Acute Oak Decline and Other Emerging Bacterial Diseases of Trees in California

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A description of the symptoms of Acute Oak Decline in Britain and a comparative review on causes of similar disorders on oak in Europe

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AOD on *Q. robur* and *Q. petraea* (UK)
Key external symptoms

Weeping patches

Bleeding from outer bark

oval-shaped inner-bark lesions

A. biguttatus galleries in the newest phloem, sapwood

Photos: Denman et al., 2010

AOD on *Q. agrifolia* and *Q. douglasii* (CA)

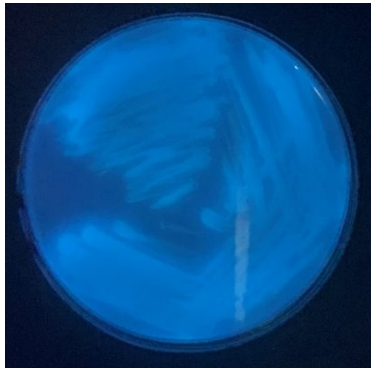
Q. agrifolia; LA County

Q. douglasii; SB County

Notable Detections from 2023

Q. agrifolia

- *Brenneria* sp. aff. *goodwinii*; LA
  - *Q. robur*, UK; Denman et al., 2012
- *B. rosae* subsp. *americana; LA*
  - *Q. kelloggi,* CA; Brady et al., 2014
- *Gibbsiella quercinecans*; LA
  - *Q. petreae*, UK; Brady et al., 2010; (also *Q. robur, Q. pyrenaica*)
- *G. greigii*; LA
  - *Q. kellogii*, CA; Brady et al., 2014
- *Lonsdalea quercina*; LA
  - *Q. agrifolia* (?), CA, CO; Hildebrand and Schroth, 1967
- *Pantoea* spp. (aff. *agglomerans*, *ananatis, anthophila*); LA
  - Ubiquitous species with wide host range; likely secondary colonizer
- *Pseudomonas daroniae*; San Benito
  - *Q. robur*, UK; Bueno-Gonzalez et al., 2019
- *P. dryadis*; LA
  - *Q. robur*, UK; Gonzalez et al., 2019
- *Rahnella ecdela*; Ventura
  - *Quercus* sp. Netherlands; Brady et al., 2022

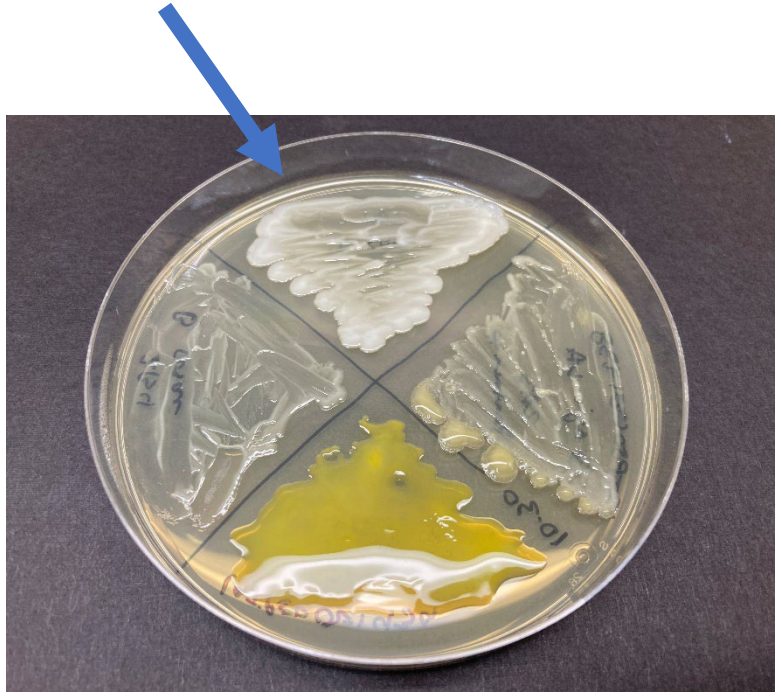


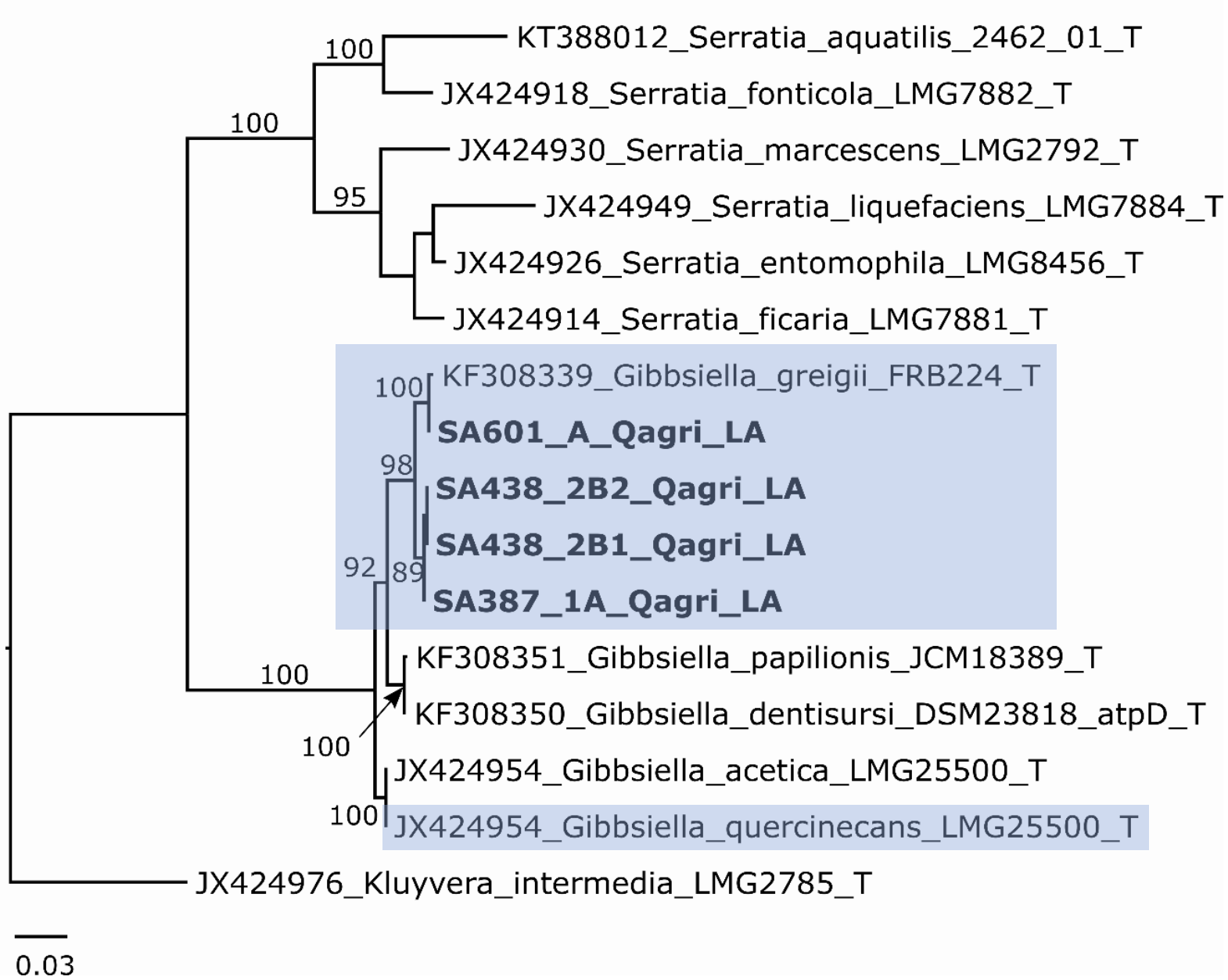
Q. douglasii

- *Erwinia* spp (*billingiae*); LA, San Benito, Ventura
  - Some species pathogenic; possible saprotrophic role on weakened oaks
- *Pseudomonas* sp. aff. *daroniae*; San Benito
  - *Q. robur*, UK; Gonzalez et al., 2019
- *Rahnella victoriana*; San Benito
  - *Quercus robur*, UK; Brady et al., 2014

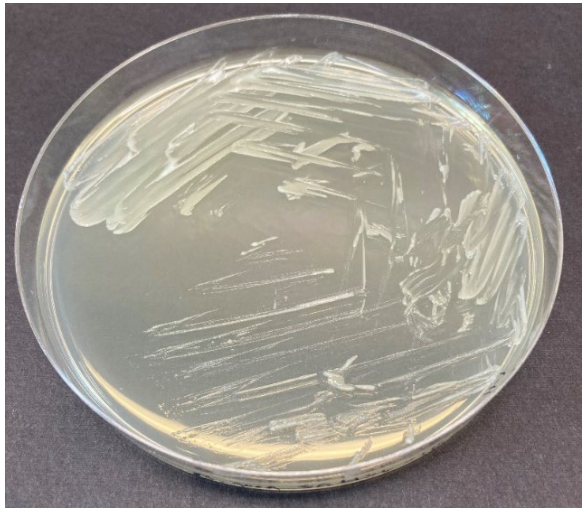
Gibbsiella detections from *Q. agrifolia*

Gibbsiella greigii; SA438-2B1

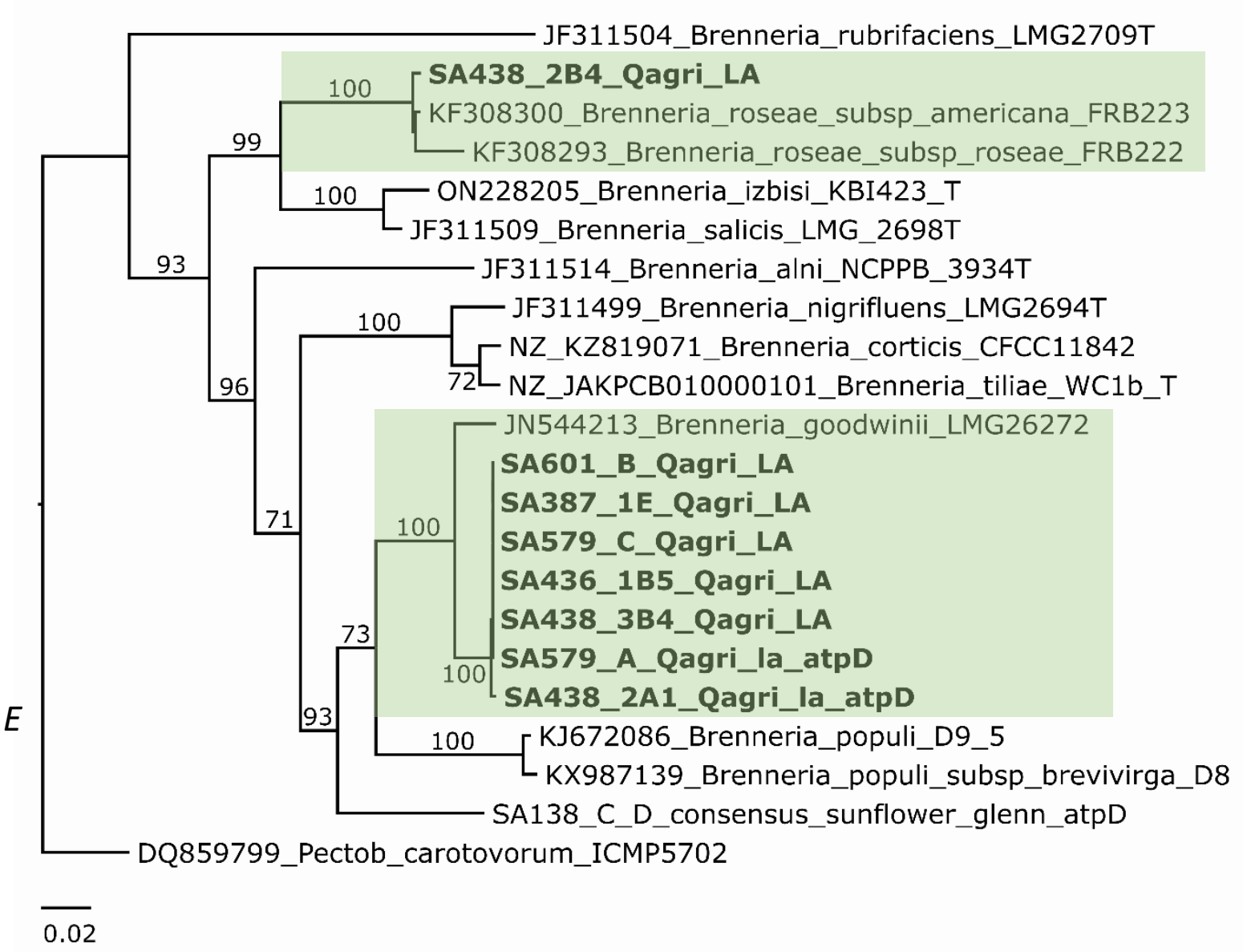




Brenneria detections from *Q. agrifolia*

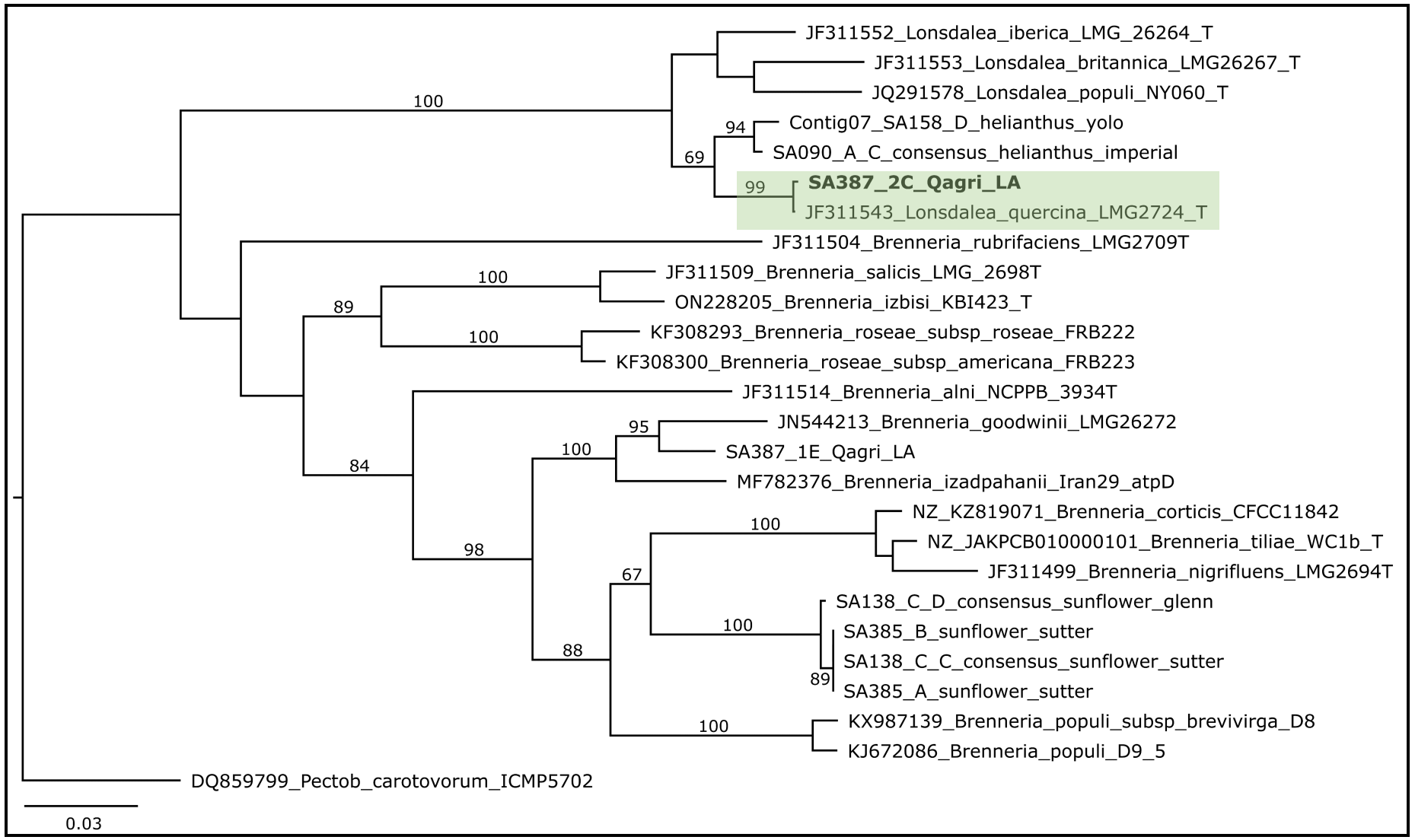


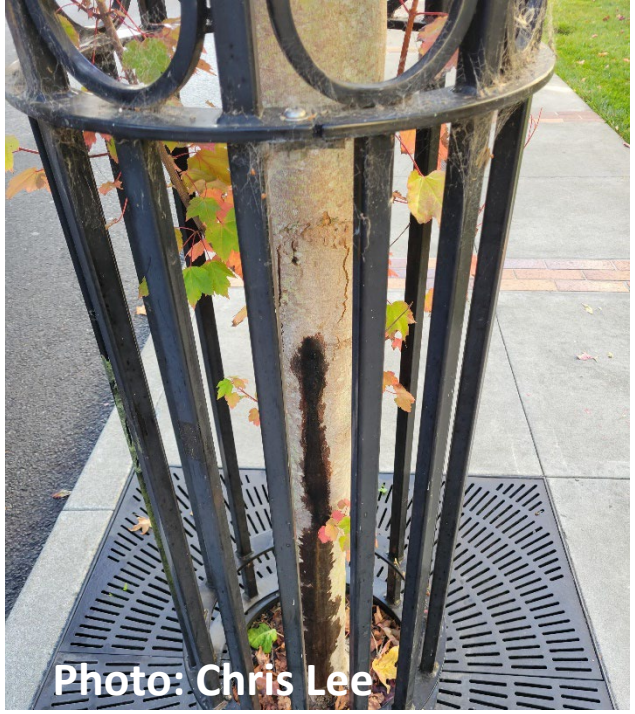
Brenneria sp. aff. *goodwinii; SA387-1E*



Lonsdalea quercina detection from *Q. agrifolia*

Drippy nut/acorn
Photo: UC IPM





Soft Rot and Wetwood

- *Lelliottia amnigena*
- *Dickeya* spp.
- *Erwinia* spp.
- *Enterobacter* spp.
- *Pseudomonas* spp.

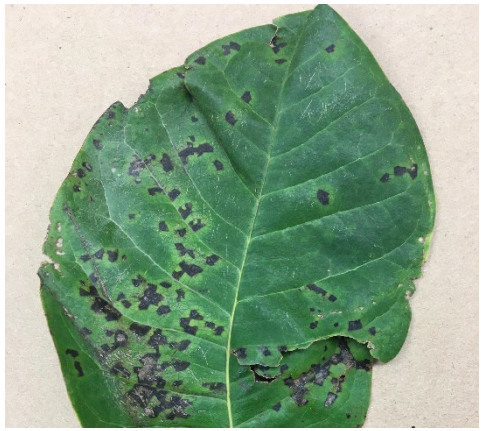
Cankers

Brenneria rubrifaciens
Brenneria nigrifluens

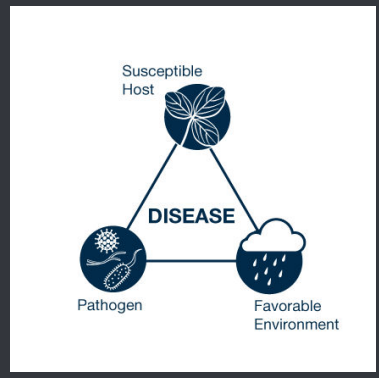
Fire Blight

- *Erwinia amylovora*
  - Rosaceae hosts

Leaf Spots



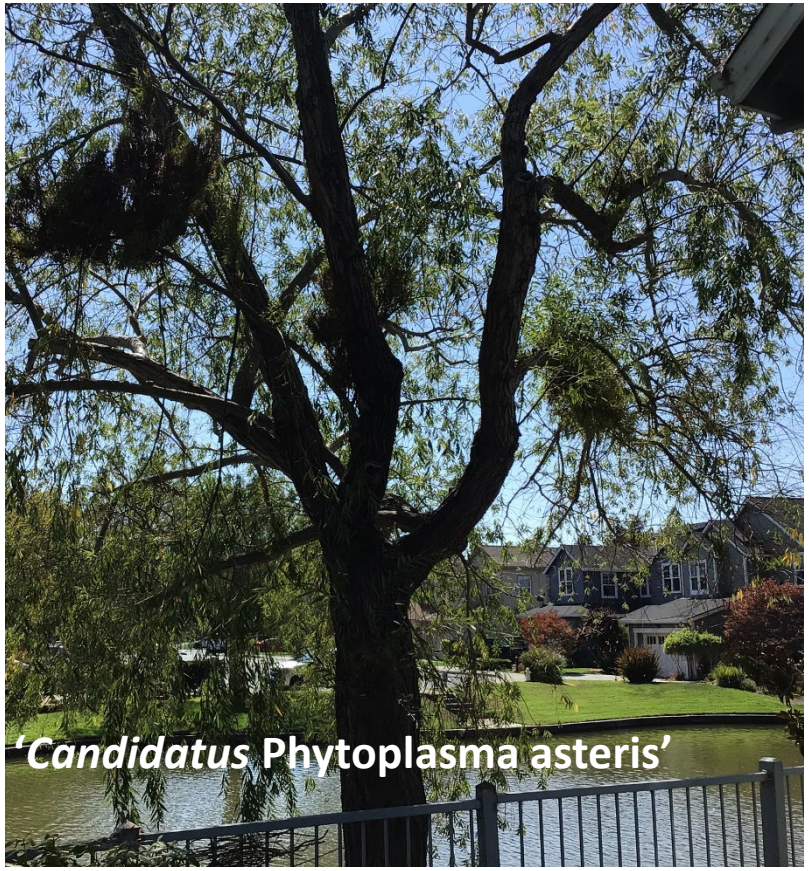
- *Magnolia grandiflora*
  - *P. syringae* pvs.
    - *actinidifoliorum, maculicola, spinaceae, tomato*
  - *P. viridiflava*
  - *Erwinia persicina/rhapontici*
  - *Xanthomonas arboricola*
- *Aesculus californica*
  - *P. syringae* pvs.
    - *aceris, dysoxyli*
  - *P. cerasi*
  - *Erwinia rhapontici*
- *Umbellularia californica*
  - *P. caspiana*
  - *P. syringae* pvs.
    - *delphinii, viburnii*
  - *E. rhapontici*



Trunk and root galls

Agrobacterium tumefaciens

Pseudomonas savastanoi



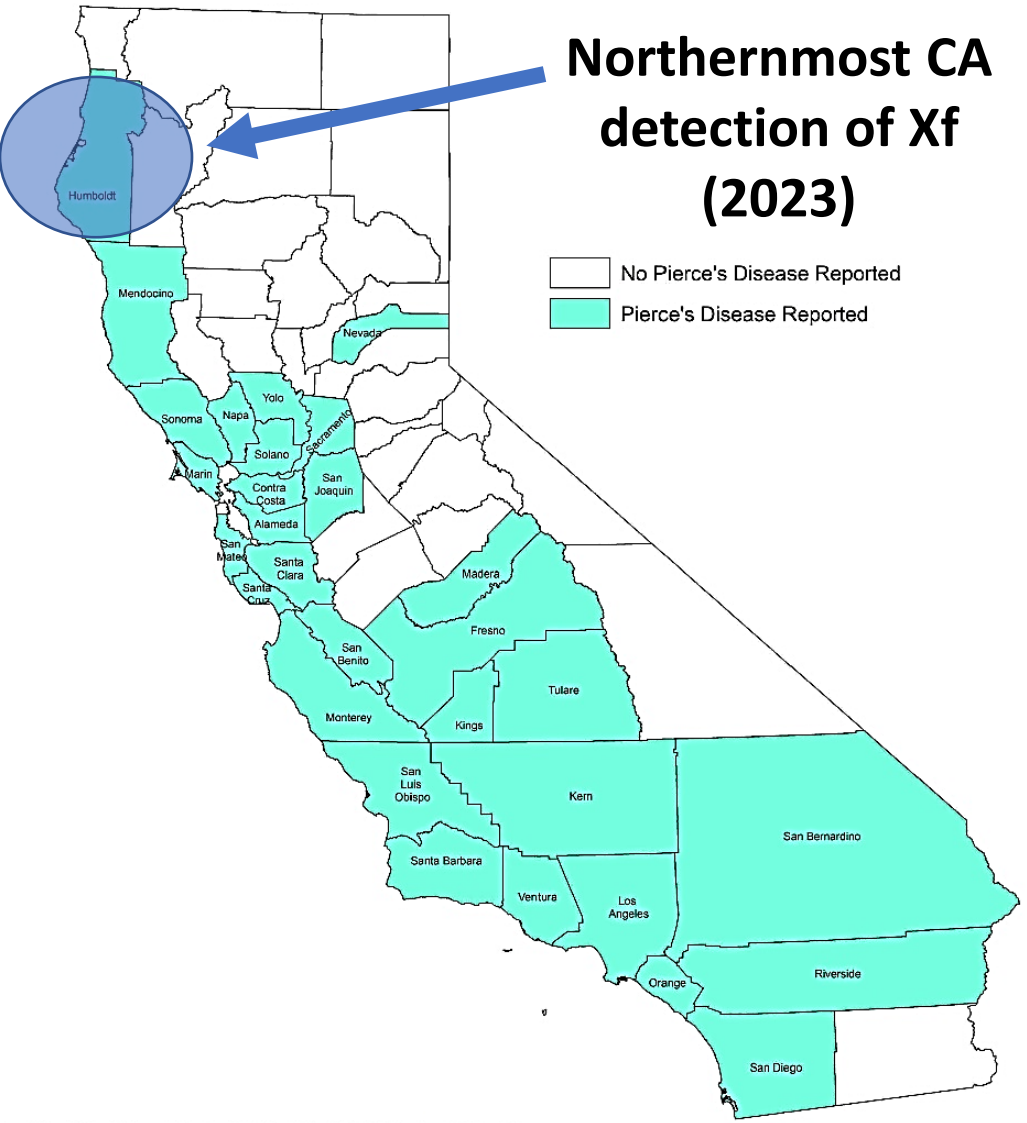
‘*Candidatus* Phytoplasma asteris’

‘*Candidatus* Phytoplasma pruni’

Phytoplasmas

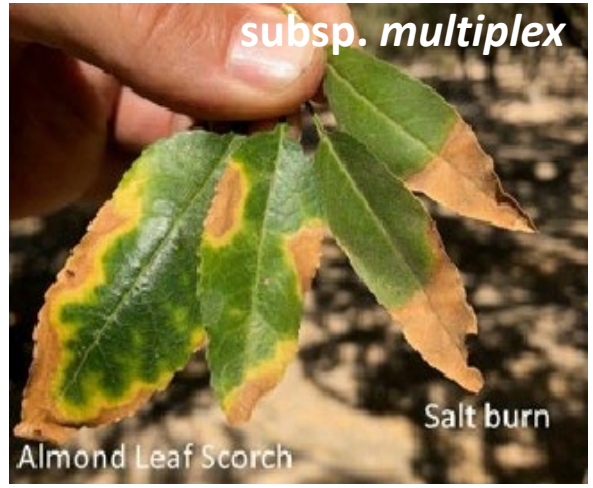
cdfa
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Pierce's Disease in California



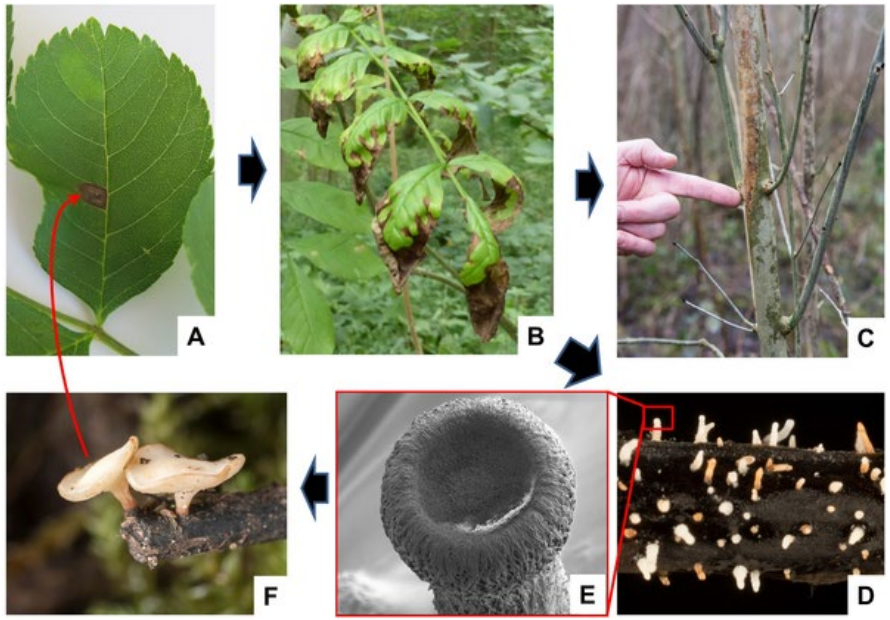
Counties where Pierce's disease has been reported, based on CDFA laboratory records and reports from researchers and cooperative extension agents.
[Note: the known distrbution of Pierce's disease in each county is not reflected on the map, and not all counties have been surveyed for Pierce's disease.

January 30, 2023

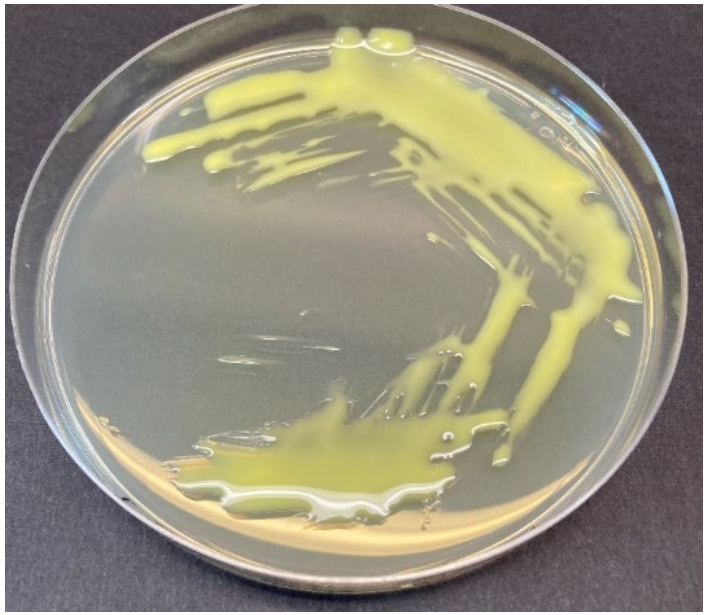






Hymenoscyphus fraxinea (ash dieback)



Luteimonas fraxinea; *Q. agrifolia*; SA438-2A4

PLOS | PATHOGENS

PEARLS

Ash dieback epidemic in Europe: How can molecular technologies help?

J. Allan Downie*

John Innes Centre, Norwich Research Park, Norwich, United Kingdom

Syst Appl Microbiol. 2022 Jul;45(4):126333. doi: 10.1016/j.syapm.2022.126333. Epub 2022 May 11.

Physiological and genomic characterisation of Luteimonas fraxinea sp. nov., a bacterial species associated with trees tolerant to ash dieback

Kristina Ulrich [1], Regina Becker [2], Undine Behrendt [3], Michael Kube [4], Volker Schneck [5], Andreas Ulrich [6]