

Table S2. Binding affinities of two *D. abietella* OBPs to various ligands.

| Ligand | CAS number | OBP5 | | OBP14 | |
|--|------------|----------|---------------------|----------|---------------------|
| | | F.D. (%) | K _i (μM) | F.D. (%) | K _i (μM) |
| Esters | | | | | |
| Methyl acetate | 79-20-9 | 27.62 | – | 27.21 | – |
| Ethyl acetate | 141-78-6 | 18.99 | – | 23.29 | – |
| Propyl acetate | 109-60-4 | 31.42 | – | 25.46 | – |
| Butyl acetate | 123-86-4 | 31.57 | – | 0.16 | – |
| Amyl acetate | 628-63-7 | 26.33 | – | 25.00 | – |
| Hexyl acetate | 142-92-7 | 23.71 | – | 29.22 | – |
| Heptyl acetate | 112-06-1 | 41.04 | – | 33.70 | – |
| Octyl acetate | 112-14-1 | 35.41 | – | 30.09 | – |
| Nonyl acetate | 143-13-5 | 16.47 | – | 22.98 | – |
| Decyl acetate | 112-17-4 | 26.24 | – | 15.15 | – |
| Geranyl acetate | 105-87-3 | 26.51 | – | 27.39 | – |
| Z3-Hexenyl acetate | 3681-71-8 | 27.72 | – | 31.25 | – |
| Z3-Hexenyl butyrate | 16491-36-4 | 20.80 | – | 26.39 | – |
| Ethyl butyrate | 105-54-4 | 31.98 | – | 31.72 | – |
| Methyl benzoate | 93-58-3 | 30.49 | – | 30.65 | – |
| Ethyl benzoate | 93-89-0 | 29.39 | – | 30.02 | – |
| Phenyl benzoate | 93-99-2 | 31.69 | – | 34.36 | – |
| Benzyl benzoate | 120-51-4 | 47.80 | – | 49.39 | – |
| Ethyl-(2 <i>E</i> ,4 <i>Z</i>)-decadienoate | 3025-30-7 | 69.83 | 5.67±0.55 | 68.07 | 6.45±0.43 |
| Ethyl hexanoate | 123-66-0 | 24.17 | – | 29.43 | – |
| Methyl laurate | 111-82-0 | 7.25 | – | 12.60 | – |
| Alcohols | | | | | |
| 1-Hexanol | 111-27-3 | 38.88 | – | 40.27 | – |
| 1-Heptanol | 111-70-6 | 39.32 | – | 39.10 | – |
| 2-Heptanol | 543-49-7 | 13.90 | – | 24.86 | – |
| 1-Octanol | 111-87-5 | 34.97 | – | 35.51 | – |
| 1-Nonanol | 143-08-8 | 39.58 | – | 29.98 | – |
| 1-Decanol | 112-30-1 | 31.40 | – | 31.32 | – |
| 1-Undecanol | 112-42-5 | 37.66 | – | NB | – |
| 1-Dodecanol | 112-53-8 | 38.67 | – | 28.55 | – |
| Z3-Hexen-1-ol | 928-96-1 | 28.57 | – | 24.52 | – |
| Linalool | 78-70-6 | 33.33 | – | 31.71 | – |
| Farnesol | 4602-84-0 | 36.29 | – | 36.20 | – |
| Geraniol | 106-24-1 | 32.91 | – | 28.67 | – |
| Nerolidol | 7212-44-4 | 34.62 | – | 37.52 | – |
| Phenethyl alcohol | 60-12-8 | 37.61 | – | 10.00 | – |
| 2-Methyl-1-butanol | 137-32-6 | 36.04 | – | 27.78 | – |
| 3-Methyl-2-buten-1-ol | 556-82-1 | 36.95 | – | 34.58 | – |
| 1-Hexadecanol | 36653-82-4 | 36.97 | – | 31.97 | – |

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|-------------------------|------------|-------|---------------------------------|-------|---------------------------------|
| 3-Octenol | 3391-86-4 | 25.07 | – | 31.31 | – |
| <i>E</i> 2-Hexen-1-ol | 928-95-0 | 36.50 | – | 18.64 | – |
| α -Terpineol | 98-55-5 | 33.89 | – | 30.28 | – |
| 6-Methyl-5-hepten-2-ol | 4630-06-2 | 41.37 | – | 33.49 | – |
| Aldehydes | | | | | |
| Hexanal | 66-25-1 | 39.33 | – | 32.96 | – |
| Heptanal | 111-71-7 | 42.46 | – | 25.87 | – |
| Octanal | 124-13-0 | 35.56 | – | 34.48 | – |
| Nonanal | 124-19-6 | 31.50 | – | 23.55 | – |
| Decanal | 112-31-2 | 29.13 | – | 21.35 | – |
| Undecanal | 112-44-7 | 27.83 | – | 35.28 | – |
| Dodecanal | 112-54-9 | 30.61 | – | 3.43 | – |
| Z2-Hexenal | 16635-54-4 | 39.42 | – | 33.09 | – |
| <i>E</i> 2-Hexenal | 6728-26-3 | 33.10 | – | 32.34 | – |
| Syringaldehyde | 134-96-3 | 38.53 | – | 34.32 | – |
| β -Cyclocitral | 432-25-7 | 32.90 | – | 32.77 | – |
| Citral | 5392-40-5 | 39.02 | – | 32.25 | – |
| Benzaldehyde | 100-52-7 | 36.78 | – | 38.35 | – |
| Phenylacetaldehyde | 122-78-1 | 29.15 | – | 33.05 | – |
| Alkenes | | | | | |
| Ocimene | 13877-91-3 | 33.97 | – | 33.18 | – |
| α -Pinene | 80-56-8 | 25.12 | – | 29.24 | – |
| Farnesene | 502-61-4 | 40.68 | – | 17.77 | – |
| α -Caryophyllene | 6753-98-6 | 15.42 | – | NB | – |
| β -Caryophyllene | 87-44-5 | 16.28 | – | NB | – |
| 1-Undecene | 821-95-4 | 17.44 | – | NB | – |
| Myrcene | 123-35-3 | 37.07 | – | 34.84 | – |
| Squalene | 7683-64-9 | 32.30 | – | 24.81 | – |
| 3-Carene | 13466-78-9 | 41.63 | – | 29.92 | – |
| γ -Terpinene | 99-85-4 | 28.23 | – | 24.46 | – |
| α -Phellandrene | 99-83-2 | 37.38 | – | 36.07 | – |
| α -Terpinene | 99-86-5 | 35.10 | – | 27.93 | – |
| Limonene | 138-86-3 | 38.31 | – | 30.81 | – |
| Ketones | | | | | |
| 2-Hexanone | 591-78-6 | 43.11 | – | 27.57 | – |
| 3-Hexanone | 589-38-8 | 25.30 | – | 36.58 | – |
| 2-Heptanone | 110-43-0 | 36.47 | – | 33.53 | – |
| 2-Tridecanone | 593-08-8 | 35.58 | – | 32.61 | – |
| Acetophenone | 98-86-2 | 38.75 | – | 36.22 | – |
| β -Ionone | 14901-07-6 | 59.51 | 9.11\pm1.03 | 62.86 | 8.39\pm1.04 |
| 6-Methyl-5-hepten-2-one | 110-93-0 | 40.28 | – | 34.39 | – |
| Alkanes | | | | | |
| Heptane | 142-82-5 | 31.42 | – | 22.91 | – |
| Octane | 111-65-9 | 27.95 | – | NB | – |

| | | | | | |
|---------------------|-------------|-------|-------------------|-------|-------------------|
| Nonane | 111-84-2 | 22.19 | – | NB | – |
| Decane | 124-18-5 | 20.23 | – | NB | – |
| Undecane | 1120-21-4 | 4.42 | – | 6.47 | – |
| Dodecane | 112-40-3 | 31.90 | – | 17.71 | – |
| Tridecane | 629-50-5 | 5.52 | – | NB | – |
| Tetradecane | 629-59-4 | 25.00 | – | 27.13 | – |
| Octadecane | 593-45-3 | 26.53 | – | 23.94 | – |
| Nonadecane | 629-92-5 | 27.73 | – | 15.30 | – |
| Tricosane | 638-67-5 | 32.82 | – | 27.90 | – |
| Insecticides | | | | | |
| Abamectin | 71751-41-2 | 24.16 | – | 4.33 | – |
| Imidacloprid | 138261-41-3 | 22.51 | – | 39.56 | – |
| Diflubenzuron | 35367-38-5 | 21.40 | – | 30.33 | – |
| Chlorbenzuron | 57160-47-1 | 39.11 | – | 47.43 | – |
| Deltamethrin | 52918-63-5 | 28.53 | – | 38.21 | – |
| Chlorpyrifos | 2921-88-2 | 66.12 | 5.92±0.48 | 72.41 | 4.62±0.46 |
| Phoxim | 14816-18-3 | 81.98 | 2.89±0.14 | 89.62 | 2.38±0.28 |
| Fipronil | 120068-37-3 | 23.68 | – | 29.70 | – |
| Chlorfenapyr | 122453-73-0 | 61.98 | 8.16±0.55 | 60.84 | 8.41±0.42 |
| Rotenone | 83-79-4 | 56.04 | 12.66±0.63 | 58.66 | 10.15±0.49 |
| Matrine | 519-02-8 | 29.01 | – | 29.59 | – |
| Osthole | 484-12-8 | NB | – | NB | – |
| Acids | | | | | |
| Lauric acid | 143-07-7 | 33.87 | – | 30.18 | – |

Note: F.D. represents the fluorescence displacement percent of ligands at 20 μ M. NB means no binding of DabiOBPs to ligands.