In[1]:=
```
experiments = {
   "EYrainbow_glucose",
   "EYrainbow_glucose_largerBF",
   "EYrainbow_rapamycin_1stTry",
   "EYrainbow_rapamycin_CheckBistability",
   "EYrainbow_1nmpp1_1st",
   "EYrainbow_leucine_large",
   "EYrainbowWhi5Up_betaEstrodiol"
  };
data = Import[FileNameJoin[{NotebookDirectory[], "fitCellSizeWithOrganelle.csv"}],
   "Data", "HeaderLines" → 1];
epsilon = 10^(-18);
filled = data /. {0. → epsilon};
washed = Select[data, Function[x, NoneTrue[x, # == 0 &]]];
```

In[6]:=
```
(* Check data *)
Position[filled, 0.]
Position[washed, 0.]
```

Out[6]= { }

Out[7]= { }

In[8]:=
```
Length[filled]
Length[washed]
```

Out[8]= 43

Out[9]= 108

In[14]:=
```
fitCellSizeFromOrganelles[dataset_] := Module[
  {expr, a, b, c, alpha, mean, n, nlm, params,
   fittedFunc, fitted, fittedMin, fittedMax, dataMin, dataMax},
  expr = Sum[a[i] × n[i] × mean[i]^alpha[i], {i, 1, 6}] + Sum[
     n[i] × mean[i]^alpha[i] × b[i, j] × n[j] × mean[j]^alpha[j], {i, 1, 6}, {j, i, 6}] + c;
  nlm = NonlinearModelFit[
    dataset[[All, 2 ;;]], expr,
    Join[
     Table[a[i], {i, 1, 6}],
     Flatten[Table[b[i, j], {i, 1, 6}, {j, i, 6}]],
     {c},
     Table[alpha[i], {i, 1, 6}]
    ],
    Join[
     Table[mean[i], {i, 1, 6}],
     Table[n[i], {i, 1, 6}]
    ],
    MaxIterations → ∞
   ];
  params = nlm["BestFitParameters"];
```

```
  Print["a[i]: ", Table[a[i], {i, 1, 6}] /. params];
  Print["b[i,j]: ", Table[b[i, j], {i, 1, 6}, {j, 1, 6}] /. params // MatrixForm];
  Print["c: ", c /. params];
  Print["alpha[i]: ", Table[alpha[i], {i, 1, 6}] /. params];
  Print["Adjusted R Square: ", nlm["AdjustedRSquared"]];
  Print["p-values for parameter z-statistics: ", nlm["ParameterPValues"]];
  Print["t-statistics for parameter estimates: ", nlm["ParameterTStatistics"]];
  fittedFunc = Function[
    vec,
    expr /. params
      /. Table[n[i] → vec[[i]], {i, 1, 6}]
     /. Table[mean[i] → vec[[i + 6]], {i, 1, 6}]
   ];
  fitted = Map[fittedFunc, dataset[[All, 2 ;; -2]]];
  fittedMin = Min[fitted];
  fittedMax = Max[fitted];
  dataMin = Min[dataset[[All, -1]]];
  dataMax = Max[dataset[[All, -1]]];
  Print[Show[
    ListPlot[
     Transpose[{dataset[[All, -1]], fitted}],
     PlotTheme → "Scientific"
    ],
    Plot[x, {x, 0, dataMax}]
   ]];
  Print[""]
 ]
```

In[15]:=
```
Print["All Experiments, Null Organelles filled with 0:"];
fitCellSizeFromOrganelles[filled];
```

All Experiments, Null Organelles filled with 0:

a[i]: {3.82552, 12.6133, −21.9128, 0.745641, 2.85817, 1.59948}

b[i,j]:
$$\begin{pmatrix} 0.331175 & -0.58853 & -0.228735 & -0.0597813 & 0.124697 & -0.156068 \\ b\$6901[2,1] & 7.49621 & -3.759 & 0.241133 & -0.600461 & 0.530961 \\ b\$6901[3,1] & b\$6901[3,2] & 3.69175 & -0.380987 & -0.653824 & -0.319836 \\ b\$6901[4,1] & b\$6901[4,2] & b\$6901[4,3] & 0.0123123 & 0.0700795 & 0.171655 \\ b\$6901[5,1] & b\$6901[5,2] & b\$6901[5,3] & b\$6901[5,4] & 0.230667 & -0.236894 \\ b\$6901[6,1] & b\$6901[6,2] & b\$6901[6,3] & b\$6901[6,4] & b\$6901[6,5] & 0.143779 \end{pmatrix}$$

c: 66.9517

alpha[i]: {0.845372, 0.406347, 0.666922, 1.05675, 0.65552, 0.829809}

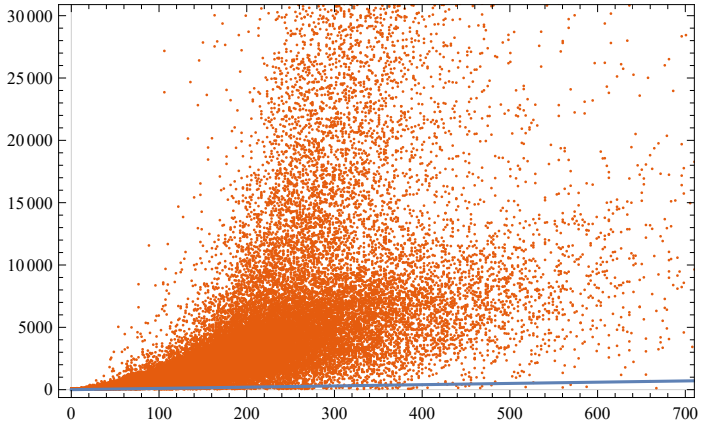
Adjusted R Square: 0.952053

p-values for parameter z-statistics:

{4.1067×10^{-47}, 5.42124×10^{-71}, 1.76316×10^{-50}, 0.00510757, 8.1361×10^{-84}, 7.31444×10^{-13}, 8.27022×10^{-244}, 8.66504×10^{-61}, 1.37874×10^{-12}, 0.000202402, 6.56923×10^{-41}, 2.09893×10^{-37}, 6.83378×10^{-151}, 2.72321×10^{-126}, 1.36841×10^{-11}, 7.73921×10^{-163}, 2.96054×10^{-71}, 1.48586×10^{-48}, 1.26701×10^{-23}, 8.30277×10^{-124}, 3.41354×10^{-29}, 0.000778424, 2.40136×10^{-11}, 4.92643×10^{-35}, 0., 7.00941×10^{-168}, 3.41202×10^{-97}, 7.80706×10^{-152}, 0., 0., 0., 2.76327×10^{-60}, 0., 5.26468×10^{-308}}

t-statistics for parameter estimates:

{14.4335, 17.8478, −14.9612, 2.80031, 19.4398, 7.17561, 33.5628, −16.474, −7.08828, −3.71632, 13.4079, −12.793, 26.2684, −23.9846, 6.76305, −27.3109, 17.8818, 14.6617, −10.0242, −23.7421, −11.224, 3.36059, 6.68104, 12.3601, 47.4687, −27.7396, 20.9749, 26.3521, 77.4041, 124.106, 93.8101, 16.4032, 186.16, 37.8237}



In[17]:=
```
Print["All Experiments, Null Organelles Excluded:"];
fitCellSizeFromOrganelles[washed];
```

All Experiments, Null Organelles Excluded:

a[i]: {4.15297, 13.2552, −0.584623, 0.909362, 0.70081, 0.112199}

b[i,j]:

0.297515	−0.288189	−0.0446842	−0.0207601	−0.0128407	−0.120737
b$7382[2, 1]	4.56411	−1.14714	0.0361813	−0.651291	0.598759
b$7382[3, 1]	b$7382[3, 2]	0.47419	−0.102101	−0.179688	−0.134486
b$7382[4, 1]	b$7382[4, 2]	b$7382[4, 3]	−0.00547833	0.0736075	0.0704449
b$7382[5, 1]	b$7382[5, 2]	b$7382[5, 3]	b$7382[5, 4]	0.175173	−0.145967
b$7382[6, 1]	b$7382[6, 2]	b$7382[6, 3]	b$7382[6, 4]	b$7382[6, 5]	0.120232

c: 18.3037

alpha[i]: {0.890099, 0.44813, 0.853776, 0.97791, 0.700691, 1.17385}

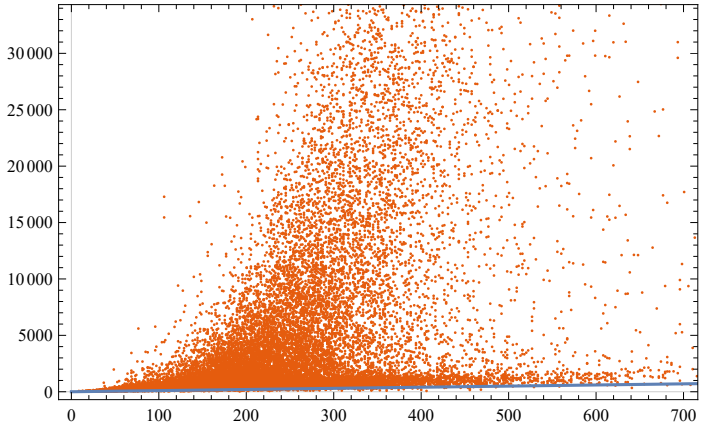
Adjusted R Square: 0.961846

p-values for parameter z-statistics:

{5.29449×10^{-65}, 1.29457×10^{-50}, 0.38475, 0.000215802, 0.0000191574, 0.645137, 2.38681×10^{-156}, 1.87664×10^{-16}, 0.00212216, 0.22322, 0.216512, 1.29808×10^{-15}, 1.03055×10^{-51}, 1.85049×10^{-25}, 0.292197, 9.65122×10^{-121}, 8.70794×10^{-61}, 8.26972×10^{-9}, 8.17901×10^{-9}, 1.81903×10^{-28}, 2.52533×10^{-16}, 0.214807, 1.08534×10^{-11}, 0.0000104926, 1.22907×10^{-230}, 1.2997×10^{-49}, 1.06697×10^{-46}, 4.06778×10^{-10}, 0., 0., 0., 7.9002×10^{-29}, 0., 1.68106×10^{-173}}

t-statistics for parameter estimates:

{17.0682, 14.9911, −0.86919, 3.70023, 4.2752, 0.460533, 26.802, −8.23455, −3.07286, −1.21804, −1.23588, −7.99922, 15.1596, −10.4376, 1.05333, −23.475, 16.486, 5.76455, −5.76642, −11.0784, −8.19885, −1.24048, 6.79745, 4.40753, 32.7188, −14.836, 14.3753, 6.25355, 68.9809, 87.147, 48.9563, 11.1532, 157.275, 28.2715}



In[19]:=
```
Do[
  Print[experiments[[i]], ", Null Organelles filled with 0:"];
  fitCellSizeFromOrganelles[Select[filled, #[[1]] == experiments[[i]] &]];,
  {i, 1, Length[experiments]}
 ];
```

EYrainbow_glucose, Null Organelles filled with 0:

a[i]: {2.95191, −2.52228, 0.89206, 2.12821, 3.91563, −0.581085}

b[i,j]:

0.453004	−1.96067	−0.17696	−0.107892	0.657511	−0.162347
b$7863[2, 1]	9.08995	−0.904763	0.624199	−0.17992	−0.47797
b$7863[3, 1]	b$7863[3, 2]	0.262324	0.0178803	−0.48493	0.0574221
b$7863[4, 1]	b$7863[4, 2]	b$7863[4, 3]	0.0563297	−0.333532	−0.0260039
b$7863[5, 1]	b$7863[5, 2]	b$7863[5, 3]	b$7863[5, 4]	0.687624	−0.308602
b$7863[6, 1]	b$7863[6, 2]	b$7863[6, 3]	b$7863[6, 4]	b$7863[6, 5]	0.206513

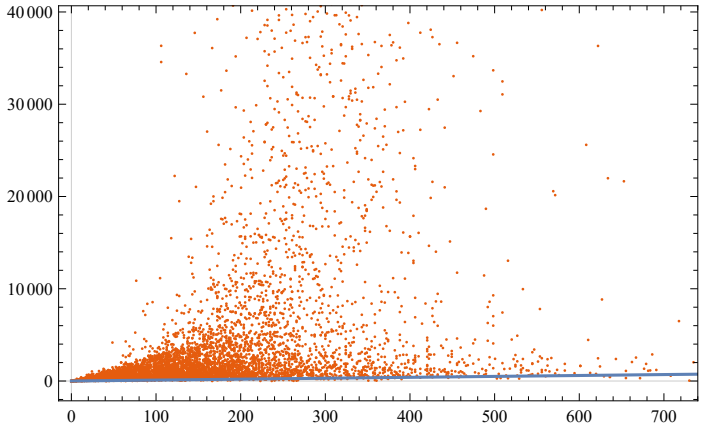
c: −5.14084

alpha[i]: {0.687612, 0.387199, 0.981724, 0.531677, 0.482259, 0.227515}

Adjusted R Square: 0.935182

p-values for parameter z-statistics:
{0.00187342, 0.255337, 0.187043, 0.00598929, 5.19995×10^{-6}, 0.327975, 9.23077×10^{-11}, 7.54135×10^{-23}, 0.00105372, 0.213639, 4.84452×10^{-18}, 0.00500127, 1.22423×10^{-19}, 1.18899×10^{-8}, 0.0000374457, 0.12679, 2.16823×10^{-6}, 0.00138689, 0.609992, 7.32582×10^{-10}, 0.0548551, 0.269974, 1.76045×10^{-6}, 0.569238, 1.86662×10^{-36}, 3.00061×10^{-9}, 6.87911×10^{-6}, 0.158091, 6.59643×10^{-88}, 0., 2.32397×10^{-199}, 0.00112765, 7.24249×10^{-299}, 0.00740225}

t-statistics for parameter estimates:
{3.11086, −1.13758, 1.31952, 2.74926, 4.56032, −0.978273, 6.48962, −9.87705, −3.27723, −1.24374, 8.68199, −2.8079, 9.09564, −5.70855, 4.12552, −1.52708, −4.74129, 3.19873, 0.510109, −6.168, 1.92036, 1.10322, −4.78347, −0.569203, 12.6867, −5.93972, 4.50102, −1.41168, 20.1783, 42.5907, 31.1936, 3.25801, 38.9518, 2.67902}



EYrainbow_glucose_largerBF, Null Organelles filled with 0:

a[i]: {13.2167, 9.69624, −155.685, −5.5526, 7.29337, −4.41846}

b[i,j]:

0.76434	−0.565969	−3.26594	0.228251	0.0315532	−0.277951
b$8010[2, 1]	9.49365	−6.39728	0.15106	−1.13657	0.300553
b$8010[3, 1]	b$8010[3, 2]	57.4694	−0.0683086	−2.82388	0.779656
b$8010[4, 1]	b$8010[4, 2]	b$8010[4, 3]	0.302418	0.154188	−0.220426
b$8010[5, 1]	b$8010[5, 2]	b$8010[5, 3]	b$8010[5, 4]	0.193842	−0.206455
b$8010[6, 1]	b$8010[6, 2]	b$8010[6, 3]	b$8010[6, 4]	b$8010[6, 5]	0.16239

c: 125.895

alpha[i]: {1.0897, 0.395254, 0.338662, 0.734981, 0.732091, 0.490664}

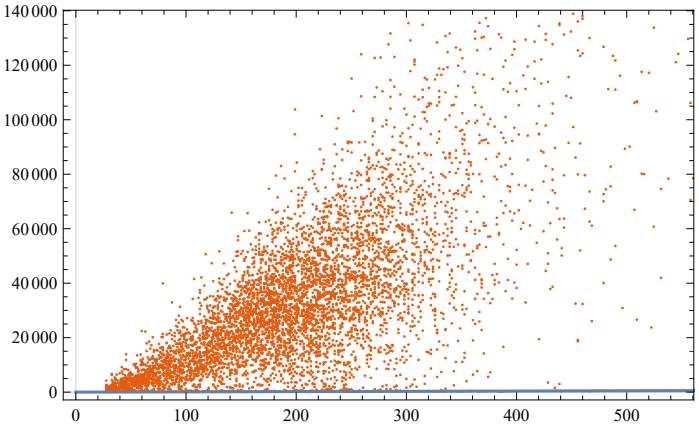
Adjusted R Square: 0.951318

p-values for parameter z-statistics:

$\{1.61185\times10^{-8}, 0.000115889, 4.32787\times10^{-48}, 0.00114368, 3.72474\times10^{-27}, 7.28539\times10^{-6}, 2.82248\times10^{-8},$
$0.042325, 0.00276553, 0.0365817, 0.625801, 0.0000133157, 1.598\times10^{-18}, 1.1485\times10^{-6},$
$0.328971, 5.46973\times10^{-33}, 0.00113391, 2.48987\times10^{-21}, 0.932458, 1.53114\times10^{-15}, 0.0731374,$
$1.44407\times10^{-10}, 0.0000435902, 5.2757\times10^{-9}, 7.07741\times10^{-52}, 7.39583\times10^{-21}, 2.43215\times10^{-35},$
$1.17266\times10^{-121}, 7.82465\times10^{-86}, 3.06751\times10^{-278}, 1.61788\times10^{-134}, 1.13456\times10^{-41}, 0., 1.64025\times10^{-88}\}$

t-statistics for parameter estimates:

{5.65703, 3.85723, −14.702, −3.25415, 10.8462, −4.48916, 5.55954, −2.03075,
−2.99392, 2.09087, 0.487671, −4.35851, 8.81146, −4.86937, 0.976269, −12.037, 3.25659,
9.51852, −0.0847565, −7.99609, 1.79229, 6.42253, 4.09062, −5.84685, 15.3025,
−9.40298, 12.4869, 24.0087, 19.9578, 37.6336, 25.3297, 13.6288, 84.3302, 20.2843}



EYrainbow_rapamycin_1stTry, Null Organelles filled with 0:

a[i]: {7.69762, −0.730055, −8.68348, −5.21583, 4.12821, −2.84425}

b[i,j]:

0.219516	−0.630989	−0.648453	0.093569	0.0947617	0.0528546
b$8156[2, 1]	4.42544	−1.37357	0.902114	−0.616404	0.395749
b$8156[3, 1]	b$8156[3, 2]	1.92469	−0.42829	−0.317556	−0.277385
b$8156[4, 1]	b$8156[4, 2]	b$8156[4, 3]	0.169205	−0.0392724	0.16999
b$8156[5, 1]	b$8156[5, 2]	b$8156[5, 3]	b$8156[5, 4]	0.114097	−0.01632
b$8156[6, 1]	b$8156[6, 2]	b$8156[6, 3]	b$8156[6, 4]	b$8156[6, 5]	0.0588344

c: 64.152

alpha[i]: {0.609546, 0.449023, 0.720216, 1.60673, 0.780768, 0.412308}

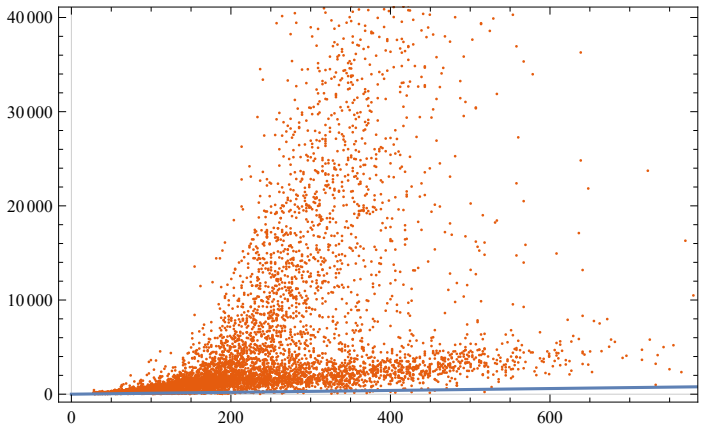
Adjusted R Square: 0.965942

p-values for parameter z-statistics:

$\{2.13092\times10^{-16}, 0.643961, 0.00900833, 3.77237\times10^{-11}, 7.45032\times10^{-25}, 9.56345\times10^{-10}, 0.00399043,$
$7.37913\times10^{-8}, 2.8532\times10^{-6}, 0.32368, 0.0225676, 0.299891, 3.05058\times10^{-13}, 3.18303\times10^{-8},$
$7.15044\times10^{-19}, 6.70563\times10^{-33}, 7.15105\times10^{-14}, 0.000697338, 0.000246172, 1.04937\times10^{-6},$
$0.0000219781, 0.000399024, 0.24508, 0.0000185383, 1.51954\times10^{-25}, 0.394616, 6.39222\times10^{-6},$
$3.1332\times10^{-25}, 1.67918\times10^{-29}, 6.40698\times10^{-243}, 3.87491\times10^{-123}, 1.33883\times10^{-53}, 0., 6.45425\times10^{-21}\}$

t-statistics for parameter estimates:

{8.2345, -0.462188, -2.61246, -6.62328, 10.3339, -6.12489, 2.87987, -5.38742, -4.68493, 0.986993, 2.28118, 1.03674, 7.30621, -5.53727, 8.89772, -12.0086, 7.50026, 3.39213, -3.66809, -4.88646, -4.24665, 3.54243, -1.16248, 4.28475, 10.4876, -0.851328, 4.51641, 10.4179, 11.3299, 34.6404, 24.0755, 15.5446, 98.421, 9.41207}



EYrainbow_rapamycin_CheckBistability, Null Organelles filled with 0:

a[i]: {1.5072, -1.29286, 2.44348, 2.28581, -1.2529, 0.163876}

b[i,j]:

0.25552	-0.269447	-0.151095	0.047614	0.124545	-0.0875568
b$8294[2, 1]	9.66599	-0.613831	0.171577	-0.318726	0.0606784
b$8294[3, 1]	b$8294[3, 2]	0.10668	0.0321622	-0.0962549	0.00133927
b$8294[4, 1]	b$8294[4, 2]	b$8294[4, 3]	0.0601688	-0.194884	0.160359
b$8294[5, 1]	b$8294[5, 2]	b$8294[5, 3]	b$8294[5, 4]	0.125102	-0.139353
b$8294[6, 1]	b$8294[6, 2]	b$8294[6, 3]	b$8294[6, 4]	b$8294[6, 5]	0.108846

c: 34.6499

alpha[i]: {0.925562, 0.375567, 1.03785, 1.18864, 0.911968, 0.346116}

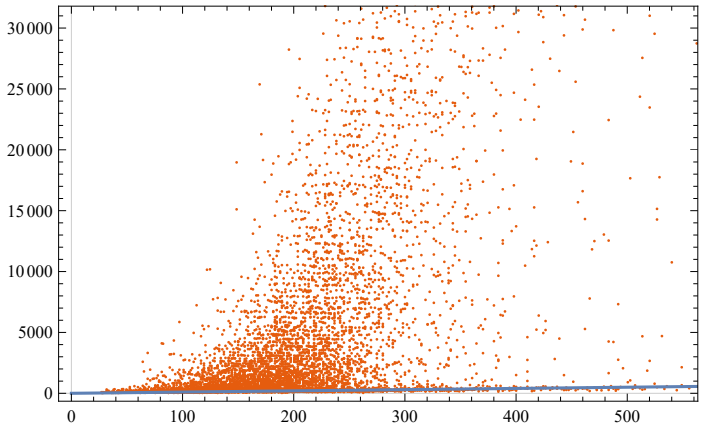
Adjusted R Square: 0.969927

p-values for parameter z-statistics:

{0.0000808941, 0.418934, 3.04308×10^{-53}, 7.67281×10^{-11}, 1.92105×10^{-8}, 0.580285, 2.86524×10^{-28}, 0.00135137, 1.13349×10^{-10}, 0.122998, 2.42997×10^{-14}, 0.000219035, 1.1944×10^{-26}, 3.60352×10^{-9}, 0.0314306, 6.78187×10^{-15}, 0.320158, 0.000731332, 0.0408597, 4.37234×10^{-11}, 0.912378, 0.0291323, 5.19268×10^{-22}, 3.66502×10^{-10}, 1.16002×10^{-38}, 2.78806×10^{-26}, 4.25974×10^{-18}, 2.07488×10^{-70}, 9.50144×10^{-266}, 0., 8.07994×10^{-228}, 3.0986×10^{-23}, 0., 3.73527×10^{-13}}

t-statistics for parameter estimates:

{3.94349, -0.808308, 15.4582, 6.51446, -5.62389, 0.552988, 11.0624, -3.20581, -6.45537, 1.54245, 7.63769, -3.69744, 10.7183, -5.90712, 2.1519, -7.80141, 0.994186, 3.37868, 2.04524, -6.59876, 0.110043, 2.18203, -9.66879, 6.27446, 13.0637, -10.6386, 8.68942, 17.8911, 35.9945, 42.2625, 33.1455, 9.95611, 107.232, 7.27533}



EYrainbow_1nmpp1_1st, Null Organelles filled with 0:

a[i]: {1.11896, 0.670299, −2.87073, −0.56777, 3.48346, −3.73346}

b[i,j]:

0.0908307	0.0032058	−0.232175	0.0456734	0.127138	−0.00440177
b$8432[2, 1]	0.0000630624	−0.0254336	0.0135408	0.00537207	−0.00460567
b$8432[3, 1]	b$8432[3, 2]	0.883666	−0.241032	−0.520599	−0.0795162
b$8432[4, 1]	b$8432[4, 2]	b$8432[4, 3]	0.214296	−0.00140152	0.101649
b$8432[5, 1]	b$8432[5, 2]	b$8432[5, 3]	b$8432[5, 4]	0.105603	0.0533672
b$8432[6, 1]	b$8432[6, 2]	b$8432[6, 3]	b$8432[6, 4]	b$8432[6, 5]	0.0349469

c: 27.1398

alpha[i]: {0.664413, 1.32993, 0.842827, 0.460812, 0.845939, 1.29821}

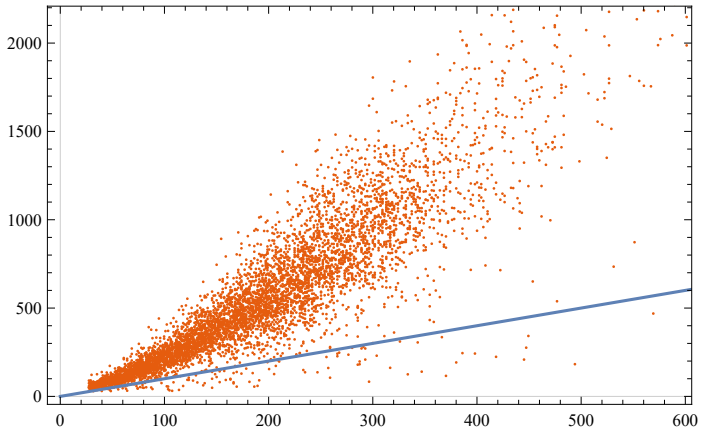
Adjusted R Square: 0.976786

p-values for parameter z-statistics:

{0.0846731, 0.00189492, 0.0540972, 0.326023, 6.90464×10^{-22}, 3.60692×10^{-15}, 0.0468717, 0.508378, 4.82413×10^{-6}, 0.468811, 4.65641×10^{-6}, 0.918053, 0.510677, 0.00566181, 0.0199871, 0.0332516, 0.173341, 0.0000253697, 9.97052×10^{-6}, 2.66519×10^{-17}, 0.0224405, 0.0000105562, 0.956034, 0.0118322, 9.54523×10^{-33}, 0.00301799, 0.0690057, 1.005×10^{-10}, 7.27915×10^{-27}, 4.75248×10^{-58}, 5.27349×10^{-230}, 2.02001×10^{-6}, 0., 8.36407×10^{-52}}

t-statistics for parameter estimates:

{1.72448, 3.1076, −1.92643, −0.982236, 9.65256, −7.8885, 1.98787, 0.661406, −4.57646, 0.724462, 4.58389, −0.102891, 0.657823, −2.76775, 2.32721, 2.12952, −1.36171, 4.21477, −4.42158, −8.48596, −2.28342, 4.40919, −0.0551328, 2.51788, 11.9891, 2.96711, 1.81871, 6.47772, 10.783, 16.2359, 33.845, 4.75607, 111.744, 15.2896}



EYrainbow_leucine_large, Null Organelles filled with 0:

a[i]: {0.210138, 14.9721, −0.683613, 0.258025, 0.663041, −4.64271}

b[i,j]:

−0.291243	−0.414332	0.1362	0.0255194	0.120106	−0.914814
b$8570[2, 1]	1.81902	−0.904558	0.365765	−0.273026	−0.447628
b$8570[3, 1]	b$8570[3, 2]	0.407165	−0.0765402	−0.0509247	0.000528835
b$8570[4, 1]	b$8570[4, 2]	b$8570[4, 3]	0.0366388	−0.0679683	−0.164
b$8570[5, 1]	b$8570[5, 2]	b$8570[5, 3]	b$8570[5, 4]	0.0512271	0.378412
b$8570[6, 1]	b$8570[6, 2]	b$8570[6, 3]	b$8570[6, 4]	b$8570[6, 5]	0.0736298

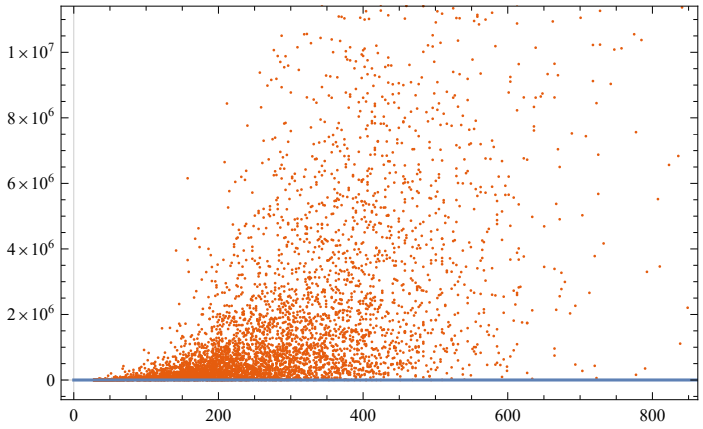
c: 18.4159

alpha[i]: {0.146019, 0.525877, 0.841906, 0.120596, 0.804508, 2.67003}

Adjusted R Square: 0.973102

p-values for parameter z-statistics:
{0.84849, 1.83165×10^{-14}, 0.752251, 0.618647, 0.0461502, 0.0359298, 7.75377×10^{-7},
3.69924×10^{-6}, 0.101921, 0.611755, 0.0000167822, 0.00078103, 4.40599×10^{-13},
0.000552855, 3.86382×10^{-17}, 2.5736×10^{-20}, 0.00381673, 0.072482, 0.063485,
0.0730168, 0.99732, 0.00151571, 0.0000253278, 0.137392, 1.07224×10^{-14}, 0.000629974,
0.70453, 0.0638962, 0.0697318, 0., 5.96547×10^{-56}, 0.230159, 0., 7.97252×10^{-15}}

t-statistics for parameter estimates:
{0.191053, 7.68114, −0.315687, 0.497795, 1.99443, −2.0982, −4.94673, −4.63195,
1.63586, 0.507597, 4.30742, −3.36116, 7.25872, −3.45562, 8.44237, −9.26889, −2.89406,
1.7964, −1.85612, −1.79304, 0.00335957, 3.17313, −4.21517, −1.48577, 7.75011,
3.42019, 0.379231, 1.85325, 1.81398, 47.4303, 15.925, 1.20007, 78.2084, 7.78803}



EYrainbowWhi5Up_betaEstrodiol, Null Organelles filled with 0:

a[i]: $\{4.33854\times10^6, -1.00582\times10^7, 6.22751\times10^6, 8.86846\times10^6, -236196., -1.11094\times10^6\}$

b[i,j]:

0.624198	−2.12151	-4.33853×10^6	−0.113234	−0.300917	−0.698946
b$8708[2, 1]	6.57966	1.00582×10^7	0.586889	−0.194036	1.16904
b$8708[3, 1]	b$8708[3, 2]	-6.22762×10^6	-8.86849×10^6	236209.	1.11093×10^6
b$8708[4, 1]	b$8708[4, 2]	b$8708[4, 3]	0.213263	−0.248232	0.645248
b$8708[5, 1]	b$8708[5, 2]	b$8708[5, 3]	b$8708[5, 4]	0.0747167	0.120053
b$8708[6, 1]	b$8708[6, 2]	b$8708[6, 3]	b$8708[6, 4]	b$8708[6, 5]	0.367039

c: 64.1994

alpha[i]: $\{0.829483, 0.426842, -8.53201\times10^{-7}, 1.13622, 0.79021, 1.24737\}$

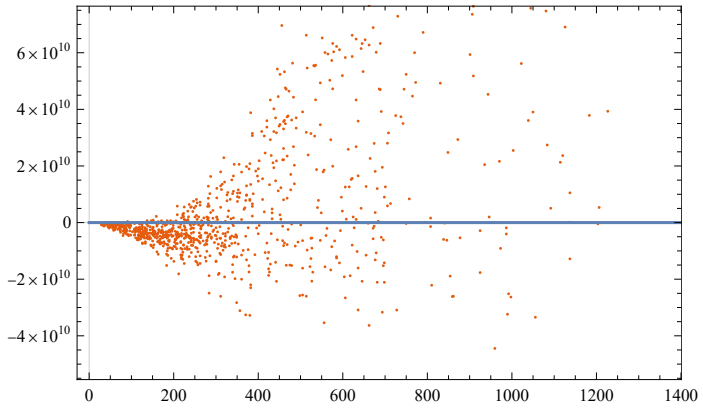
Adjusted R Square: 0.961094

p-values for parameter z-statistics:

$\{0., 0., 0., 0., 0., 0., 8.31424\times10^{-8}, 0.0000112899, 0., 0.611298, 0.000287211,$
$0.000111482, 0.00292753, 0., 0.225813, 0.280167, 0.00334947, 0., 0., 0., 0.,$
$0.342885, 0.0525569, 0.0144595, 0.00819556, 0.220348, 0.10844, 0.596388,$
$1.1234\times10^{-82}, 7.0013\times10^{-63}, 2.71965\times10^{-6}, 0.0000746437, 5.3599\times10^{-188}, 1.71428\times10^{-9}\}$

t-statistics for parameter estimates:

$\{2.66662\times10^6, -2.2328\times10^6, 101883., 2.80673\times10^6, -304376., -741343., 5.40152, -4.41392,$
$-2.66661\times10^6, -0.508386, -3.63984, -3.88006, 2.98282, 2.23281\times10^6, 1.21199, -1.08055,$
$2.94098, -101885., -2.80674\times10^6, 304400., 741337., 0.948945, -1.94092, 2.45005,$
$2.64936, 1.22639, 1.60673, 0.529777, 21.2656, 18.027, -4.71889, 3.97808, 37.06, 6.08114\}$



In[20]:=
```
Do[
 Print[experiments[[i]], ", Null Organelles Excluded:"];
 fitCellSizeFromOrganelles[Select[washed, #[[1]] == experiments[[i]] &]];,
 {i, 1, Length[experiments]}
]
```

EYrainbow_glucose, Null Organelles Excluded:

a[i]: {5.9464, −3.43527, 0.205712, 1.24737, 1.69065, −0.248826}

b[i,j]:

0.511042	−1.45354	−0.177658	−0.153381	0.0879843	−0.205906
b$9183[2, 1]	12.3106	−1.8618	0.994984	−0.258158	−0.719586
b$9183[3, 1]	b$9183[3, 2]	0.45797	0.0601761	−0.393475	0.129711
b$9183[4, 1]	b$9183[4, 2]	b$9183[4, 3]	0.141073	−0.278617	−0.151978
b$9183[5, 1]	b$9183[5, 2]	b$9183[5, 3]	b$9183[5, 4]	0.471856	−0.252083
b$9183[6, 1]	b$9183[6, 2]	b$9183[6, 3]	b$9183[6, 4]	b$9183[6, 5]	0.240518

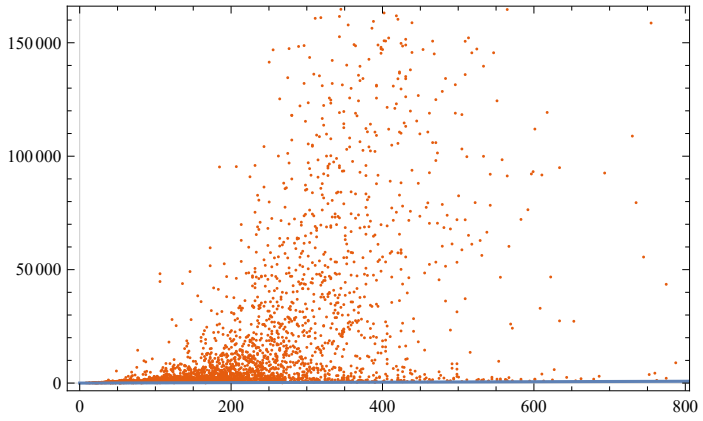
c: −5.3484

alpha[i]: {0.978529, 0.370118, 0.917038, 0.630714, 0.570789, 0.304559}

Adjusted R Square: 0.949303

p-values for parameter z-statistics:
{0.0000171516, 0.545372, 0.915743, 0.328112, 0.136203, 0.799758, 1.1791×10^{-7}, 8.84387×10^{-8}, 0.0681289, 0.182064, 0.348745, 0.0127877, 2.36249×10^{-8}, 0.000412205, 0.0000752047, 0.130147, 0.000245786, 0.0599449, 0.504379, 0.000288233, 0.0619594, 0.0541463, 0.00025838, 0.0293522, 4.08515×10^{-13}, 0.0000671469, 0.000512765, 0.599901, 2.77755×10^{-56}, 3.06108×10^{-148}, 7.68727×10^{-58}, 0.000227539, 1.46178×10^{-109}, 0.00744111}

t-statistics for parameter estimates:
{4.30488, −0.604767, 0.105805, 0.978056, 1.49041, −0.253679, 5.30738, −5.35999, −1.8247, −1.33469, 0.937148, −2.49087, 5.59558, −3.53544, 3.96377, −1.51387, −3.67028, 1.88179, 0.667683, −3.62921, 1.86717, 1.92629, −3.65744, −2.17959, 7.27972, −3.99084, 3.47714, −0.52459, 16.0858, 27.1875, 16.3224, 3.69003, 23.0239, 2.67794}



EYrainbow_glucose_largerBF, Null Organelles Excluded:

a[i]: {6.50502, 5.24955, 3.66289, −4.85324, 2.1747, −2.36659}

b[i,j]:

0.278717	−0.732921	0.136386	0.105106	0.0773574	−0.291049
b$9321[2, 1]	7.37931	−0.96354	0.175593	−0.856534	0.227435
b$9321[3, 1]	b$9321[3, 2]	0.582601	−0.179207	−0.365656	0.035447
b$9321[4, 1]	b$9321[4, 2]	b$9321[4, 3]	0.314014	0.240474	−0.233256
b$9321[5, 1]	b$9321[5, 2]	b$9321[5, 3]	b$9321[5, 4]	0.201454	−0.193498
b$9321[6, 1]	b$9321[6, 2]	b$9321[6, 3]	b$9321[6, 4]	b$9321[6, 5]	0.153031

c: 20.7657

alpha[i]: {1.19524, 0.419446, 0.831081, 0.779214, 0.731002, 0.467695}

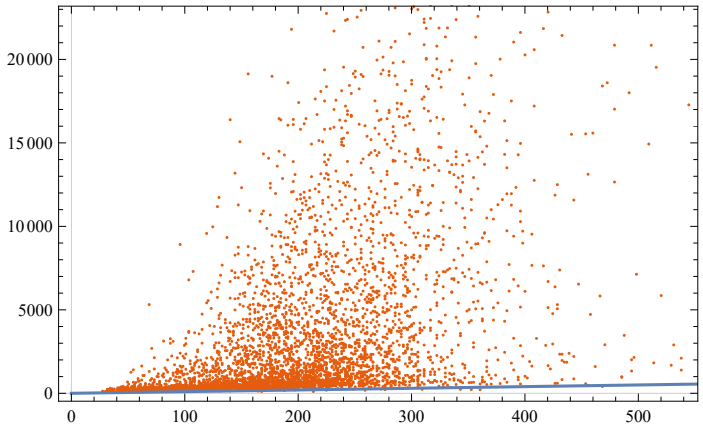
Adjusted R Square: 0.956595

p-values for parameter z-statistics:

{0.0000511519, 0.139542, 0.0051895, 2.16391×10^{-7}, 0.00209829, 1.06354×10^{-6}, 0.05182, 0.0129518, 0.383385, 0.381819, 0.280558, 8.48777×10^{-6}, 5.32649×10^{-6}, 0.0365009, 0.371156, 1.23162×10^{-11}, 0.0157973, 0.201495, 0.0919342, 0.00715184, 0.470174, 3.98973×10^{-8}, 1.48402×10^{-6}, 6.78482×10^{-8}, 3.18035×10^{-39}, 1.10363×10^{-16}, 3.49773×10^{-29}, 0.00185678, 2.62538×10^{-62}, 3.8654×10^{-114}, 1.04592×10^{-20}, 2.871×10^{-38}, 0., 1.33059×10^{-71}}

t-statistics for parameter estimates:

{4.05415, 1.47775, 2.79637, −5.19258, 3.07771, −4.88612, 1.94513, −2.48607, 0.87176, 0.874635, 1.07919, −4.45756, 4.5569, −2.09192, 0.894398, −6.79385, 2.41446, 1.27749, −1.68564, −2.6909, 0.722256, 5.50066, 4.81973, −5.40567, 13.2271, −8.32476, 11.2916, 3.11405, 16.915, 23.3621, 9.37633, 13.0544, 68.8614, 18.2116}



EYrainbow_rapamycin_1stTry, Null Organelles Excluded:

a[i]: {5.82682, 4.57242, −18.7452, −4.09339, 3.54151, −0.874089}

b[i,j]:

0.189086	−0.797895	−0.668507	0.107902	0.155063	0.00449079
b$9467[2, 1]	5.58886	−2.24923	0.82368	−0.823568	0.366606
b$9467[3, 1]	b$9467[3, 2]	3.58102	−0.471294	−0.416386	−0.369282
b$9467[4, 1]	b$9467[4, 2]	b$9467[4, 3]	0.049683	0.0058011	0.133902
b$9467[5, 1]	b$9467[5, 2]	b$9467[5, 3]	b$9467[5, 4]	0.134734	−0.00817648
b$9467[6, 1]	b$9467[6, 2]	b$9467[6, 3]	b$9467[6, 4]	b$9467[6, 5]	0.0348557

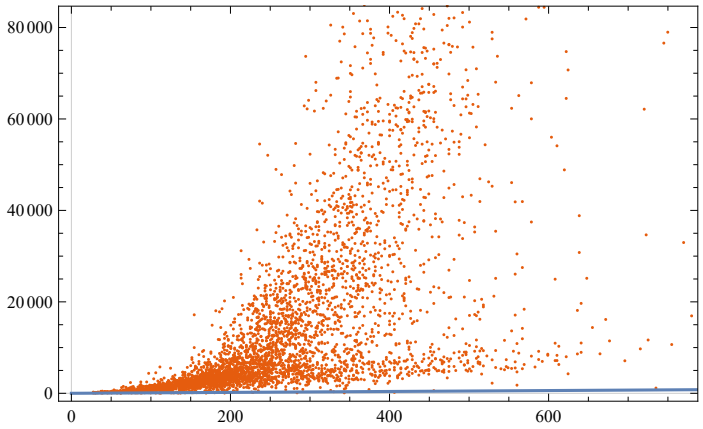
c: 76.6539

alpha[i]: {0.640333, 0.435844, 0.654, 1.57771, 0.750955, 0.425658}

Adjusted R Square: 0.974905

p-values for parameter z-statistics:
{4.48054×10^{-6}, 0.121052, 0.0476276, 0.000211732, 3.97494×10^{-9}, 0.171361, 0.0198538, 2.83885×10^{-7}, 0.00214557, 0.286048, 0.0020132, 0.934522, 2.35508×10^{-7}, 0.000141712, 4.8577×10^{-10}, 3.01989×10^{-21}, 5.73319×10^{-7}, 0.0270586, 0.014672, 0.000502585, 0.00139204, 0.351118, 0.887758, 0.00158507, 5.53071×10^{-20}, 0.723784, 0.00910717, 3.45739×10^{-6}, 3.69337×10^{-19}, 1.28642×10^{-135}, 5.14707×10^{-49}, 4.03074×10^{-21}, 0., 1.91334×10^{-8}}

t-statistics for parameter estimates:
{4.59341, 1.55067, −1.98122, −3.70765, 5.89699, −1.36806, 2.32994, −5.14171, −3.0711, 1.06696, 3.0901, 0.0821618, 5.1769, −3.80846, 6.2375, −9.51019, 5.00728, 2.2114, −2.44133, −3.48193, −3.1983, 0.93252, 0.141149, 3.16058, 9.19673, −0.353428, 2.60914, 4.64745, 8.9865, 25.6641, 14.8962, 9.4795, 72.2855, 5.62992}



EYrainbow_rapamycin_CheckBistability, Null Organelles Excluded:

a[i]: {1.89571, 7.29168, 1.76929, 3.07509, −0.50279, −0.148195}

b[i,j]:

0.227156	−0.265587	−0.110233	0.00680404	0.073501	−0.105371
b$9613[2, 1]	9.98781	−0.908109	0.0266606	−0.387105	0.0801424
b$9613[3, 1]	b$9613[3, 2]	0.147783	0.0641161	−0.0856065	0.0320125
b$9613[4, 1]	b$9613[4, 2]	b$9613[4, 3]	0.10056	−0.189433	0.123402
b$9613[5, 1]	b$9613[5, 2]	b$9613[5, 3]	b$9613[5, 4]	0.0929538	−0.0996789
b$9613[6, 1]	b$9613[6, 2]	b$9613[6, 3]	b$9613[6, 4]	b$9613[6, 5]	0.075332

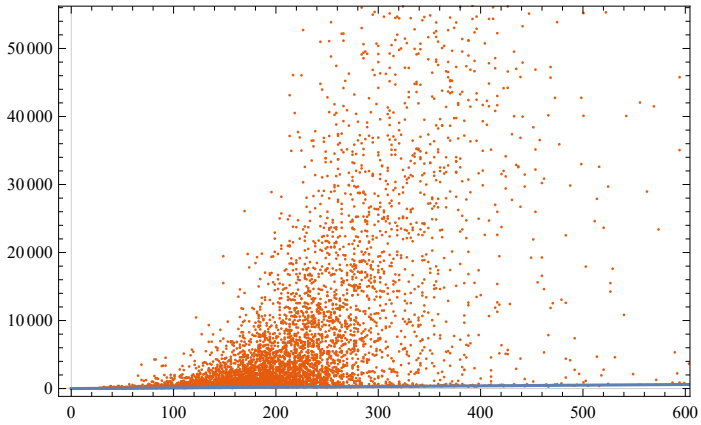
c: 20.949

alpha[i]: {0.934994, 0.375421, 0.985619, 1.25649, 0.938131, 0.500959}

Adjusted R Square: 0.976605

p-values for parameter z-statistics:
{0.000121963, 0.0182385, 8.33183×10^{-6}, 1.67125×10^{-11}, 0.0292748, 0.691831, 1.74046×10^{-17},
0.01666, 0.0000551541, 0.849669, 4.09758×10^{-6}, 0.0000408687, 2.22165×10^{-7}, 2.17796×10^{-6},
0.811997, 5.10301×10^{-12}, 0.341138, 0.00218466, 0.00978776, 5.18122×10^{-8}, 0.0805444,
0.00152878, 3.93136×10^{-21}, 8.6552×10^{-6}, 3.14326×10^{-25}, 1.12541×10^{-14}, 5.51223×10^{-8},
3.20639×10^{-9}, 1.20733×10^{-215}, 4.97906×10^{-113}, 1.57403×10^{-178}, 5.75688×10^{-28}, 0., 7.52865×10^{-10}}

t-statistics for parameter estimates:
{3.84442, 2.36132, 4.45996, 6.7439, −2.18024, −0.396389, 8.53341, −2.39473, −4.03525,
0.189548, 4.61021, −4.10526, 5.18518, −4.74033, 0.23786, −6.91529, 0.951988,
3.0651, 2.58398, −5.45124, 1.7478, 3.17048, −9.46636, 4.45177, 10.4198,
−7.74182, 5.44017, 5.92868, 32.5353, 23.0342, 29.3803, 11.013, 93.4268, 6.16354}



EYrainbow_1nmpp1_1st, Null Organelles Excluded:

a[i]: {−1.15876, 0.522812, 0.0919175, 0.514024, 1.52607, −2.12038}

b[i,j]:

−0.0841497	−0.260237	0.0188441	0.0566426	0.081094	0.0529923
b$9751[2, 1]	9.21618	−1.83955	0.72742	0.41635	−0.397742
b$9751[3, 1]	b$9751[3, 2]	0.642372	−0.285608	−0.401078	−0.0402345
b$9751[4, 1]	b$9751[4, 2]	b$9751[4, 3]	0.139554	0.040592	0.041029
b$9751[5, 1]	b$9751[5, 2]	b$9751[5, 3]	b$9751[5, 4]	0.093531	0.0342095
b$9751[6, 1]	b$9751[6, 2]	b$9751[6, 3]	b$9751[6, 4]	b$9751[6, 5]	0.0108732

c: 24.7762

alpha[i]: {0.565076, 0.387141, 0.880025, 0.349111, 0.877316, 1.49251}

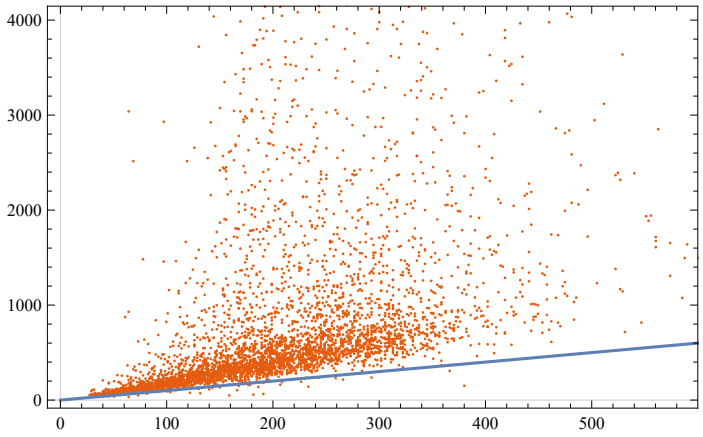
Adjusted R Square: 0.980977

p-values for parameter z-statistics:

{0.174974, 0.896984, 0.950659, 0.464412, 0.000691701, 0.0000442737, 0.125635, 0.299051, 0.728908, 0.367239, 0.00437862, 0.237408, 0.000120683, 6.05458×10^{-7}, 0.00173526, 3.79447×10^{-6}, 0.0114727, 0.00253375, 0.0000193825, 8.07763×10^{-10}, 0.193448, 0.00132656, 0.0803604, 0.279261, 8.88357×10^{-28}, 0.0392181, 0.570808, 1.59495×10^{-6}, 1.79955×10^{-15}, 2.35169×10^{-55}, 1.50317×10^{-136}, 0.00247548, 0., 7.38078×10^{-26}}

t-statistics for parameter estimates:

{−1.35661, 0.12948, 0.0618821, 0.731663, 3.3952, −4.08798, −1.53183, −1.03859, 0.3466, 0.901749, 2.85096, 1.18165, 3.8481, −4.99665, 3.13404, 4.62808, −2.529, 3.02098, −4.27645, −6.15663, −1.30064, 3.21219, 1.74899, 1.08211, 10.997, 2.06249, 0.566904, 4.80536, 7.98289, 15.8889, 25.7521, 3.02803, 112.095, 10.5803}



EYrainbow_leucine_large, Null Organelles Excluded:

a[i]: {5.31113, 13.8949, 0.870391, 0.913158, −2.03095, 3.69577}

b[i,j]:

−0.307349	−0.318516	−0.0536264	0.226878	−0.080775	0.308196
b$9889[2, 1]	1.88546	−0.596877	0.219731	−0.344273	−0.290226
b$9889[3, 1]	b$9889[3, 2]	0.250487	−0.00333324	−0.0453576	−0.0118978
b$9889[4, 1]	b$9889[4, 2]	b$9889[4, 3]	−0.00477803	−0.0941173	−0.0353931
b$9889[5, 1]	b$9889[5, 2]	b$9889[5, 3]	b$9889[5, 4]	0.103132	0.0713563
b$9889[6, 1]	b$9889[6, 2]	b$9889[6, 3]	b$9889[6, 4]	b$9889[6, 5]	−0.107345

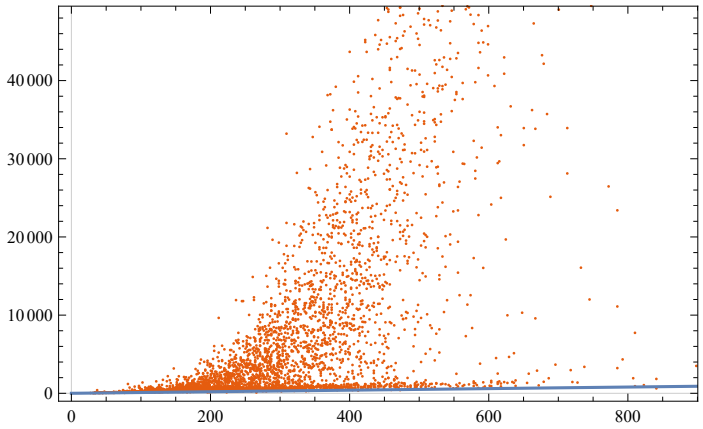
c: 19.8813

alpha[i]: {0.396596, 0.526502, 0.88102, −0.204324, 0.784617, 0.926782}

Adjusted R Square: 0.974764

p-values for parameter z-statistics:
{0.0000495185, 3.85723×10^{-8}, 0.70071, 0.132654, 0.000178629, 0.00114576, 0.0000647963, 0.0039561, 0.491882, 0.000155244, 0.111717, 0.00538873, 2.82411×10^{-8}, 0.0399598, 5.68287×10^{-7}, 5.55588×10^{-14}, 0.0000532546, 0.292113, 0.928385, 0.263336, 0.867847, 0.725981, 0.0000364611, 0.410927, 1.13653×10^{-10}, 0.0931536, 0.0850725, 0.144721, 0.0000330528, 7.81381×10^{-262}, 3.87039×10^{-23}, 0.0788341, 0., 6.60333×10^{-12}}

t-statistics for parameter estimates:
{4.06199, 5.50721, 0.384387, 1.504, −3.75073, 3.25423, −3.99855, −2.88319, −0.687377, 3.78588, −1.59085, 2.78424, 5.56224, −2.05479, 5.00923, −7.54324, −4.04492, 1.05363, −0.0898817, −1.11869, −0.166403, −0.3505, −4.13315, −0.822343, 6.46349, 1.67936, −1.72238, 1.4587, 4.15573, 37.1031, 9.96439, −1.75791, 64.1529, 6.88516}



EYrainbowWhi5Up_betaEstrodiol, Null Organelles Excluded:

a[i]: {7.68157, 11.7629, −0.471, 0.661684, 11.0869, −10.567}

b[i,j]:

0.353407	−0.701833	0.0486934	−0.598769	0.506102	−1.39214
b$10027[2, 1]	1.26392	−0.249908	0.908802	−1.05826	1.25398
b$10027[3, 1]	b$10027[3, 2]	0.0945227	0.244717	−0.11612	0.252761
b$10027[4, 1]	b$10027[4, 2]	b$10027[4, 3]	0.436483	−1.09812	0.702302
b$10027[5, 1]	b$10027[5, 2]	b$10027[5, 3]	b$10027[5, 4]	0.241521	−0.0921991
b$10027[6, 1]	b$10027[6, 2]	b$10027[6, 3]	b$10027[6, 4]	b$10027[6, 5]	0.0193283

c: −56.1691

alpha[i]: {0.900402, 0.562983, 0.961984, 0.783804, 0.727193, 1.04914}

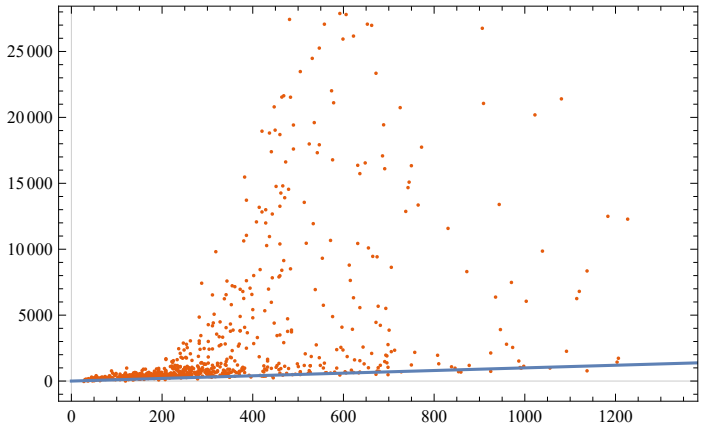
Adjusted R Square: 0.965159

p-values for parameter z-statistics:

{0.00653947, 0.000356344, 0.849946, 0.87096, 3.18954×10^{-6}, 0.00307103, 0.00561388,
0.0132471, 0.673986, 0.017676, 0.00104488, 8.82317×10^{-11}, 0.0820236, 0.246047,
0.0136508, 0.000156951, 0.0029197, 0.509259, 0.296247, 0.285531, 0.251459, 0.0659923,
0.000131561, 0.00945916, 0.0120529, 0.591097, 0.915295, 0.0688801, 9.7482×10^{-76},
1.66696×10^{-38}, 4.11141×10^{-11}, 5.19749×10^{-6}, 4.50906×10^{-134}, 1.27524×10^{-16}}

t-statistics for parameter estimates:

{2.72597, 3.58454, −0.189243, 0.162487, 4.6886, −2.96882, 2.7764, −2.48212,
0.420825, −2.37684, 3.28919, −6.56651, 1.74107, −1.16078, 2.47132, −3.79638, 2.98447,
0.660263, 1.04514, −1.06863, 1.14757, 1.84078, −3.84065, 2.60074, 2.51584,
−0.537446, 0.106392, −1.82145, 20.3604, 13.6306, 6.68496, 4.58514, 29.6156, 8.44298}


25 000
20 000
15 000
10 000
5000
0
0
200
400
600
800
1000
1200