FIGURES
Fig 1. *Dendrobium* Queen Sonia. A potted flowering plant.

Fig 2. *Dendrobium* Queen Sonia. A single flower.
Leaf explants of *Dendrobium Queen Sonia* or VW medium with 2mg\(^{-1}\) BAP and 3mg\(^{-1}\) NAA after three weeks in culture. (see Table 10).

Callus obtained from shoot tip explants of *Dendrobium Queen Sonia* or MS medium showing high degree of multiplication. (see Table 21).
Fig 5. Differentiation of PLBs and plantlets from callus segments of *Dendrobium Queen Sonia* on MS medium with 1 mg/l NAA and 1 mg/l BAP after 10 weeks in culture. (see Table 22).

Fig 6. Differentiation of PLBs and plantlets from callus segments of *Dendrobium Queen Sonia* on VW medium with 0.5 mg/l NAA and 1 mg/l BAP after 10 weeks in culture (see Table 23).
Fig. 7 Differentiation of plantlets and PLBs from callus segments of *Dendrobium Queen Sonia* on KC medium with 1mg l⁻¹ NAA and 1 mg l⁻¹ BAP after 10 weeks in culture (see Table 24).

Fig. 8 Formation and multiplication of plantlets from PLBs of *Dendrobium Queen Sonia* on VW medium with 2mg l⁻¹ BAP and 4mg l⁻¹ NAA after 12 weeks in culture (see Table 64).

Fig 9 Formation and multiplication of *Dendrobium Queen Sonia* plantlets from PLBs on VW medium with 4mg l⁻¹ BAP and 1mg l⁻¹ NAA after 12 weeks in culture (see Table 64).
Fig 10. Sub Culturing of Plantlets of *Dendrobium Queen Sonia* on VW medium.

Fig 11. *Dendrobium Queen Sonia* plantlets on KC medium after 12 weeks of culture showing slow growth (see Table 44).

Fig 12. Plantlets of *Dendrobium Queen Sonia* on VW medium with 2.5 mg/l kinetin and 5 mg/l \(^{1}\) NAA after 10 weeks of culture (see Table 55).
Fig 13. Plantlets of *Dendrobium Queen Sonia* on KC medium with 1mg/l BAP and without NAA in 12 weeks culture, showing stunted growth (see Table 44).

Fig 14. Plantlets of *Dendrobium Queen Sonia* on MS medium with 5 mg/l NAA and without BAP, showing unusually long leaves in 12 weeks culture (see Table 42).

Fig 15. *Dendrobium Queen Sonia* plantlets showing slow stunted growth and no multiplication on VW medium with 2mg/l NAA and without BAP in 12 weeks culture (see Table 64).

Fig 16. Plantlets of *Dendrobium Queen Sonia* on VW medium with 4 mg/l 2,4-D and 1mg/l BAP in 10 weeks of culture showing unusual narrow leaves (see Table 59).
Fig 17. Well rooted *Dendrobium* Queen Sonia plants ready for hardening.

Fig 18. *Dendrobium* Queen Sonia plantlets showing different stage of growth.
Fig 19. *Dendrobium Queen Sonia* plantlets showing unusual growth in VW medium with 1mg/l BAP and 8mg/l NAA (see Table 59).

Fig 20. Healthy *Dendrobium Queen Sonia* plants in VW medium with 1mg/l BAP and 6mg/l NAA (see Table 59).

Fig 21. *Dendrobium Queen Sonia* plantlets showing high degree of multiplication ration in VW medium with 1mg/l NAA and 4mg/l BAP (see Table 64).
Fig 22 and Fig 23. Various stage of in vivo growth of *Dendrobium Queen Sonia* plants.

Fig 24. Potted *Dendrobium Queen Sonia* plants in the green house.
Fig 25. *Dendrobium Emma White*; A potted flowering plant.

Fig 26. *Dendrobium Emma White*, Flowers in close-up.
Fig 27. *Dendrobium* Emma White, A potted flowering plant showing normal flowers.

Fig 28. *Dendrobium* Emma White; A plant showing abnormal flowers.
Fig 29. Leaf explants of *Dendrobium Emma White* on KC medium with 1mg{l}^{-1} NAA and 2mg{l}^{-1} BAP showing death (see Table 14).

Fig 30. Shoot apex explants *Dendrobium Emma White* showing formation of callus in VW medium with 1mg{l}^{-1} NAA and 2mg{l}^{-1} BAP after 10 weeks of culture (see Table 13).

Fig 31. Root explants of *Dendrobium Emma White* showing callusing on VW medium with 0.5 mg{l}^{-1} NAA and 2mg{l}^{-1} BAP (see Table 13).
Fig 32. Differentiation of PLBs and plantlets from shoot apex explants of *Dendrobium Emma White* on MS medium with 1 mg l\(^{-1}\) NAA and 1 mg l\(^{-1}\) BAP after 10 weeks of culture (see Table 25).

Fig 33. Differentiation of PLBs and plantlets from shoot apex explants of *Dendrobium Emma White* on VW medium with 0.5 mg l\(^{-1}\) NAA and 1 mg l\(^{-1}\) BAP (see Table 26).

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Fig 35. *Dendrobium Emma White* – an young inflorescence.

Fig 36. *Dendrobium Emma White* showing multiplication on MS medium (see Table 54).

Fig 37. *Dendrobium Emma White* plants on KC medium not showing multiplication (see Table 54).

Fig 38. *Dendrobium Emma White* plants on VW medium showing multiplication and Uniform growth (see Table 54).
Fig 39. Root explants of *Dendrobium Emma White* on MS medium with 5mg\textsuperscript{l} NAA and 2mg\textsuperscript{l} BAP after 16 weeks of culture (not shown in Tables).

Fig 40. Plantlets of *Dendrobium Emma White* on VW medium with 10mg\textsuperscript{l} NAA and 2mg\textsuperscript{l} BAP showing unusual growth of roots. After 16 weeks of culture (not shown in Tables).

Fig 41. *Dendrobium Emma White* plants on VW medium with 1mg\textsuperscript{l} BAP and 10mg\textsuperscript{l} NAA (see Table 61).

Fig 42. *Dendrobium Emma White*, showing no multiplication on VW medium with 1mg\textsuperscript{l} NAA and without BAP (see Table 65).
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Fig 44. *Dendrobium Emma White* plants on VW medium, showing unusual growth (see Table 65).

Fig 45. Plantlets of *Dendrobium Emma White* on VW medium with 6\(\text{mg}^{-1}\), 2,4-D and 1\(\text{mg}^{-1}\) BAP. Plants showing unusual narrow leaves (see Table 61).

Fig 46. *Dendrobium Emma White* plantlets on VW medium with 4\(\text{mg}^{-1}\), 2,4-D and 1\(\text{mg}^{-1}\) BAP. Plants showing unusual leaves (see Table 61).
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Fig 48. *In Vitro* grown *Dendrobium* **Emma White** plants on potting medium.

Fig 49. *Dendrobium* **Emma White** plants in the greenhouse.
Fig 50. *Cattleya* Naomi Kerns; A single flower.

Fig 51. *Cattleya* Naomi Kerns; A flowering plant.
Fig 52. Leaf segment explants of *Cattleya Naomi Kerns* on MS medium with 2mgl⁻¹ BAP and 1mgl⁻¹ NAA after one week in culture (see Table 16).

Fig 53. Formation of PLBs and plantlets from shoot-tip explants of *Cattleya Naomi Kerns* on VW medium with 1mgl⁻¹ each of NAA and BA (see Table 28).

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Fig 56. Formation of PLBs and plants from callus segments of *Cattleya Naomi Kerns* on MS medium with 1mg/l each of NAA and BAP after 10 weeks of culture (see Table 29).

Fig 57. Root explants of *Cattleya Naomi Kerns* on MS medium with 5mg/l NAA and 1mg/l BAP (see Table 29).
Fig 58. Formation of PLBs and plantlets from leaf explants of *Cattleya Naomi Kerns* on MS medium with 0.5 mg/l NAA and 1mg/l BAP after 10 weeks of culture (see Table 29).

Fig 59. Differentiation of PLBs and plantlet from callus explants of *Cattleya Naomi Kerns* on MS medium with 1mg/l each of NAA and BAP (see Table 29).

Fig 60. Shoot tip explants of *Cattleya Naomi Kerns* on MS medium with 1mg/l each of NAA and BAP showing formation callus, PLBs and plantlets (see Table 29).
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Fig 63. Subculturing of *Cattleya Naomi Kerns* plantlets of MS medium.
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Fig 65. Plantlets of *Cattleya Naomi Kerns* on MS medium with 1mg/l BAP and 4mg/l 2,4-D, showing abnormal growth (see Table 62).

Fig 66. *Cattleya Naomi Kerns* plantlets on MS medium with 150ml l⁻¹ CW showing healthy growth with normal rooting (see Table 54).
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**Fig 68.** Plantlets of *Cattleya Naomi Kerns* on MS medium with 4mg\(\text{l}^{-1}\) NAA and 1mg\(\text{l}^{-1}\) BAP (see Table 62).

**Fig 69.** Abnormal plantlets of *Cattleya Naomi Kerns* plantlets on MS medium with 8mg\(\text{l}^{-1}\) 2,4-D and 1mg\(\text{l}^{-1}\) BAP (see Table 62).
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Fig 71. Plants of *Cattleya Naomi Kerns* showing different stages of growth.
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Fig 74. Young shoot of *Cattleya Naomi Kerns* arising from the base of an old plant.
Fig 75. Flowers of *Phalaenopsis Queen Emma*

Fig 76. *Phalaenopsis Queen Emma* a potted flowering plant.
Fig 77. Leaf explants *Phalaenopsis Queen Emma* on MS medium with 1mg/l BAP and 5 mg/l NAA (see Table 31).

Fig 78. Leaf explants of *Phalaenopsis Queen Emma* on VW medium with 1mg/l BAP and 4mg/l NAA (see Table 32).

Fig 79. Leaf explants of *Phalaenopsis Queen Emma* on VW medium with 5mg/l NAA and 1mg/l BAP (see table 32).
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Fig 83. Meristem explants of *Phalaenopsis Queen Emma* on VW medium 1mg l⁻¹ NAA 2mg l⁻¹ BAP (see Table 20).

Fig 84. Inflorescence apex explants of *Phalaenopsis Queen Emma* on VW medium with 3mg l⁻¹ NAA and 1mg l⁻¹ BAP (see Table 32).

Fig 85. Internodal segments on *Phalaenopsis Queen Emma* on MS medium with 5mg l⁻¹ NAA and 1mg l⁻¹ BAP (see Table 31).
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Fig 87. Differentiation of Phalaenopsis Queen Emma plantlets directly from leaf explants on MS medium with 1mg/l BAP and 5mg/l NAA. After 16 weeks of inoculation (not shown in tables).

Fig 88. Phalaenopsis Queen Emma callus showing high rate of multiplication on MS medium with 2mg/l BAP and 3mg/l NAA. Formation of PLBs and plantlets also seen (Table 21).
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Fig 90. Differentiation of *Phalaenopsis Queen Emma* plantlets directly from nodal bud explant on VW medium with 5mg l⁻¹ NAA and 1mg l⁻¹ BAP (see Table 32).

Fig 91. *Phalaenopsis Queen Emma* callus showing differentiation of PLBs and plantlets on MS medium with 2mg l⁻¹ BAP and 3mg l⁻¹ NAA (see Table 21).
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Fig 93. Formation of *Phalaenopsis* Queen Emma plantlets directly from leaf explants on MS medium with 1mg l\(^{-1}\) NAA and 1mg l\(^{-1}\) BAP (see Table 32).

Fig 94. Formation of plantlets from leaf explants of *Phalaenopsis* Queen Emma on MS medium with 0.5 mg l\(^{-1}\) NAA and 4mg l\(^{-1}\) BAP (see Table 32).
Fig 95. Subculturing of *Phalaenopsis Queen Emma* plantlets on KC medium 1mg l⁻¹ BAP and 5mg l⁻¹ NAA (see Table 53).

Fig 96. Subculturing of *Phalaenopsis Queen Emma* plantlets VW medium with 7mg l⁻¹ NAA and 1mg l⁻¹ BAP (see Table 52).

Fig 97. *Phalaenopsis Queen Emma* plantlets on MS medium with 150ml CW showing rooting (see Table 54).
Fig 98. Differentiation and growth of *Phalaenopsis Queen Emma* plantlets from leaf explants on VW Medium after 14 weeks in culture.

Fig 99. *Phalaenopsis Queen Emma* plantlets on MS medium with 2.5 mg/l Kinetin 5mg/l NAA (see Table 58).

Fig 100. Multiplication of *Phalaenopsis Queen Emma* plantlets on MS medium with 8mg/l BAP and 2mg/l NAA (see Table 66).
Fig 101 *Phalaenopsis* Queen Emma plantlets on MS medium with 1mg/l BAP and 4mg/l IBA (see Table 63).

Fig 102 *Phalaenopsis* Queen Emma plantlets on MS medium with 5 mg/l BAP and 3mg/l NAA (see Table 51).

Fig 103 *Phalaenopsis* Queen Emma plantlets showing good rate of multiplication on MS medium with 4mg/l NAA and 8mg/l BAP (see Table 66).
**Fig 104** *Phalaenopsis Queen Emma* plantlets on MS medium with 150ml CW showing good growth and rooting (see Table 54).

**Fig 105** *Phalaenopsis Queen Emma* plantlet showing no multiplication on MS medium without growth regulators.

**Fig 106** *Phalaenopsis Queen Emma* plantlets at different stages of development.
Fig 107 Hardened *Phalaenopsis Queen Emma* plantlets on potting medium.

Fig 108 A single hardened *Phalaenopsis Queen Emma* plant.

Fig 109 A nature plant of *Phalaenopsis Queen Emma*