Teratology
Science and Social Issues #2

- Retinoic acid (RA)—derivative of Vitamin A
  *drug formulations: Accutane (13-cis retinoic acid) and Retin A (all-trans-retinoic acid)
  *acutane 15 years ago administered orally for acne
  - physicians prescribe for acne during pregnancy
  - birth defects—intermittent, e.g., NS & limbs

-normal
+RA alters Hoxd expression

-normal
+RA Hoxb-1 in Rs 1-3 as well

-reaction: not banned, controlled (warning/conditions)
*Retin A introduced last decade and administered topically for acne and other skin conditions (extensive use)
- teratogenic when administered orally, not topically
- physicians prescribe to pregnant women with conditions
*How RA works in development
  - transported by proteins because a lipid
  - cellular RA binding protein in cytoplasm
  - nuclear RA receptors (RAR)
  - RAR•RA complex 3D change in RAR structure
  - complex binds to regulator regions of gene (e.g., Hox gene)