EVOLUTION


Homo neanderthalensis
Homo rudolfensis
Homo sapiens
Australopithecus boisei
Australopithecus afarensis
Australopithecus africanus
Homo erectus
Homo habilis
Australopithecus anamensis

EMBRYOLOGICAL EVIDENCE FOR EVOLUTION

INTRODUCTION

The study of the developmental stages of an organism is called embryology

If we observe the embryos of different animals, there is a similarity.

This similarity tells us that there is a relationship between the animals.

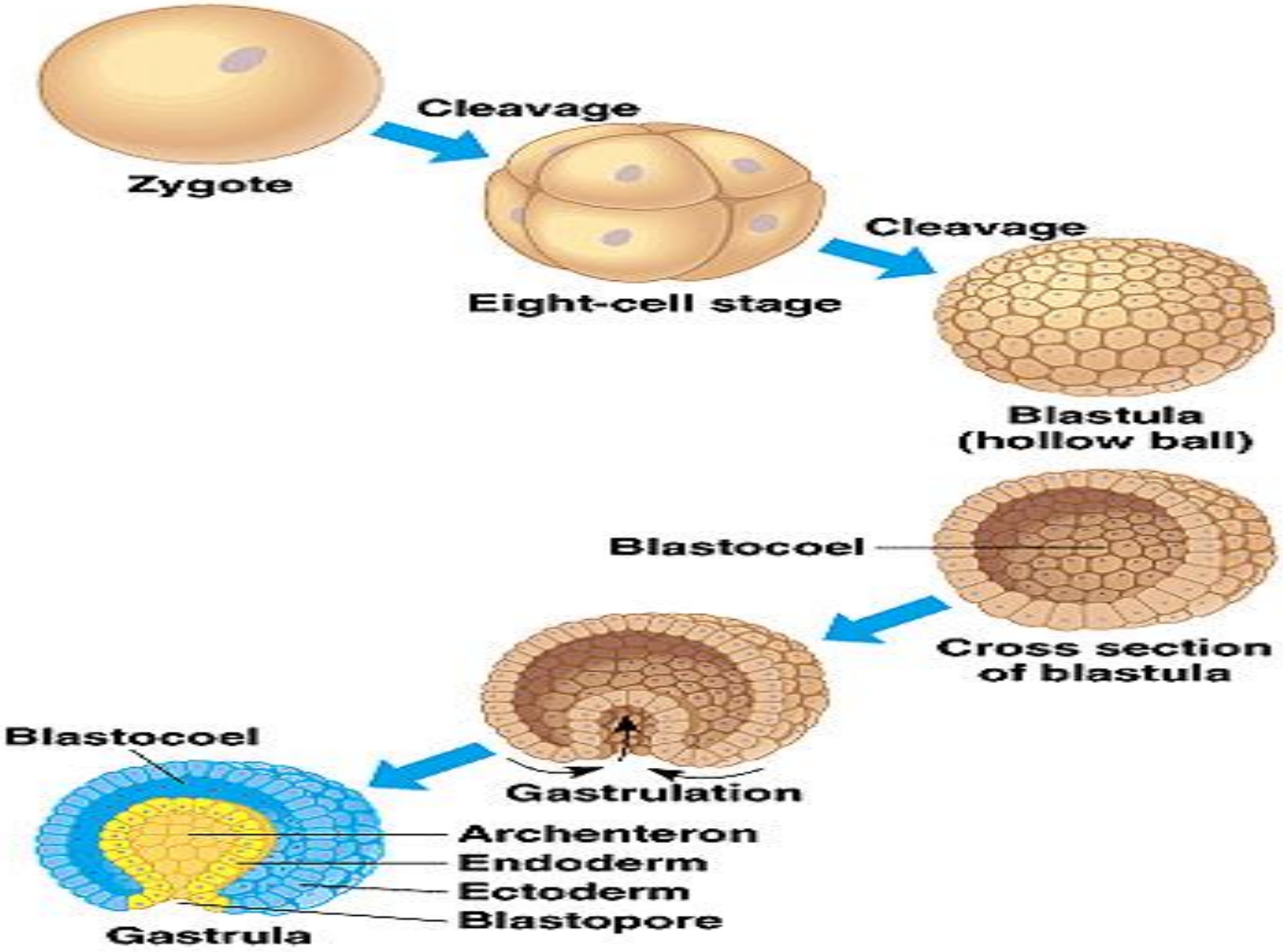
The embryological evidences show support to organic evolution

SEQUENCE OF DEVELOPMENTAL STAGES

- ALL MULTICELLULAR ORGANISMS BEGIN THEIR LIFE AS A SINGLE CELLED STAGE, NAMELY ZYGOTE.

- ZYGOTE-----MORULA-----BLASTULA------GASTRULA------ADULT

- THE SEQUENCE OF EMBRYOS SHOWS THAT EVERY MULTI CELLULAR ORGANISM PASSES THROUGH THE ABOVE STAGES REPRESENTING THEIR ANCESTORS

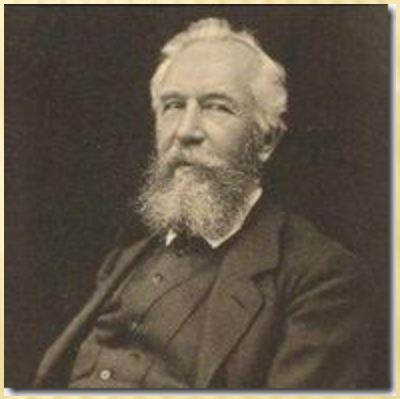


EMBRYOLOGICAL PRINCIPLES

VON BAER PROPOSED THESE PRINCIPLES BY STUDYING THE EMBRYOLOGY OF FISH, FROG, TORTOISE, PIGEON, CHIMPANZEE AND MAN

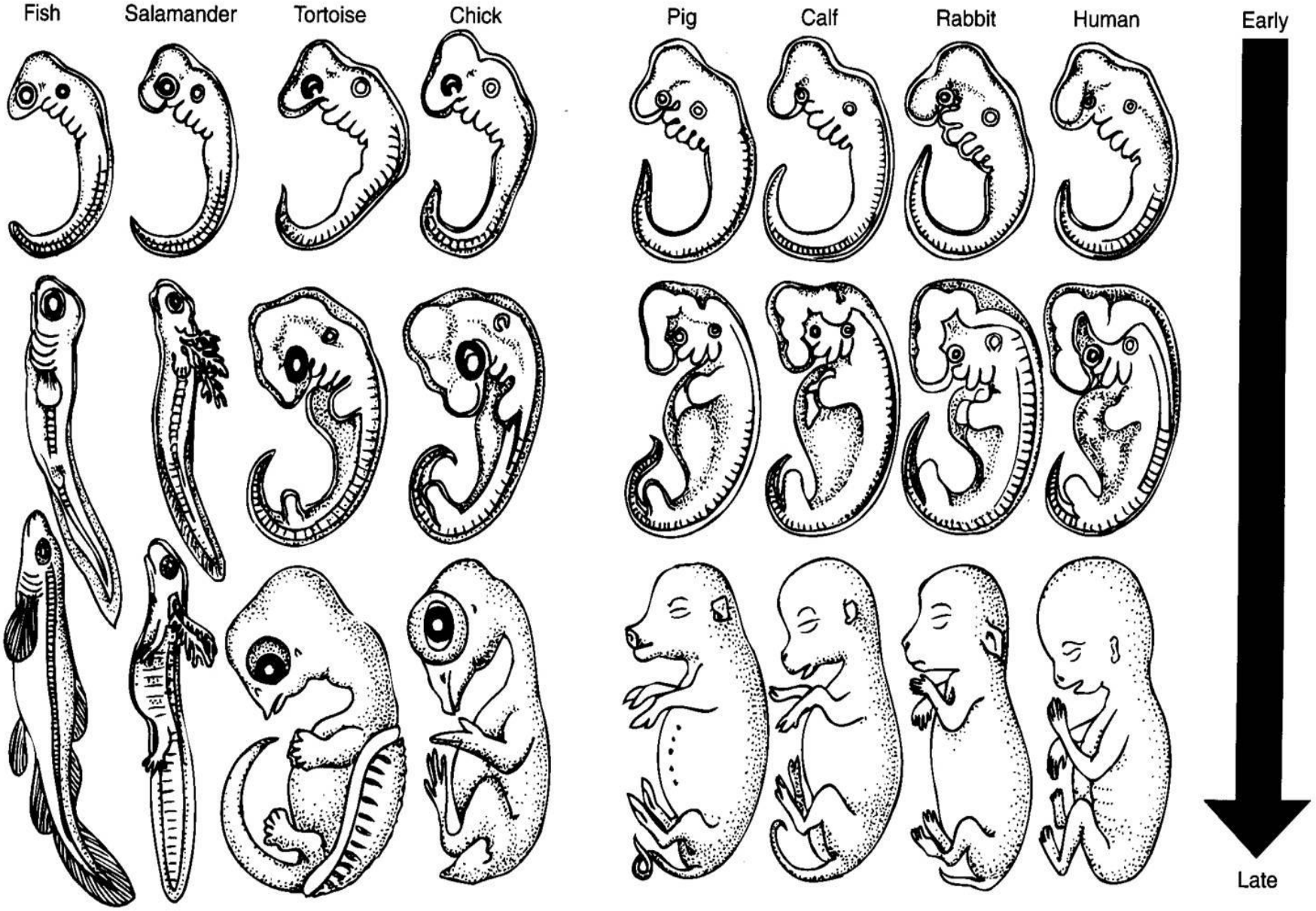
1. GENERAL CHARACTERS APPEAR IN THE EARLY EMBRYOS
2. THE SPECIAL CHARACTER APPEAR IN THE LAST EMBRYOS
3. THE EMBRYOS OF CLOSELY RELATED INDIVIDUALS ARE ALMOST SIMILAR UP TO THE END WITH SMALL DIFFERENCES
4. THE EMBRYOS OF ONE ORGANISM RESEMBLES TO THE EMBRYOS OF ITS ANCESTORS BUT NOT WITH ADULTS

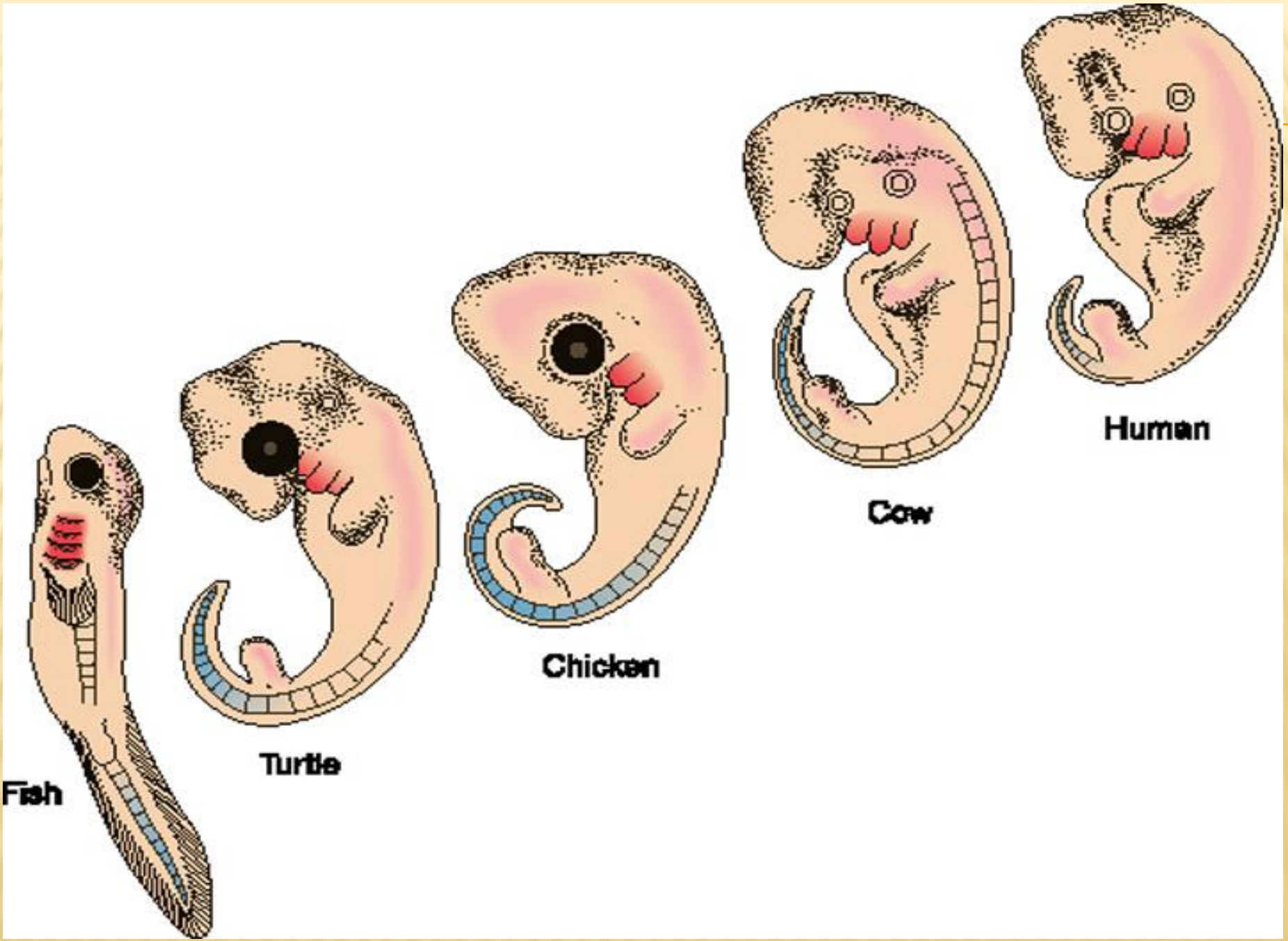
BIOGENETIC LAW



- IT WAS PROPOSED BY EARNEST HAECKEL

- LAW STATES THAT ONTOGENY OF AN INDIVIDUAL REPEATS ITS PHYLOGENY(THE STUDY OF THE SEQUENCE OF EMBRYOS OF AN ORGANISM IS CALLED ONTOGENY.THE EVOLUTIONARY HISTORY OF AN INDIVIDUAL IS CALLED PHYLOGENY).


Fish
Salamander
Tortoise
Chick
Pig
Calf
Rabbit
Human
Early
Late


Fish
Turtle
Chicken
Cow
Human

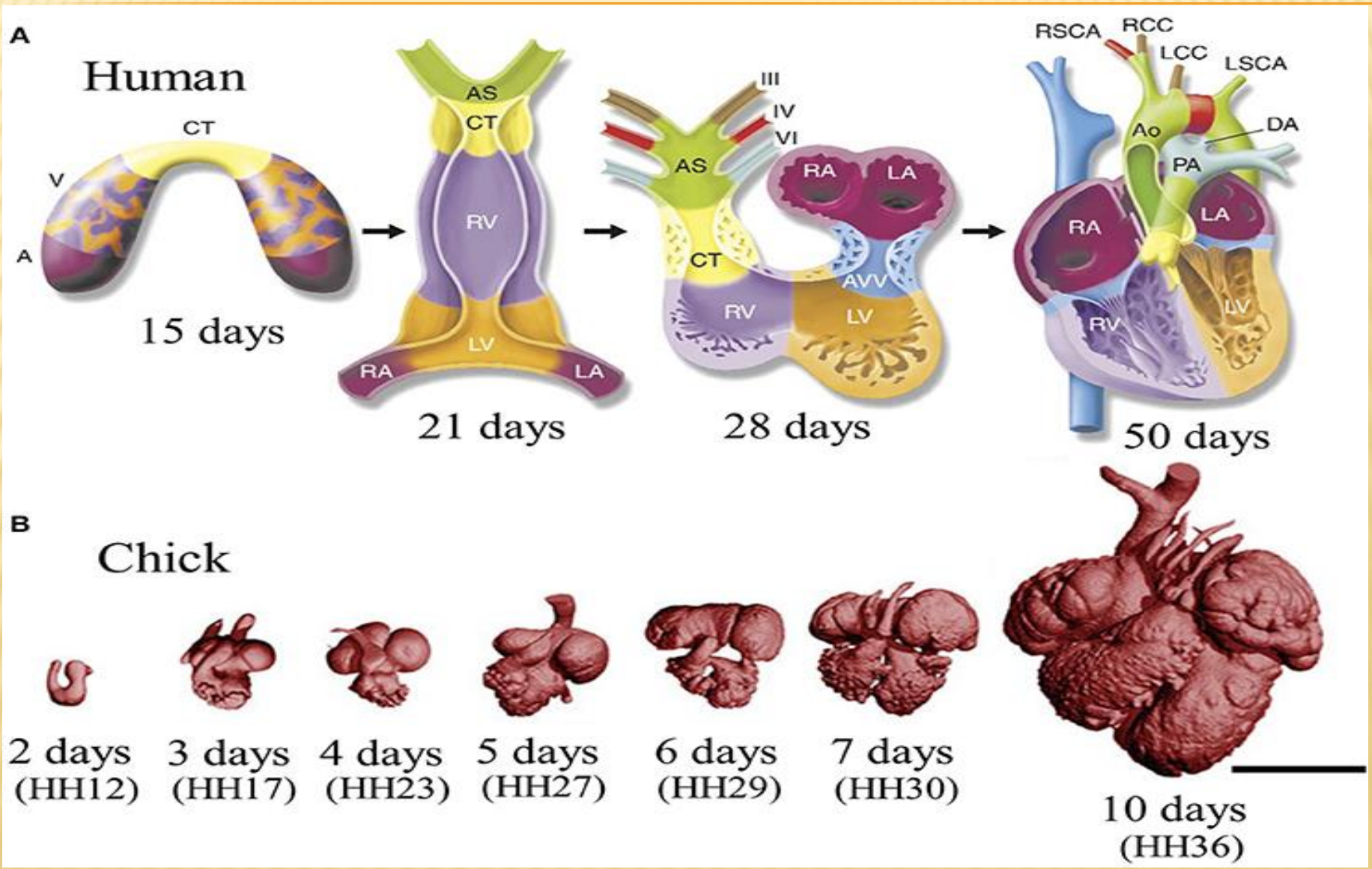
BOIGENETIC LAW- EXAMPLES

- TAD POLE LARVA OF FROG
- CATER PILLAR LARVA OF BUTTER FLY
- DEVELOPMENT OF ‘4’ CHAMBERED HEART IN THE EMBRYOS OF BIRDS AND MAMMALS
- TEMPORARY EMBRYONIC NONFUNCTIONAL ORGANS.

TADPOLE LARVA OF FROG

CATER PILLAR LARVA OF BUTTER FLY

DEVELOPMENT OF '4' CHAMBERED HEART



TEMPORARY EMBRYONIC NONFUNCTIONAL ORGANS

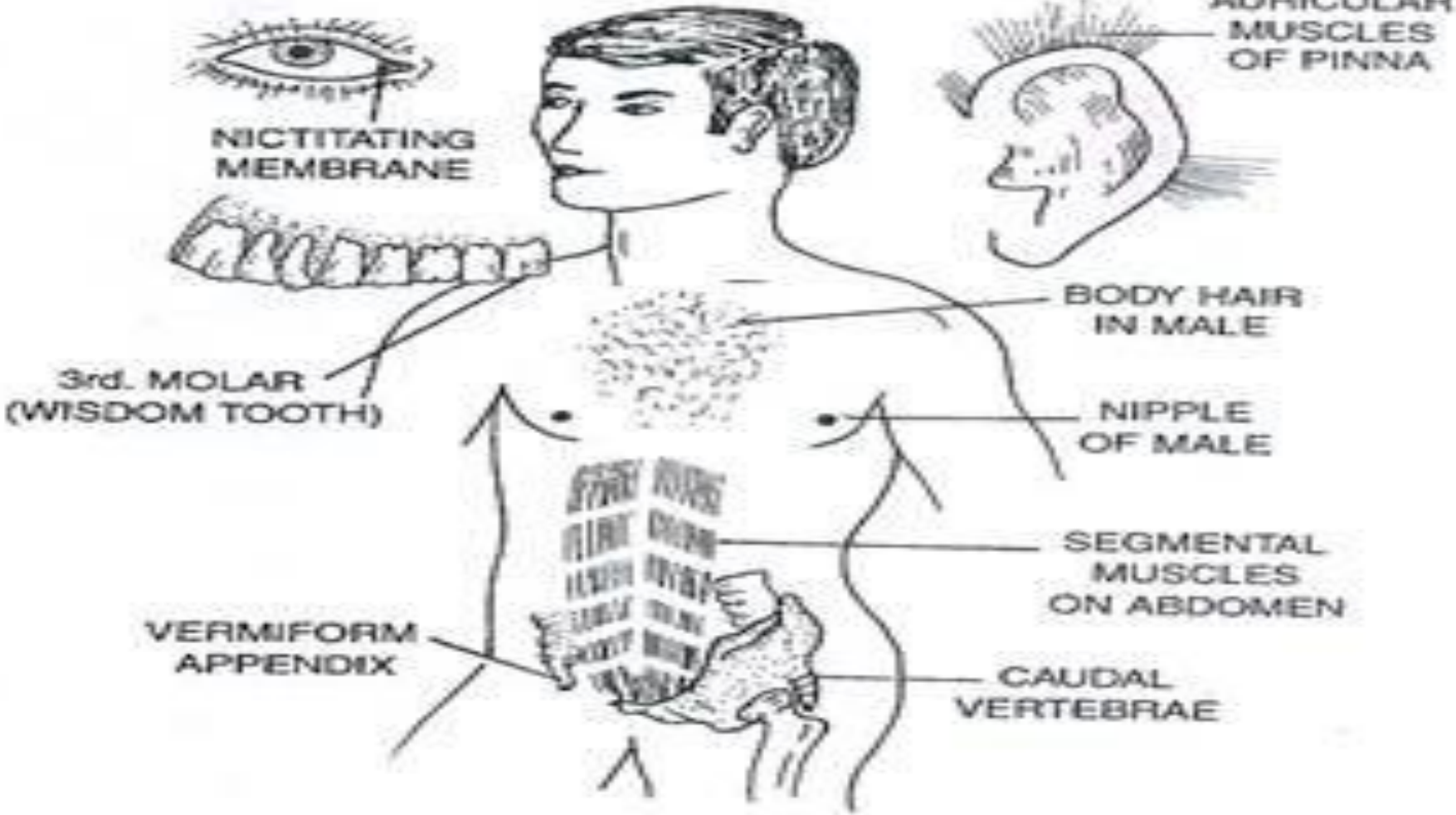


Fig. 7.26. Some vestigial organs in human body.

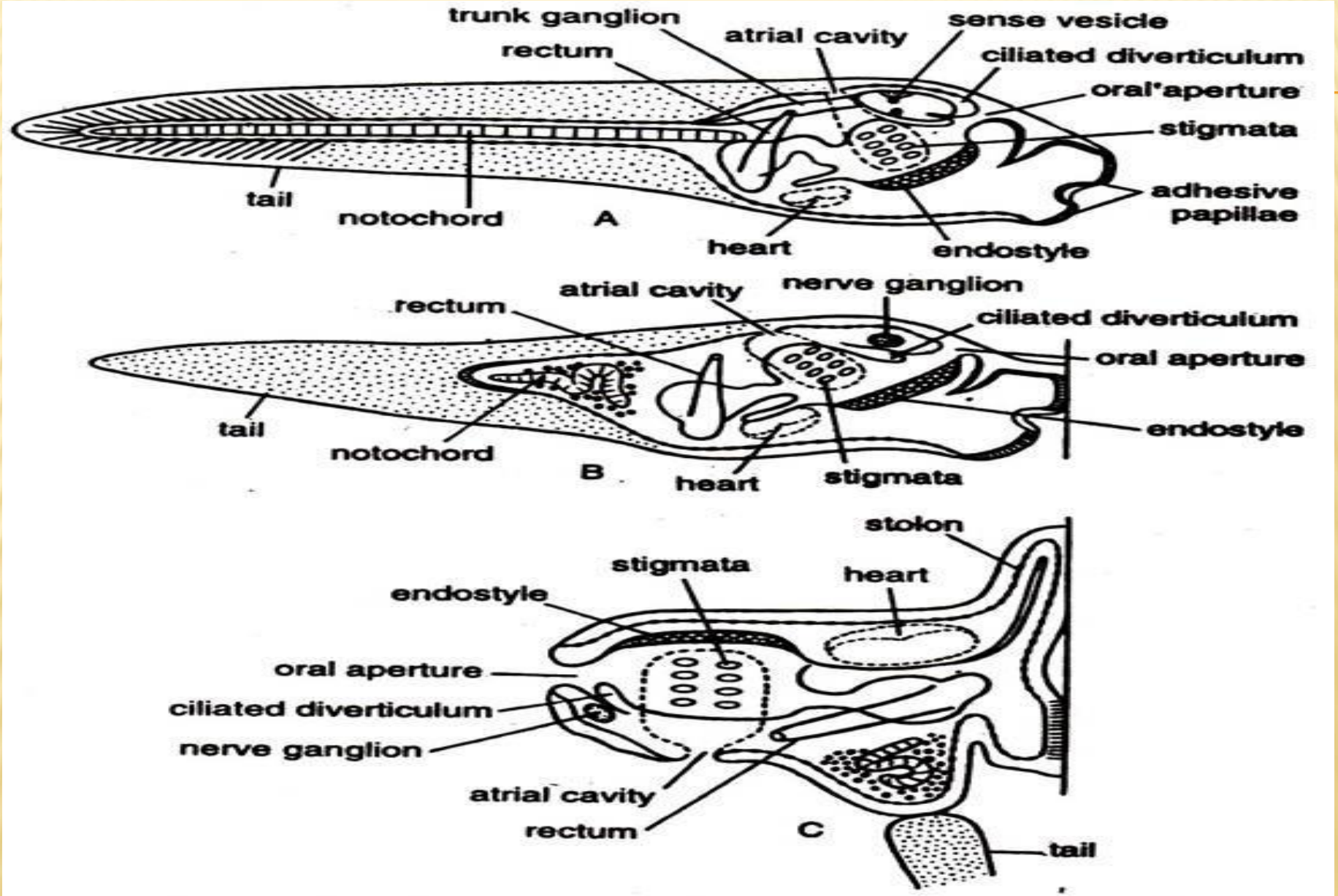
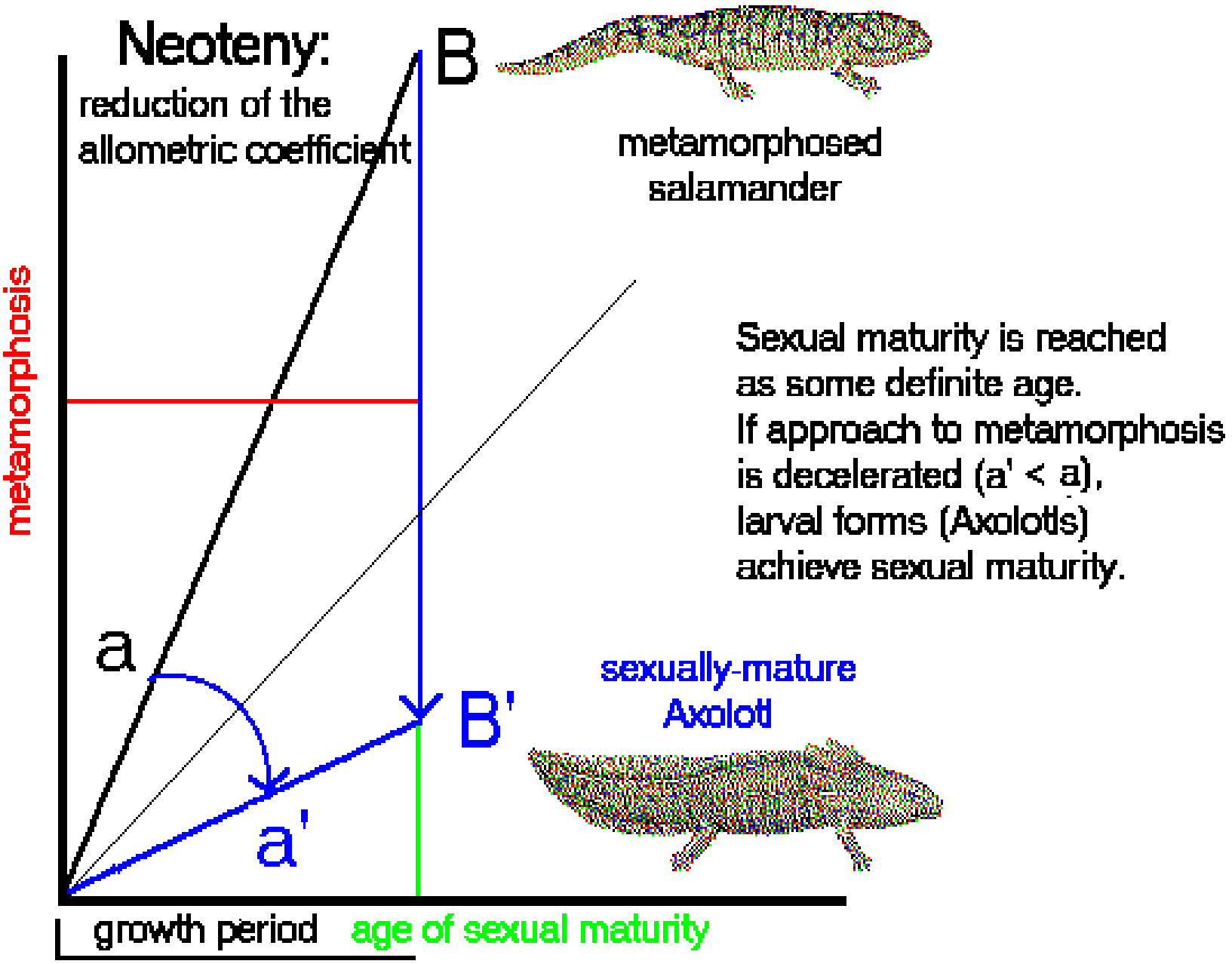


Fig. 30.6. Ascidia sp. Metamorphosis — free tailed larva into a fixed ascidian


Neoteny:
reduction of the
allometric coefficient
B
metamorphosed
salamander
metamorphosis
Sexual maturity is reached
as some definite age.
If approach to metamorphosis
is decelerated (a' < a),
larval forms (Axolotls)
achieve sexual maturity.
a
B'
sexually-mature
Axolotl
a'
growth period
age of sexual maturity