

EVOLUTIONARY DEVELOPMENT

ZOO3603C


Satomi Kohno

Satomi Kohno Ph.D.

I got my Ph. D. in Yokohama City University, Japan in 2003.

I have worked at Zoology department for 6 years since 2003.

This is the first time to have the class in English.



Sex determination in American alligator

No Sex Chromosome

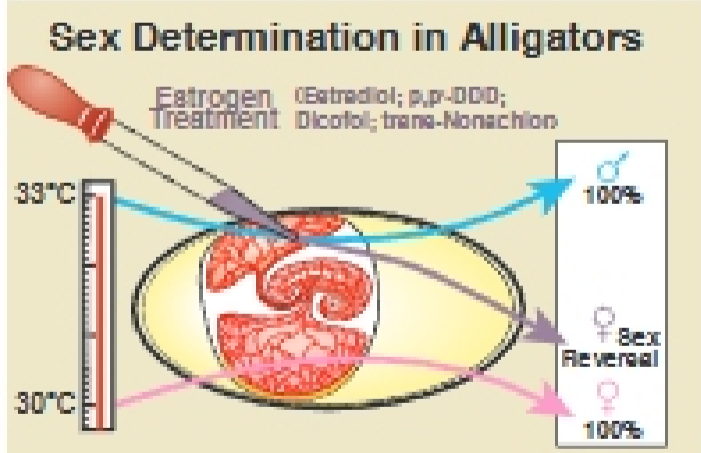
Temperature dependent sex determination (TSD)

33°C produces male, 30°C produces female

Sex reverse can be induced by estrogens or environmental contaminants.

Sex Determination in Alligators

Estrogen Treatment (Ethinodiol; p,p'-DDE; Dicofol; trans-Nonachlor)



33°C → 100% ♂

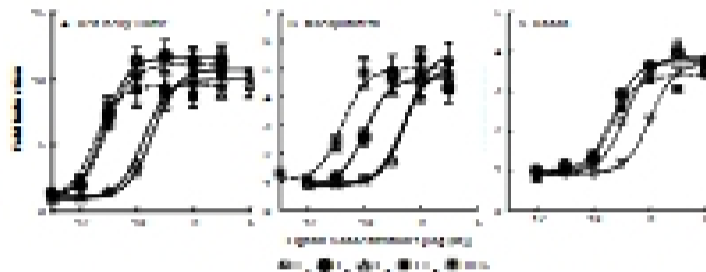
30°C → 100% ♀

Sex Reversal

Estrogen signaling

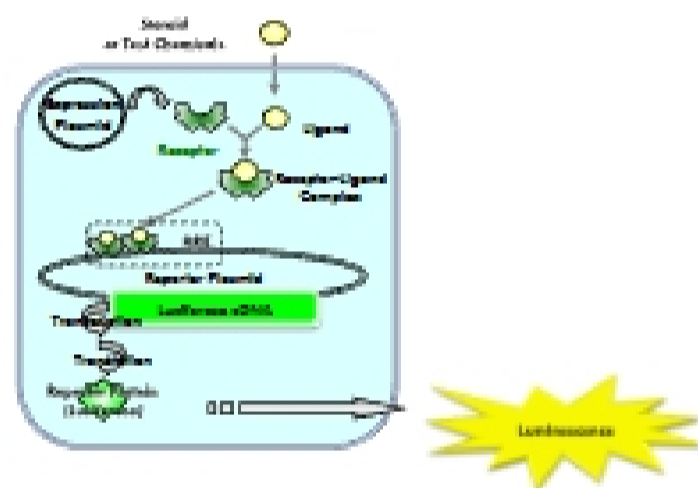
Relating to the sex-reverse phenomenon, the estrogen signaling is very interesting.

- Comparative Receptor function
 - Steroid hormone receptor is the transcription factor.
 - Comparing the transactivation of the receptor isolated from different species.



Reporter gene assay for the transactivation

Make receptor protein in the cell line. Transfected the plasmid with HRE (hormone response element) and the reporter gene.



Endocrine Disruptors

- Some chemicals in the environment can alter the endocrine system by mimicking the hormone, changing hormone productions or hormone clearance.
- A possible agent to induce the sex-reverse.
- Some of endocrine disruptors can bind to steroid hormone receptor.



Blood cells

- Blood cells can be an interesting genetic material to investigate the endangered animals, since we can collect them without killing the animals.
- Most of steroid receptor can be cloned from the blood cells.





Pipping American Alligator

If you are interested in our research, you can join our group. Contact to me to set up an interview for the undergraduate research.