Teaching Science with Grossology!

** Make Science Accessible * Improve Critical Thinking Skills **
** Turn Students into Science Communicators **

1. Give each student a sentence or two of information about a gross adaptation in an animal. See back page for ideas.

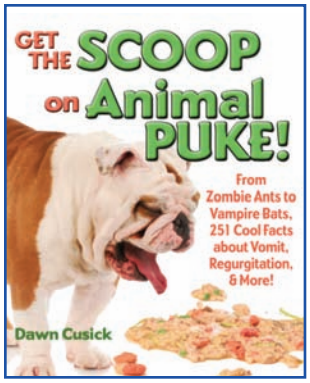
2. Provide a biological framework for students to consider their gross adaptation. Remind them of the following:

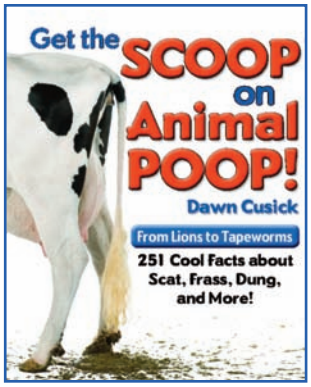
- Adaptations do not come from outer space or Wal-Mart; they come from changes (mutations) in base pair combinations inherited from their ancestors' DNA.
- Adaptations are selected for when they help organisms survive in a specific environment. In the wild, many more organisms are produced than there are resources to support, creating intense competition for limited resources such as habitat, food, and mates.
- Adaptations are never perfect and often have a "cost" to them.

3. Challenge students to research their animal's gross adaptation and share the information they find with the class. Ask them to explain how the adaptation helps their animal compete; which resources the animal is competing for; and whether the adaptation has any costs. Older students can also search for similar adaptations (or lack of) in close relatives.

4. Follow each student's presentation with layers of related science detail using science vocabulary.

5. Challenge students to share the gross information *and* the science information they've learned with someone outside of their class.





About the author . . .
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A Sampling of Gross Adaptations

From *ANIMALS THAT MAKE ME SAY EWWW . . .*

— Nose picking and eating in primates [diffusion, predation, foraging, energy, competition]
— Social grooming in primates [digestion, herbivores, microbiology]
— Food regurgitation in birds, wolves, and bears [digestion, energy, parental care]
— Jackals guarding elephant dung [chemical communication, predator/prey]
— Skunk spray [chemistry, speciation, anatomy, predator/prey]

From *GET THE SCOOP ON ANIMAL PUKE . . .*

— Pellet puking in birds of prey and fish- and some fruit-eating birds [digestion, anatomy]
— Mouth brooding eggs in Darwin's frogs [parental care, sexual dimorphism, extinction]
— Spiders and insects vomiting on food [digestion, organic molecules]
— Cud chewing/vomiting in ruminants [digestion, organic molecules, symbiosis, adaptation]
— Courtship feeding in some birds [parental care, selection]
— Saliva spreading in kangaroos and African spurred tortoises [habitat, adaptation]

From *GET THE SCOOP ON ANIMAL POOP . . .*

— Rhino latrines [chemical communication, territory, selection]
— Feces eating in elephants, pandas, and warthogs [digestion, herbivores, microbiology]
— Aphid guarding by ants and honeydew feeding [symbiosis, predator/prey]
— Jackals guarding elephant dung [chemical communication, predator/prey]
— Insects laying eggs in herbivore feces [habitat, CHNOPS nutrients in feces, parental care]
— Marine snow and benthic organisms [habitat, food chains]

From *GET THE SCOOP ON ANIMAL SNOT, SPIT & SLIME . . .*

— Mucus layer in earthworms [diffusion, gas exchange, chemical defense and communication]
— Thick layers of mucus on freshwater fish [osmosis, habitat adaptation]
— Mucous blankets in some parrotfish species [chemical communication, predator/prey]
— Filter feeding with mucus in corals and sponges [plankton, digestion]
— Saliva spreading in kangaroos and African spurred tortoises [habitat, adaptation]
— Spitting cobras [digestive enzymes, anatomy, adaptation]

Male jawfish-brooding eggs