



Supplementary Figure 1: Gene prediction pipeline used for predicting genes within the genome of *X. dendrorhous*.

**Supplementary Table 1: Secondary metabolite clusters predicted within the genome of *X. dendrorhous*.**

**Cluster:1**

<b>Backbone_gene_id</b>	<b>Gene_id</b>	<b>Gene_positions</b>	<b>Chromosome-Contig</b>	<b>Gene_order</b>	<b>5'end</b>	<b>3'end</b>	<b>Gene_distance</b>	<b>Domain_score</b>
XDEN_04041	XDEN_04042	-1	54	241	740866	744314	541	1
XDEN_04041	XDEN_04041	0	54	240	733506	740325	0	1
XDEN_04041	XDEN_04040	1	54	239	731589	733193	313	0
XDEN_04041	XDEN_04039	2	54	238	727989	730753	836	1
XDEN_04041	XDEN_04038	3	54	237	726536	727498	491	0
XDEN_04041	XDEN_04037	4	54	236	723179	726257	279	1
XDEN_04041	XDEN_04036	5	54	235	720173	722704	475	0
XDEN_04041	XDEN_04035	6	54	234	711884	719170	1003	1
XDEN_04041	XDEN_04034	7	54	233	706419	710916	968	0
XDEN_04041	XDEN_04033	8	54	232	704246	705780	639	0
XDEN_04041	XDEN_04032	9	54	231	702306	704043	203	1
XDEN_04041	XDEN_04031	10	54	230	701197	702001	305	0
XDEN_04041	XDEN_04030	11	54	229	699396	700978	219	0
XDEN_04041	XDEN_04029	12	54	228	697265	699076	320	1
XDEN_04041	XDEN_04028	13	54	227	692878	695960	1305	1
XDEN_04041	XDEN_06315	14	54	226	691217	692606	272	0
XDEN_04041	XDEN_04027	15	54	225	688706	691035	182	1

**Cluster:2**

<b>Backbone_gene_id</b>	<b>Gene_id</b>	<b>Gene_positions</b>	<b>Chromosome-Contig</b>	<b>Gene_order</b>	<b>5'end</b>	<b>3'end</b>	<b>Gene_distance</b>	<b>Domain_score</b>
XDEN_06121	XDEN_06131	-10	79	695	2062902	2064575	357	0
XDEN_06121	XDEN_06130	-9	79	694	2061014	2062545	778	1
XDEN_06121	XDEN_06129	-8	79	693	2059803	2060236	501	0
XDEN_06121	XDEN_06128	-7	79	692	2057630	2059302	697	1
XDEN_06121	XDEN_06127	-6	79	691	2052204	2056933	859	0
XDEN_06121	XDEN_06126	-5	79	690	2050708	2051345	246	0
XDEN_06121	XDEN_06125	-4	79	689	2049048	2050462	418	0
XDEN_06121	XDEN_06124	-3	79	688	2047721	2048630	456	0

XDEN_06121	XDEN_06123	-2	79	687	2045652	2047265	469	0
XDEN_06121	XDEN_06122	-1	79	686	2044728	2045183	295	0
XDEN_06121	XDEN_06121	0	79	685	2040016	2044433	0	1
XDEN_06121	XDEN_06120	1	79	684	2038248	2039550	466	0
XDEN_06121	XDEN_06119	2	79	683	2035799	2037908	340	1
XDEN_06121	XDEN_06118	3	79	682	2032319	2033759	2040	0
XDEN_06121	XDEN_06117	4	79	681	2029048	2032016	303	1
XDEN_06121	XDEN_06116	5	79	680	2027516	2028720	328	1
XDEN_06121	XDEN_06115	6	79	679	2023522	2027484	32	1
XDEN_06121	XDEN_06114	7	79	678	2019987	2023027	495	0
XDEN_06121	XDEN_06113	8	79	677	2018817	2019767	220	0
XDEN_06121	XDEN_06112	9	79	676	2017106	2018316	501	0
XDEN_06121	XDEN_06111	10	79	675	2014526	2017015	91	0
XDEN_06121	XDEN_06110	11	79	674	2012525	2013825	701	0
XDEN_06121	XDEN_06109	12	79	673	2011746	2012307	218	0
XDEN_06121	XDEN_06108	13	79	672	2008849	2011495	251	1
XDEN_06121	XDEN_06107	14	79	671	2006362	2008318	531	0
XDEN_06121	XDEN_06106	15	79	670	2002723	2005517	845	1

**Supplementary Table 2: Backbone genes of the two secondary metabolite clusters predicted within the genome of *X. dendrorhous*.**

<b>Backbone_gene_id</b>	<b>Scaffold id</b>	<b>Gene_order</b>	<b>5'_end</b>	<b>3'_end</b>	<b>SMURF_backbone_gene_prediction</b>
XDEN_00460	162	343	1032809	1037153	NRPS-Like
XDEN_04041	54	240	733506	740325	PKS-Like
XDEN_06121	79	685	2040016	2044433	NRPS-Like

**Supplementary Table 3: List of fungal genomes used for phylogenetic analyses.**

	Species names	Taxonomy*	Reference
1	<i>Melampsora laricis</i>	Basidiomycota; Pucciniomycotina; Pucciniomycetes; Pucciniales;	[1]
2	<i>Puccinia graminis</i>	Basidiomycota; Pucciniomycotina; Pucciniomycetes; Pucciniales;	[1]
3	<i>Mixia osmundae</i>	Basidiomycota; Pucciniomycotina; Mixiomycetes; Mixiales;	[2]
4	<i>Malassezia sympodialis</i>	Basidiomycota; Ustilaginomycotina; Malasseziomycetes; Malasseziales	[3]
5	<i>Pseudozyma antarctica</i>	Basidiomycota; Ustilaginomycotina; Ustilaginomycetes; Ustilaginales;	[4]
6	<i>Pseudozyma hubeiensis</i>	Basidiomycota; Ustilaginomycotina; Ustilaginomycetes; Ustilaginales;	[5]
7	<i>Ustilago maydis</i>	Basidiomycota; Ustilaginomycotina; Ustilaginomycetes; Ustilaginales;	[6]
8	<i>Ustilago hordei</i>	Basidiomycota; Ustilaginomycotina; Ustilaginomycetes; Ustilaginales;	[7]
9	<i>Malassezia globosa</i>	Basidiomycota; Ustilaginomycotina; Malasseziomycetes; Malasseziales;	[8]
10	<i>Sporisorium reilianum</i>	Basidiomycota; Ustilaginomycotina; Ustilaginomycetes; Ustilaginales;	[9]
11	<i>Melanopsichium pennsylvanicum</i>	Basidiomycota; Ustilaginomycotina; Ustilaginomycetes; Ustilaginales;	[10]
12	<i>Auricularia subglabra</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis; Auriculariales;	[11]
13	<i>Coniophora puteana</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetidae; Boletales;	[11]
14	<i>Dichomitus squalens</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis; Polyporales;	[11]
15	<i>Fomitiporia mediterranea</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis; Hymenochaetales;	[11]
16	<i>Gloeophyllum trabeum</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis; Gloeophyllales;	[11]
17	<i>Punctularia strigosozonata</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis; Corticiales;	[11]
18	<i>Stereum hirsutum</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis; Russulales;	[11]
19	<i>Trametes versicolor</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis; Polyporales;	[11]
20	<i>Tremella mesenterica</i>	Basidiomycota; Agaricomycotina; Tremellomycetes; Tremellales;	[11]
21	<i>Wolfiporia cocos</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis;	[11]

		Polyporales;	
22	<i>Dacryopinax sp.</i>	Basidiomycota; Agaricomycotina; Dacrymycetes; Dacrymycetales;	[11]
23	<i>Cryptococcus neoformans</i>	Basidiomycota; Agaricomycotina; Tremellomycetes; Tremellales;	[12]
24	<i>Heterobasidion irregulare</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis; Russulales;	[13]
25	<i>Laccaria bicolor</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetidae; Agaricales;	[14]
26	<i>Armillaria mellea</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetidae; Agaricales;	[15]
27	<i>Coprinopsis cinerea</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetidae; Agaricales;	[16]
28	<i>Phanerochaete chrysosporium</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetes incertae sedis; Polyporales;	[17]
29	<i>Schizophyllum commune</i>	Basidiomycota; Agaricomycotina; Agaricomycetes; Agaricomycetidae; Agaricales;	[18]
30	<i>Wallemia sebi</i>	Basidiomycota; Basidiomycota incertae sedis; Wallemiomycetes; Wallemiales;	[19]
31	<i>Wallemia ichthyophaga</i>	Basidiomycota; Basidiomycota incertae sedis; Wallemiomycetes; Wallemiales;	[20]
32	<i>Aspergillus fumigatus</i>	Ascomycota; saccharomyceta; Pezizomycotina; leotiomyceta; Eurotiomycetes; Eurotiomycetidae; Eurotiales;	[21]
33	<i>Saccharomyces cerevisiae</i>	Ascomycota; saccharomyceta; Saccharomycotina; Saccharomycetes; Saccharomycetales;	[22]
34	<i>Schizosaccharomyces pombe</i>	Ascomycota; Taphrinomycotina; Schizosaccharomycetes; Schizosaccharomycetales;	[23]
35	<i>Stagonospora nodorum</i>	Ascomycota; saccharomyceta; Pezizomycotina; leotiomyceta; dothideomyceta; Dothideomycetes; Pleosporomycetidae; Pleosporales;	[24]
36	<i>Trichoderma reesei</i>	Ascomycota; saccharomyceta; Pezizomycotina; leotiomyceta; sordariomyceta; Sordariomycetes; Hypocreomycetidae; Hypocreales;	[25]
37	<i>Yarrowia lipolytica</i>	Ascomycota; saccharomyceta; Saccharomycotina; Saccharomycetes; Saccharomycetales;	[26]
38	<i>Aspergillus nidulans</i>	Ascomycota; saccharomyceta; Pezizomycotina; leotiomyceta; Eurotiomycetes; Eurotiomycetidae; Eurotiales;	[27]
39	<i>Candida albicans</i>	Ascomycota; saccharomyceta; Saccharomycotina; Saccharomycetes; Saccharomycetales;	[28]
40	<i>Aspergillus niger</i>	Ascomycota; saccharomyceta; Pezizomycotina; leotiomyceta; Eurotiomycetes; Eurotiomycetidae; Eurotiales;	[29]
41	<i>Debaryomyces hansenii</i>	Ascomycota; saccharomyceta; Saccharomycotina; Saccharomycetes;	[26]

		Saccharomycetales;	
42	<i>Kluyveromyces waltii</i>	Ascomycota; saccharomyceta; Saccharomycotina; Saccharomycetes; Saccharomycetales;	[30]
43	<i>Ashbya gossypii</i>	Ascomycota; saccharomyceta; Saccharomycotina; Saccharomycetes; Saccharomycetales;	[31]
44	<i>Magnaporthe grisea</i>	Ascomycota; saccharomyceta; Pezizomycotina; leotiomyceta; sordariomyceta; Sordariomycetes; Sordariomycetidae; Magnaporthales;	[32]
45	<i>Neurospora crassa</i>	Ascomycota; saccharomyceta; Pezizomycotina; leotiomyceta; sordariomyceta; Sordariomycetes; Sordariomycetidae; Sordariales;	[33]
46	<i>Batrachochytrium dendrobatidis</i>	Chytridiomycota; Chytridiomycetes; Rhizophydiales;	Broad-Mit <sup>a</sup>
47	<i>Rhizopus oryzae</i>	Fungi incertae sedis; Early diverging fungal lineages; Mucoromycotina; Mucorales;	[34]

\* Information extracted from NCBI Taxonomy Browser.

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