

**Supplemental Data for:**

Joseph, C.M.L., E.A. Albino, S.E. Ebeler, and L.F. Bisson. 2015.

*Brettanomyces bruxellensis* aroma-active compounds determined by SPME GC-MS olfactory analysis.

Am. J. Enol. Vitic. 66:379-387. doi: 10.5344/ajev.2015.14073.

**Supplemental Table 1** *Brettanomyces* strains screened for aroma characteristics with added aromatic amino acids.

| UCD VEN strain number | Genus                | Species             | Source   | Other collection number <sup>a</sup> |
|-----------------------|----------------------|---------------------|--|--------------------------------------|
| 605 <sup>b</sup>      | <i>Brettanomyces</i> | <i>bruxellensis</i> | Beer, USA  | UCD FST 71-12                        |
| 615 <sup>c</sup>      | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Napa Valley, California, USA                             |                                      |
| 734                   | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, USA  |                                      |
| 738                   | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Missouri   |                                      |
| 752                   | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, France   |                                      |
| 860                   | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine   |                                      |
| 2027                  | <i>Brettanomyces</i> | <i>custersianus</i> | Beer (Bantu), South Africa                                     | CBS 4805, UCD FST 82-28              |
| 2029                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Cabernet Sauvignon                                       |                                      |
| 2030                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 1972 Cabernet Sauvignon, Napa Valley, California, USA    |                                      |
| 2041                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Fruit, Thailand  |                                      |
| 2042                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Simi Valley, California, USA                             |                                      |
| 2043                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Simi Valley, California, USA                             |                                      |
| 2046                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 1999, Merlot, Amador County, California, USA             |                                      |
| 2047                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2001, Cabernet Sauvignon, Carneros, California, USA      |                                      |
| 2048                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 1999, Pinot noir, Carneros, California, USA              |                                      |
| 2049                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Pinot noir, New Zealand                                  |                                      |
| 2050                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2001, Chardonnay, New Zealand                            |                                      |
| 2051 <sup>b</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2001, Pinot noir, Carneros, California, USA              |                                      |
| 2052                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2001, Zinfandel, Paso Robles, California, USA            |                                      |
| 2053                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2001, Cabernet Sauvignon, Sonoma Valley, California, USA |                                      |
| 2054                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2001, Cabernet Sauvignon, Napa Valley, California, USA   |                                      |
| 2055                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, red, California, USA                                     |                                      |
| 2058 <sup>c</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Must   | CBS 73, UCD FST 82-30                |
| 2059                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Cabernet Sauvignon, 1975                                 | UCD FST 77-105                       |
| 2060                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2001, Cabernet Sauvignon, Chile                          |                                      |
| 2062                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Champagne  | UCD FST 75-41                        |
| 2063                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Cabernet Sauvignon, 1975                                 | UCD FST 77-106                       |
| 2065                  | <i>Brettanomyces</i> | <i>anomalus</i>     | Wine, white, Italy, pellicle                                   | DBVPG 4051                           |
| 2066                  | <i>Brettanomyces</i> | <i>anomalus</i>     | Wine, white, Italy, pellicle                                   | DBVPG 4052                           |
| 2067                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2000, Pinot noir, Healdsburg, California, USA            |                                      |
| 2075                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Alexander Valley, California, USA                        |                                      |
| 2076                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, British Columbia, Canada                                 |                                      |
| 2077 <sup>c</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2001, Chile  |                                      |
| 2078                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Beer (lambic), Belgium   | CBS 72, CE 41                        |
| 2079                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Beer (lambic), Belgium   | CBS 74, CE 41                        |
| 2080                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine   | CE 116                               |
| 2081                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine   | CE 119                               |
| 2082 <sup>c</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine   | CE120                                |
| 2083                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine   | CE122                                |
| 2084                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine   |                                      |
| 2085                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine   | CE 50                                |
| 2091 <sup>b,c</sup>   | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Bordeaux, France, 1957                                   | CBS 2797                             |
| 2092 <sup>b</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Sparkling Mosselle, Germany, 1957                        | CBS 2796                             |
| 2093                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, New York, USA  |                                      |
| 2094                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, California, USA  |                                      |
| 2254                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2002, Chile  |                                      |
| 2255                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 1999, Syrah, Pope Valley, California, USA                |                                      |
| 2347                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2002, Chile  |                                      |

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**Supplemental Table 1** *Brettanomyces* strains screened for aroma characteristics with added aromatic amino acids.

| UCD VEN strain number | Genus                | Species             | Source  | Other collection number <sup>a</sup> |
|-----------------------|----------------------|---------------------|---|--------------------------------------|
| 2385                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Washington, USA                               |                                      |
| 2386                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Washington, USA                               |                                      |
| 2387                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Washington, USA                               |                                      |
| 2388                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Livermore, California, USA                    |                                      |
| 2396                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 1791                           |
| 2397                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 1792                           |
| 2398                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 2127                           |
| 2399                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 1600                           |
| 2400                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 2114                           |
| 2401                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 1327                           |
| 2402 <sup>b</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 1679                           |
| 2403                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Washington, USA                               |                                      |
| 2404 <sup>b</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 1700                           |
| 2405                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 2101                           |
| 2406                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Portugal                                      | Port. 2113                           |
| 2407                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Washington, USA                               |                                      |
| 2408 <sup>b</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2000 France                                   |                                      |
| 2409                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Mexico  |                                      |
| 2420                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Oregon, USA                                   |                                      |
| 2421                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Oregon, USA                                   |                                      |
| 2422                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Mexico  |                                      |
| 2423                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Mexico  |                                      |
| 2426                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, 2001, Sicily, Italy                           |                                      |
| 2456                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Napa Valley, California, USA                  |                                      |
| 2459                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Napa Valley, California, USA                  |                                      |
| 2467                  | <i>Brettanomyces</i> |                     | Wine, Uruguay                                       |                                      |
| 2484                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Semillon/Sauvignon Blanc blend, Colorado, USA |                                      |
| 2485                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Red, North Carolina, USA                      |                                      |
| 2486                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Starfruit, Thailand                           |                                      |
| 2490                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Napa Valley, California, USA                  |                                      |
| 2492                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Syrah, Lodi, California, USA                  |                                      |
| 2493                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Zinfandel Rose', Colorado, USA                |                                      |
| 2494                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Chardonnay, Sonoma Valley, California, USA    |                                      |
| 2503                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, South Africa                                  |                                      |
| 2504 <sup>b</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, South Africa                                  |                                      |
| 2505                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, South Africa                                  |                                      |
| 2506                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, South Africa                                  |                                      |
| 2507                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Uruguay                                       |                                      |
| 2508                  | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Uruguay                                       |                                      |
| 2509 <sup>b</sup>     | <i>Brettanomyces</i> | <i>bruxellensis</i> | Wine, Uruguay                                       |                                      |

<sup>a</sup>UCD FST: Phaff Yeast Collection, University of California, Davis, USA; CBS: Centraalbureau voor Schimmelcultures, Fungal Biodiversity Centre, Utrecht, The Netherlands; DBVPG: Collection of Yeasts, Dipartimento di Biologia Vegetale, Perugia, Italy.

<sup>b</sup>Strains chosen from initial screen for further GC-MS analysis.

<sup>c</sup>Strains used for GC-MS-O analysis.

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**Supplemental Table 2** Non-IUPAC (International Union of Pure and Applied Chemistry) chemical names and their IUPAC equivalents.

| Common chemical name       | IUPAC chemical name                                    |
|----------------------------|--|
| Isoamyl alcohol            | 3-Methyl-1-butanol                                     |
| Ethyl butyrate             | Ethyl butanoate  |
| Butyric acid               | Butanoic acid  |
| Ethyl isovalerate          | Ethyl 3-methylbutanoate                                |
| Ethyl valerate             | Ethyl pentanoate                                       |
| Ethyl 2-methyl butyrate    | Ethyl 2-methylbutanoate                                |
| 2-Ethylhexanol             | 2-Ethylhexan-1-ol                                      |
| Ocimene                    | 3,7-Dimethyl-1,3,7-octatriene                          |
| Phenethyl alcohol          | 2-Phenylethanol  |
| Phenethyl formate          | 2-Phenylethyl formate                                  |
| 4-Ethylguaiacol            | 4-Ethyl-2-methoxy-phenol                               |
| 2-Methoxy-4-vinylphenol    | 4-Ethenyl-2-methoxyphenol                              |
| 2-Methoxyphenethyl alcohol | 2-(4-Methoxyphenyl) ethanol                            |
| Amyl-octanoate             | Pentyl octanoate                                       |
| Bisabolene                 | 1-Methyl-4-(6-methylhepta-2,5-dien-2-yl)cyclohex-1-ene |
| Phenethyl alcohol          | 2-Phenylethanol  |
| Phenethyl acetate          | 1-Phenylethyl acetate                                  |
| Isoamyl alcohol            | 3-Methyl-1-butanol                                     |
| Isovaleric acid            | 3-Methylbutanoic acid                                  |
| Phenylacetaldehyde         | 2-Phenylacetaldehyde                                   |
| Ethyl butyrate             | Ethyl butanoate  |
| Ethyl isobutyrate          | Ethyl 2-methylpropanoate                               |
| Octanol                    | Octan-1-ol   |
| Decanol                    | Decan-1-ol   |