Figure Descriptions.

**000\_ancfit\_cbyenv.pdf**

Histogram of ancestral, generation-0, fitness for 112 yeast strains in seven environments variable for chemical stress identity and amount. Data colored by assay environment: CM0, complete minimal media with no added stress; COPR0.4, 0.8, 1.2, resp., complete minimal media with added copper sulfate stress at 40%, 80%, and 120% of pilot near-lethal-limit (see methods); SALT0.4, 0.4, 1.2, resp., complete minimal media with added NaCl stress. Black dashed vertical line at 1.0 depicts mean fitness expected if the reference barcode was exactly intermediate in fitness among all lineages; depicted distribution indicates lower than average ancestral fitness for the selected reference strain d1C2.

**000\_fit\_cbyenv\_full.pdf**

Histograms of ancestral (generation-0) fitness [col 1], evolved (generation-500) fitness [col 2], and delta (generation-500 minus generation-0) fitness [col 3] in assay environments variable for chemical stress identity and amount. Row 1 depicts data for yeast assigned to the SALT evolution treatments; row 2 depicts data for yeast assigned to the COPR evolution treatments. Within each subplot, colors depict assay environment: CM, complete minimal media with no added stress; 0.4, 0.8, 1.2, complete minimal media with added chemical stress at 40%, 80%, and 120% of pilot near-lethal-limit (see methods).

**000\_SALT\_fit\_byenv\_cbytreat\_full.pdf**

Histograms of ancestral (generation-0) fitness [col 1], evolved (generation-500) fitness [col 2], and delta (generation-500 minus generation-0) fitness [col 3] for yeast assigned to the SALT evolution treatments in assay environments variable NaCl chemical stress amount. Row 1 depicts data for the complete minimal media with no added stress assay environment, Rows 2, 3, and 4 depict data for complete minimal media with NaCl added at 40%, 80%, and 120% of pilot near-lethal-limit (see methods), respectively. Data are colored by assigned evolutionary treatment.

**000\_COPR\_fit\_byenv\_cbytreat\_full.pdf**

Histograms of ancestral (generation-0) fitness [col 1], evolved (generation-500) fitness [col 2], and delta (generation-500 minus generation-0) fitness [col 3] for yeast assigned to the COPR evolution treatments in assay environments variable copper sulfate chemical stress amount. Row 1 depicts data for the complete minimal media with no added stress assay environment, Rows 2, 3, and 4 depict data for complete minimal media with copper sulfate added at 40%, 80%, and 120% of pilot near-lethal-limit (see methods), respectively. Data are colored by assigned evolutionary treatment.

**MOSUM\_byenv.pdf**

Depiction summarizing model results for change in fitness in 500 generations of experimental evolution. Models in the form delta fitness ~ treatment. In the main plot, Column 1 depicts data for yeast assigned to the SALT treatment assayed across 4 environments: No Stress (row 1), 40% NaCl stress (row 2), 80% NaCl stress (row 3), and 120% NaCl stress (row 4). Column two depicts the same but for COPR assigned yeast assayed in media with copper sulfate added. Within each subplot there is a row for each lmer model; row labels indicate the base level treatment in the model. Within these rows, empty boxes indicate no significant difference in fitness between treatments, blue boxes indicate lower fitness for that treatment than the reference treatment in that environment, and red boxes indicate higher fitness for that treatment than the reference treatment in that environment. Asterisks indicate p value significance ranges: \* <0.05, \*\* <0.01, \*\*\* <0.001.

**MOSUM\_bytreat.pdf**

Depiction summarizing model results for change in fitness in 500 generations of experimental evolution. Models in the form delta fitness ~ treatment. In the main plot, row 1 depicts data for yeast assigned to the SALT treatment assayed across four environments. …I am having a very hard time writing a description for this, but I can describe it to you in person and we can workshop it a little if you like this version better than the MOSUM\_byenv.pdf version. The two depict exactly the same data in two different ways. Thanks!

**000\_SALTinCM.pdf**

Change in fitness in complete minimal media across seven treatments in 500 generations of experimental evolution for yeast assigned to the SALT evolutionary treatments. Violin plots show the density of 224 yeast strains' change in fitness with labels indicating the evolutionary treatment stress amount and dynamics. Points indicate fitness of individual barcodes with sizes reflecting the number of reads underlying each datapoint. Colors correspond to evolutionary treatments. Treatment mean fitness changes are depicted as heavy black crossbars.

**000\_SALTinSALT40.pdf**

Change in fitness in complete minimal media with NaCl added at 40% of pilot near-lethal limit across seven treatments in 500 generations of experimental evolution for yeast assigned to the SALT evolutionary treatments. Violin plots show the density of 224 yeast strains' change in fitness with labels indicating the evolutionary treatment stress amount and dynamics. Points indicate fitness of individual barcodes with sizes reflecting the number of reads underlying each datapoint. Colors correspond to evolutionary treatments. Treatment mean fitness changes are depicted as heavy black crossbars.

**000\_SALTinSALT80.pdf**

Change in fitness in complete minimal media with NaCl added at 80% of pilot near-lethal limit across seven treatments in 500 generations of experimental evolution for yeast assigned to the SALT evolutionary treatments. Violin plots show the density of 224 yeast strains' change in fitness with labels indicating the evolutionary treatment stress amount and dynamics. Points indicate fitness of individual barcodes with sizes reflecting the number of reads underlying each datapoint. Colors correspond to evolutionary treatments. Treatment mean fitness changes are depicted as heavy black crossbars.

**000\_SALTinSALT120.pdf**

Change in fitness in complete minimal media with NaCl added at 120% of pilot near-lethal limit across seven treatments in 500 generations of experimental evolution for yeast assigned to the SALT evolutionary treatments. Violin plots show the density of 224 yeast strains' change in fitness with labels indicating the evolutionary treatment stress amount and dynamics. Points indicate fitness of individual barcodes with sizes reflecting the number of reads underlying each datapoint. Colors correspond to evolutionary treatments. Treatment mean fitness changes are depicted as heavy black crossbars.

**000\_COPRinCM.pdf**

Change in fitness in complete minimal media across seven treatments in 500 generations of experimental evolution for yeast assigned to the COPR evolutionary treatments. Violin plots show the density of 224 yeast strains' change in fitness with labels indicating the evolutionary treatment stress amount and dynamics. Points indicate fitness of individual barcodes with sizes reflecting the number of reads underlying each datapoint. Colors correspond to evolutionary treatments. Treatment mean fitness changes are depicted as heavy black crossbars.

**000\_COPRinCOPR40.pdf**

Change in fitness in complete minimal media with copper sulfate added at 40% of pilot near-lethal limit across seven treatments in 500 generations of experimental evolution for yeast assigned to the COPR evolutionary treatments. Violin plots show the density of 224 yeast strains' change in fitness with labels indicating the evolutionary treatment stress amount and dynamics. Points indicate fitness of individual barcodes with sizes reflecting the number of reads underlying each datapoint. Colors correspond to evolutionary treatments. Treatment mean fitness changes are depicted as heavy black crossbars.

**000\_COPRinCOPR80.pdf**

Change in fitness in complete minimal media with copper sulfate added at 80% of pilot near-lethal limit across seven treatments in 500 generations of experimental evolution for yeast assigned to the COPR evolutionary treatments. Violin plots show the density of 224 yeast strains' change in fitness with labels indicating the evolutionary treatment stress amount and dynamics. Points indicate fitness of individual barcodes with sizes reflecting the number of reads underlying each datapoint. Colors correspond to evolutionary treatments. Treatment mean fitness changes are depicted as heavy black crossbars.

**000\_COPRinCOPR120.pdf**

Change in fitness in complete minimal media with copper sulfate added at 120% of pilot near-lethal limit across seven treatments in 500 generations of experimental evolution for yeast assigned to the COPR evolutionary treatments. Violin plots show the density of 224 yeast strains' change in fitness with labels indicating the evolutionary treatment stress amount and dynamics. Points indicate fitness of individual barcodes with sizes reflecting the number of reads underlying each datapoint. Colors correspond to evolutionary treatments. Treatment mean fitness changes are depicted as heavy black crossbars.