

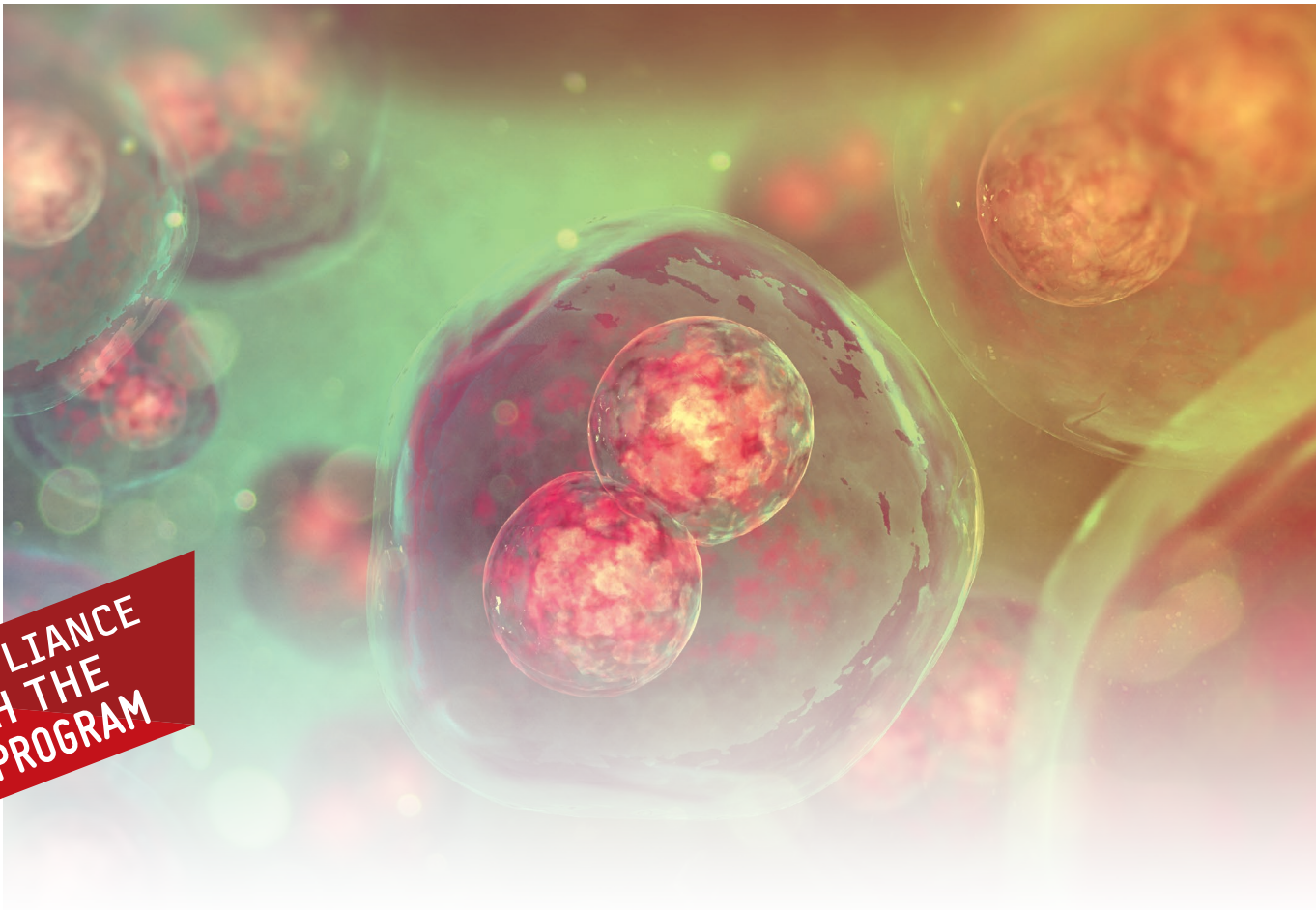
LEARNING GUIDE

# TRANSFORMATIONS

## REPRODUCTION AND DEVELOPMENT

BIOLOGY

BLG-5071-2



IN COMPLIANCE  
WITH THE  
NEW PROGRAM

SOFAD

LEARNING GUIDE

# TRANSFORMATIONS

REPRODUCTION AND DEVELOPMENT

BIOLOGY

BLG-5071-2



SOFAD

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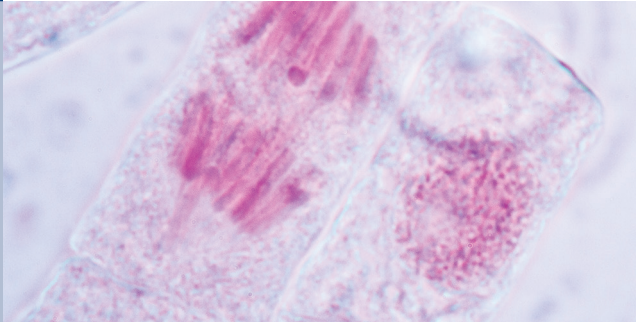
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Legend: l = left   c = centre   r = right  
t = top   b = bottom

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## Introduction to the Learning Guide

Welcome to the learning guide for the *Reproduction and Development* course. The goal of this Secondary V Biology course is to develop your ability to seek answers to problems related to human reproduction, growth and development. In this course, you will:

- process information to solve problems related to cell division mechanisms, birth control, infertility and the development of the embryo during pregnancy;
- apply your knowledge to explain the processes involved in reproduction and development and how these processes are regulated by hormones;
- describe intervention techniques used for reproduction mechanisms;
- study the incidence of environmental factors on the development of the embryo and fetus and describe the underlying scientific principles in prenatal screening and diagnostic techniques;
- make informed decisions on social issues arising from the use of reproductive biotechnology and evaluate its impact on society and demographics;
- use various methods to communicate your ideas and the results of your scientific research on the human biological cycle.

Listed below are the three competencies you will develop:

- Seeks answers or solutions to problems involving biology.
- Makes the most of his/her knowledge of biology.
- Communicates ideas relating to questions involving biology, using the languages associated with science and technology.

You are now invited to carry out the learning activities presented in the four chapters of this learning guide.

## Portailsofad.com

You can find all the material you need to accompany the TRANSFORMATIONS series on [portailsofad.com](http://portailsofad.com): videos and printable versions of complementary resources.



The learning process followed in each chapter is illustrated below. The pedagogical intent is specified for each section. Learners progress by building on what they have learned from one section to the next.

## CHAPTER INTRODUCTION

The first page describes the context and the theme that will serve as a backdrop for the acquisition of the new knowledge discussed in the chapter.

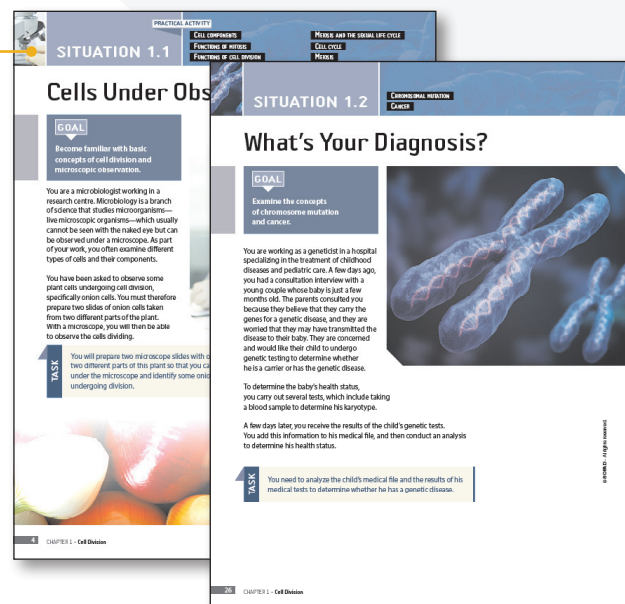


A table of contents accompanies this first page. The knowledge to be acquired is described for each of the *Situations*, as well as the theme of the situational problems.

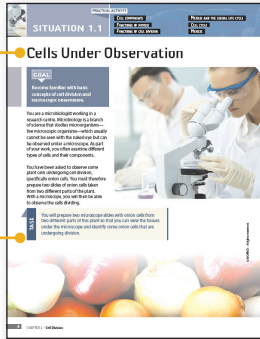
## SITUATIONS

In general, each chapter contains two *Learning Situations*, which can be either theoretical or practical.

The approach taken in these situations enables learners to acquire new knowledge and develop skills in realistic and meaningful contexts.



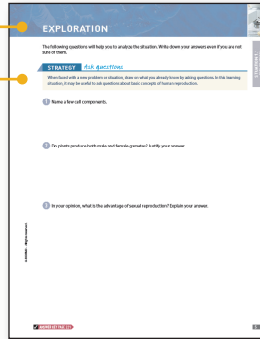
# PHASES OF EACH SITUATION



## SITUATIONAL PROBLEM

Related to the main theme of the chapter, this page briefly describes the context of the situational problem and provides the information needed to solve it.

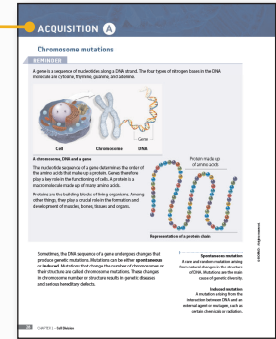
A box describes the task that you must perform later in the *Solution* section. This task is the starting point for acquiring new knowledge to solve the situational problem.



## EXPLORATION

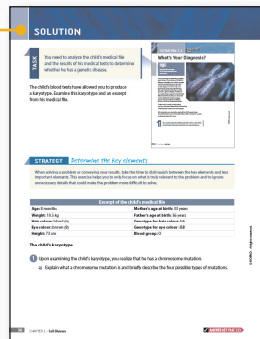
This section invites you to analyze the data of a situational problem, and then identify the knowledge you possess and the knowledge you need to acquire in order to perform the task.

Aspects of the investigative process in science and exploration strategies may also be suggested here.



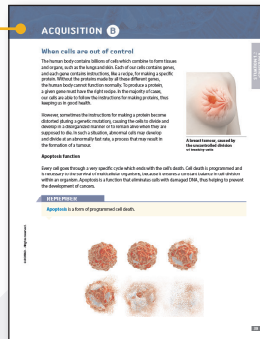
## ACQUISITION A

This is where the knowledge needed to solve the situational problem is assimilated.



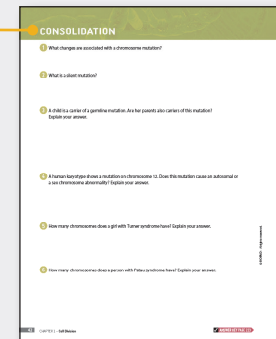
## SOLUTION

When you reach this section, you should have acquired all the knowledge and strategies that are essential to solving the situational problem described at the beginning of the situation. Other elements of the investigative process in science and analysis strategies may also be suggested here.



## ACQUISITION B

In this second acquisition section, you will learn new concepts prescribed in the program that are related to those covered in *Acquisition A*.



## CONSOLIDATION

This section allows you to consolidate the knowledge you acquired in *Acquisition*. Like *Integration*, *Consolidation* contributes to competency development.

## AT THE END OF A CHAPTER . . .

### KNOWLEDGE SUMMARY

This section summarizes all the knowledge to *Remember* that was presented in the chapter.

### INTEGRATION

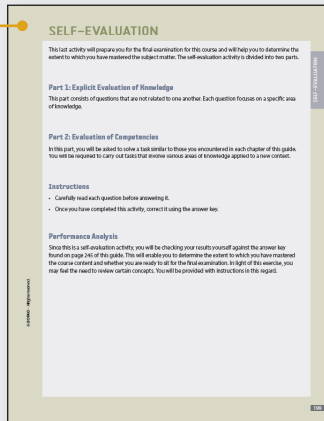
In this section, which includes exercises and complex situations, you are expected to apply the knowledge you acquired in this chapter.

### LES

The *LES* is a complex task developed according to the certification evaluation model. It is accompanied by a competency evaluation grid, found at the end of the learning guide.



# COMPLEMENTARY RESOURCES



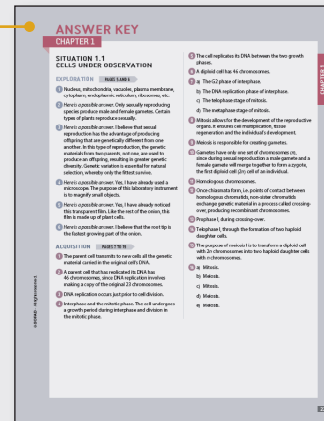
## SELF-EVALUATION

Presented in the first part of *Complementary Resources*, the *Self-Evaluation* activities allow you to evaluate your acquired knowledge and the competencies you have developed throughout the course. This is a chance for you to determine whether you need to review the material before you complete the *Summary Scored Activity*.



## GLOSSARY

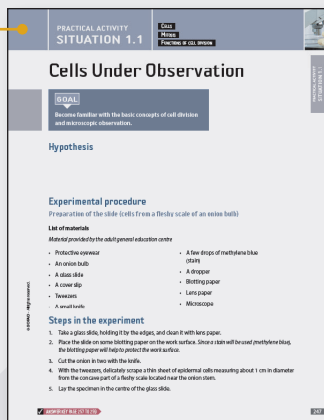
The key concepts are in **blue** and the terms that are defined in the body text of the chapters are in **black**.



## ANSWER KEY

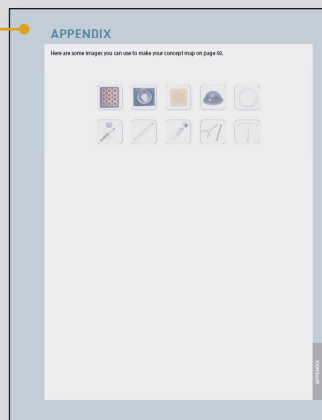
The *Answer Key* allows you to check your answers and complements the learning process.

This section contains the answers to questions and detailed explanations of the approach to be taken or the reasoning to be used.



## PRACTICAL ACTIVITIES

Experimental activities 1.1 and 2.1 are found in this section of the guide. They are also available on [portailsofad.com](http://portailsofad.com).



## APPENDIX

This section contains additional information that will help you complete activity 2.1.

# HEADINGS

## TASK

You need to analyze the child's medical file and the results of his medical tests to determine whether he has a genetic disease.

Presents the task to be performed as part of the situational problem.

## REMINDER

### Mitosis

Mitosis is a type of cell division that produces **somatic cells**. These cells ...

Refers to knowledge acquired in previous courses and related refresher exercises.

## REMEMBER

**Cell division** is the process by which a parent cell produces two new cells: the daughter cells. There are ...

Presents the knowledge to be mastered, as prescribed by the program of study.

## INVESTIGATIVE PROCESS

B...

The first step in the investigative process is to define the problem ...

Presents aspects of the investigative process in science that can be applied to a variety of situations.

## STRATEGY

Consider ...

When an investigative process involves forming an opinion or ...

Presents exploration or analysis strategies that can be applied to a variety of situations.

## DID YOU KNOW?



### Cancer treatments

There are several ways to treat cancer. The three main types ...

Allows you to discover historical and cultural information related to the concepts being studied.

## NOTE

Make sure you use a fresh onion root (not dry), or you will not see . . .

Provides additional information or points out possible exceptions to the concept in question.



## TOOLKIT

Read the following sections in the toolkit:

- The optical microscope and its components;
- How to use a microscope.

Refers to information provided in the toolkit, which is available at [portailsofad.com](http://portailsofad.com).



## LABORATORY REPORT

Write a discussion (p. 250) and a conclusion (p. 250) in the experimental activity section.

Prompts you to complete parts of the experimental activity section at the end of the guide.



These icons refer to Web resources (links or videoclips) available on [portailsofad.com](http://portailsofad.com).

## SCORED ACTIVITY

You must now do Scored Activity 1. It is available on the course website . . .

Indicates that you are now ready for the *Scored Activity*, which will test your understanding of the material covered so far. At the very end of the course you will complete a *Summary Scored Activity*.

These activities are presented in separate booklets. Once completed, you must submit them to your teacher (or tutor), who will mark them and provide feedback.

The **TRANSFORMATIONS** collection consists of all the courses in the Diversified Basic Education Program for Secondary IV and Secondary V.



**SOFAD**

The courses in the **TRANSFORMATIONS** collection feature a learning process based on the acquisition of prescribed knowledge through interesting and meaningful learning situations. The instructional approach underlying this learning process is outlined below:

**PRESENTATION OF THE  
LEARNING SITUATION**

**EXPLORATION OF THE  
LEARNING SITUATION**

**KNOWLEDGE  
ACQUISITION**

**SOLUTION OF THE  
LEARNING SITUATION**

**CONSOLIDATION  
OF LEARNING**

The knowledge and competencies to be developed become meaningful through investigations that require learners to use inductive and deductive reasoning skills. The learning guides provide a variety of simple exercises and more complex tasks that address the needs of both learners and teachers. Additional resources are available on SOFAD's e-learning portal.

### Components of the **TRANSFORMATIONS** collection:

- Experimental (or Practical) Activity Booklet: Print and PDF versions
- Toolkit: Print and PDF versions
- Learning Guide: Print and PDF versions
- Teaching Guide (PDF)
- Video clips of concepts and laboratory techniques
- Kits of materials for the experimental and practical activities
- Scored activities
- Answer keys

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