

**Uncovering the natural variability of araucariacean exudates from ex situ and in situ tree populations in New Caledonia**

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**Supplementary Table S1. List of exudates interpreted using FTIR in species from New Caledonia**

Genus, species	Locality	Sample reference	Exudate type determined using FTIR
<b><i>Araucaria</i></b>			
<i>bidwillii</i>	Arboretum	Bid 1	Resin
	Arboretum	Bid 2	Gum resin
<i>columnaris</i>	Wild at Bourail	Col 1	Gum resin
	Wild at Bourail	Col 2	Gum resin
	Wild at Bourail	Col 3	Gum resin
	Wild at Bourail	Col 4	Resin
	Wild at Bourail	Col 5	Gum resin
	Wild at Bourail	Col 6	Gum resin
	Wild at Bourail	Col 7	Gum resin
	Wild at Bourail	Col 8	Gum resin
	Wild at Bourail	Col 9	Gum resin
<i>cunninghamii</i>	Arboretum	Cun 1	Gum resin
	Arboretum	Cun 2	Gum resin
	Arboretum	Cun 3	Resin
	Arboretum	Cun 4	Gum resin
<i>luxurians</i>	Arboretum	Lux 1	Gum resin
<i>muelleri</i>	Arboretum	Muel 1	Gum resin
<i>nemorosa</i>	Wild at Port Boisé	Nem 1	Gum resin
	Wild at Port Boisé	Nem 2	Gum resin
	Wild at Port Boisé	Nem 3	Gum
	Wild at Port Boisé	Nem 4	Resin
	Wild at Port Boisé	Nem 5	Resin
	Wild at Port Boisé	Nem 6	Resin
	Wild at Port Boisé	Nem 7	Resin
	Wild at Port Boisé	Nem 8	Resin
<b><i>Agathis</i></b>			
<i>corbassonii</i>	Arboretum	Cor 1	resin
	Arboretum	Cor 2	resin
	Arboretum	Cor 3	resin
	Arboretum	Cor 4	resin
	Arboretum	Cor 5	resin
	Arboretum	Cor 6	resin
	Arboretum	Cor 7	resin
	Arboretum	Cor 8	resin
	Arboretum	Cor 9	resin
	Arboretum	Cor 10	resin
<i>lanceolata</i>	Arboretum	Lan 1	resin
	Arboretum	Lan 2	resin
	Arboretum	Lan 3	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 21	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 22	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 23	resin

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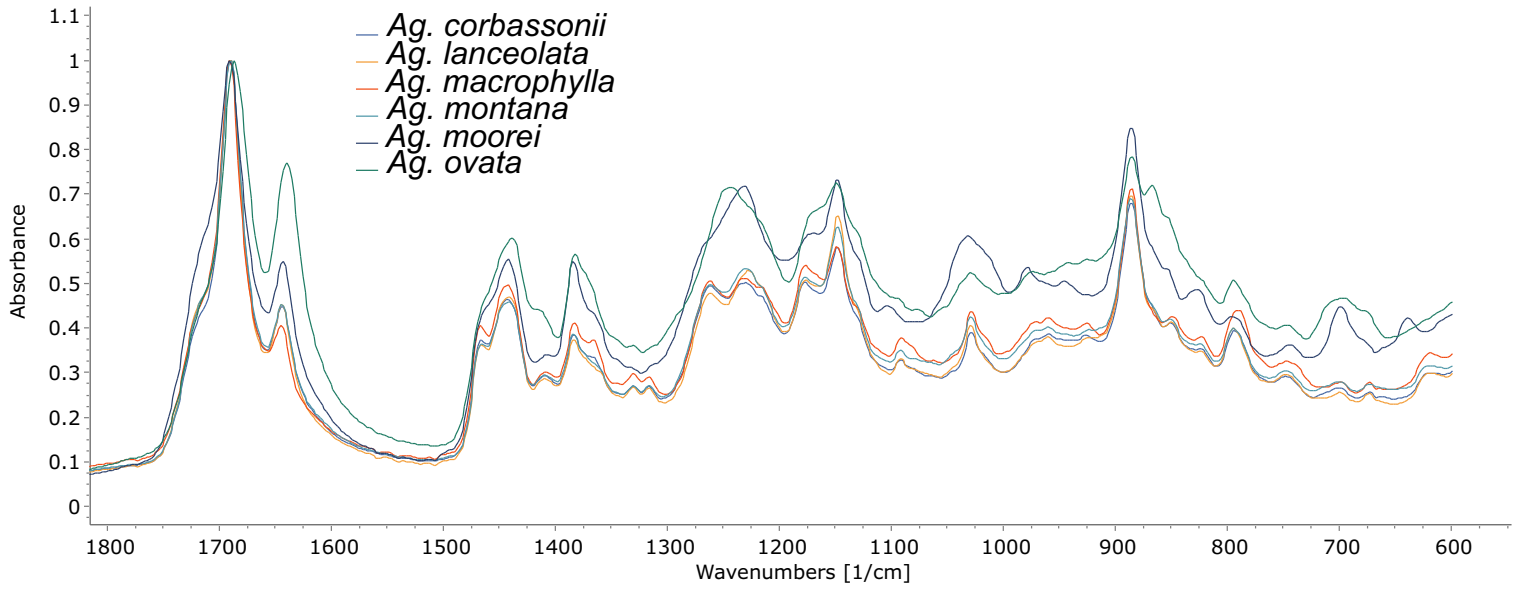
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**Supplementary Table S1. Continued.**

Genus, species	Locality	Sample reference	Exudate type determined using FTIR
	Wild at Parc Provincial de la Rivière Bleue	Lan 24	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 25	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 26	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 27	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 28	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 29	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 30	resin
	Wild at Parc Provincial de la Rivière Bleue	Lan 31	resin
<i>macrophylla</i>	Arboretum	Mac 1	resin
	Arboretum	Mac 2	resin
	Arboretum	Mac 3	resin
	Arboretum	Mac 4	resin
	Arboretum	Mac 5	resin
	Arboretum	Mac 5	resin
	Arboretum	Mac 7	resin
	Arboretum	Mac 8	resin
	Arboretum	Mac 9	resin
	Arboretum	Mac 10	resin
	Arboretum	Mac 11	resin
	Arboretum	Mac 12	resin
	Arboretum	Mac 13	resin
	Arboretum	Mac 14	resin
	Arboretum	Mac 15	resin
	Arboretum	Mac 16	resin
<i>montana</i>	Arboretum	Mont 1	resin
	Arboretum	Mont 2	resin
	Arboretum	Mont 3	resin
	Arboretum	Mont 4	resin
	Arboretum	Mont 5	resin
<i>moorei</i>	Arboretum	Moor 1	resin
	Arboretum	Moor 2	resin
	Arboretum	Moor 3	resin
	Arboretum	Moor 4	resin
<i>ovata</i>	Arboretum	Ova 1	resin
	Arboretum	Ova 2	resin
	Arboretum	Ova 3	resin
	Wild at Yaté	Ova 20	resin

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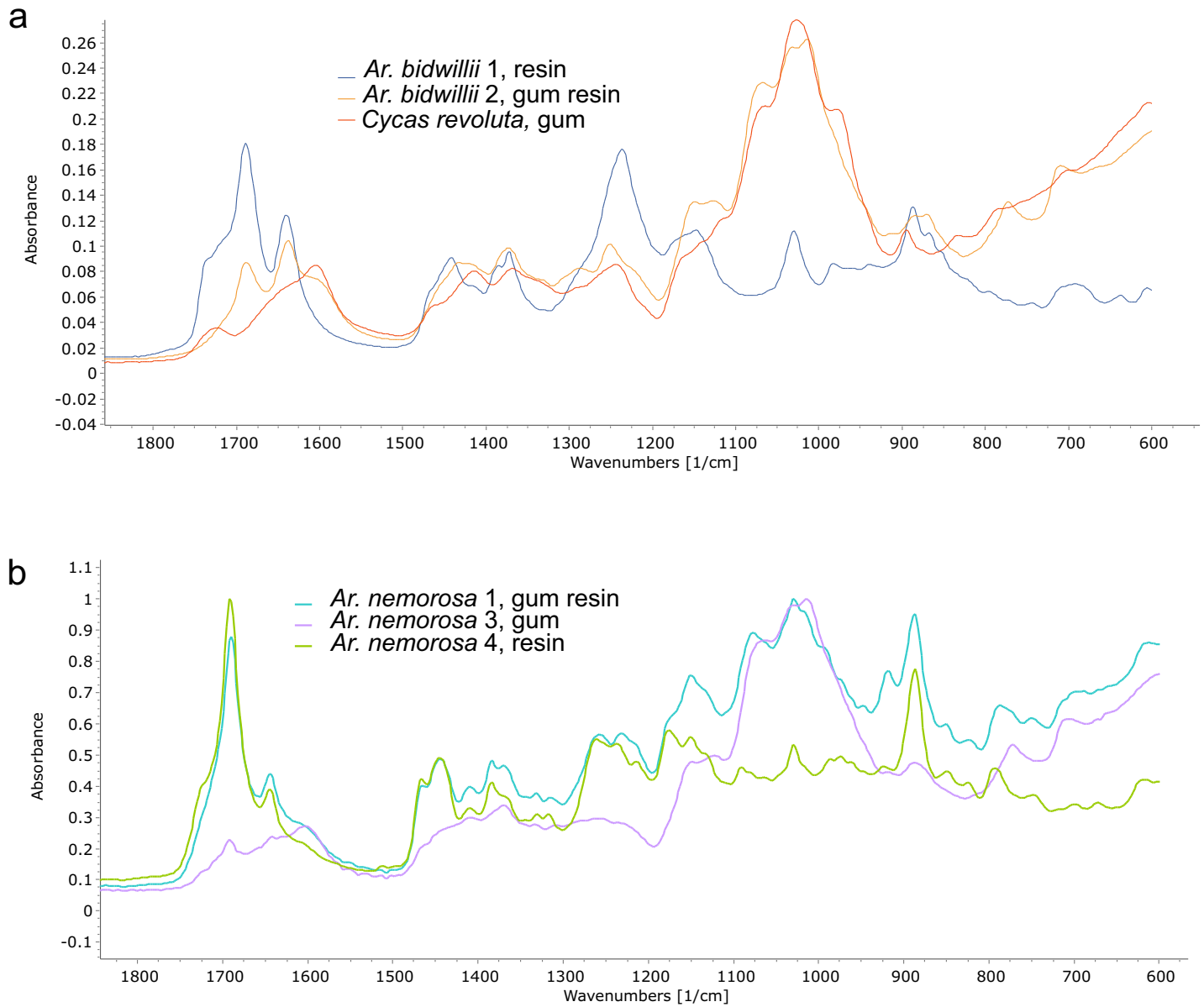
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Supplementary Fig. S1. Fingerprint region of FTIR spectra of different exudates from *Agathis* species present at the arboretum in New Caledonia (full spectra given in Fig. 4)

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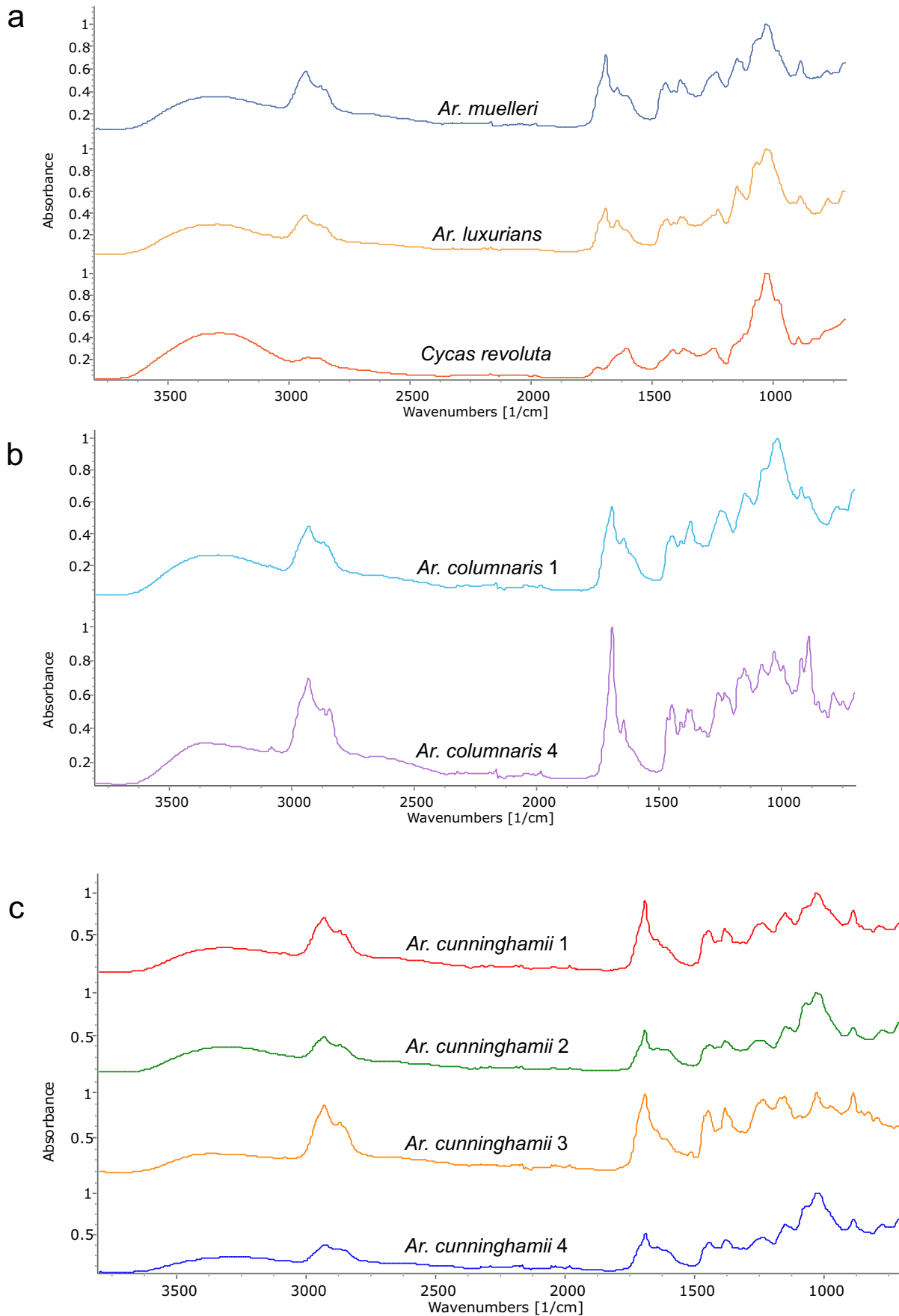
Supplementary Fig. S2. Fingerprint region of FTIR spectra of different exudates types from a single species. Full spectra given in Fig. 5.

(a) *Araucaria bidwillii* from the arboretum produced both a resin (*Ar. bidwillii* 1) and a gum resin (*Ar. bidwillii* 2) and are compared against a gum spectrum from *Cycas*.

(b) Wild-sourced *Araucaria nemorosa* produced three exudate types: a gum resin (*Ar. nemorosa* 1), a gum (*Ar. nemorosa* 3) and a resin (*Ar. nemorosa* 4).

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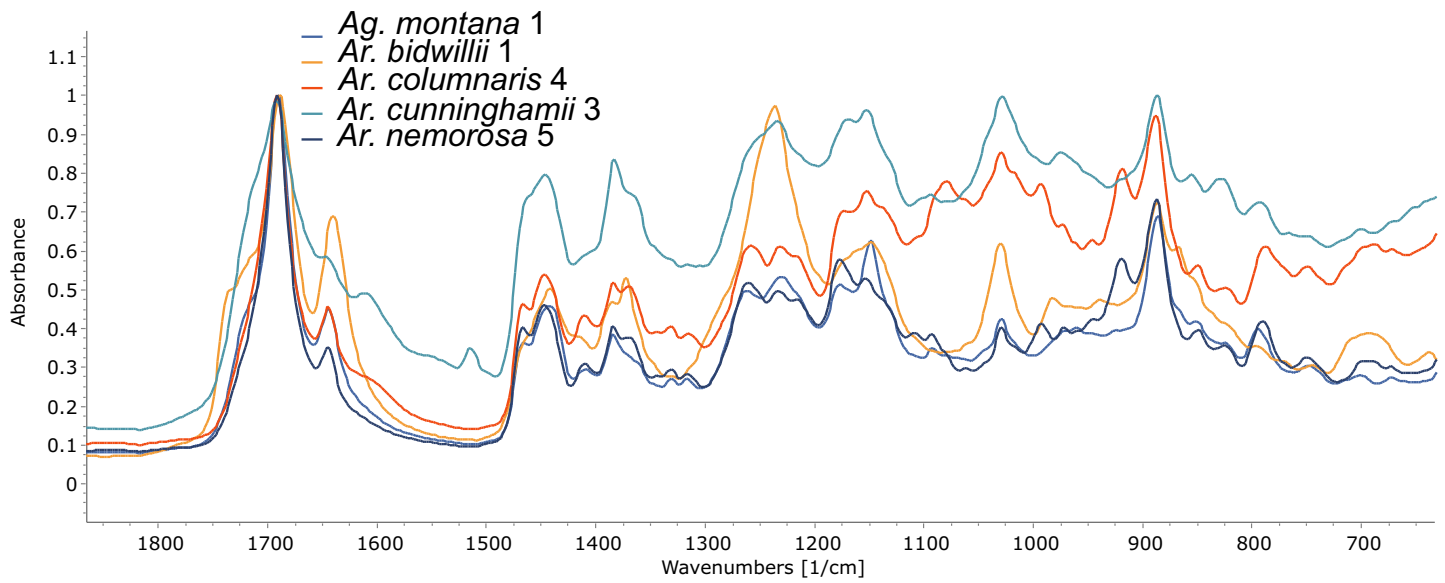


Supplementary Fig. S3. FTIR spectra of different exudates from New Caledonia.

(a) Gum resins of *Ar. luxurians* and *Ar. muelleri* (arboretum-sourced) compared against *Cycas* gum, (b) exudates from wild-sourced *Ar. columnaris*, a gum resin (*Ar. columnaris 1*) and a resin (*Ar. columnaris 4*), (c) exudates from arboretum-sourced *Ar. cunninghamii*, *Ar. cunninghamii 1*, *2*, *4* are gum resins, *Ar. cunninghamii 3* is a resin.

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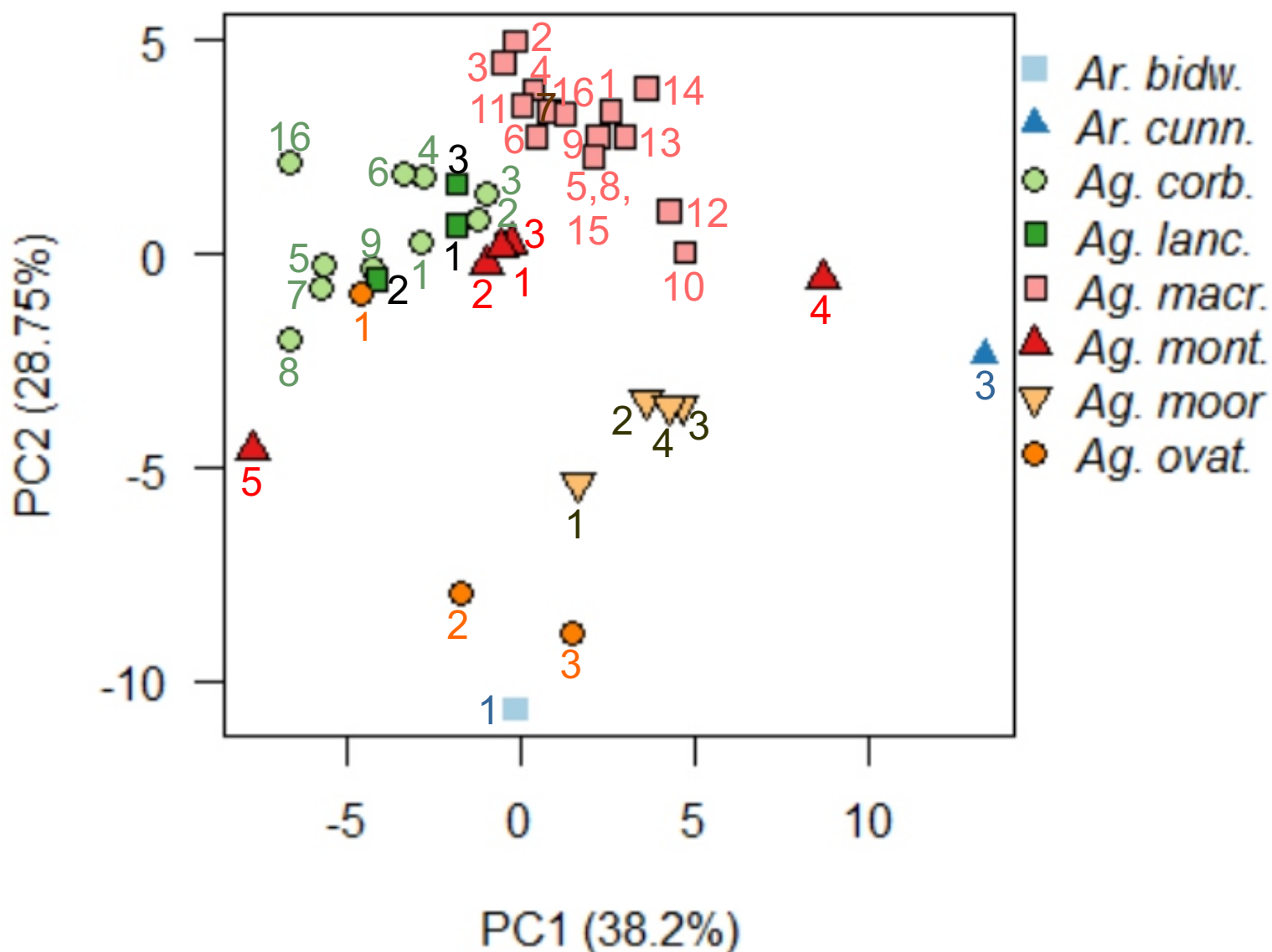
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Supplementary Fig. S4. Fingerprint region of FTIR spectra of resins from different *Araucaria* species, with a resin from *Agathis montana* for comparison.

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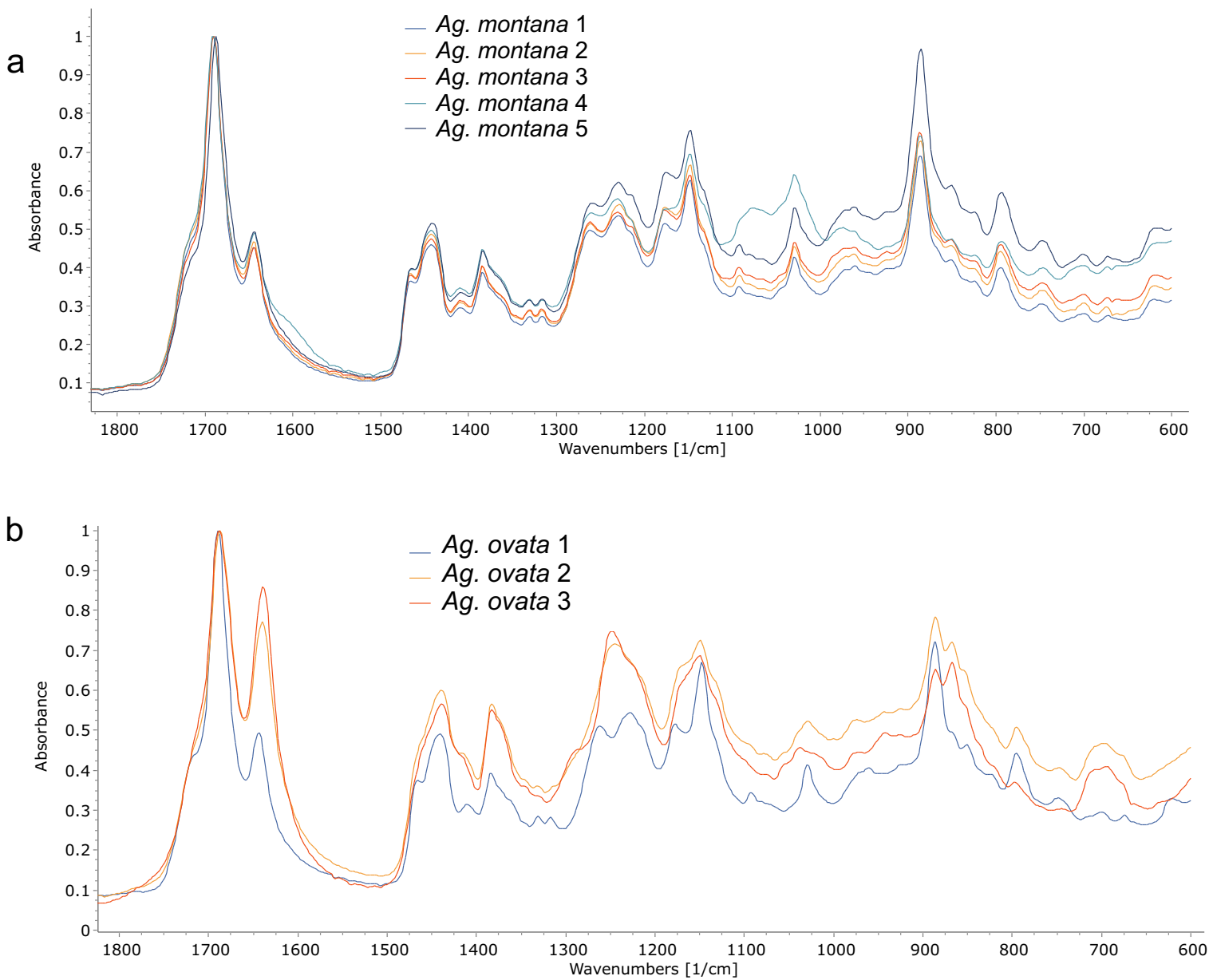
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Supplementary Fig. S5. Enlarged PCA showing the resin FTIR spectra sourced from the arboretum (shown in Fig. 7a) with the samples labelled following Table 1.

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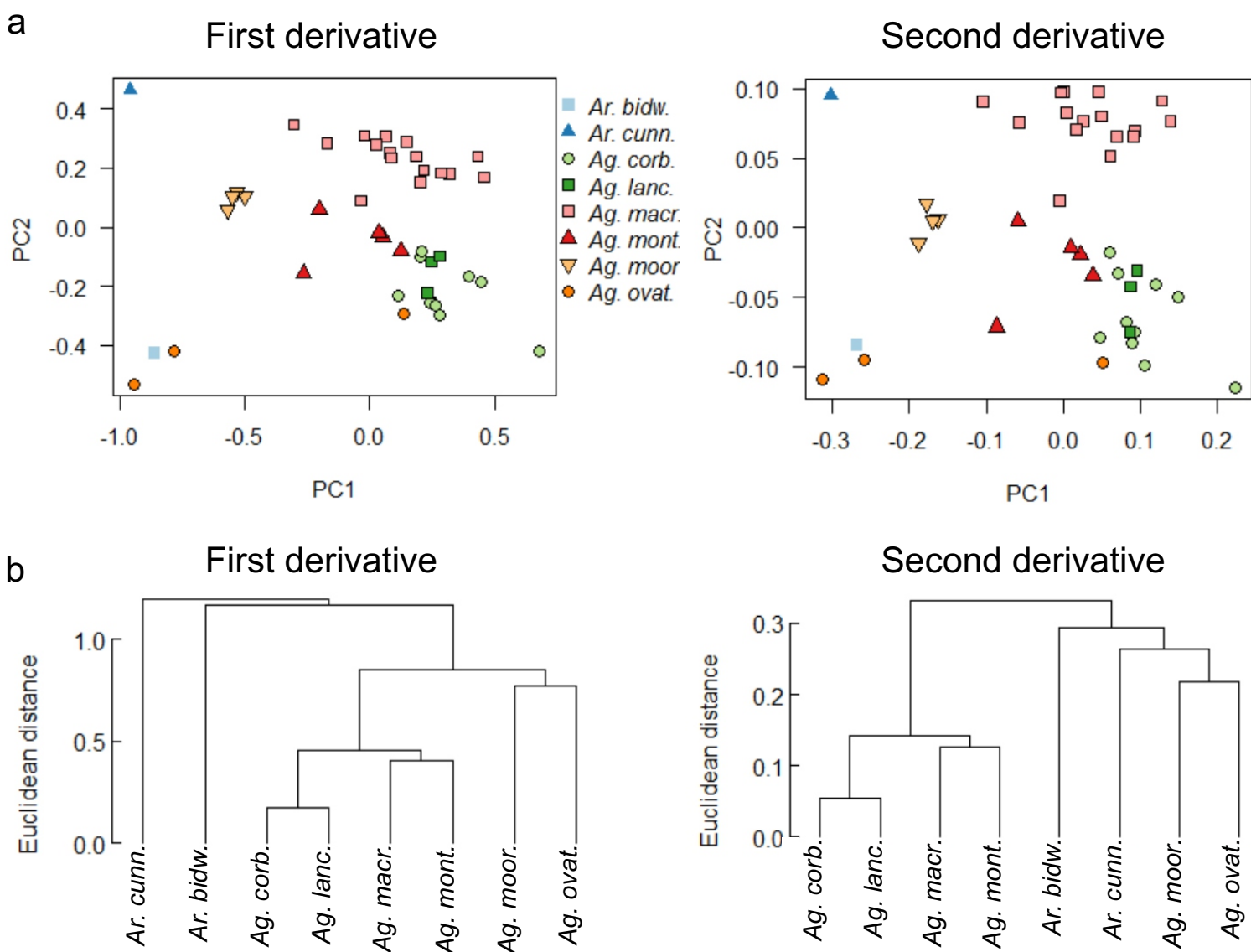


Supplementary Fig. S6. Fingerprint region of FTIR spectra of resins from different *Agathis* species (full spectra given in Fig. 8), all arboretum sourced. (a) *Ag. montana* resins. (b) *Ag. ovata* resins.



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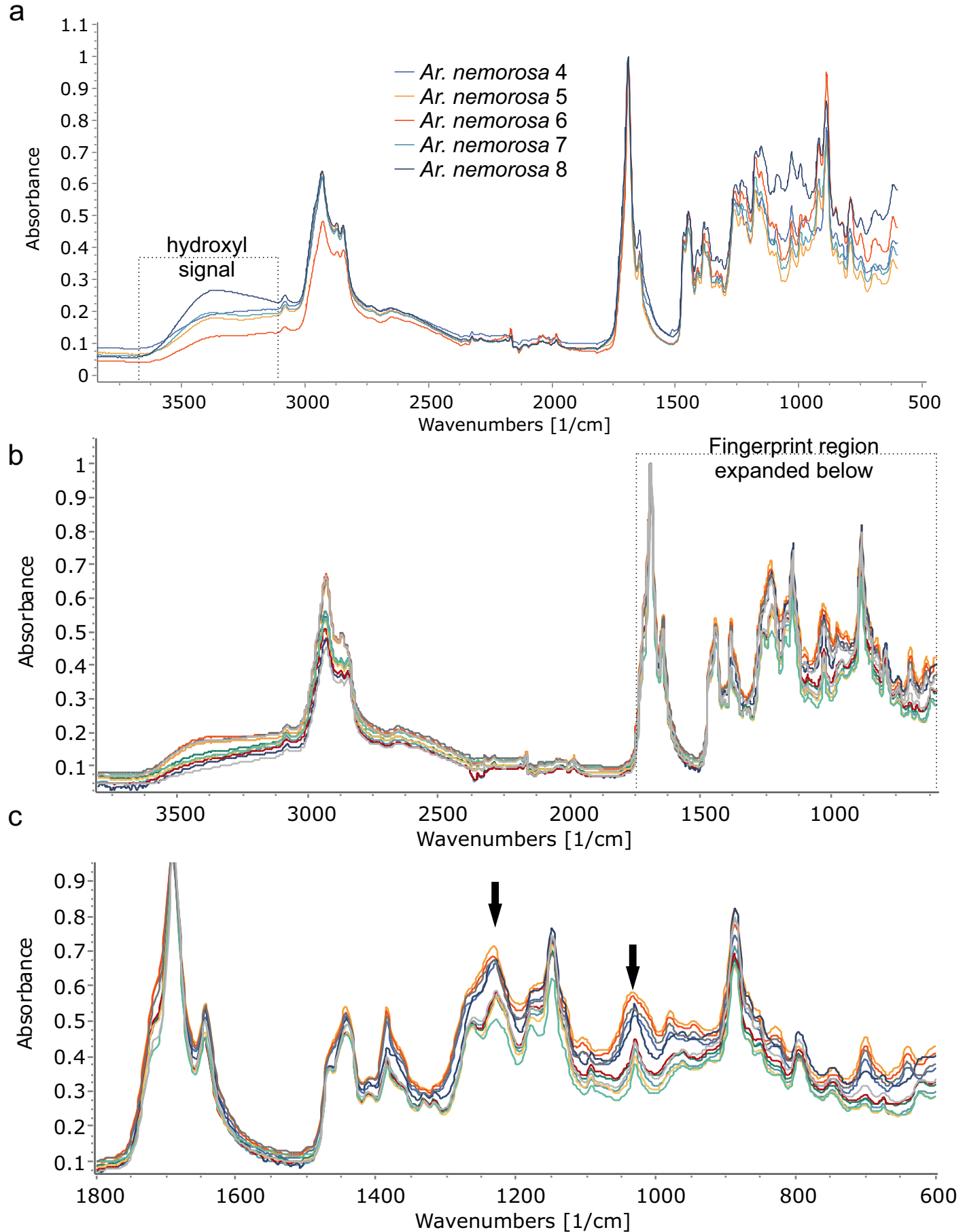
Supplementary Fig. S7. Multivariate analyses using derivatives of the resin FTIR spectra sourced from the arboretum.

(a) PCA analyses,

(b) taxon-mean spectra cluster analyses. Taxa and numbers of samples same as in Fig.7.

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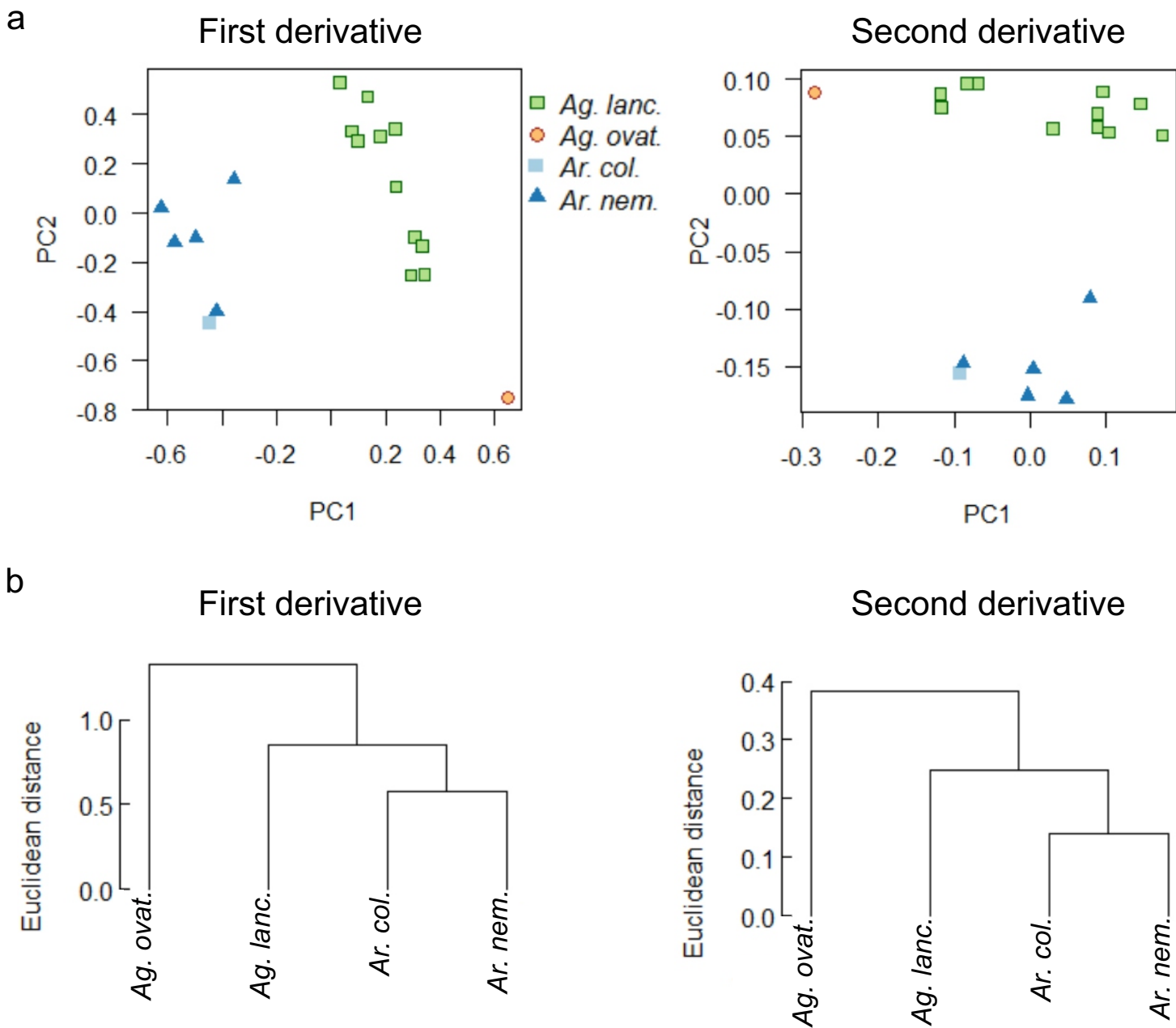
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Supplementary Fig. S8. Variation across resin FTIR spectra from wild-sourced trees. (a) *Ar. nemorosa* resins with the greatest variation shown in the  $3,400\text{--}2,700\text{ cm}^{-1}$  region potentially indicating differing levels of polymerisation. (b)-(c) variation in *Ag. lanceolata* resins, (b) overview of spectra, (c) detail of fingerprint region where the majority of the spread of the spectra is due to differing peak intensities (black arrows).

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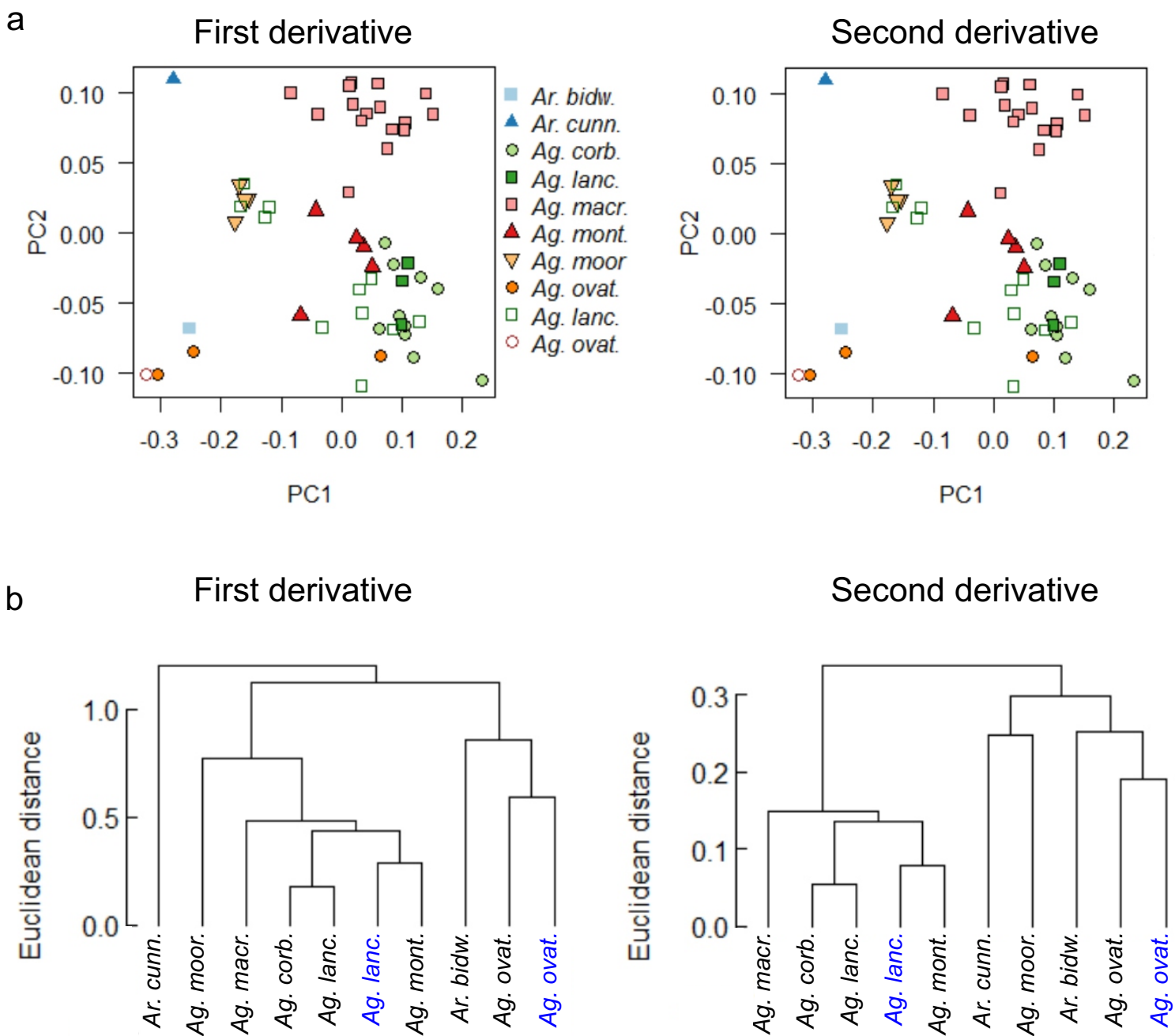
Supplementary Fig. S9. Multivariate analyses using derivatives of the resin FTIR spectra sourced from the wild.

(a) PCA analyses,

(b) taxon-mean spectra cluster analyses

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Supplementary Fig. S10. Multivariate analyses using derivatives of the resin FTIR spectra that occur in the arboretum and in the wild.

(a) PCA analyses, closed symbols indicate arboretum-derived resins, open symbols wild-derived.

(b) taxon-mean spectra cluster analyses, arboretum-derived samples in black, wild-derived in blue.