

FINAL REPORT
CALIFORNIA COMPETITIVE GRANT PROGRAM FOR RESEARCH IN
VITICULTURE AND ENOLOGY/AMERICAN VINYARD FOUNDATION
APRIL 1, 2000 – MARCH 31, 2001

I. PROJECT TITLE: Support for the UC-Davis Wine Microbiology Culture Collection

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III. SUMMARY

The primary objective of this proposal was to increase both the diversity and total number of wine related bacteria in the culture collection. We have used 2 methods to accomplish this goal. First we have obtained interesting isolates from other collections (see Appendix A). From these collections we have been able to obtain some unusual isolates that will be of use for further research. For example, 2 isolates of the acid tolerant *Lactobacillus suebicus* are being used for a study of malo-lactic fermentations by a masters student, Cameron Parry. These strains may be a commercial alternative to *Oenococcus*. We also now have in the collection 2 strains of *Allicyclobacillus*, a spoilage organism from apple juice. These organisms have not been found in grape juice but we may now be able to look for this type of spoilage organism.

Our second method of enhancing the bacterial collection has been to isolate interesting wine-related bacteria directly from wine and must. We worked with a winery that does not use inoculation for malo-lactic fermentation to obtain isolates of *Oenococcus* from 5 wine varieties; Zinfandel, Cabernet Sauvignon, Chardonnay, Merlot, and Carignane. We have purified **over 600 putative *Oenococcus* isolates** from these wines and are in the process of determining how many different strains they represent. We have also isolated **more than 300 other bacteria** from these samples and are attempting to determine the genus and species as well as the genetic variety of these organisms. An additional request was made to several wineries to provide us with examples of wines that they felt had microbial spoilage organisms present. We have isolated approximately 20 bacterial spoilage organisms from a variety of such wines at this point.

We are currently working in conjunction with the Wine Microbiology class (VEN 128) to obtain more isolates that will be added to the collection.

Over the duration of the granting period we have added 68 well characterized strains to the collection from various collections around the world. We have added an additional 20 spoilage isolates from California. Over the next year we should be able to analyze and characterize many of the other isolates we have collected. We can not as yet put a number on those isolates we will add to the collection. Overall, we have made substantial progress in bringing the bacterial portion of the culture collection up to the level where it can be of substantial use for instructional, research, and industry purposes.

Appendix A:

Bacterial Strains Obtained From Other Collections

UCD #	Strain Identification	Origin
100	<i>Oenococcus oeni</i> LA122	?
101	<i>Oenococcus oeni</i> KR5-3	New Zealand, Sauvignon Blanc
102	<i>Oenococcus oeni</i> MV-A	New Zealand, Chardonnay
103	<i>Oenococcus oeni</i> MV-B	New Zealand, Chardonnay
104	<i>Oenococcus oeni</i> MV-C	New Zealand, Chardonnay
105	<i>Oenococcus oeni</i> MV-D	New Zealand, Chardonnay
106	<i>Oenococcus oeni</i> MV-E	New Zealand, Chardonnay
107	<i>Oenococcus oeni</i> MV-G	New Zealand, Chardonnay
108	<i>Oenococcus oeni</i> MV-I	New Zealand, Chardonnay
109	<i>Oenococcus oeni</i> MV-J	New Zealand, Chardonnay
110	<i>Oenococcus oeni</i> MV-K	New Zealand, Pinot Noir
111	<i>Oenococcus oeni</i> SH	New Zealand, Pinot Noir
112	<i>Gluconacetobacter liquefaciens</i>	ATCC 23749
113	<i>Acetobacter hansenii</i>	ATCC 35959
114	<i>Acetobacter aceti</i>	ATCC 23746
115	<i>Acetobacter pasteurianus</i>	ATCC 9432
116	<i>Gluconabacter oxydans</i>	ATCC 23651
117	<i>Alicyclobacillus</i> sp. VF	Cornell/Geneva (Canandaigua)
118	<i>Alicyclobacillus</i> sp. WAC	Cornell/Geneva (Canandaigua)
119	<i>Lactobacillus brevis</i> B-1834	USDA, NRRL
120	<i>Lactobacillus brevis</i> B-1836	USDA, NRRL
121	<i>Lactobacillus brevis</i> B-4527	USDA, NRRL
122	<i>Lactobacillus brevis</i> IFO 3960	Japan
123	<i>Lactobacillus buchneri</i> B-1837	USDA, NRRL
124	<i>Lactobacillus buchneri</i> B-1838	USDA, NRRL
125	<i>Lactobacillus hilgardii</i> B-1843	USDA, NRRL
126	<i>Lactobacillus saki</i>	ATCC
127	<i>Lactobacillus pentosus</i>	USDA, NRRL
128	<i>Lactobacillus suebicus</i> 5008	DSMZ
129	<i>Lactobacillus suebicus</i> 5007	DSMZ, Type strain, ATCC 49375
130	<i>Lactobacillus</i> sp. mont. 20605	DSMZ
134	<i>Lactobacillus acidophilus</i>	ATCC 700396
135	<i>Lactobacillus pentosus</i> B-227	USDA, NRRL
136	<i>Lactobacillus fructivorans</i> B-400	USDA, NRRL
137	<i>Lactobacillus fermentum</i> B-4524	USDA, NRRL
138	<i>Lactobacillus fructivorans</i> B-1841	USDA, NRRL
139	<i>Oenococcus oeni</i> Lco23	Switzerland (N.Z.)
140	<i>Oenococcus oeni</i> 1050	New Zealand, Chardonnay
141	<i>Oenococcus oeni</i> 1674	France, type strain (N.Z.)

142	<i>Oenococcus oeni</i> 1694	Australia (N.Z.)
143	<i>Oenococcus oeni</i> 1696	Australia (N.Z.)
144	<i>Oenococcus oeni</i> 1707	France (N.Z.)
145	<i>Oenococcus oeni</i> 1823 (ML34)	USA (N.Z.)
148	<i>Oenococcus oeni</i> Kli	Switzerland (N.Z.)
149	<i>Lactobacillus fructivorans</i> B-3797	USDA, NRRL
150	<i>Oenococcus oeni</i> OENO	Microlife (N.Z.)
151	<i>Oenococcus oeni</i> B-3472	USDA, NRRL
152	<i>Oenococcus oeni</i> 1709	France (N.Z.)
153	<i>Oenococcus oeni</i> 1044	New Zealand, Chardonnay
154	<i>Oenococcus oeni</i> 1041	New Zealand, Sauvignon Blanc
155	<i>Oenococcus oeni</i> 1004	New Zealand, Chardonnay
156	<i>Oenococcus oeni</i> 1002	New Zealand, Chardonnay
157	<i>Oenococcus oeni</i> L181	Australia (N.Z.)
158	<i>Oenococcus oeni</i> ETS-1	USA (N.Z.)
159	<i>Oenococcus oeni</i> MCW-2000	Vinquery
160	<i>Oenococcus oeni</i> 4028 CECT	
161	<i>Oenococcus oeni</i> AM19	New Zealand, Merlot
162	<i>Oenococcus oeni</i> AM20	New Zealand, Cabernet Sauvignon
163	<i>Oenococcus oeni</i> AM21	New Zealand, Cabernet Sauvignon
164	<i>Oenococcus oeni</i> AM22	New Zealand, Cabernet Sauvignon
165	<i>Oenococcus oeni</i> 1095	New Zealand, Chardonnay
166	<i>Oenococcus oeni</i> 1078	New Zealand, Chardonnay
167	<i>Oenococcus oeni</i> 1081	New Zealand, Pinot Noir
168	<i>Lactobacillus casei</i>	ATCC 344