**NZQA**

**Approved**

Achievement standard: 90950 Version 3

Standard title: Investigate biological ideas relating to interactions between humans and micro-organisms

Level: 1

Credits: 4

Resource title: Zoonoses – diseases from animals to humans and vice versa!

Resource reference: Science VP-1.11 v2

Vocational pathway: Social and Community Services

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| Quality assurance status | These materials have been quality assured by NZQA. NZQA Approved number A-A-02-2015-90950-02-7298 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material.Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

Achievement standard: 90950

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Learner instructions

# Introduction

This assessment activity requires you to investigate biological ideas relating to interactions between humans and harmful micro-organisms.

You will be assessed on how you comprehensively you investigate the biological ideas relating to interactions between humans and harmful micro-organisms by creating a poster to show how two pathogens carried by pets, can be spread from animals and affect humans.

The following instructions provide you with a way to structure your work so you can demonstrate what you have learnt and achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions and modify them if necessary to suit their learners.

# Task

Pathogens are disease-causing micro-organisms such as bacteria, fungi, or viruses.

Owners of pets must take to prevent the spread of diseases from animals to humans and/or from humans to animals. Such diseases are called ‘Zoonoses’. These are diseases that naturally occur in animals and are occasionally spread to people, for example ringworm, rabies, brucellosis, leptospirosis, yellow fever and plague. Veterinary nurses, veterinarians, zookeepers and other animal professionals are at greater risk due to their close association with animals.

You are a helper at the local SPCA and have been asked by the manager to create a poster for the reception area showing how humans are affected by two pathogens carried by pets, which can be spread from animals to humans. Your poster needs to include relevant biological ideas.

You will work individually to gather and process information to present your poster to the manager of the SPCA.

Complete both parts of this task.

## Part 1: Collect and process information

Carry out your research on two different pathogens from pets.

Use a range of resources to collect your information, for example resource sheets, photos, videos, websites, and reference texts.

Before you begin, draw up worksheets to record the details of your research. Use a separate worksheet for each pathogen from pets.

### Worksheet guidelines

Head each sheet with your name, and the name of the pathogen from pets.

For each pathogen from a pet:

* describe the pathogen’s life cycle
* describe biological ideas as to how and why the pathogen causes disease or makes humans sick. This may include pathogenic life processes that affect humans.

The information you research should allow you to:

* make links between the specific life processes of the pathogens and the conditions caused in humans.
* use biological ideas to explain why and how people combat the micro-organisms or try to limit its effects as a pathogen.

Processing your information usually involves:

* selecting relevant information (sifting, sorting, photocopying, printing, or making notes)
* summarising the relevant information by highlighting text, writing notes, and circling useful diagrams/illustrations
* organising your information
* providing references for all your sources, for example website URL(s), magazine articles or book titles and authors.

## Part 2: Present a poster

You now need to use your collected and processed information to produce a poster that investigates the biological ideas relating to how humans are affected by the two pathogens from pets.

The poster can include illustrations, diagrams, and graphs, if appropriate.

You will also need to include supporting information to show discussion of the significant links about the interactions between humans and both micro-organisms.

Use your findings and biological ideas to explain how or why humans are affected by the two pathogens from a pet(s) you are investigating.

You need to consider:

* biological ideas that could include the structure and life processes of two micro-organisms causing Zoonoses
* the effect the life processes of micro-organisms causing Zoonoses have on humans.

Make significant links relating to the interactions between humans and both micro-organisms causing Zoonoses, including the impacts of this knowledge on humans’ personal actions or everyday life.

Making significant links may involve explaining, elaborating, applying, justifying, relating, evaluating, comparing and contrasting, and analysing.

Acknowledge all your sources of information.

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material. Using this assessment resource without modification may mean that learners' work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This research activity requires learners to comprehensively investigate the biological ideas relating to interactions between humans and harmful micro-organisms and create a poster, with supporting information, for the reception area of the local SPCA to show how humans are affected by two pathogens carried by pets. Micro-organisms that cause diseases or sickness in this way are called ‘Zoonoses’ and are transmitted by direct or indirect contact with pets.

# Conditions

Learners will work individually.

# Resource requirements

Learners will need information from a variety of sources such as resource sheets, photos, videos, websites, and reference texts. You could provide learners with the source material or require them to research their own.

Most animal care and pet hygiene services provide information that covers the interaction between pathogenic pet micro-organisms and humans. Providing this information will give learners a fairer opportunity to succeed.

## Useful internet link

Zoonoses and pet care: [www.cdc.gov/healthypets/](http://www.cdc.gov/healthypets/).

# Additional information

Mutual exclusion exists between this standard and the externally assessed Achievement Standard 90927 (Biology 1.3) *Demonstrate understanding of biological ideas relating to micro-organisms*.

## Some common Zoonoses and their pathogenic causes:

* tuberculosis (TB) – *Mycobacterium,* rarelyfrom dogs, cats and other domestic animals
* rat bite fever – *Streptobacillus,* from rats
* Salmonellosis – *Salmonella sp.* bacteria, from a wide range of domestic animals
* ringworm – *Microsporum trychophton* fungi, from kittens and hedgehogs
* cat scratch fever – *Bartonella henselae*
* psittacosis – *Chlamydia psittaci* bacteria, from parrots, canaries.

## Other possible contexts for this vocational pathway

Animal care, for example how to prevent the transmission of pathogenic animal diseases to a zoo attendant.

Investigating the effectiveness of disinfectants on the control of pathogens from a pet animal.

Culturing pathogenic micro-organisms from a pet’s environment.

# Assessment schedule: Science 90950 – Zoonoses – diseases from animals to humans and vice versa!

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner investigates biological ideas relating to interactions between humans and micro-organisms by creating a poster that shows how humans are affected by two pathogens carried by pets. The learner:* uses observations or findings and biological ideas to describe how humans are affected by two pathogens from a pet
* provides all relevant evidence in a poster with supporting information

For example:The learner uses Salmonella bacteria (a range of species); describing environmental factor(s) that affect the life functions of the bacteria, and describing its lifecycle in the human gut, causing food poisoning and effect on the small intestine.*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner investigates, in depth, biological ideas relating to interactions between humans and micro-organisms by creating a poster that shows how humans are affected by two pathogens carried by pets. The learner:* uses observations or findings to explain in-depth how and why humans are affected by two pathogens from a pet
* uses these findings and biological ideas to give a reason for how or why humans are affected by pathogens from a pet
* provides all relevant evidence in a poster with supporting information

For example:The learner uses Salmonella bacteria (a range of species); explaining environmental factor(s) that affect the life functions of the bacteria, and explaining how its lifecycle can include the human gut, causing food poisoning and affect the small intestine.*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner investigates, comprehensively, biological ideas relating to interactions between humans and micro-organisms by creating a poster that shows how humans are affected by two pathogens carried by pets. The learner:* uses observations or findings to explain how humans are affected by two pathogens from a pet
* uses findings and biological ideas to make significant key links about the interactions between humans and pathogens from a pet, including the impacts of this knowledge on a human’s personal actions or everyday life
* provides all relevant evidence in a poster with supporting information

For example:The learner uses Salmonella bacteria (a range of species); elaborating on the links between how key environmental factor(s) affect the life functions of the bacteria, how its lifecycle can include the human gut, causing food poisoning and effect on the lining of the small intestine.*The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.