



Biology Curriculum at Rocky Mountain HS

Marion Annis
Carol Seemueller
GK-12 Summer 2009 Presentation

Goals

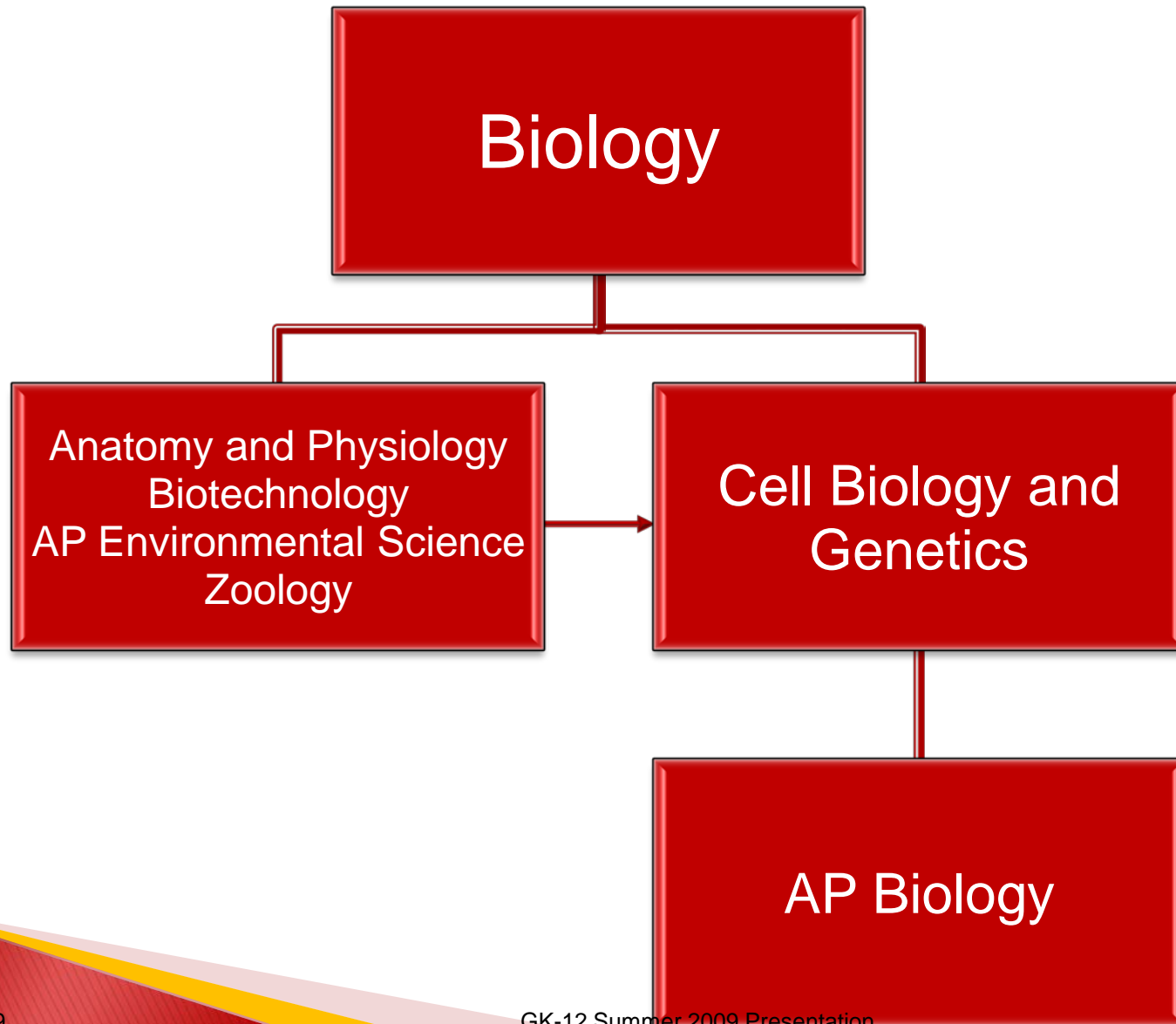
Through our collaboration we want our students to

- ▶ Acquire knowledge and skills through engaging lessons and labs
- ▶ Develop a sense of awe about science

Lobo 101

- ▶ Our Schedule is a 4x4 or accelerated block much like the university schedule
- ▶ We see our students every day for 90 minutes for one semester, class schedules change after winter break
- ▶ Class sizes range from 25–32

Curriculum Overview



Anatomy and Physiology at RMHS

- ▶ Grades 11–12 (mostly)
- ▶ Systems approach
- ▶ Mix of gross anatomy, microscopic anatomy and physiology
- ▶ Lab and activity based curriculum
- ▶ Outreach, field trips and special projects

Studying the Body Systems

- ▶ Microscopy
- ▶ Tissues and Skin
- ▶ Skeletal
- ▶ Muscular
- ▶ Cardiovascular
- ▶ Digestive
- ▶ Nervous
- ▶ Respiratory
- ▶ Immune
- ▶ Endocrine
- ▶ Urinary
- ▶ Reproductive

Potential Applications

- ▶ **Nervous System**
 - Nerve impulse transmission, Neuromuscular junction
- ▶ **Muscular System**
 - Sliding Filament Theory
- ▶ **Microscopy**
 - Size and Scale, visualizing cell processes (video microscopy?)
- ▶ **Immune**
 - Cell to cell interactions (class simulations?)
- ▶ **Endocrine**
 - Feedback loops

Potential Application cont.

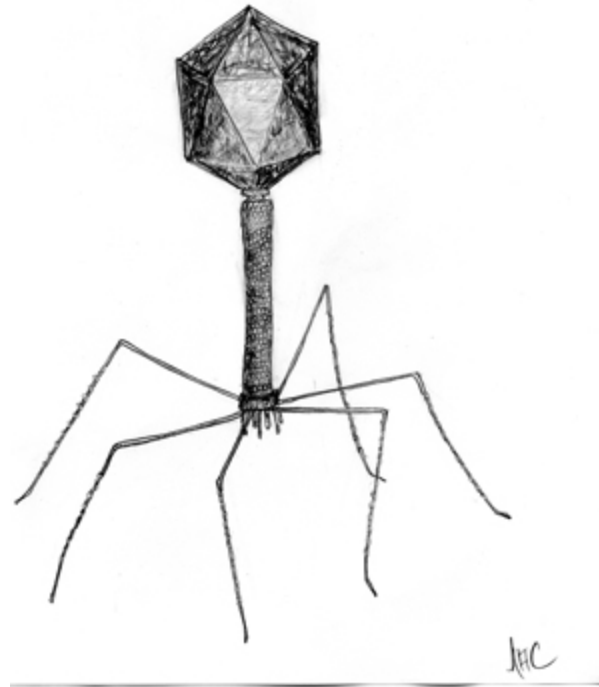
- ▶ Use of animals in biological research
- ▶ Scientific process and research methods
- ▶ Lab techniques and skills
- ▶ Reporting scientific findings using scientific language and writing skills

AP Biology Curriculum

- ▶ Developed by the College Board
- ▶ Molecules and Cells (25%)
- ▶ Heredity and Evolution (25%)
- ▶ Organismal Biology (50%)
- ▶ 12 Recommended Labs + More

Special Projects in AP Bio

- Amgen Biotechnology Labs: restriction enzyme digests, gel electrophoresis, bacterial transformation
- Phagehunting – inquiry lab through University of Pittsburgh Bacteriophage Institute

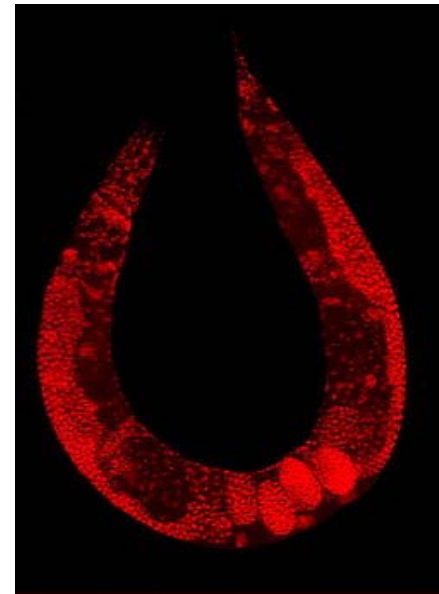


Potential for Growth...

- ▶ Microscopy (videomicroscopy/EM)
- ▶ Vernier Probeware applications – to transform traditional labs
- ▶ Cell to Cell communication
Cell cycle signaling – normal and cancerous cells
- ▶ Biotechnology enrichment
- ▶ Regulation of gene expression in prokaryotes and eukaryotes
- ▶ Neuromuscular Junction/Sliding Filament Mechanism

More ideas...

- ▶ Homeostatic mechanisms...osmoregulation, hormones, etc.
- ▶ Biomedical strategies...tuberculosis
- ▶ Work with *C. elegans* as a model organism



Questions?