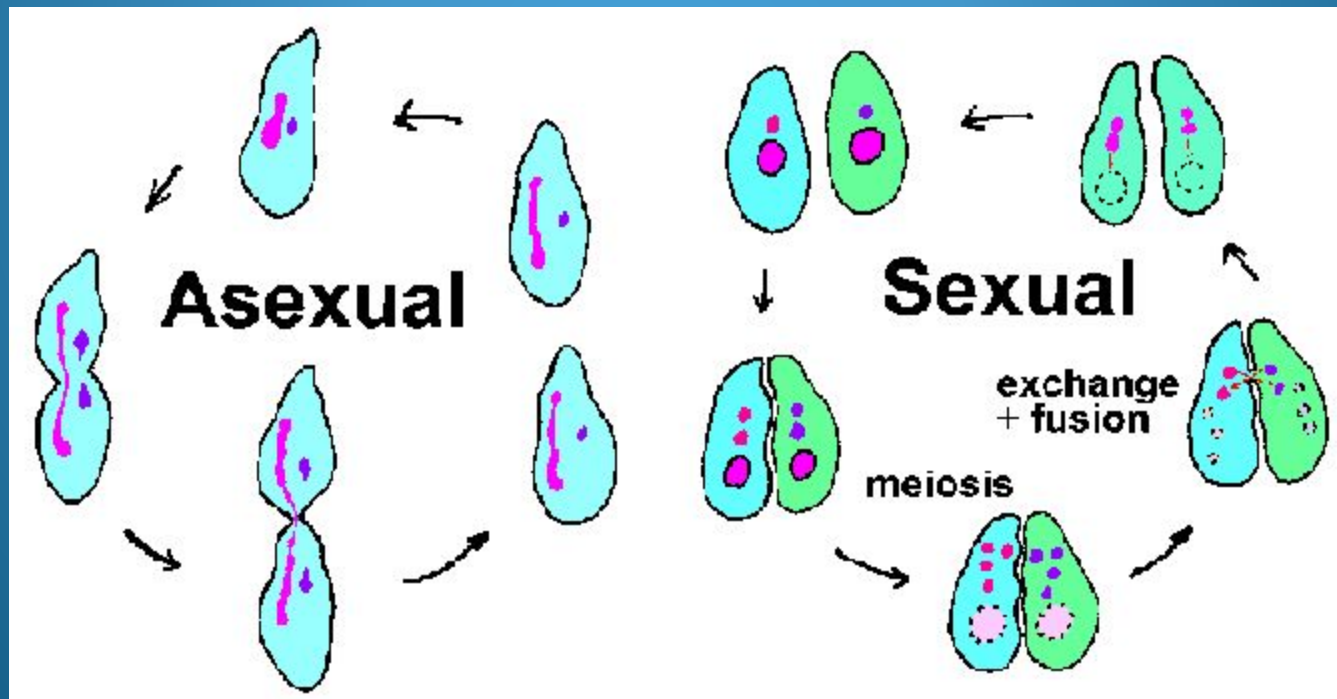
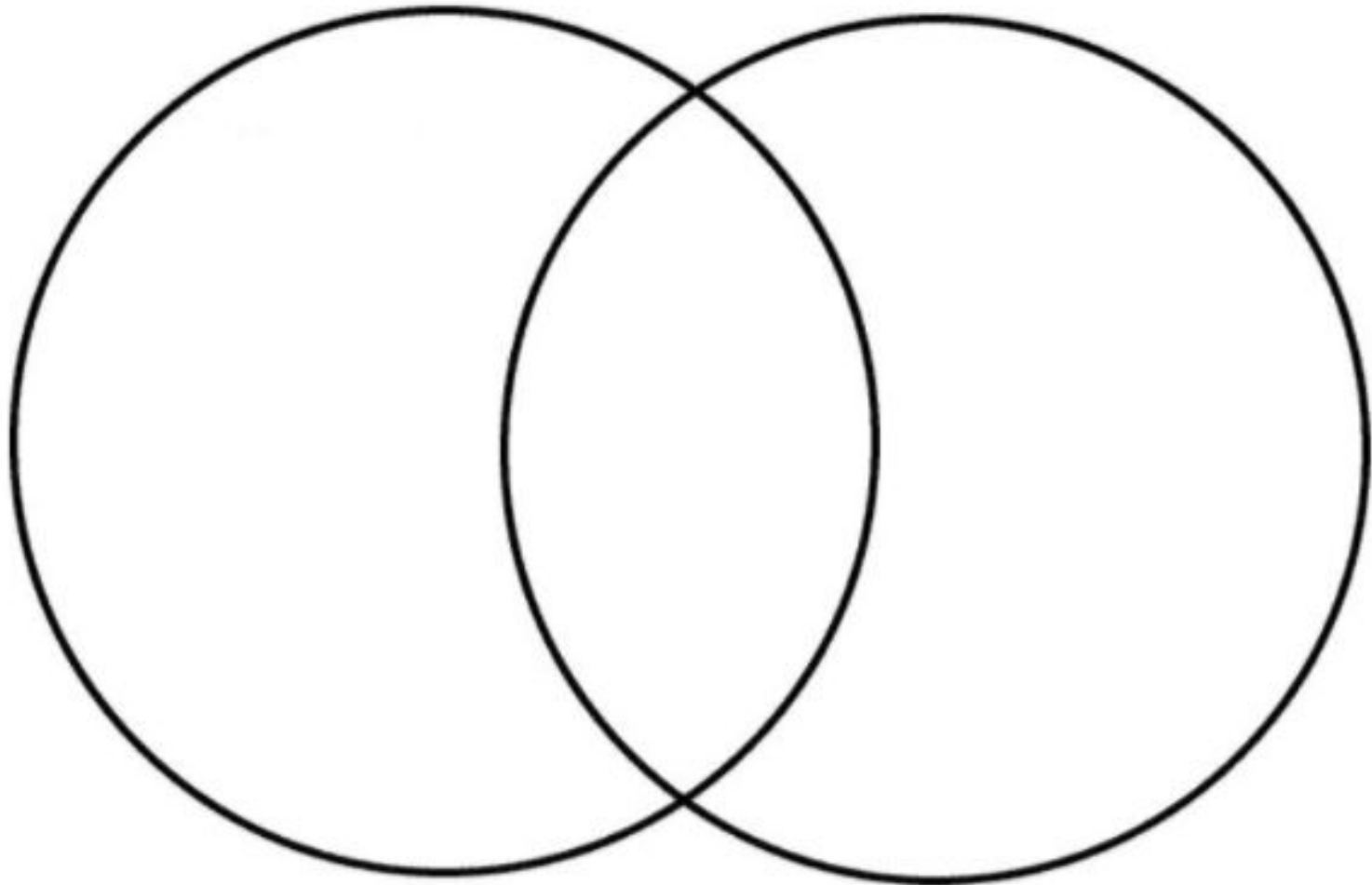


Asexual vs. Sexual Reproduction



**Asexual
Reproduction**

**Sexual
Reproduction**



Asexual Reproduction

- Requires only one parent.
- Offspring has 100% the same genetic information (DNA) as the parent - produce identical offspring.
- Most unicellular or less complex organisms reproduce this way.
- Usually takes less time to produce an offspring.

Asexual Reproduction

- Binary Fission
 - Bacteria
 - Protists

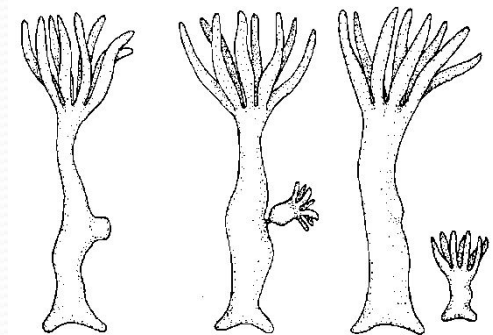
Binary fission is a form of asexual reproduction where the **organism** divides in two.



Asexual Reproduction

- Budding
- Hydra

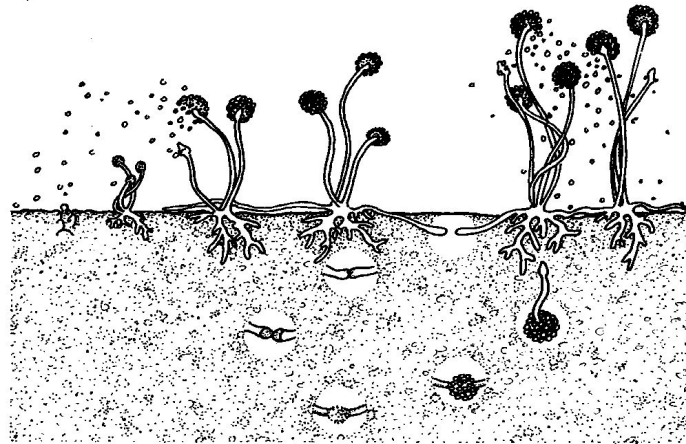
Budding is a form of asexual reproduction whereby a **new individual develops from an outgrowth of a parent, splits off, and lives independently.**



Asexual Reproduction

- Spore
 - fungi, algae, protozoa

Airborne cells that are released from the parent. They are enclosed and developed when the environment is appropriate

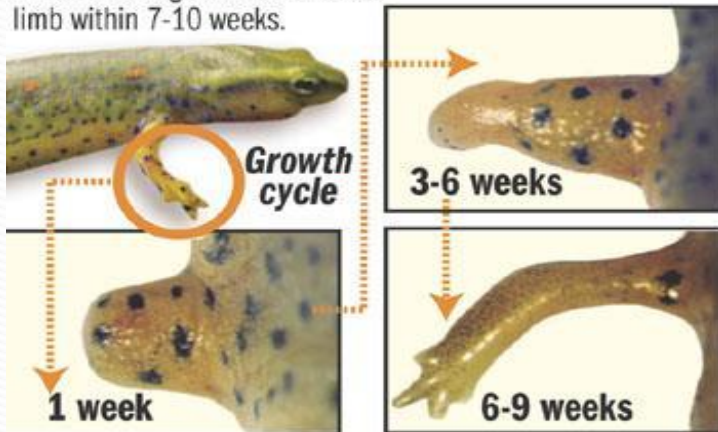


Asexual Reproduction

- Regeneration
 - starfish

Regenerating a limb

A newt can regenerate an entire limb within 7-10 weeks.

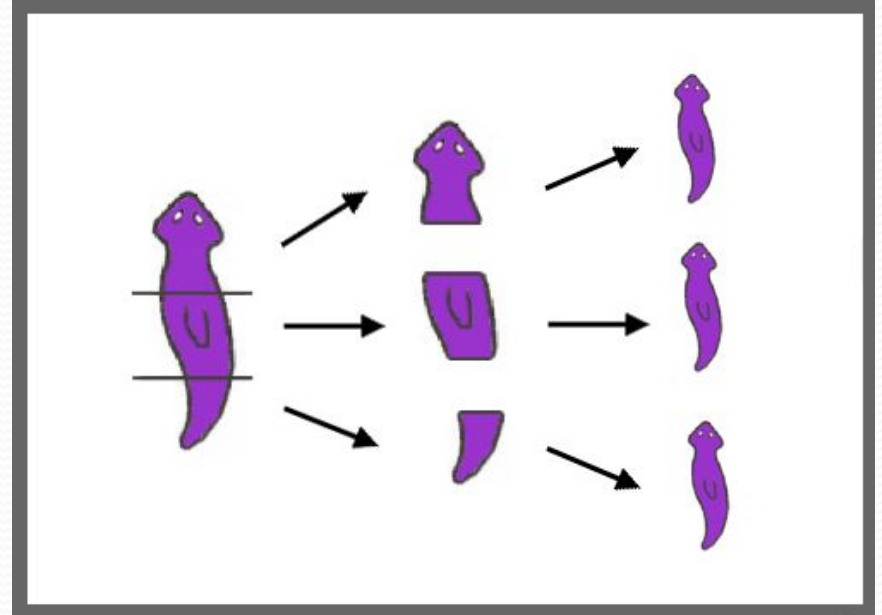


Regeneration is a form of asexual reproduction when a **body part has broken off and the organism grows a new one.**

Asexual Reproduction

- Fragmentation
 - flatworm

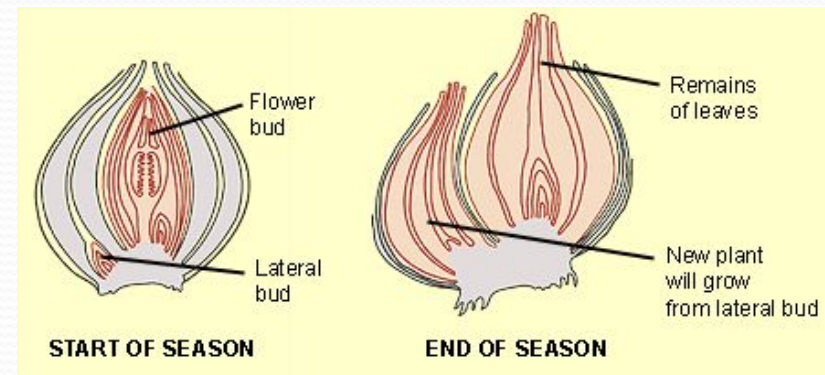
Fragmentation is a form of asexual reproduction whereby a **single parent breaks into parts that regenerate into whole new individuals.**



Asexual Reproduction

- Plant cuttings/
vegetative propagation

Vegetative reproduction is a type of asexual reproduction in plants that relies on **multicellular structures formed by the parent plant**. It has long been exploited in horticulture and agriculture, with various methods employed to **multiply stocks of plants**.



Asexual Reproduction

- Parthenogenesis
 - Nematodes
(Roundworms)

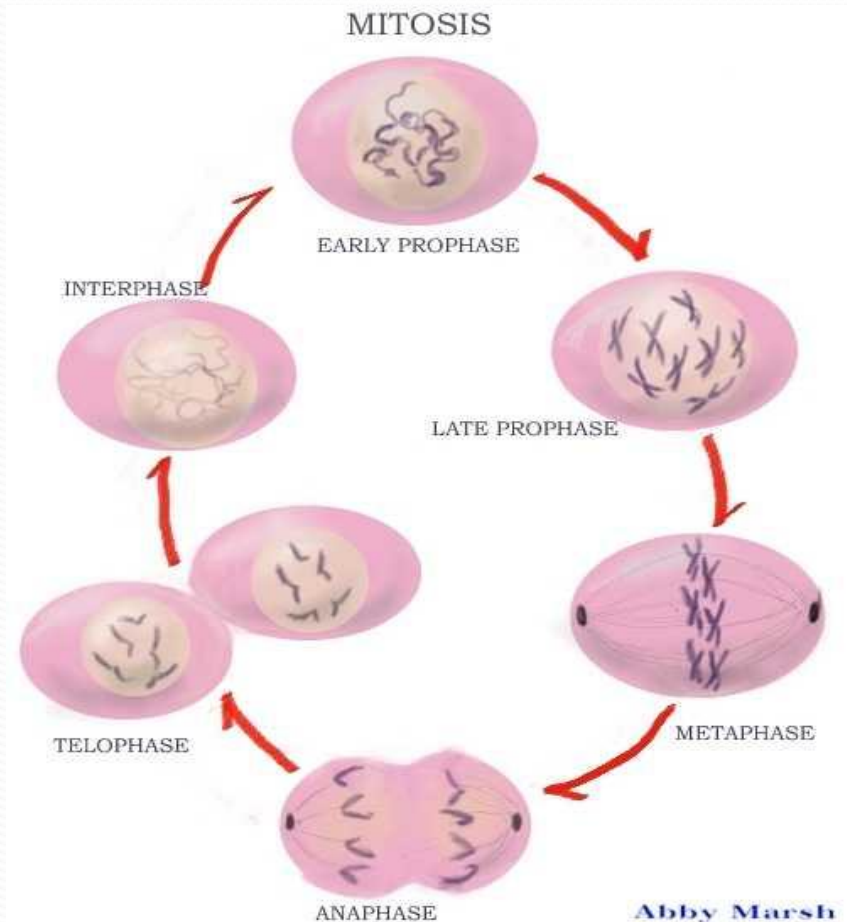
A natural form of asexual reproduction in which growth and development of embryos occur without fertilization by sperm. In animals, parthenogenesis means **development of an embryo from an unfertilized egg cell.**



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Asexual reproduction- Mitosis

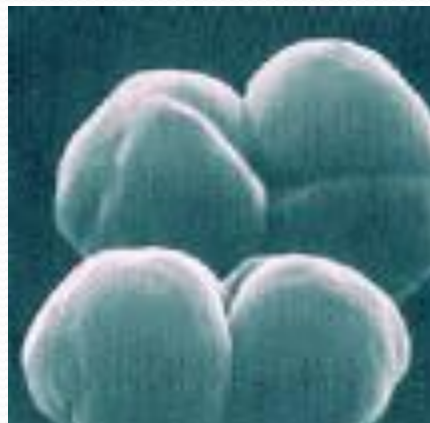
- The process where **animal cells divide**
- This is a type of **asexual** reproduction
- **Body cells go through the process of mitosis**
- **Results in an exact copy of the parent cell**



Asexual Reproduction

- Examples of organisms that reproduce asexually

- Hydra
- Sea Star
- Strawberry
- Archaeobacteria
- Eubacteria
- Euglena
- Paramecium
- Yeast



Sexual Reproduction

- Requires two parents.
- Offspring has $\frac{1}{2}$ of the genetic information from each parent - produce unique offspring.
- Most multicellular or more complex organisms reproduce this way.
- Usually takes more time to produce an offspring.

Sexual Reproduction



Sexual Reproduction

Sexual Reproduction

- Happens 2 ways

- Internally (inside)

- The egg is fertilized by sperm inside the female
 - Mammals, birds, reptiles, insects, spiders

- Externally (outside)

- The egg is fertilized by sperm outside the female
- The female lays the eggs and then the male fertilizes them.
 - Fish and some amphibians
 - Plants and fungi (pollen and spores)



Sexual Reproduction

- Plant Kingdom

- Flowers are the reproductive organs of plants.

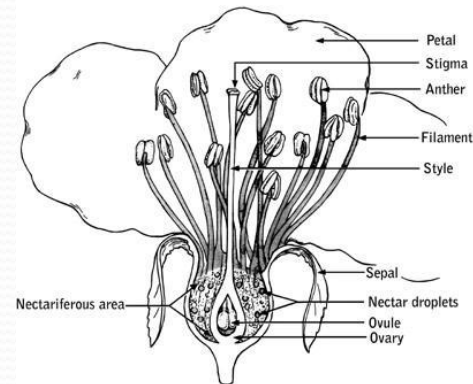


Male flower



Female flower

- Some flowers have both male and female reproductive organs on the same flower.



Sexual Reproduction

- Examples of organisms that reproduce sexually

- Chickens

- Iguanas

- Lobsters

- Sharks

- Humans

- Butterflies

- Sunflowers

- Roses

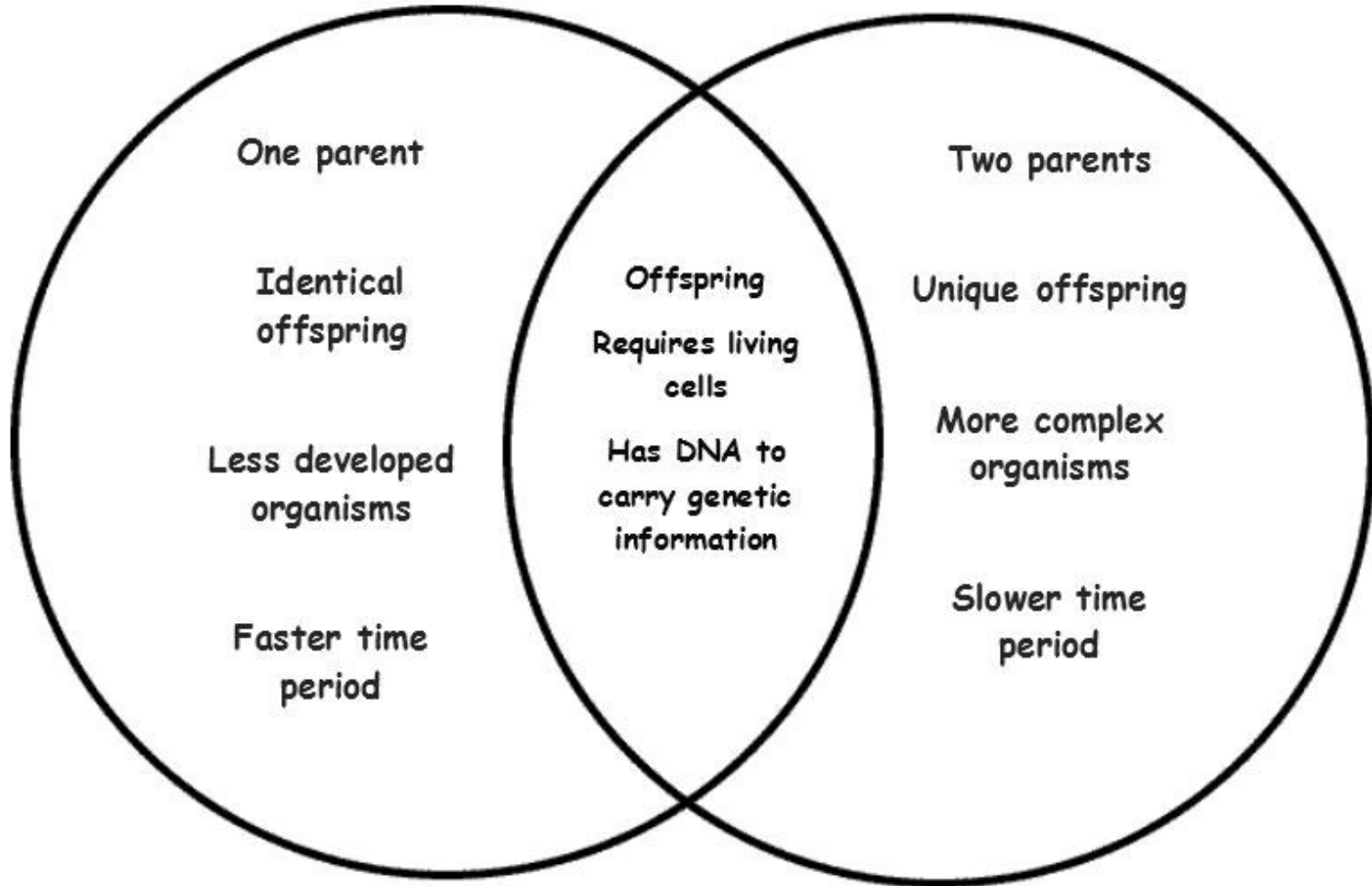


Asexual & Sexual Reproduction

- Produces offspring.
- Only occurs in living things. Involves cells.
- DNA carries the genetic information that is passed from parent to offspring.

Asexual Reproduction

Sexual Reproduction



Advantages vs Disadvantages of Asexual Reproduction

Advantages

- Asexual reproduction produces more offspring
- Asexual reproduction takes less time
- Only one parent involved. No searching for mates
- Requires less energy

Disadvantages

- Same DNA being passed down □ NO GENETIC VARIATION IN THE OFFSPRING
- If parent has genetic disease offspring will have it too

Advantages vs Disadvantages of Sexual Reproduction

Advantages

- Variation in offspring
- Organism is more protected because of genetic variation

Disadvantages

- Requires two organisms.
Must find a mate
- Requires more cellular energy
- More time required for offspring development