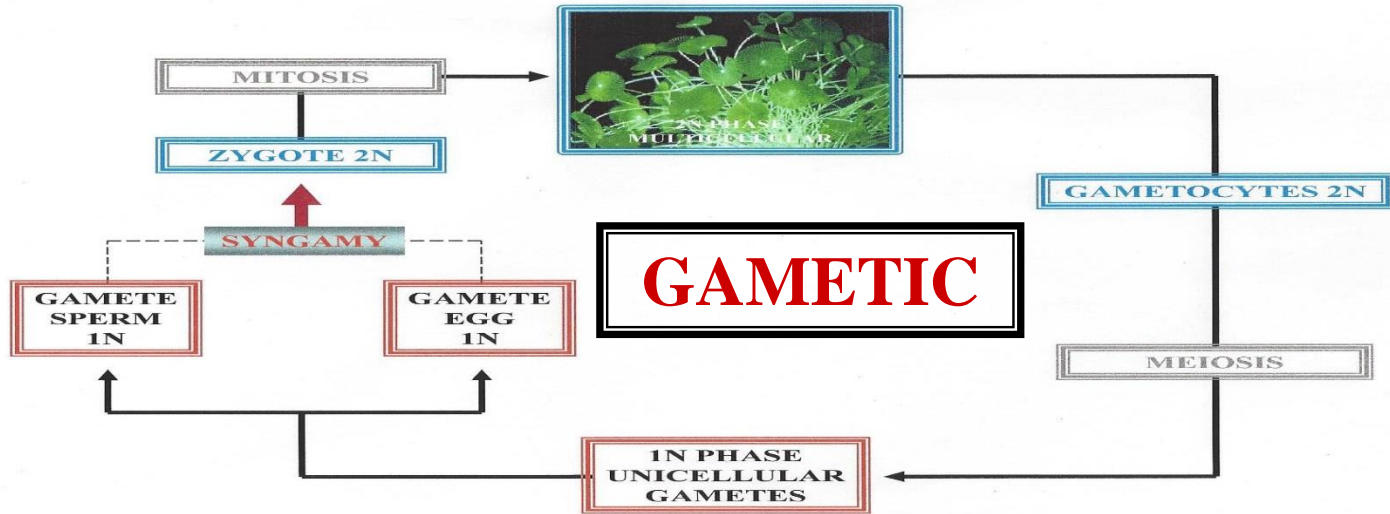


# CHARA ZYGOTIC LIFE CYCLE

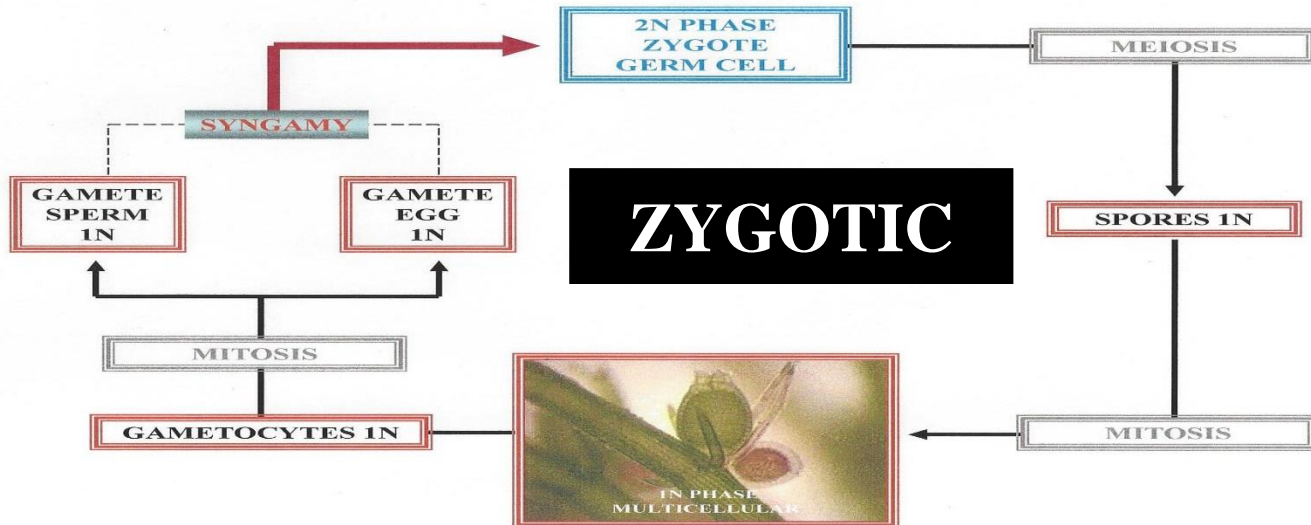




# ACETABULARIA GAMETIC LIFE CYCLE



# CHARA ZYGOTIC LIFE CYCLE



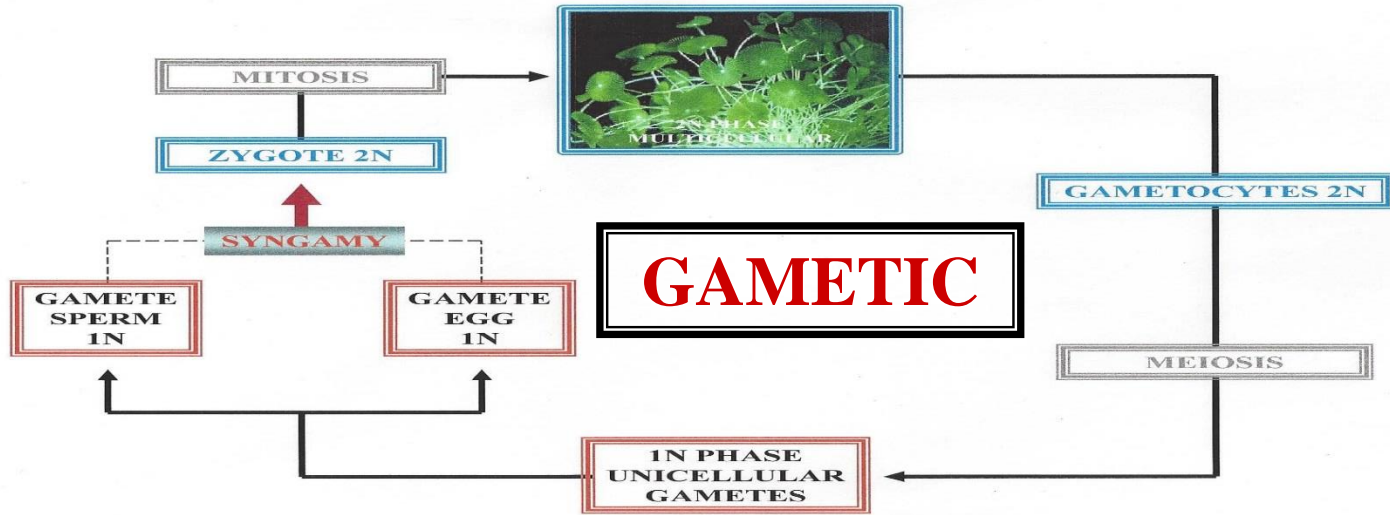


# QUESTION

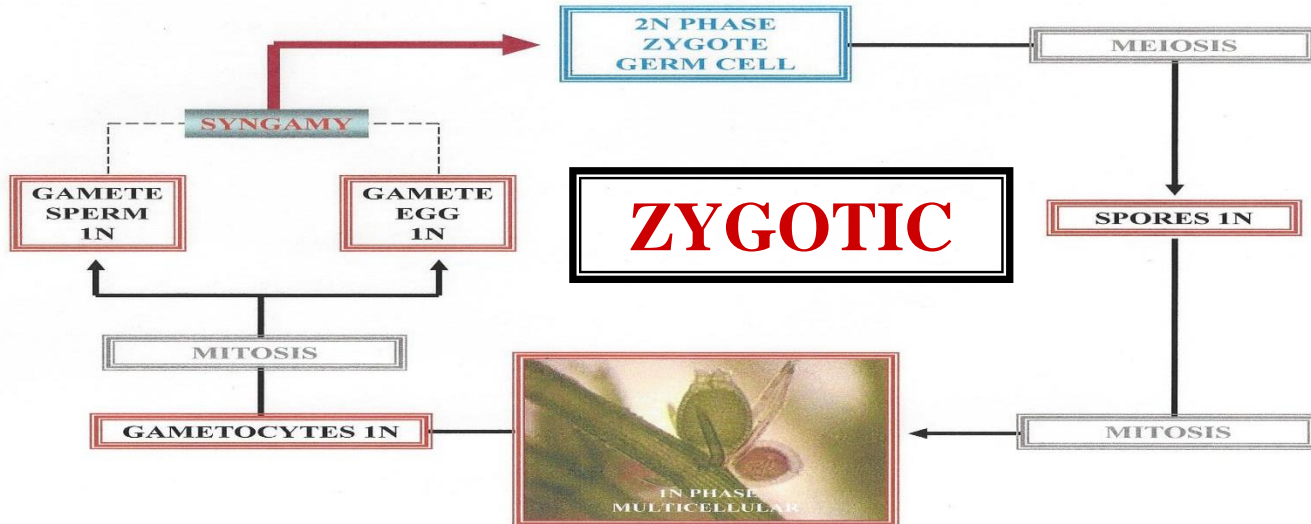
WHICH LIFE CYCLE  
ARE THE GAMETES  
THE ONLY  
HAPLOID CELLS?

# QUESTION

# ACETABULARIA GAMETIC LIFE CYCLE



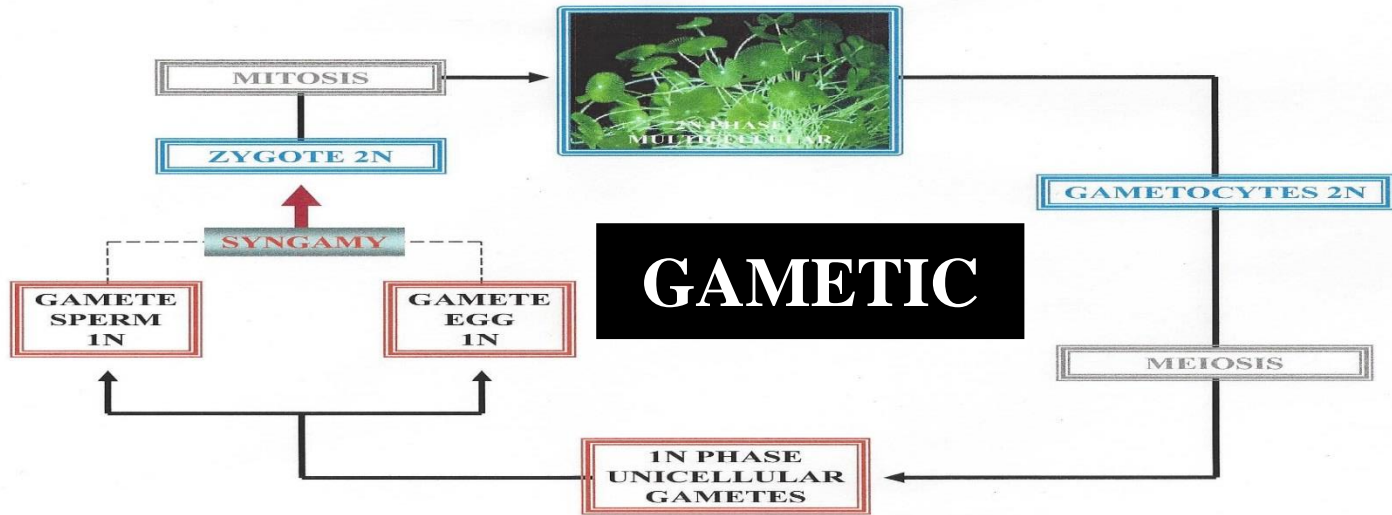
# CHARA ZYGOTIC LIFE CYCLE



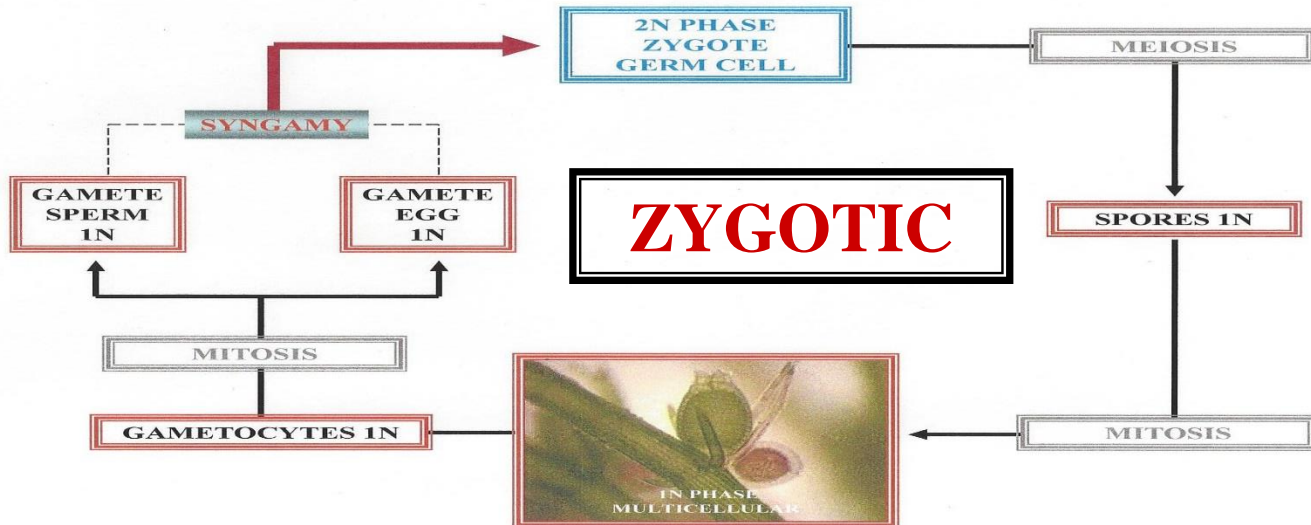




# ACETABULARIA GAMETIC LIFE CYCLE



# CHARA ZYGOTIC LIFE CYCLE



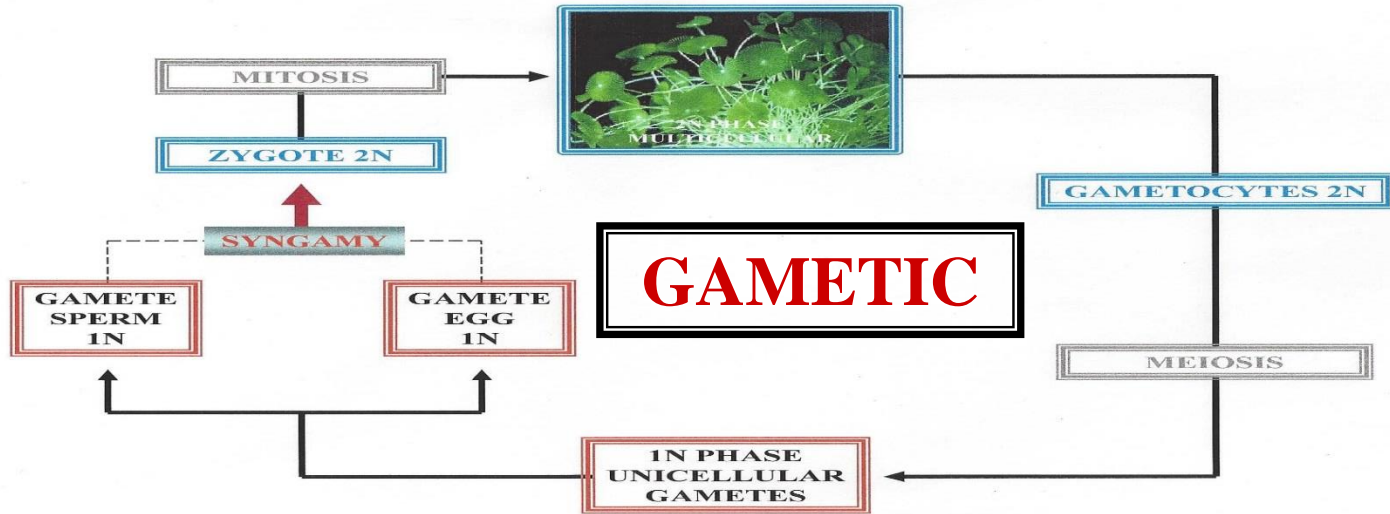


# QUESTION

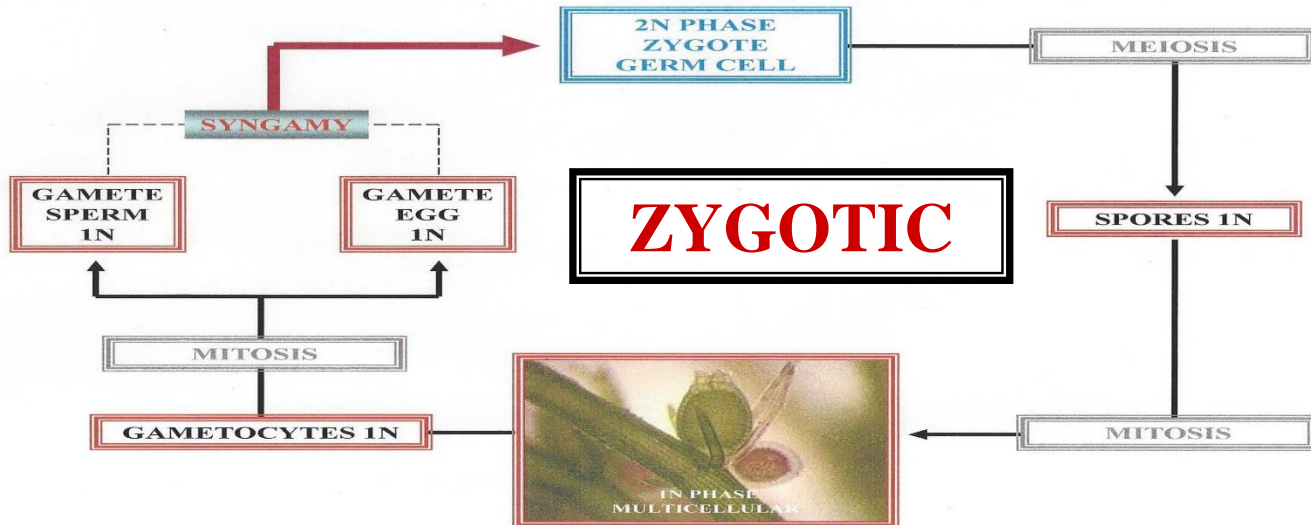
WHICH LIFE CYCLE  
IS THE ZYGOTE  
THE ONLY  
DIPLOID CELL?

# QUESTION

# ACETABULARIA GAMETIC LIFE CYCLE

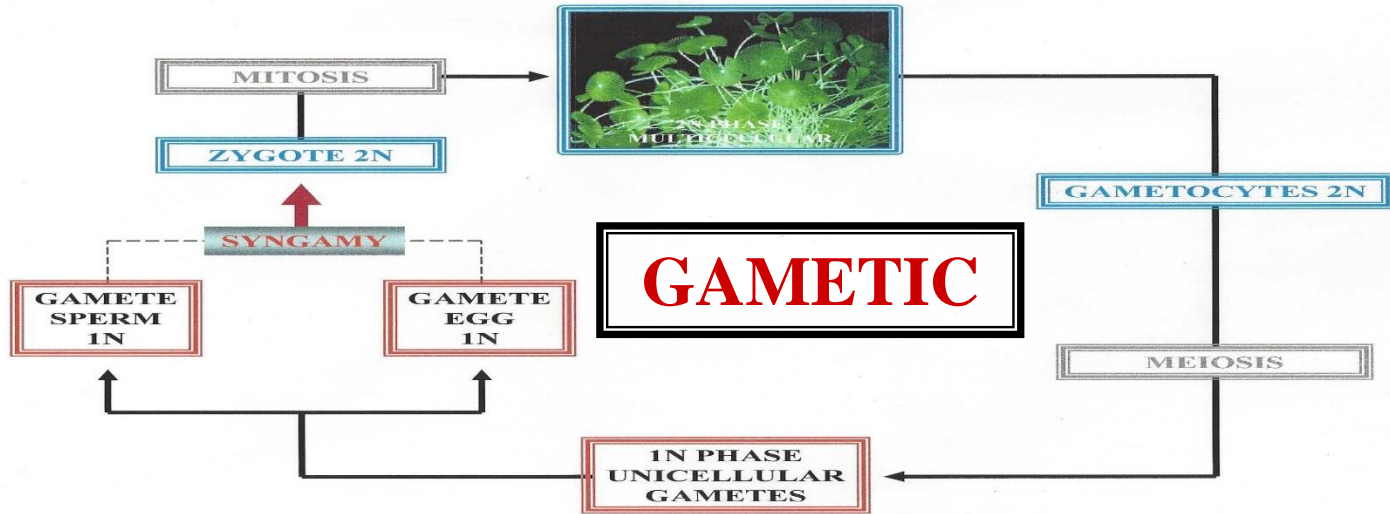


# CHARA ZYGOTIC LIFE CYCLE

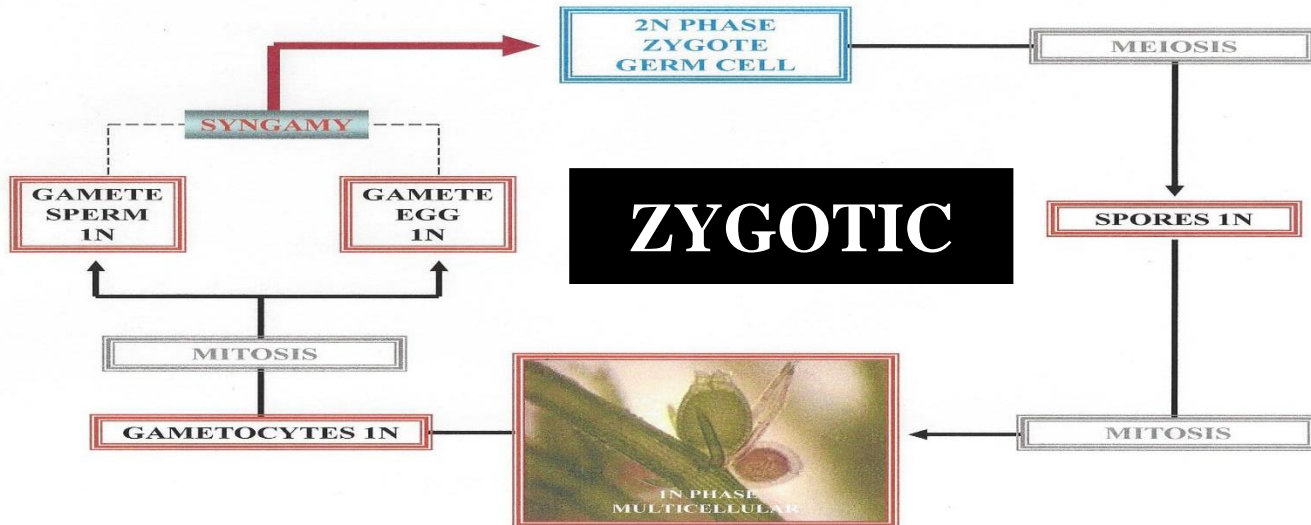




# ACETABULARIA GAMETIC LIFE CYCLE



# CHARA ZYGOTIC LIFE CYCLE





# QUESTION

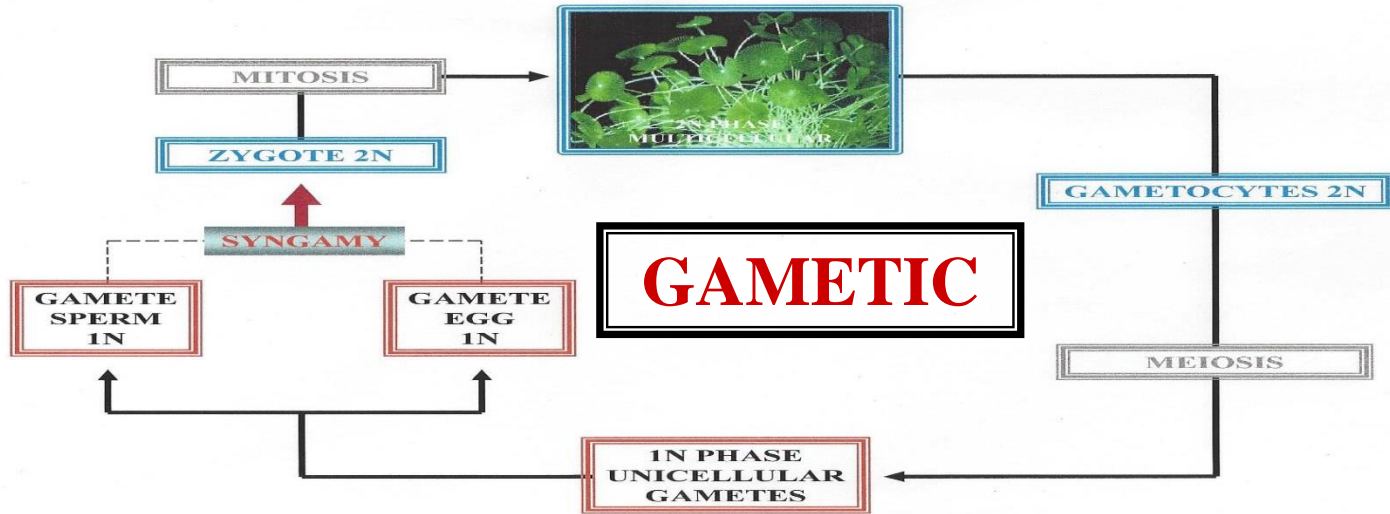
GAMETIC LIFE CYCLE  
AND

ZYGOTIC LIFE CYCLE  
ARE WHAT WITH RESPECT  
TO ONE ANOTHER?

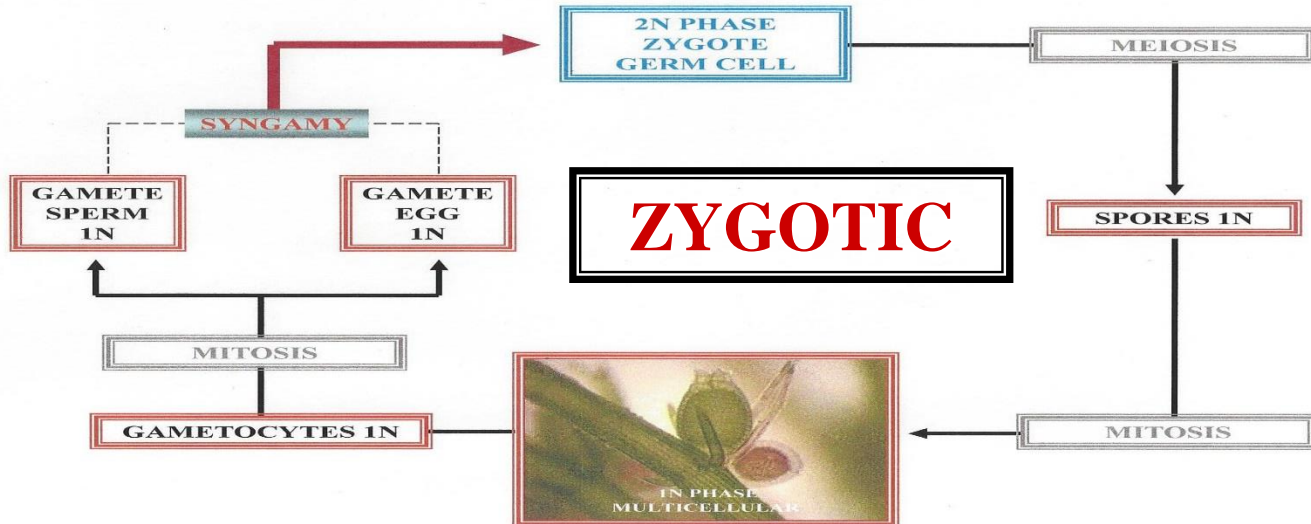
# QUESTION



# ACETABULARIA GAMETIC LIFE CYCLE

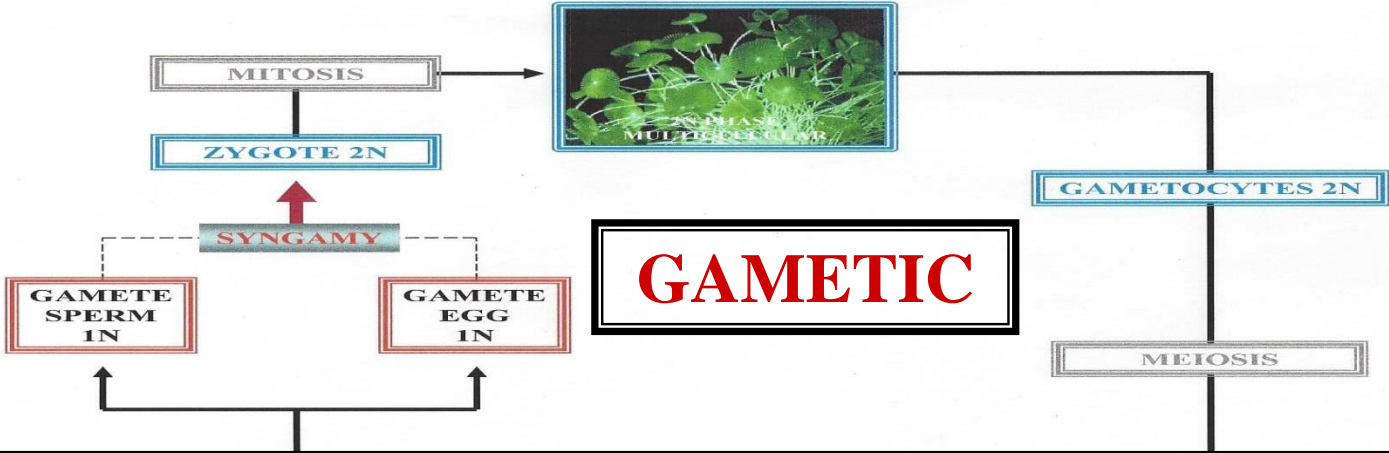


# CHARA ZYGOTIC LIFE CYCLE

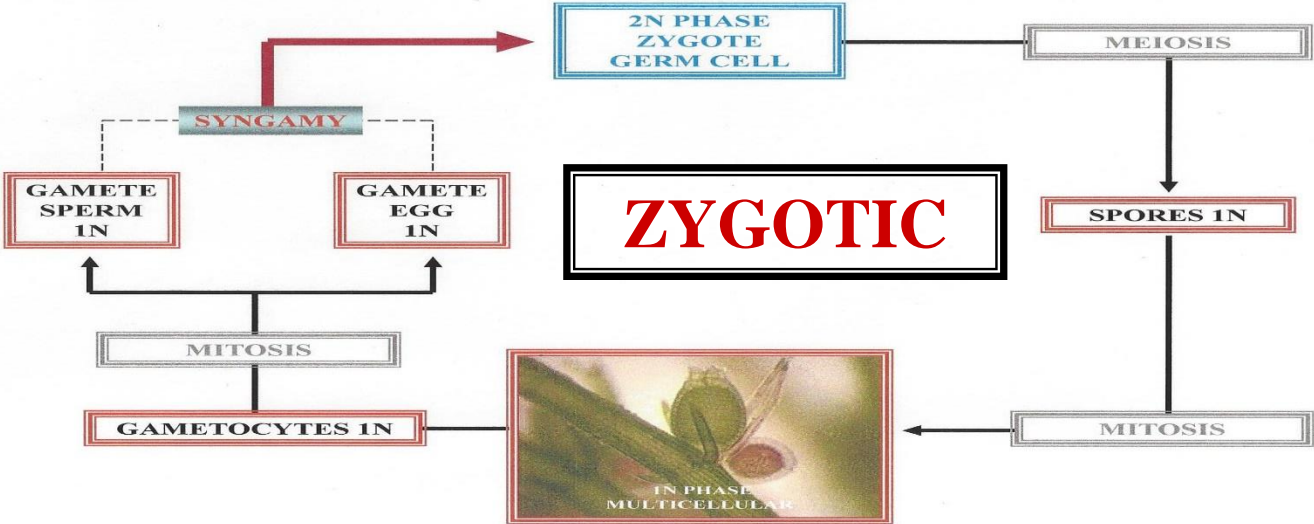




# ACETABULARIA GAMETIC LIFE CYCLE



# INVERSE LIFE CYCLES





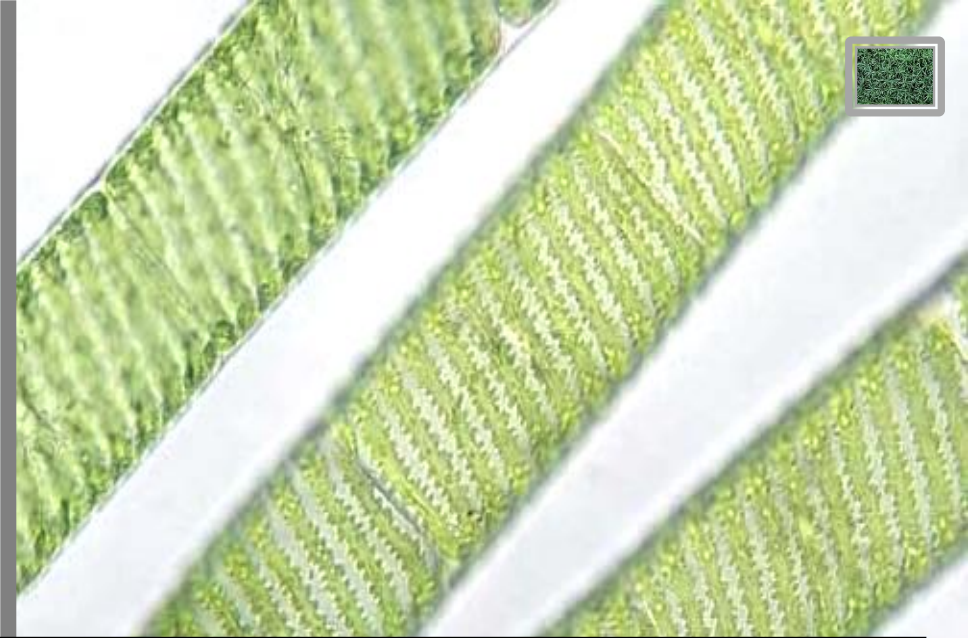
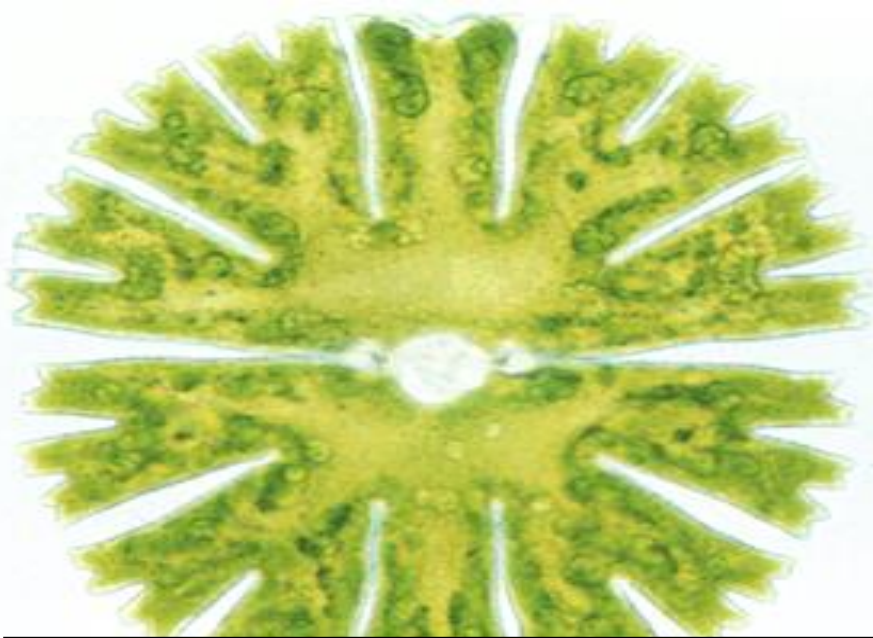
# SPORIC LIFE CYCLE





# PLANT LIFE CYCLE





# GREEN ALGAE





# EMBRYOPHYTES





***MAGNOLIA***

# PLANT SPORIC LIFE CYCLE



# PLANT SPORIC LIFE CYCLE



# PLANT SPORIC LIFE CYCLE



# PLANT SPORIC LIFE CYCLE





# PLANT SPORIC LIFE CYCLE



SPORANGIA

# PLANT SPORIC LIFE CYCLE



SPOROCYTES

# PLANT SPORIC LIFE CYCLE



SPOROCTYES 2N

# PLANT SPORIC LIFE CYCLE



GERM CELLS