

September 2017

Hello! I am excited to be the UIL Biology Director again for the upcoming 2017-2018 UIL season. Below is the list of expanded topics for 2017-2018. Most of these are from previous years. I have some minor updates to this list and may have a few more as I consider questions for the tests throughout the summer. These topics will certainly be finalized prior to the first SAC in September. I look forward to seeing you all again and meeting the new coaches! Thank you for all that you do!

UIL Biology 2017-2018 List of Main Topics

1. Relationship Between Structure and Function

Basic biochemistry, cell biology, biological membranes, membrane transport, structure and function of organic macromolecules

2. Cellular and Acellular Replication

Cell cycle, regulation of the cell cycle, DNA replication, genome structure, meiosis and sexual reproduction, viral replication

3. Energy Transformations

Metabolism, cellular respiration, photosynthesis, enzymes

4. Gene Expression

Protein synthesis, regulation of gene expression, effects of mutations

5. Genetics and Inheritance

Mendelian inheritance, non-Mendelian inheritance, genetic crosses, DNA technology

6. Evolution

Natural selection, reproductive success, microevolution (selection, mutation, recombination migration, genetic drift, gene flow), evidence of macroevolution (speciation, extinction), evidence for unity in diversity

7. Origin and Diversity of Life on Earth

Phylogeny, taxonomy, domains of life, animal and plant behavior, biological hierarchy

8. Ecology and the Environment

Population biology, community dynamics, organism relationships, biogeochemical cycles, ecosystem stability

9. Basic Human Anatomy & Physiology

Specialized cells (blood, muscle, and epithelial), tissue types, homeostasis (regulation, effects of imbalance), select organ systems involved in regulation, nutrient absorption, reproduction, and defense

10. *NEW*** Diseases**

(Requested at CapCon 2017) Parasitology, microbial pathogenesis, etiologic agents, and diseases

Exam Layout and Student Preparation Suggestions

Each contest will encompass all nine main biological topics with increasing level of difficulty as we progress from the Invitational to the State meets. Encourage your students to *read the question prompts carefully* before they look at the possible answers! Also, do not be discouraged by the length of the question. In some cases, students will need to sift through information that is not relevant. In other cases, enough background information must be provided to successfully answer the question.

Participants should expect three levels of questions. About 75% of the biology exam will consist of questions from Levels 1 and 2; with 25% from Level 3 questions, but this will be dependent on the exam tier. The relative difficulty will increase with each exam tier. The biology invitational tests are designed to get students thinking about concepts and will be easier than the district test and probably have more Level 1 and 2, than Level 3. The state test may have a few more Level 3 questions (probably 2-3 more Level 3 questions). The levels are indicated below.

1. **Knowledge and Comprehension:** Advanced recall and identification of subject matter.
2. **Application and Analysis:** Demonstration of quantitative reasoning using and generating graphs and data.
3. **Synthesis and Evaluation:** Using information and prior content knowledge to formulate conclusions and generate hypotheses.

Recommended Textbook Resources

Pearson's *Biology* by Campbell et al. (10th or 11th edition)
MacMillan's *Life* by Sadava et al. (11th edition)

Recommended Online Resources

University of Texas Bio 311C site: <http://bio311.biosci.utexas.edu/>
Learn Genetics University of Utah: <http://learn.genetics.utah.edu/>
Kimball's Biology Pages: <http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/>
Paul Anderson Bozeman Science <http://www.bozemanscience.com/about/>

Best wishes for your UIL endeavors this academic year.

Cheers,



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