- Locate and open the learning object, *Virtual microscope: Pollen in focus*.
- Select **Split screen**.
- Load slides called *Banksia littoralis* and *Grevillea* Robyn Gordon.
- Examine both under all magnifications.

1. Describe some similarities and differences between the two types of pollen grains.

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2. Two pollen grains are pictured below. Label both diagrams to show how pollen dimensions (length, width, diameter, pore diameter …) are measured.

Figure 1: *Banksia littoralis*

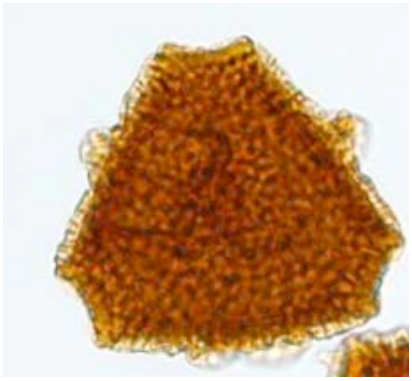

Figure 2: *Grevillea* Robyn Gordon

3. *Banksia littoralis* is known as a biporate pollen and *Grevillea* Robyn Gordon is triporate. What is meant by the terms 'biporate' and 'triporate'?

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4. *Banksia littoralis* has a smooth surface and *Grevillea* Robyn Gordon is verrucated. What is meant by 'verrucate'?

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5. *Banksia littoralis* has sides described as convex, that is they curve outwards. *Grevillea* Robyn Gordon is straight sided. What is meant by the term 'concave'?

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6. Suggest a reason that might explain why pollen grains may have different shapes. How could this reason be tested by scientific investigation?

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- Select **Single screen**, load the following slides, then complete the table below.

| Characteristic / pollen | Shape with sketch | Colour | Grain dimensions (length/width/diameter) (you may have a few measurements here) | Pollen wall width | Pore diameter | Number of pores | Surface texture |
|---|---|---|---|---|---|---|---|
| *Adenanthos meisneri* | | | | | | | |
| *Adenanthos obovatus* | | | | | | | |
| *Banksia grandis* | | | | | | | |
| *Banksia ilicifolia* | | | | | | | |
| *Banksia littoralis* | | | | | | | |
| *Banksia meisneri* | | | | | | | |
| *Banksia occidentalis* | | | | | | | |
| *Grevillea* Robyn Gordon | | | | | | | |
| *Hakea lissocarpa* | | | | | | | |

7. Now, examine ‘pollen mix one’. Select **Labels** and complete the table below.

| POLLEN MIX ONE | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Shape with sketch | Colour | Grain dimensions (length/width/diameter) (you may have a few measurements here) | Pollen wall width | Pore diameter | Number of pores | Surface texture |
| pollen 1 | | | | | | | |
| pollen 2 | | | | | | | |
| pollen 3 | | | | | | | |

- Use information from the previous table to identify each of the pollen types on ‘pollen mix one’. Give reasons for your decision.

| Pollen | Pollen identification | Reason |
|---|---|---|
| pollen 1 | | |
| pollen 2 | | |
| pollen 3 | | |

8. Now, examine ‘pollen mix two’. Complete the table below.

| POLLEN MIX TWO | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Shape with sketch | Colour | Grain dimensions (length/width/diameter) (you may have a few measurements here) | Pollen wall width | Pore diameter | Number of pores | Surface texture |
| pollen 1 | | | | | | | |
| pollen 2 | | | | | | | |
| pollen 3 | | | | | | | |

- Use information from the previous table to identify each of the pollen types on ‘pollen mix two’. Give reasons for your decision.

| pollen | Pollen identification | Reason |
|---|---|---|
| pollen 1 | | |
| pollen 2 | | |
| pollen 3 | | |

9. Now, examine ‘pollen mix three’. Complete the table below.

| POLLEN MIX THREE | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Shape with sketch | Colour | Grain dimensions (length/width/diameter) (you may have a few measurements here) | Pollen wall width | Pore diameter | Number of pores | Surface texture |
| pollen 1 | | | | | | | |
| pollen 2 | | | | | | | |
| pollen 3 | | | | | | | |

- Use information from the previous table to identify each of the pollen types on ‘pollen mix three’. Give reasons for your decision.

| Pollen | Pollen identification | Reason |
|---|---|---|
| pollen 1 | | |
| pollen 2 | | |
| pollen 3 | | |

10. Samples for each mixed slide were taken by wiping a honey possum's nose. Then, samples were made into slides. Were any pollen types common to all mixed slides?

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11. The slides show that honey possums have pollen on their noses. Pollen provides honey possums with protein but little energy. What does the plant produce that provides energy for honey possums?

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12. Why are honey possums' noses covered in pollen?

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13. What can you infer about honey possums' diet, from this information?

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