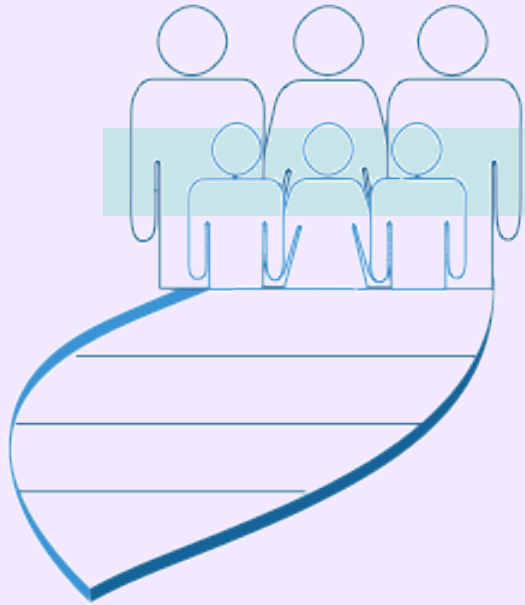


Life Sciences/HHMI
OutReach
PROGRAM



- Summer 2006 Workshop
- in Biology and Multimedia
- for High School Teachers

Human Vestigial Organs

By Donna Canuel-Browne

Vestige

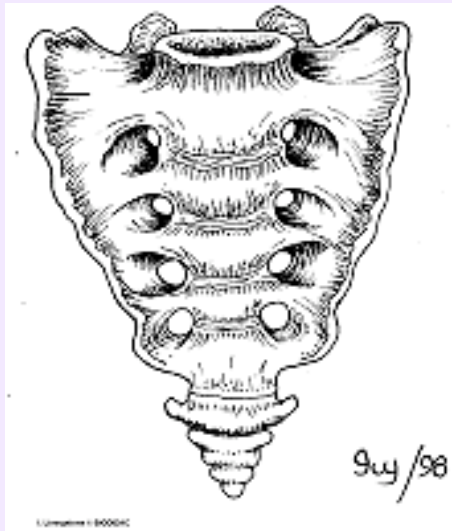
- 1 A visible trace, evidence, or sign of something that once existed but exists or appears no more. 2 *Biology*. A rudimentary or degenerate, usually nonfunctioning, structure that is the remnant of an organ or part that was fully developed or functioning in a preceding generation or an earlier stage of development.
- From dictionary.com

Vestigial Organs

A vestgial organ is an organ whose original function has been lost during evolution.

Examples of Vestigial Organs

- ❖ Appendix
- ❖ Coccyx
- ❖ Wisdom teeth
- ❖ Plica semilunaris



- ❖ Goose bumps
- ❖ Plantaris muscle
- ❖ External ear muscles

▪ In 1893 an anatomist named Robert Wiedersheim composed a list of 86 vestigial organs including the following

Adenoids

Body hair

Ear muscles for wiggling

Nictitating membrane of eye

Nodes on ears

Pineal gland

Plantaris Muscle

Toes bones III, IV, V

Valves in veins

Appendix

Coccyx

Lachrymal glands

Nipples on males

Parathyroid

Pituitary gland

Thymus

Tonsils

Wisdom teeth

He included some very useful organs, that are NOT vestigial organs

Adenoids and Tonsils -Important immune system function during the first year of life.

Lacrimal glands-produce tears which moisten and cleanse the eyes.

Parathyroid-maintains calcium levels

Pineal gland-produces melatonin and regulates daily rhythms

Pituitary gland-The pituitary gland helps control: growth, Blood pressure, aspects of pregnancy and childbirth, breast milk production, sex organ functions and thyroid gland function.from wikipedia

Thymus-Important for development of white blood cells.

Toes bones III, IV, V-important in locomotion and balance.

Valves in veins-Assist blood return against gravity to the heart.

The Appendix Controversy

Many scientists believe that the appendix is a vestige of an organ found in mammals that consume large amounts of cellulose, a major component of grass. It is believed that we no longer use this organ because our diets have changed.

From <http://www.org/faqs/vestigis/appendix.html>.talkorigins

Loren G. Martin, professor of physiology at Oklahoma State University, believes that early in development the appendix serves an important function of the immune system. He believes that the appendix “teaches” the immune system to distinguish dangerous pathogens from harmless food particles. Science Magazine

THE APPENDIX

"Its major importance would appear to be financial support of the surgical profession." Alfred Sherwood Romer and Thomas S. Parsons [The Vertebrate Body \(1986\)](#), p. 389.

"The appendix *n*, of the colon *n m*, is a part of the caecum and is capable of contracting and dilating so that excessive wind does not rupture the caecum." Leonardo da Vinci

FB 14v (1504-1506). from [O'Mally and Saunders 1952, Leonardo da Vinci on the human body](#), p. 185.



Image courtesy of BIODODAC website
<http://biodidac.bio.uottowa.ca>

The Coccyx

- Former function was to support the tail and the nerves associated with the tail.
- Formed from 4 fused coccyx.
- Currently used as a point of muscle attachment for the gluteus maximus.
- Has a shock absorber function

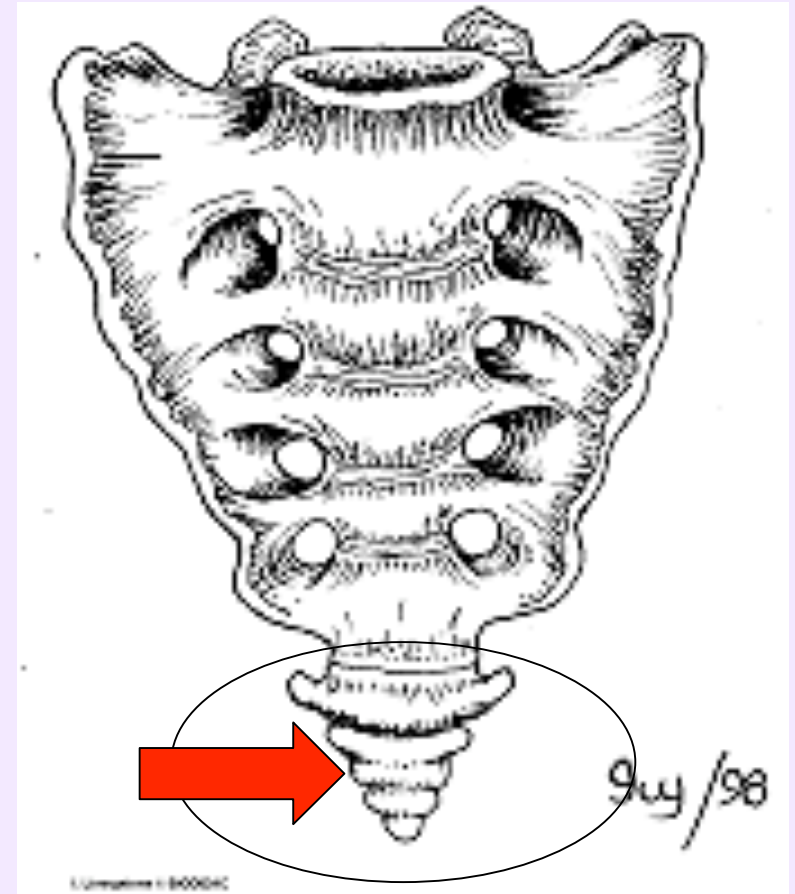
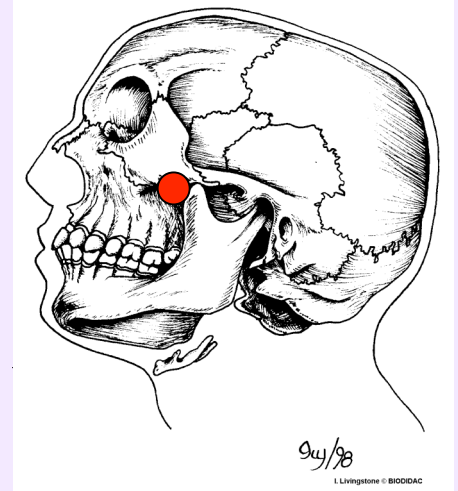


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Wisdom Teeth



- Called wisdom teeth because they erupt at ages 17-21, an age when a person is wiser than they were when the teeth erupted!

- Most people have 4 Wisdom teeth but the range is usually between 0 and 4. Often they are impacted (lodged in bone or soft tissue) and unable to erupt.

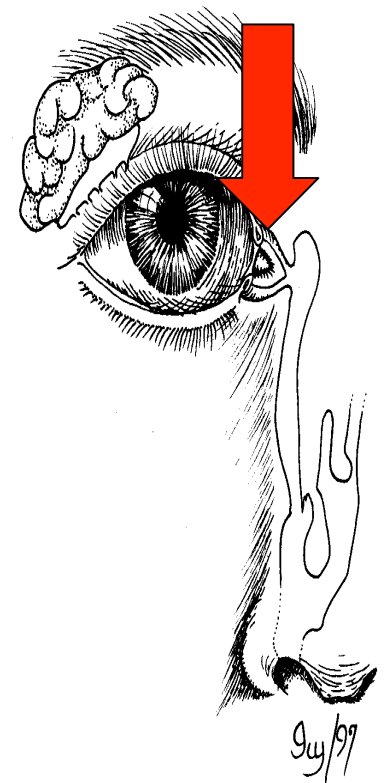
- Several theories exist on why wisdom teeth have such limited utility
 - We eat a more refined diet with less use for extra molars
 - Our teeth are less likely to be lost to decay, making “replacements” unnecessary.
 - Man has evolved a smaller jaw. From <https://www.drBunn.com/3rds.htm> and

Plica semilunaris

- A remnant of the “third eyelid” or nictitating membrane.
- In humans it still functions to make “sleepies” the crusty waste ejected from the eye.

From <http://everything2.com/index.pl?node=Plica%20semilunaris>

Image courtesy of BIODODAC
website <http://biodidac.bio.uottowa.ca>



Ivy Livingstone © BIODIDAC

Goose bumps

- Goose bumps are a vestigial reflex.
- In furry mammals, goose bumps allowed the fur to stand on end, making the animal appear larger to enemies.
- Goosebumps still serve a function in warming humans, as many thousands of tiny muscles contract creating heat.

Plantaris Longus

- Plantaris longus functions weakly to allow us to stand on tiptoes and flex the knee”
- The tendon is often used to replace a damaged tendon with no ill effect.
- In the primates the muscle was used for grasping trees with the feet.
- About 10% of people don't even have one

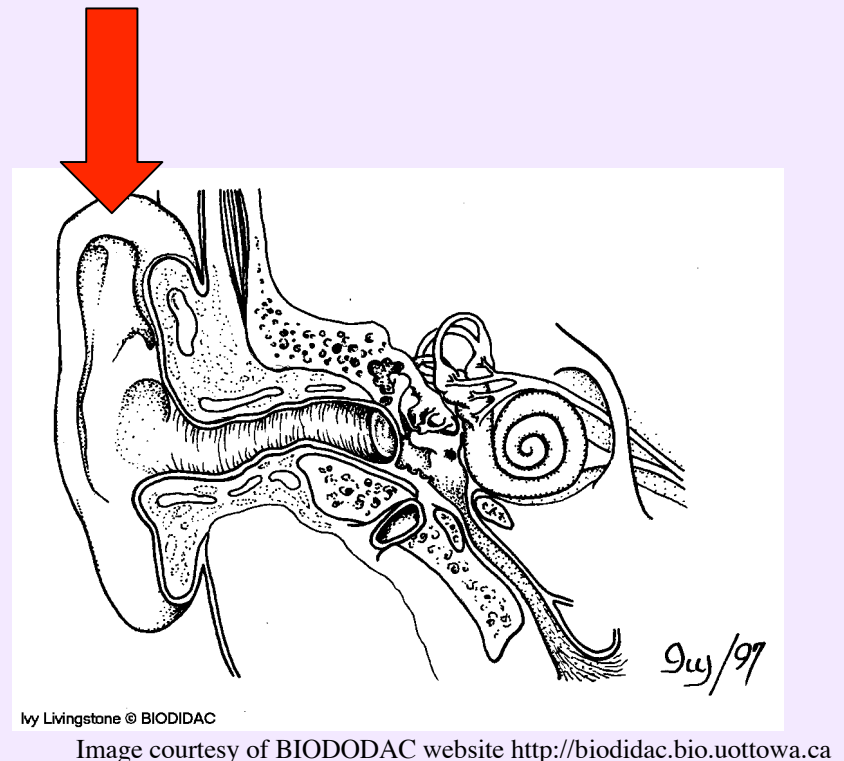
From [*www.answers.com/topic/plantaris-muscle](http://www.answers.com/topic/plantaris-muscle)

External Ear Muscles

- Humans have 3 small muscles on the outside of the ear.
- Most people cannot control these muscles, but some of us can still wiggle our ears
- Primates use these muscles to orient their ears toward a sound.

From

www.txtwriter.com/backgrounders/Evolution/EVpage12.html



The Myth of Male Nipples

- Male Nipples are not a vestigial structure because the NEVER had a function.
- Nipples in both sexes form early in pregnancy.
- Testosterone which produces “maleness” is not present until 14 weeks, after the nipples have already developed.

We must, however,
acknowledge, as it seems to
me, that man with all his noble
qualities ... still bears in his
bodily frame that indelible
stamp of his lowly origin.

CHARLES DARWIN, *Descent of Man*



Title 38 pt to 32 pt

- This is where your text goes.
- It can be in bullets. Or you can do one long paragraph.
- The text size is set at 24 point, but can be resized if needed down to 14 point.
- Last bullet point.
- Wait, you can fit one more.