Supplemental Table 1: Reporter metabolites for d'Anjou medium compared to complex medium.

Metabolite name	**Compartment**	**No. of genes**	**p-value**
Butanoyl-CoA	Peroxisome	2	<1E-16
Octadecynoyl-CoA	Peroxisome	9	1.11E-16
Tetradecenoyl-CoA	Peroxisome	9	1.11E-16
Hexadecenoyl-CoA	Peroxisome	9	1.11E-16
Octadecenoyl-CoA	Peroxisome	9	1.11E-16
Acetyl-CoA	Peroxisome	10	6.66E-16
Decanoyl-CoA	Peroxisome	6	5.22E-15
Dodecanoyl-CoA	Peroxisome	6	5.22E-15
Octanoyl-CoA	Peroxisome	6	5.22E-15
NADP	Peroxisome	6	3.11E-14
NADPH	Peroxisome	6	3.11E-14
CoA	Peroxisome	14	4.98E-14
Tetradecanoyl-CoA	Peroxisome	8	5.66E-14
Palmitoyl-CoA	Peroxisome	8	5.66E-14
NAD+	Peroxisome	8	1.33E-11
NADH	Peroxisome	8	1.33E-11
Oxygen	Peroxisome	9	5.89E-11
Tetracosanoyl-CoA	Peroxisome	8	2.10E-10
H2O2	Peroxisome	11	3.95E-09
Adenine	Extracellular	2	2.34E-08

Supplemental Table 2: Reporter metabolites for Generation 1 medium compared to complex medium.

Metabolite name	Compartment	No. of genes	p-value
Butanoyl-CoA	Peroxisome	2	<1E-16
Octadecynoyl-CoA	Peroxisome	9	<1E-16
Tetradecenoyl-CoA	Peroxisome	9	<1E-16
Hexadecenoyl-CoA	Peroxisome	9	<1E-16
Octadecenoyl-CoA	Peroxisome	9	<1E-16
Acetyl-CoA	Peroxisome	10	<1E-16
NADP	Peroxisome	6	<1E-16
NADPH	Peroxisome	6	<1E-16
CoA	Peroxisome	14	<1E-16
Oxygen	Peroxisome	9	<1E-16
Decanoyl-CoA	Peroxisome	6	<1E-16
Dodecanoyl-CoA	Peroxisome	6	<1E-16
Octanoyl-CoA	Peroxisome	6	<1E-16
NAD+	Peroxisome	8	<1E-16
NADH	Peroxisome	8	<1E-16
Tetradecanoyl-CoA	Peroxisome	8	<1E-16
Palmitoyl-CoA	Peroxisome	8	<1E-16
H2O2	Peroxisome	11	8.88E-16
H+	Peroxisome	14	6.11E-15

Supplemental Table 3: Cost analysis of BMGY, BSM, and RDM. Chemical costs were estimated based on publicly available prices from Sigma Aldrich at the 1 kg scale if available, or at the largest available mass if less than 1 kg.

Basal salts medium (BSM)				**$4.97**
Compound	**Quantity per L**	**Unit**	**Cost / g or mL ($)**	**Total cost / L ($)**
Glycerol	40	mL	0.043	1.73
H3PO4	22.70	g	0.011	0.25
CaSO4.2H2O	0.93	g	0.088	0.08
K2SO4	18.20	g	0.073	1.32
MgSO4.7H2O	14.90	g	0.037	0.55
KOH	4.13	g	0.041	0.17
NH4OH	16.67	mL	0.048	0.81
PTM1 salts	4.35	mL	0.016	0.07
Rich defined medium (RDM)				**$4.08**
Compound	**Quantity per L**	**Unit**	**Cost / g or mL ($)**	**Total cost / L ($)**
Glycerol	40	mL	0.043	1.73
KH2PO4	12.00	g	0.044	0.53
MgSO4.7H2O	4.70	g	0.037	0.17
CaCl2.2H2O	0.36	g	0.034	0.01
(NH4)2SO4	1.65	g	0.016	0.03
KOH	3.37	g	0.041	0.14
Glutamine	1.74	g	0.473	0.82
Arginine	1.46	g	0.299	0.44
Vitamins	3.33	mL	0.005	0.02
Lipids	10.00	mL	0.013	0.13
PTM1 salts	4.35	mL	0.016	0.07
Buffered complex medium (BMGY)				**$15.90**
Compound	**Quantity per L**	**Unit**	**Cost / g or mL ($)**	**Total cost / L ($)**
Glycerol	40	mL	0.043	1.73
Yeast extract	10	g	0.190	1.90

Peptone	20	g	0.243	4.86
Yeast nitrogen base	13.4	g	0.490	6.57
K2HPO4	2.30	g	0.139	0.32
KH2PO4	11.81	g	0.044	0.52