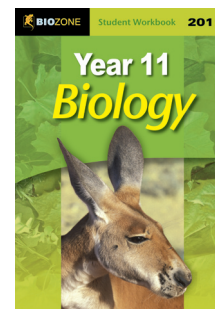


# What's New in Year 11 Biology 2011

Thank you for purchasing the 2011 edition of *Year 11 Biology Student Workbook*. Biozone is committed to providing an up-to-date resource that caters for the requirements of students and teachers in Australia. The current edition of this workbook expands on the material developed in earlier editions. This summary provides a record of changes since the previous edition.



## Organisational and general changes

Year 11 Biology 2011 builds on the successful features of previous editions, while focusing on scientific literacy and learning within relevant contexts. Much of the content has been substantially revised to improve its relevance, accessibility, and usability by students and educators. These changes include:

- ▶ A contextual approach. We encourage students to become thinkers by applying their knowledge within appropriate contexts. Some chapters include an account examining a 'biological story' related to the theme of the chapter. This approach provides a context for the material and an opportunity to focus on comprehension and the synthesis of ideas.
- ▶ Easy-to-use chapter introductions comprising succinct learning objectives, a list of key terms, and a summary of key concepts. The learning objectives are based on the learning outcomes provided by Australian curricula, without being specific to any single state's specification. Teachers may choose the objectives appropriate to their course in each case. Each introduction provides an indicator as to which part of the state curriculum that chapter applies.
- ▶ There is an emphasis on acquiring skills in scientific literacy. Each chapter includes a comprehension and/or literacy activity, and the appendix (a new feature) includes references for articles of interest cited throughout the text.
- ▶ Web links and Related Activities support the material provided on each activity page. We have provided an enhanced list of **web links** for activities accessed through [www.biozone.com.au/webblink/AU11-2702.html](http://www.biozone.com.au/webblink/AU11-2702.html). Each link provides a video clip or animation of relevance to the activity page on which it is indicated. Note that this resource is distinct from the Biolinks, which have long been a feature of BIOZONE's website.
- ▶ This workbook will be regularly updated to keep abreast of new developments in biology and to reflect changes to curricula. BIOZONE continues to be committed to providing up-to-date, relevant, interesting, and accurate information.
- ▶ Model Answers: In response to popular request, the model answers are now also provided as a show-hide feature on the non-printable PDF version of the workbook on the Teacher Resource CD-ROM (for separate purchase, conditions apply).
- ▶ Removed activities: Some activities have been removed. An activity is generally removed because (1) its content has been incorporated into a new activity (2) it is peripheral to all curricula or is more appropriate on the Teacher's Resource CD-ROM as part of the collection of resources for support and extension.
- ▶ All activities pertaining to calculation of confidence intervals and statistical tests (chi-squared, student's t test, regression, and ANOVA) activities are now provided in a separate unit *Statistical Activities* in the folder SPREADSHEETS AND STATISTICS on the Teacher's Resource CD-ROM together with supporting worked examples in *Excel*. This makes them accessible to both Year 11 and Year 12 students and teachers as appropriate. Use the Statistics Read Me provided on the TRC for information on how to use this package.

## ☆ New activities in this edition

### Literacy activities:

#### **Key Terms: Word Find**

A little different from traditional word finds, students must first solve the clue before they can find the word!

#### **Key Terms: Crossword**

Crosswords help student literacy in the selected topic. Students will need to know their key terms to solve it.

#### **Key Terms: Mix and Match**

Match each key term from the topic with its definition.

#### **On the Teacher's Resource CD-ROM**

The following class activities are also provided on the Teacher's Resource CD-ROM

#### **Key Terms: Memory Card Game**

An enjoyable way to help students remember words and definitions, with a competitive edge.

#### **Key Terms: What am I?**

A game requiring students to work in teams to help a team mate correctly determine their unknown word. Flexible format makes it suitable for any size class.

#### **Key Terms: I Have, Who Has**

A deductive game based on literacy and understanding to be played as a class.

#### **Concept map:**

A concept map introduces the course. Students can refer to the concept map to review the connections between topics and to place their material in context.

## ☆ New activities in this edition

### Page Activity and description

- |    |   |
|----|---|
| 14 | <b>A Qualitative Practical Task</b><br>Introducing a qualitative task; using colour changes in the iodine/KI test and the Benedict's test to assess the conversion of starch to simple sugars during ripening in bananas. Students are asked to evaluate the methodology and explain what is happening during the ripening process.   |
| 15 | <b>A Quantitative Practical Task</b><br>This activity introduces students to the procedure for a basic quantitative task, in this case, a study of catalase activity. The focus of the activity is in identifying and describing the variables, and aspects of the experimental design.   |
| 37 | <b>Evaluating Your Results</b><br>This activity is based on the evaluation of a quantitative task for which data are provided. The data relate to the metabolic activity of respiring seeds at varying stages of germination, as measured by decomposition of H <sub>2</sub> O <sub>2</sub> by catalase. Students must calculate the mean volume of oxygen produced, the standard deviation, and the mean rate of oxygen production. They are then asked to make decisions regarding the handling of data and to evaluate the experiment in terms of sources of error and design. |
| 52 | <b>Paper Chromatography</b><br>ThisXXured by  |



- 68 Identifying Structures in a Plant Cells**  
A new title identifies this as new but there is very little change to the activity "*Identifying Cell Structures*" which it replaces.
- 70 Identifying Structures in an Animal Cell**  
A complementary activity to "Identifying Structures in Plant Cells". This activity asks the students to identify the organelles of an animal cell from an electron micrograph. Questions focus on understanding the structure with respect to functional role.
- 76 Passive Transport Processes**  
A revision of the material previously covered in several activities. It covers types of diffusion as well as osmosis. *Erratum: Please remove the word "molecules" from the second line of caption D on the bottom of page 64.*
- 113 The Mouth and Pharynx**  
The first of a series of pages focussing on human digestion. This describes the structure and role of the mouth, pharynx, and teeth in humans.
- 149 Transport and Exchange Systems**  
(Previously *Internal Transport in Animals*), this activity has been revised to include the role of mass transport in animal systems. The questions have been revised accordingly.
- 150 Open Circulatory Systems**  
This activity describes both simple (insect) and more complex (crab) open circulatory systems.
- 151 Closed Circulatory Systems**  
Closed circulatory systems in invertebrates (annelids) are compared with single and double circuit systems in vertebrates. Schematics of fish and mammalian hearts are compared.
- 157 Capillary Networks**  
This activity looks at the structure and function of capillary networks in mammals. Students are asked to recognise different functional states in a capillary bed. The structure and role of portal systems are also discussed.
- 158 Formation of Tissue Fluid**  
The role of tissue fluid and the mechanisms by which it is formed and returned to circulation are discussed in this activity. This material was previously covered with capillaries and the clarity of the explanatory artwork has been improved.
- 172 A Most Accomplished Traveller**  
A reading and comprehension activity describing the reproductive adaptations of the coconut palm.
- 191 Alternating Asexual and Sexual Cycles**  
A stand alone revision of what was part of "*Asexual reproduction in Animals*". The focus is on parthenogenesis and the adaptive advantage of alternating cycles of sexual and asexual reproduction.
- 211 Phylogeny and Classification**  
A new activity examining the basics of cladistic analysis. Students examine and interpret data associated with different constructions of phylogenetic trees.
- 260 Water Balances in Desert Mammals**  
The water conserving adaptations of desert adapted species are discussed. Students must plot and interpret data relating to water fluxes in a kangaroo rat.
- 261 Managing Fluid Balance on Land**  
This activity compares and explains daily water transfers in non-desert and desert-adapted animals. The role of the loop of Henle (specifically, its length) in water conservation is also discussed.
- 263 Osmoregulation in Water**

The key features of osmoregulators and osmoconformers. Students are asked to interpret data relating to crab osmoregulation in diluted seawater.

- 264 Behaviour and Species Recognition**  
The role of courtship and mating behaviour in isolating species and ensuring successful breeding.
- 297 Cave Food Webs**  
Constructing a food web for lightless community where the usual producer level is absent.
- 325 The Rise and Fall of Human Populations**  
A comprehension activity examining the reasons for the demise of past human populations and how that information can be used to plan for our own future.
- 340 Spotlighting: A New Way to Sample**  
An introduction to how scientists approach a sampling problem in a real world situation. It also provides an insight into the research work of graduate students and shows where their studies might take them.

#### △ Existing material upgraded in this edition

Activities revised in order to clarify ideas and improve the stimulus material, questions, format, or general content:

#### Page Activity and description

##### Objectives and Key Concepts in all topics

The introduction to each chapter is now a single page synopsis of the material to be covered in the chapter. The objectives are still provided as numbered points, but the emphasis is on key competencies and students should now be able to more easily identify knowledge requirements. Key concepts for the chapter introduce the learning objectives, and a list of key terms provides a focus for competency in literacy. A teacher's version of the learning objectives, containing more explanatory detail, is provided in the Teacher's Guide (free with orders) for each chapter.

- 15 Recording Results**  
In the example table, the range of the independent variable has been reduced and the introduction has been revised.
- 63 Interpreting Electron Micrographs**  
Now a one page activity; the chloroplast has been replaced with lysosomes.
- 65 Bacterial Cells**  
A simpler one page activity covering the basic structure and organisation of bacterial cells. The questions (1-3) are unchanged from the 2010 edition.
- 73 The Structure of Membranes**  
A revision the diagrammatic work to more clearly show the key structural features of the plasma membrane. Question 1 is new.
- 81 Exocytosis and Endocytosis**  
A revision to include more explanatory detail, including a brief description of receptor mediated phagocytosis.
- 83 Active and Passive Transport Summary**  
A revision of a somewhat simpler activity in which students must identify the transport process from its description and then identify the transport process involved in described examples of cellular activity.
- 84 Cell Division**  
A revision to clarify the events in gametogenesis in animals and compare it with the role of meiosis in producing haploid spores in plants. The questions have been revised accordingly.
- 87 Cellular Differentiation of Human Cells**  
This activity now includes information of the role of cellular differentiation in development and the questions have been revised to avoid overlap in



- responses with "*Human Cell Specialisation*".
- 89 Human Cell Specialisation**  
A minor change in which a goblet cell replaces an intestinal epithelial cell. The intent of the activity is unchanged.
- 95 Energy in Cells**  
Cosmetic change to the artwork only.
- 107 Diversity in Tube Guts**  
This activity now includes a brief synopsis of peristalsis alongside the comparative view of gut structure. The human gut has been annotated to indicate the phases of food processing in a tube gut.
- 114 The Human Digestive System**  
This activity has been substantially revised to clarify the presentation of the material on the stomach and small intestine. The questions have been revised accordingly.
- 119 Coping with Different Diets**  
The second page of this activity has been revised to provide a comparative view of the adaptations for digestion in various animal taxa.
- 121 Adaptations for Absorbing Nutrients**  
A comparative view of the adaptations for nutrient absorption in various animal taxa. The cellular transport processes involved in the absorption of various nutrients by the intestinal villi in mammals is also provided.
- 127 Gas Exchange in Animals**  
This activity has been revised to a single page introduction to how gas exchange is achieved in different animals (and unicells) and how structure is related to function in a given environment.
- 156 Capillaries**  
This activity now includes only the first part of "*Capillaries and Tissue Fluid*" and focuses on capillary structure and function. The formation of tissue fluid and the structure and role of capillary networks are covered in separate activities.
- 162 Circulatory Fluids**  
Now a comparative examination of haemolymph and mammalian blood. The questions have been revised.
- 181 Fruits**  
The artwork in this activity has been revised to improve clarity. The questions are unchanged.
- 184 Asexual Reproduction in Animals**  
Now a one page activity with the principles of asexual reproduction being introduced with binary fission in a protozoan and budding and fragmentation discussed using the example of the cnidarian *Hydra*.
- 201 The Hormones of Pregnancy**  
A minor revision to include more information on the role of positive feedback during labour.
- 229 Biomes**  
A revision to better present the distribution of the world's biomes according to latitude. The questions are revised accordingly.
- 230 Components of an Ecosystem**  
The artwork has been revised and there is a new question (Q.4).
- 244 Ecological Niche**  
A minor revision to the artwork; the questions are unchanged.
- 265 Animal Communication**  
The questions for this activity have been revised.
- 285 The Carbon Cycle**  
The artwork and the questions have been revised and reorganised.

- 287 The Nitrogen Cycle**  
A minor revision to the artwork.
- 292 Food Chains**  
The organisms in the food chain have changed and question 4 has been revised accordingly.
- 303 Ecological Pyramids**  
The organisms in the food chain have changed (as for *Food Chains*). The questions are unchanged.
- 321 Population Growth**  
The emphasis here is now on human population growth and the questions have been revised.
- 339 Sampling Animal Populations**  
This is now a briefer, one page activity, focussing on simpler methods for sampling animals likely to be encountered by students. The questions have been revised accordingly.
- 366 Secondary Succession**  
This is now a briefer, one page activity, focussing on secondary succession in cleared land. The example illustrated is based on a Tasmanian system. The questions have been revised accordingly.
- 375 Global Warming**  
Data for greenhouse gas levels have been revised.

*We hope that you enjoy using Year 11 Biology this year. We welcome all constructive feedback ... the staff at Biozone.*

**!! ERRATA Workbook**

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