```
In[21]:= 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_normal.csv"}],
          "Data", "HeaderLines" → 1];
      epsilon = 10^(-18);
      filled = data /. {0. → epsilon};
      washed = Select[data, Function[x, NoneTrue[x, # == 0 &]]];

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

In[26]:= {}
Out[26]=
      {}

In[•]:= Length[filled]
      Length[washed]
Out[•]=
      9744
Out[•]=
      6214

In[27]:= 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[28]:=
```
Print["All Experiments, Null Organelles filled with 0:"];
fitCellSizeFromOrganelles[filled];
```

All Experiments, Null Organelles filled with 0:

a[i]: {0.696729, -9.57666, 0.402288, 0.4979, 1.4033, -0.706302}

$$
b[i,j]: \begin{pmatrix}
0.170765 & -0.579225 & -0.139695 & -0.00518762 & 0.260611 & -0.102986 \\
b\$11540[2, 1] & 10.5245 & -1.18303 & -0.00946476 & -0.172667 & 0.452603 \\
b\$11540[3, 1] & b\$11540[3, 2] & 0.393994 & 0.00240183 & -0.328545 & 0.154927 \\
b\$11540[4, 1] & b\$11540[4, 2] & b\$11540[4, 3] & -0.00432734 & 0.0187626 & -0.0257911 \\
b\$11540[5, 1] & b\$11540[5, 2] & b\$11540[5, 3] & b\$11540[5, 4] & 0.191292 & -0.22388 \\
b\$11540[6, 1] & b\$11540[6, 2] & b\$11540[6, 3] & b\$11540[6, 4] & b\$11540[6, 5] & 0.0597549
\end{pmatrix}
$$

c: 37.7287

alpha[i]: {0.925117, 0.379822, 0.869212, -0.914228, 0.689248, 1.54461}

Adjusted R Square: 0.962006

p-values for parameter z-statistics:
$\{0.0956655, 8.46231\times10^{-8}, 0.623104, 1.2917\times10^{-8}, 5.00977\times10^{-6}, 0.163537, 1.54544\times10^{-14},$
$1.8314\times10^{-11}, 1.77948\times10^{-6}, 0.430493, 3.68364\times10^{-30}, 0.00146404, 3.90237\times10^{-52}, 7.36702\times10^{-8},$
$0.534402, 0.00104466, 5.87903\times10^{-7}, 0.00462498, 0.613966, 1.05604\times10^{-9}, 0.000153857,$
$0.0000151448, 4.55863\times10^{-6}, 0.000442365, 6.06702\times10^{-88}, 1.00666\times10^{-14}, 0.000500276,$
$7.7456\times10^{-38}, 1.85604\times10^{-194}, 0., 4.0401\times10^{-114}, 2.48635\times10^{-52}, 0., 2.45062\times10^{-26}\}$

t-statistics for parameter estimates:
{1.6664, -5.36108, 0.491472, 5.69205, 4.56695, -1.39338, 7.69561, -6.72686,
-4.77991, -0.788382, 11.4497, -3.18263, 15.2847, -5.38614, -0.621322, -3.27921,
4.99849, 2.83271, 0.504437, -6.10671, 3.78625, -4.32877, 4.58674, -3.51463, 20.0845,
-7.75056, 3.48178, 12.9134, 30.4393, 66.2016, 23.0099, -15.3147, 106.338, 10.6494}
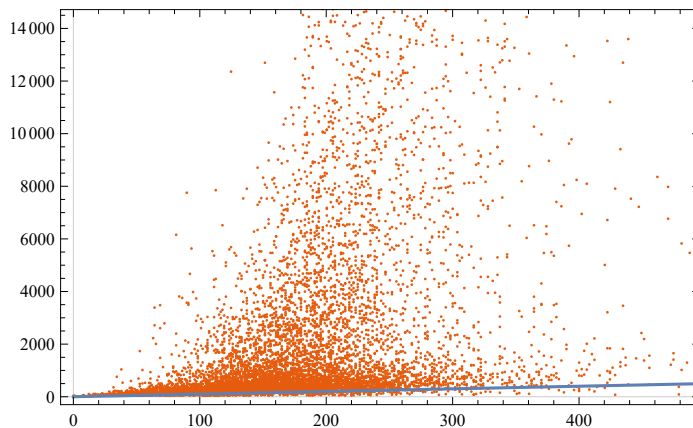
In[30]:= **Print["All Experiments, Null Organelles Excluded:"];**
fitCellSizeFromOrganelles[washed];

All Experiments, Null Organelles Excluded:

a[i]: {1.43319, −0.631799, −2.43518, 0.602025, 1.74968, −1.72643}

$$
b[i,j]: \begin{pmatrix}
0.095037 & -0.68094 & -0.0506076 & 0.00784741 & 0.134502 & -0.0180395 \\
b\$12022[2,1] & 11.5453 & -1.83976 & 0.102965 & -0.485344 & 0.456931 \\
b\$12022[3,1] & b\$12022[3,2] & 0.758316 & -0.0382842 & -0.376174 & 0.11432 \\
b\$12022[4,1] & b\$12022[4,2] & b\$12022[4,3] & -0.0522034 & 0.109615 & -0.0802438 \\
b\$12022[5,1] & b\$12022[5,2] & b\$12022[5,3] & b\$12022[5,4] & 0.147011 & -0.101026 \\
b\$12022[6,1] & b\$12022[6,2] & b\$12022[6,3] & b\$12022[6,4] & b\$12022[6,5] & 0.0245043
\end{pmatrix}
$$

c: 41.8575

alpha[i]: {0.97367, 0.378966, 0.810015, −0.203626, 0.727264, 1.81137}

Adjusted R Square: 0.970595

p-values for parameter z-statistics:
$\{0.0060045, 0.842294, 0.203612, 0.0186789, 8.05145\times10^{-7}, 0.0107173, 0.0000359819,$
$3.40323\times10^{-10}, 0.217337, 0.673792, 1.21553\times10^{-7}, 0.626614, 2.10451\times10^{-18}, 1.11682\times10^{-6},$
$0.0576047, 4.4877\times10^{-11}, 0.000962163, 0.00613598, 0.0644377, 5.73774\times10^{-9}, 0.0391787,$
$1.47696\times10^{-12}, 1.01847\times10^{-21}, 0.00582111, 2.2024\times10^{-44}, 0.00205146, 0.204926,$
$7.65658\times10^{-13}, 5.4706\times10^{-118}, 0., 1.80404\times10^{-95}, 0.000133278, 0., 1.01369\times10^{-10}\}$

t-statistics for parameter estimates:
{2.74849, −0.198968, −1.27146, 2.3525, 4.93918, −2.55256, 4.1349, −6.28948,
−1.23377, 0.42097, 5.29736, −0.486523, 8.77909, −4.87473, 1.89905, −6.59886, 3.30295,
2.74137, −1.84947, −5.83247, 2.06274, −7.09128, 9.61102, −2.75865, 14.0871,
−3.08399, 1.26778, 7.18238, 23.601, 42.7854, 21.098, −3.82273, 100.211, 6.4761}
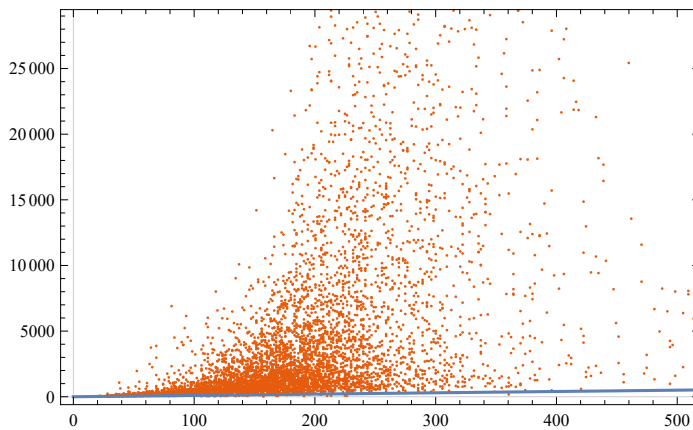
In[32]:=
```
Do[
  Print[experiments〚i〛, ", Null Organelles filled with 0:"];
  fitCellSizeFromOrganelles[Select[filled, #〚1〛 == experiments〚i〛 &]];,
  {i, 1, Length[experiments]}
 ];
```

EYrainbow_glucose, Null Organelles filled with 0:

a[i]: $\{7.95055\times10^{6}, -1.87231\times10^{6}, -1.67851\times10^{7}, 1.27235\times10^{7}, -899\,192., 5.71049\times10^{6}\}$

$$b[i,j]: \begin{pmatrix} 0.206655 & -2.26605 & -7.95056 \times 10^6 & -0.719441 & -0.330848 & 1.98234 \\ b\$12504[2,1] & 3.20509 & 1.87232 \times 10^6 & 1.43031 & -0.170369 & -0.855271 \\ b\$12504[3,1] & b\$12504[3,2] & 673245. & -1.27235 \times 10^7 & 899190. & -5.71051 \times 10^6 \\ b\$12504[4,1] & b\$12504[4,2] & b\$12504[4,3] & -0.0905509 & -0.0507523 & -1.10097 \\ b\$12504[5,1] & b\$12504[5,2] & b\$12504[5,3] & b\$12504[5,4] & 0.145153 & -0.237671 \\ b\$12504[6,1] & b\$12504[6,2] & b\$12504[6,3] & b\$12504[6,4] & b\$12504[6,5] & 0.279037 \end{pmatrix}$$

c: 1.6112×10^7

alpha[i]: $\{0.711231, 0.472112, -1.01925 \times 10^{-6}, 0.528598, 0.857688, 0.518671\}$

Adjusted R Square: 0.957991

p-values for parameter z-statistics:
$\{0., 0., 0., 0., 0., 0., 0.558229, 0.0000385444, 0., 0.0349717, 0.0286449,$
$0.00161899, 0.0150112, 0., 0.000040135, 0.150444, 0.0277493, 0., 0., 0., 0., 0.482971,$
$0.569478, 0.00805373, 0.000044358, 0.0599673, 0.221337, 0., 6.81699 \times 10^{-23},$
$1.44105 \times 10^{-40}, 2.46376 \times 10^{-16}, 1.09666 \times 10^{-6}, 1.96383 \times 10^{-186}, 0.0117437\}$

t-statistics for parameter estimates:
$\{3.51057 \times 10^6, -737628., -4.00951 \times 10^6, 5.29553 \times 10^6, -1.6491 \times 10^6, 3.41428 \times 10^6, 0.585788,$
$-4.14572, -3.51058 \times 10^6, -2.11328, -2.19341, 3.16629, 2.43884, 737630., 4.13619, -1.43973,$
$-2.20596, 160820., -5.29556 \times 10^6, 1.64914 \times 10^6, -3.41429 \times 10^6, -0.701951, -0.569121, -2.65832,$
$4.11253, -1.88445, 1.2242, 3.8487 \times 10^6, 10.2493, 14.3474, -8.42551, 4.92204, 42.4541, 2.52717\}$
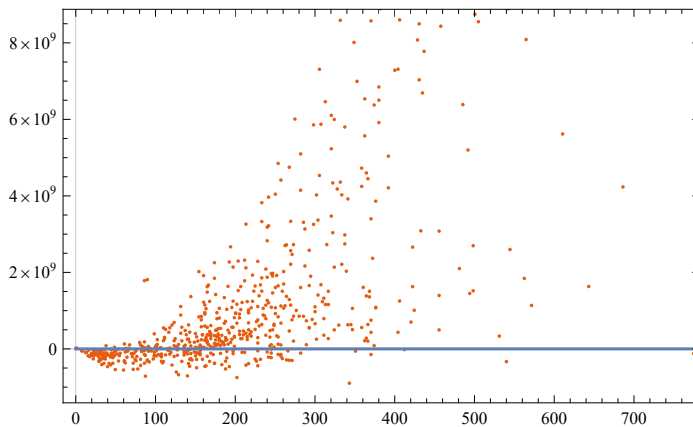
EYrainbow_glucose_largerBF, Null Organelles filled with 0:

a[i]: $\{-4.81783, 16.4708, -162.458, -4.4573, 7.03307, 8.63351\}$

$$b[i,j]: \begin{pmatrix} 0.407012 & -4.54289 & 1.91442 & -0.0795996 & 0.095331 & 0.706776 \\ b\$12662[2,1] & 17.2503 & -21.7685 & 2.07376 & -0.323612 & 0.194778 \\ b\$12662[3,1] & b\$12662[3,2] & 88.1717 & 1.82106 & -5.43396 & -2.26305 \\ b\$12662[4,1] & b\$12662[4,2] & b\$12662[4,3] & 0.00428663 & -0.594038 & 0.724965 \\ b\$12662[5,1] & b\$12662[5,2] & b\$12662[5,3] & b\$12662[5,4] & 0.359781 & -0.385994 \\ b\$12662[6,1] & b\$12662[6,2] & b\$12662[6,3] & b\$12662[6,4] & b\$12662[6,5] & 0.0978354 \end{pmatrix}$$

c: 59.8892

alpha[i]: $\{0.619894, 0.329772, 0.279838, 1.88814, 0.729227, 0.494416\}$

Adjusted R Square: 0.96968

p-values for parameter z-statistics:
$\{0.655467, 0.600074, 0.665985, 0.513876, 0.319762, 0.168583, 0.283156, 1.2888\times10^{-6},$
$0.757159, 0.850959, 0.665257, 0.0509041, 0.000417492, 0.368162, 0.00354378,$
$0.269127, 0.669582, 0.62403, 0.681485, 0.335958, 0.536978, 0.981929,$
$0.000668084, 0.0111833, 9.15186\times10^{-18}, 0.0166275, 0.543321, 0.757275,$
$1.2395\times10^{-15}, 7.60049\times10^{-27}, 0.0994903, 1.77737\times10^{-8}, 4.75916\times10^{-234}, 0.00141722\}$

t-statistics for parameter estimates:
$\{-0.446342, 0.524497, -0.43182, -0.653096, 0.995545, 1.37798, 1.07395, -4.87747,$
$0.309316, -0.187953, 0.432822, 1.95513, 3.54318, -0.900414, 2.92455, -1.10582, 0.426875,$
$0.49033, 0.410583, -0.962742, -0.617647, 0.0226575, -3.41533, 2.54263, 8.78171,$
$-2.39973, 0.608051, 0.309163, 8.16034, 11.1148, 1.64918, 5.68858, 46.6933, 3.20194\}$
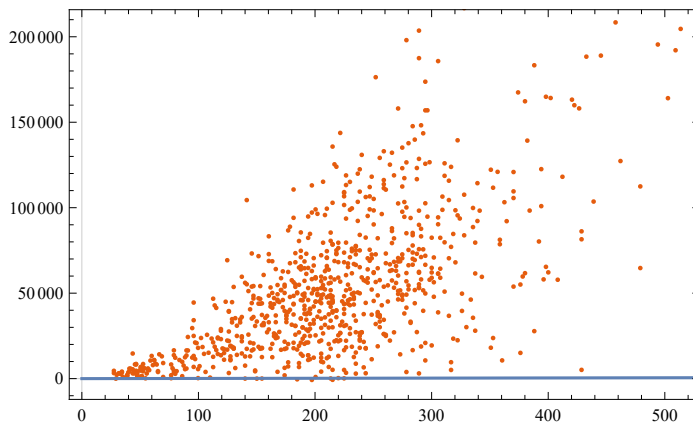
EYrainbow_rapamycin_1stTry, Null Organelles filled with 0:

a[i]: $\{3.42279, -13.3567, 0.685418, -9.61768, 7.04366, -2.07536\}$

b[i,j]:
$$\begin{pmatrix}
0.313322 & -0.495174 & -0.018953 & -0.414813 & 0.328839 & -0.360455 \\
b\$12800[2, 1] & 9.10798 & -0.321376 & 1.47292 & -1.18016 & 0.130376 \\
b\$12800[3, 1] & b\$12800[3, 2] & 0.0767022 & -0.0217186 & -0.133651 & -0.0835466 \\
b\$12800[4, 1] & b\$12800[4, 2] & b\$12800[4, 3] & 0.379327 & 0.0985121 & 0.189071 \\
b\$12800[5, 1] & b\$12800[5, 2] & b\$12800[5, 3] & b\$12800[5, 4] & 0.11439 & 0.0194904 \\
b\$12800[6, 1] & b\$12800[6, 2] & b\$12800[6, 3] & b\$12800[6, 4] & b\$12800[6, 5] & 0.216252
\end{pmatrix}$$

c: 62.5259

alpha[i]: $\{0.37867, 0.403837, 1.04573, 2.64262, 0.303223, 0.435492\}$

Adjusted R Square: 0.953756

p-values for parameter z-statistics:
$\{0.0342084, 0.00430735, 0.34639, 0.00180234, 1.17166\times10^{-6}, 0.0527066, 0.110936, 0.218935, 0.762829,$
$0.23231, 0.100213, 0.0053468, 0.0000746227, 0.21696, 0.0174269, 0.000169527, 0.469685, 0.526541,$
$0.786469, 0.207605, 0.261278, 0.169067, 0.7128, 0.256484, 0.293293, 0.829232, 0.000769661,$
$2.62782\times10^{-34}, 0.000779044, 4.09033\times10^{-43}, 3.98661\times10^{-9}, 7.45811\times10^{-7}, 2.57607\times10^{-6}, 0.00373028\}$

t-statistics for parameter estimates:
$\{2.11994, -2.85999, 0.941971, -3.12776, 4.88453, -1.93917, 1.59513, -1.22999,$
$-0.301835, -1.19501, 1.64504, -2.79027, 3.97437, -1.23528, 2.38076, -3.77204,$
$0.723212, 0.633473, -0.270957, -1.26083, -1.12389, 1.37601, 0.368183, 1.13526, 1.05137,$
$0.215732, 3.37182, 12.5918, 3.36845, 14.3102, 5.92715, 4.97451, 4.72394, 2.90561\}$
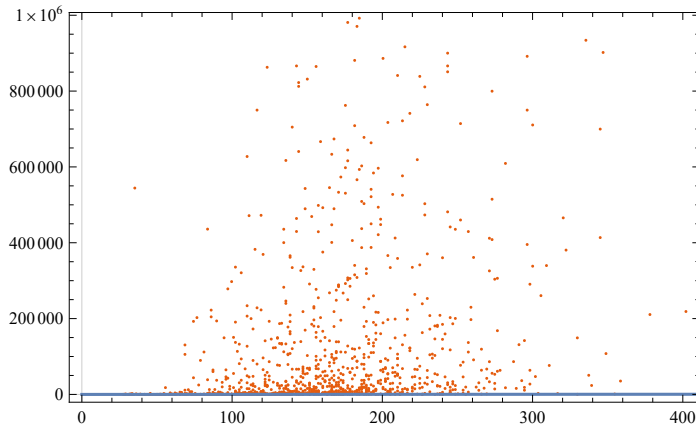
EYrainbow_rapamycin_CheckBistability, Null Organelles filled with 0:

a[i]: {−3.74637, −22.4408, 1.73533, 4.9535, 0.490163, −0.380536}

$$
b[i,j]: \begin{pmatrix}
0.219122 & -0.0306399 & -0.232835 & -0.263235 & 0.37083 & -0.274052 \\
b\$12938[2, 1] & 15.2545 & -2.08231 & 0.34816 & 0.317638 & -0.086636 \\
b\$12938[3, 1] & b\$12938[3, 2] & 1.45838 & -1.50555 & -0.886865 & 0.307814 \\
b\$12938[4, 1] & b\$12938[4, 2] & b\$12938[4, 3] & 1.3352 & 0.306796 & 0.284691 \\
b\$12938[5, 1] & b\$12938[5, 2] & b\$12938[5, 3] & b\$12938[5, 4] & 0.226377 & -0.22029 \\
b\$12938[6, 1] & b\$12938[6, 2] & b\$12938[6, 3] & b\$12938[6, 4] & b\$12938[6, 5] & 0.0858692
\end{pmatrix}
$$

c: 34.1267

alpha[i]: {1.01523, 0.32123, 0.781379, 0.629678, 0.832371, 0.75963}

Adjusted R Square: 0.971839

p-values for parameter z-statistics:
$\{5.13048 \times 10^{-7}, 2.13525 \times 10^{-8}, 0.521037, 0.0208712, 0.507063, 0.601608, 2.37029 \times 10^{-9}, 0.842149,$
$0.00870986, 0.0241644, 2.17033 \times 10^{-16}, 1.4093 \times 10^{-9}, 2.54424 \times 10^{-12}, 0.000139829, 0.371839,$
$0.0215657, 0.539243, 0.0282786, 0.000448397, 2.0767 \times 10^{-6}, 0.00119048, 0.00250105,$
$0.00314945, 0.00648853, 3.72076 \times 10^{-16}, 3.36409 \times 10^{-8}, 0.000356346, 6.13713 \times 10^{-10},$
$7.56557 \times 10^{-96}, 1.45827 \times 10^{-79}, 4.84154 \times 10^{-54}, 1.46333 \times 10^{-7}, 0., 2.83143 \times 10^{-14}\}$

t-statistics for parameter estimates:
{−5.03195, −5.61525, 0.641821, 2.31148, 0.663495, −0.522143, 5.98776, −0.199162,
−2.6249, −2.25561, 8.2576, −6.07276, 7.02904, −3.81321, 0.893163, 2.29909,
−0.614026, 2.19442, −3.51358, −4.75479, 3.24415, 3.02568, 2.95507, 2.72385, 8.19158,
−5.53533, 3.57441, 6.20642, 21.5157, 19.4425, 15.7823, 5.26922, 53.9007, 7.64187}
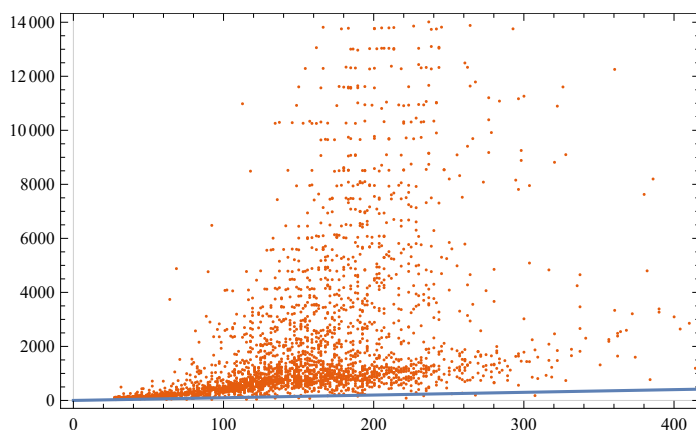
EYrainbow_1nmpp1_1st, Null Organelles filled with 0:

a[i]: {4.1015, -7.49712, 2.17978, 1.02, 3.65027, -4.75357}

$$b[i,j]: \begin{pmatrix} 0.190813 & -0.347852 & -0.0341533 & 0.19114 & -0.0894577 & -0.234675 \\ b\$13076[2, 1] & 10.3124 & -0.784643 & 1.09945 & -0.182763 & 0.124003 \\ b\$13076[3, 1] & b\$13076[3, 2] & 0.116329 & -0.20437 & -0.245506 & 0.010035 \\ b\$13076[4, 1] & b\$13076[4, 2] & b\$13076[4, 3] & 0.0876259 & 0.125328 & 0.234293 \\ b\$13076[5, 1] & b\$13076[5, 2] & b\$13076[5, 3] & b\$13076[5, 4] & 0.212202 & 0.0369924 \\ b\$13076[6, 1] & b\$13076[6, 2] & b\$13076[6, 3] & b\$13076[6, 4] & b\$13076[6, 5] & 0.11108 \end{pmatrix}$$

c: -8.8883

alpha[i]: {1.17032, 0.404532, 1.0571, 0.0872777, 0.715148, 0.930041}

Adjusted R Square: 0.969918

p-values for parameter z-statistics:
{0.00493782, 0.0561456, 3.5129×10^{-7}, 0.379877, 0.00054923, 0.000325854, 0.0477486,
0.207459, 0.400098, 0.108, 0.334648, 0.0616406, 8.27744×10^{-9}, 0.00304734,
0.000305166, 0.357422, 0.625858, 0.0930838, 0.00753064, 0.000210796, 0.831232,
0.164733, 0.16541, 0.0434917, 5.04474×10^{-8}, 0.687586, 0.306654, 0.15955,
6.26302×10^{-16}, 1.58833×10^{-94}, 4.13454×10^{-52}, 0.534286, 2.68973×10^{-157}, 0.000791547}

t-statistics for parameter estimates:
{2.81496, -1.91129, 5.11506, 0.878365, 3.46249, -3.60163, 1.98112, -1.26109,
-0.841669, 1.60814, -0.965083, -1.87018, 5.79354, -2.96744, 3.61878, -0.920554,
0.487659, 1.68035, -2.67581, -3.71423, 0.213157, 1.38996, 1.38774, 2.02055, 5.47588,
0.402205, 1.02259, -1.40724, 8.16833, 22.0748, 15.7546, 0.62161, 29.9908, 3.36215}
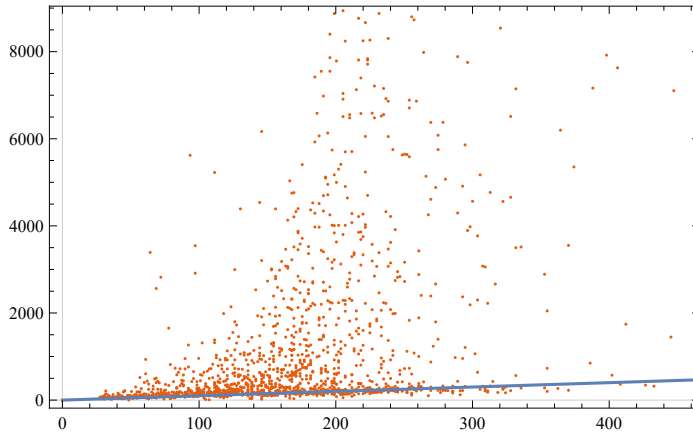
EYrainbow_leucine_large, Null Organelles filled with 0:

a[i]: {0.0049408, 0.937427, 1.88228, −0.49819, −0.0698077, 0.896746}

$$
b[i,j]: \begin{pmatrix}
3.45922\times10^{-8} & 0.0000105572 & -0.0000362882 & -0.000274834 & 0.0000276168 & -0.000499061 \\
b\$13214[2,1] & 0.440096 & -0.0983444 & 0.07909 & 0.00596252 & -0.00415221 \\
b\$13214[3,1] & b\$13214[3,2] & 0.0209771 & -0.0313891 & -0.00131623 & -0.0342072 \\
b\$13214[4,1] & b\$13214[4,2] & b\$13214[4,3] & 0.0292557 & 0.0000688139 & 0.0686443 \\
b\$13214[5,1] & b\$13214[5,2] & b\$13214[5,3] & b\$13214[5,4] & 0.0000466083 & 0.00332761 \\
b\$13214[6,1] & b\$13214[6,2] & b\$13214[6,3] & b\$13214[6,4] & b\$13214[6,5] & 0.0580782
\end{pmatrix}
$$

c: 15.2346

alpha[i]: {4.83104, 0.659347, 1.15183, 0.418643, 1.61619, 0.305701}

Adjusted R Square: 0.980936

p-values for parameter z-statistics:
{0.650029, 0.616572, 0.00766671, 0.359438, 0.526426, 0.213347, 0.843787, 0.983403, 0.786603,
 0.626136, 0.746296, 0.659109, 0.111455, 0.399697, 0.0351601, 0.520874, 0.916808, 0.679908,
 0.370178, 0.584709, 0.364169, 0.00260943, 0.982838, 0.0130355, 0.740785, 0.461298, 0.0293473,
 0.000275306, 0.000137445, 7.48556×10^{-22}, 1.09958×10^{-6}, 0.110603, 0.0000318801, 0.00137052}

t-statistics for parameter estimates:
{0.453815, 0.500821, 2.67009, −0.916723, −0.633622, 1.24495, 0.197087, 0.0208061, −0.270773,
 −0.487275, 0.323588, −0.441234, 1.59264, −0.842407, 2.10846, 0.642153, −0.104473,
 0.41267, −0.896414, −0.546641, −0.907731, 3.01551, 0.0215145, 2.48583, 0.330876,
 0.736905, 2.18092, 3.64631, 3.82281, 9.76115, 4.89349, 1.59645, 4.17258, 3.20692}
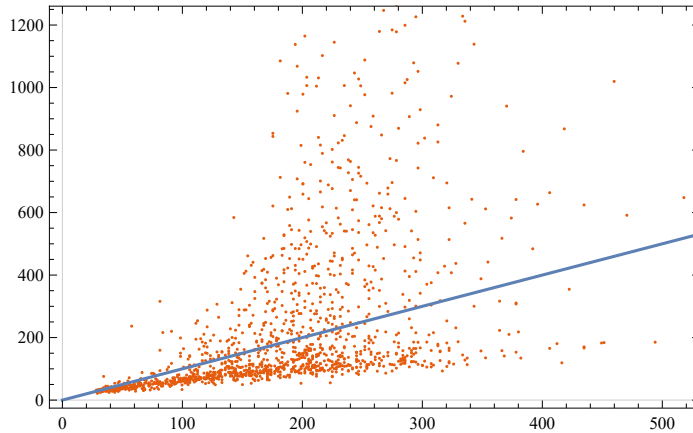
EYrainbowWhi5Up_betaEstrodiol, Null Organelles filled with 0:

a[i]: {10.2175, 1.17026, −120.585, 7.73935, 9.92105, −7.07683}

b[i,j]:
$$\begin{pmatrix}
0.239493 & -1.59017 & -2.05651 & 0.0418467 & 0.229477 & -0.341809 \\
b\$13352[2, 1] & 8.90769 & -1.44567 & 1.36135 & -1.29201 & 0.0498444 \\
b\$13352[3, 1] & b\$13352[3, 2] & 35.9827 & -2.94319 & -4.29195 & -0.122284 \\
b\$13352[4, 1] & b\$13352[4, 2] & b\$13352[4, 3] & 0.19809 & -0.119025 & -0.372668 \\
b\$13352[5, 1] & b\$13352[5, 2] & b\$13352[5, 3] & b\$13352[5, 4] & 0.465209 & -0.0700564 \\
b\$13352[6, 1] & b\$13352[6, 2] & b\$13352[6, 3] & b\$13352[6, 4] & b\$13352[6, 5] & 0.813159
\end{pmatrix}$$

c: 91.2457

alpha[i]: {1.04828, 0.412252, 0.419638, 1.44656, 0.704655, 1.33722}

Adjusted R Square: 0.981235

p-values for parameter z-statistics:
 {0.00354431, 0.878666, 0.416446, 0.193492, 0.0113249, 0.115137, 0.00145578,
  1.145×10^{-7}, 0.153766, 0.835776, 0.0747082, 0.0530184, 0.0000179972, 0.568837,
  0.00526238, 0.000317945, 0.910876, 0.417664, 0.240857, 0.0735164, 0.932812,
  0.322244, 0.635695, 0.241769, 0.00371187, 0.771323, 0.000812342, 0.487042,
  1.60005×10^{-48}, 8.74393×10^{-87}, 0.0002131, 9.79986×10^{-6}, 7.08386×10^{-101}, 1.76366×10^{-6}}

t-statistics for parameter estimates:
 {2.92737, 0.152724, −0.813149, 1.30174, 2.54014, −1.57774, 3.19778, −5.36525,
  −1.42811, 0.207387, 1.78527, −1.9385, 4.32232, −0.570071, 2.80049, −3.62069, 0.111979,
  0.811024, −1.17398, −1.79266, −0.0843422, 0.990651, −0.473961, −1.1717, 2.91278,
  −0.290772, 3.3652, 0.69544, 16.0136, 23.3296, 3.72515, 4.45863, 25.9391, 4.82532}
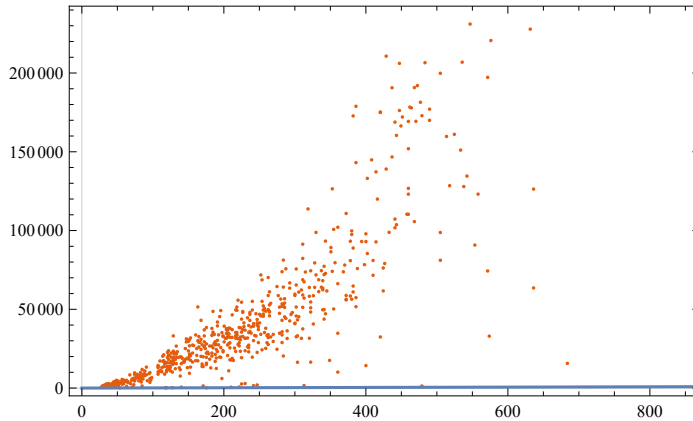
```
In[33]:= Do[
  Print[experiments〚i〛, ", Null Organelles Excluded:"];
  fitCellSizeFromOrganelles[Select[washed, #〚1〛 == experiments〚i〛 &]];,
  {i, 1, Length[experiments]}
]
```

EYrainbow_glucose, Null Organelles Excluded:

a[i]: $\{5.47487, -27.622, 0.48096, -3.13462, 2.88081 \times 10^{-6}, 3.85831\}$

b[i,j]:
$$\begin{pmatrix}
0.445775 & -2.35577 & -0.0198103 & 0.322307 & -1.78057 \times 10^{-7} & 1.03061 \\
b\$13819[2, 1] & 10.1805 & -0.069881 & 1.98776 & 4.42265 \times 10^{-6} & -0.274067 \\
b\$13819[3, 1] & b\$13819[3, 2] & 0.000454131 & -0.00992291 & -2.22761 \times 10^{-7} & -0.000682103 \\
b\$13819[4, 1] & b\$13819[4, 2] & b\$13819[4, 3] & 0.141132 & -2.35799 \times 10^{-7} & -1.00324 \\
b\$13819[5, 1] & b\$13819[5, 2] & b\$13819[5, 3] & b\$13819[5, 4] & 6.91581 \times 10^{-11} & 5.90736 \times 10^{-6} \\
b\$13819[6, 1] & b\$13819[6, 2] & b\$13819[6, 3] & b\$13819[6, 4] & b\$13819[6, 5] & 0.0202411
\end{pmatrix}$$

c: 45.0752

alpha[i]: $\{0.7555, 0.394194, 1.70892, 0.32841, 3.04428, 0.557125\}$

Adjusted R Square: 0.97295

p-values for parameter z-statistics:
$\{0.211749, 0.0611537, 0.221599, 0.284506, 0.954572, 0.37855, 0.191762, 0.00288126, 0.461784,$
$0.415901, 0.965293, 0.181418, 0.0271451, 0.429755, 0.00747604, 0.731161, 0.641747, 0.696287,$
$0.544998, 0.76166, 0.938985, 0.390977, 0.941976, 0.114978, 0.875476, 0.758778, 0.939913,$
$0.0913981, 2.49285 \times 10^{-9}, 4.6641 \times 10^{-26}, 1.2273 \times 10^{-10}, 0.061419, 8.01698 \times 10^{-6}, 0.189896\}$

t-statistics for parameter estimates:
$\{1.25115, -1.87866, 1.22455, -1.07196, 0.0570091, 0.881732, 1.30801, -3.00212, -0.736754,$
$0.814558, -0.0435451, 1.33917, 2.21911, -0.790564, 2.69113, 0.343866, -0.465678,$
$0.390671, -0.605887, -0.303547, -0.0766033, 0.858953, -0.072841, -1.58029, 0.156825,$
$0.307335, 0.075435, 1.6929, 6.12739, 11.5041, 6.64402, 1.87673, 4.53502, 1.31354\}$
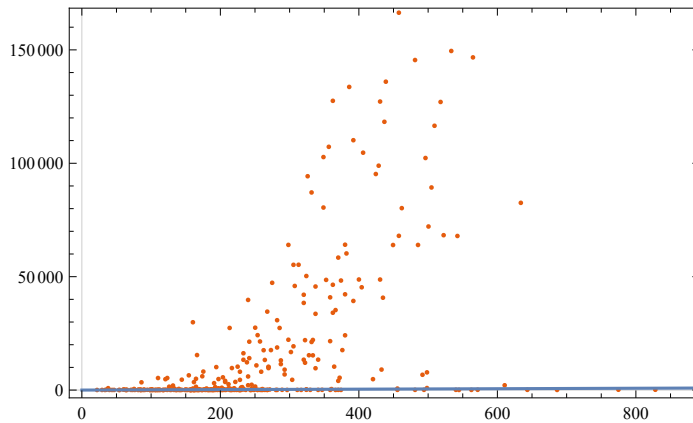
EYrainbow_glucose_largerBF, Null Organelles Excluded:

a[i]: {−45.0484, 33.9864, −570.005, −14.5716, 24.6618, 145.37}

$$
b[i,j]: \begin{pmatrix}
-0.436723 & -5.08567 & 30.5792 & -0.103099 & 0.271425 & 7.68666 \\
b\$13956[2, 1] & 32.2023 & -47.673 & 4.07912 & -1.04797 & -20.3763 \\
b\$13956[3, 1] & b\$13956[3, 2] & 360.302 & 9.15637 & -20.7306 & -140.159 \\
b\$13956[4, 1] & b\$13956[4, 2] & b\$13956[4, 3] & -0.0321034 & -0.379627 & 0.808794 \\
b\$13956[5, 1] & b\$13956[5, 2] & b\$13956[5, 3] & b\$13956[5, 4] & 0.319971 & 3.81128 \\
b\$13956[6, 1] & b\$13956[6, 2] & b\$13956[6, 3] & b\$13956[6, 4] & b\$13956[6, 5] & -3.15506
\end{pmatrix}
$$

c: 179.862

alpha[i]: {0.377443, 0.282921, 0.177476, 1.93791, 0.768022, 3.71759}

Adjusted R Square: 0.974838

p-values for parameter z-statistics:
{0.478609, 0.756873, 0.801825, 0.51458, 0.523898, 0.722741, 0.285719, 0.00909544, 0.589503, 0.811379, 0.200739, 0.60553, 0.119859, 0.615584, 0.0235073, 0.0764494, 0.59506, 0.768026, 0.63639, 0.555947, 0.697689, 0.874972, 0.0200263, 0.86292, 5.00346×10^{-18}, 0.634834, 0.920422, 0.860223, 0.0010816, 1.0835×10^{-7}, 0.398792, 0.000441774, 4.68247×10^{-205}, 0.0563117}

t-statistics for parameter estimates:
{−0.709021, 0.309743, −0.251106, −0.65214, 0.637751, 0.354978, −1.06859, −2.61763, 0.539869, −0.238761, 1.28097, 0.516758, 1.55776, −0.502401, 2.27135, −1.77497, −0.531824, 0.295103, 0.473012, −0.589229, −0.388644, −0.157418, −2.33258, 0.172738, 8.95724, 0.475195, −0.0999479, 0.176173, 3.28565, 5.38272, 0.84443, 3.53498, 49.2848, 1.91261}
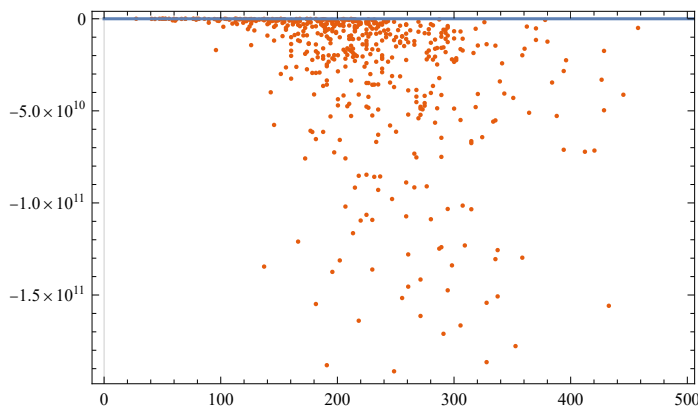
EYrainbow_rapamycin_1stTry, Null Organelles Excluded:

a[i]: {4.73974, −19.7446, −3.30983, −4.34326, 10.761, 0.257584}

$$
b[i,j]: \begin{pmatrix}
0.348908 & -1.13291 & -0.0161668 & -0.525506 & 0.587515 & -0.481935 \\
b\$14094[2, 1] & 18.5761 & -2.39918 & 2.36921 & -1.7913 & -0.0635328 \\
b\$14094[3, 1] & b\$14094[3, 2] & 0.576221 & -0.0925034 & -0.241828 & -0.146956 \\
b\$14094[4, 1] & b\$14094[4, 2] & b\$14094[4, 3] & 0.138856 & -0.0288575 & -0.0377778 \\
b\$14094[5, 1] & b\$14094[5, 2] & b\$14094[5, 3] & b\$14094[5, 4] & -0.0345846 & -0.0538965 \\
b\$14094[6, 1] & b\$14094[6, 2] & b\$14094[6, 3] & b\$14094[6, 4] & b\$14094[6, 5] & 0.271677
\end{pmatrix}
$$

c: 70.2659

alpha[i]: {0.315754, 0.349702, 0.847956, 1.00952, 0.0681449, 0.729603}

Adjusted R Square: 0.9627

p-values for parameter z-statistics:
{0.0775723, 0.222994, 0.541578, 0.0582602, 1.91954×10^{-8}, 0.881894, 0.122474, 0.169235, 0.938343,
0.0321505, 0.00814444, 0.00640588, 0.0185254, 0.126015, 0.00307349, 0.00307729, 0.87877, 0.408069,
0.538065, 0.237553, 0.321317, 0.292335, 0.865514, 0.771512, 0.781321, 0.637003, 0.00467298,
0.000063441, 0.00881426, 1.13844×10^{-17}, 2.51326×10^{-10}, 0.00126408, 0.553603, 0.000741283}

t-statistics for parameter estimates:
{1.76733, −1.2196, −0.610703, −1.89658, 5.67963, 0.148618, 1.54619, −1.37597,
−0.0773786, −2.14647, 2.65298, −2.7338, 2.36001, −1.53168, 2.96979, −2.9694, −0.152579,
0.827753, −0.616021, −1.18205, −0.992399, 1.05374, −0.169416, −0.290501, −0.277696,
−0.472083, 2.83712, 4.02202, 2.62594, 8.77161, 6.41218, 3.23609, 0.592631, 3.38758}
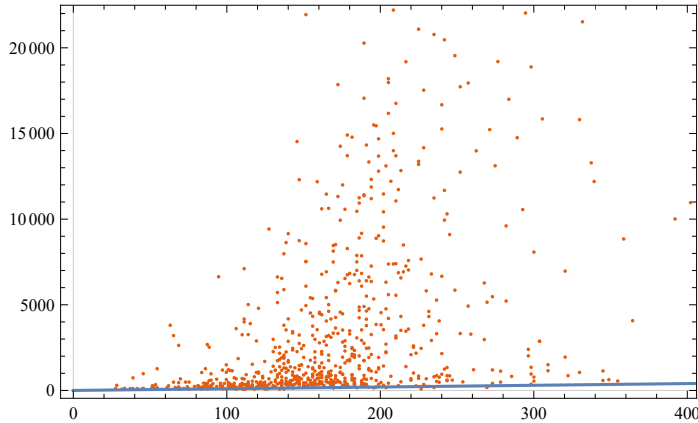
EYrainbow_rapamycin_CheckBistability, Null Organelles Excluded:

a[i]: {−0.23803, 2.3262, −4.56638, 2.45662, 3.33995, −0.438266}

$$
b[i,j]: \begin{pmatrix}
0.154752 & -0.610254 & -0.166578 & -0.414718 & 0.278267 & -0.194603 \\
b\$14232[2, 1] & 9.01304 & -1.895 & 1.34059 & -0.170338 & -0.0102316 \\
b\$14232[3, 1] & b\$14232[3, 2] & 1.25754 & -1.27152 & -0.548598 & 0.185579 \\
b\$14232[4, 1] & b\$14232[4, 2] & b\$14232[4, 3] & 1.68252 & 0.232938 & 0.321991 \\
b\$14232[5, 1] & b\$14232[5, 2] & b\$14232[5, 3] & b\$14232[5, 4] & 0.113859 & -0.144862 \\
b\$14232[6, 1] & b\$14232[6, 2] & b\$14232[6, 3] & b\$14232[6, 4] & b\$14232[6, 5] & 0.050741
\end{pmatrix}
$$

c: 18.0912

alpha[i]: {1.09905, 0.390899, 0.796849, 0.857423, 0.811011, 0.803621}

Adjusted R Square: 0.984654

p-values for parameter z-statistics:
 {0.734982, 0.640192, 0.221408, 0.393432, 6.31154×10^{-8}, 0.532498, 1.22048×10^{-6},
  0.000205366, 0.0255628, 0.00682979, 1.55836×10^{-10}, 1.63753×10^{-6}, 0.00241176, 0.000809832,
  0.0201223, 0.254784, 0.942206, 0.0186756, 0.00142239, 1.49135×10^{-7}, 0.00920578,
  0.00571894, 0.0945132, 0.0150476, 0.0000895055, 0.000383897, 0.0194581, 0.0942608,
  5.94301×10^{-93}, 5.3714×10^{-33}, 1.50846×10^{-62}, 2.73864×10^{-9}, 6.2969×10^{-196}, 2.02219×10^{-9}}

t-statistics for parameter estimates:
 {-0.338558, 0.467509, -1.22321, 0.853614, 5.43244, -0.624317, 4.86878, -3.71992,
  -2.23464, -2.70814, 6.43682, -4.8096, 3.03848, -3.35507, 2.32612, -1.13917,
  -0.0725072, 2.35407, -3.195, -5.27445, 2.60712, 2.76678, 1.67293, 2.43355, 3.92627,
  -3.5576, 2.33872, 1.67422, 21.694, 12.2081, 17.3576, 5.97654, 33.9515, 6.02675}
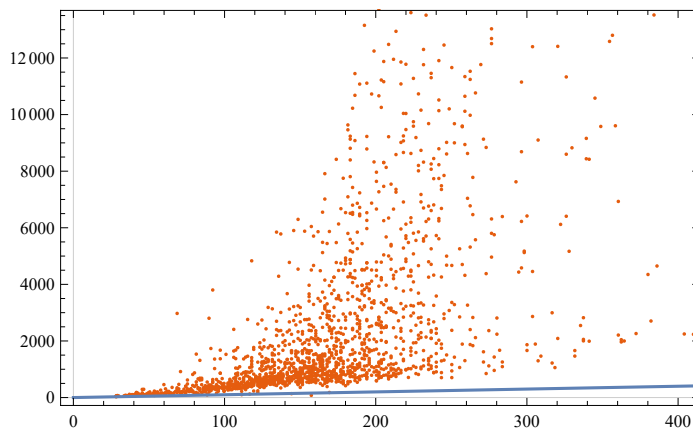
EYrainbow_1nmpp1_1st, Null Organelles Excluded:

a[i]: {3.50591, 0.897568, 1.61745, 2.68903, 2.30252, -3.56969}

$$b[i,j]: \begin{pmatrix} 0.00505295 & -0.433991 & -0.122273 & 0.23234 & 0.0869233 & -0.288756 \\ b\$14370[2, 1] & 8.59915 & -1.41511 & 0.710117 & 0.11164 & -0.336883 \\ b\$14370[3, 1] & b\$14370[3, 2] & 0.428631 & -0.621625 & -0.320523 & 0.216963 \\ b\$14370[4, 1] & b\$14370[4, 2] & b\$14370[4, 3] & 0.167718 & 0.260291 & 0.351818 \\ b\$14370[5, 1] & b\$14370[5, 2] & b\$14370[5, 3] & b\$14370[5, 4] & 0.073592 & -0.117671 \\ b\$14370[6, 1] & b\$14370[6, 2] & b\$14370[6, 3] & b\$14370[6, 4] & b\$14370[6, 5] & 0.111619 \end{pmatrix}$$

c: -6.72342

alpha[i]: {1.25941, 0.422415, 0.934929, 0.208093, 0.94193, 0.937568}

Adjusted R Square: 0.976039

p-values for parameter z-statistics:
 {0.0228285, 0.883692, 0.343123, 0.138008, 0.00189664, 0.0277844, 0.952776, 0.186502,
  0.20622, 0.0916782, 0.152679, 0.0513746, 0.00457972, 0.00597166, 0.0484627,
  0.383931, 0.312617, 0.0848364, 0.00437058, 0.000263823, 0.0769743, 0.080444,
  0.000884034, 0.0162084, 0.00456168, 0.0860328, 0.324016, 0.387998, 2.38466×10^{-9},
  2.00457×10^{-35}, 1.74046×10^{-45}, 0.0930698, 2.58072×10^{-104}, 0.000854772}

t-statistics for parameter estimates:
 {2.27943, 0.146324, 0.948413, 1.48431, 3.11334, −2.20319, 0.0592347, −1.32181,
  −1.26476, 1.68806, 1.4311, −1.95042, 2.84092, −2.75459, 1.97544, 0.871017, −1.0102,
  1.72481, −2.8559, −3.66012, 1.77015, 1.7497, 3.334, 2.40783, 2.84219, −1.71822,
  0.986673, −0.86359, 6.01823, 12.8638, 14.8146, 1.68085, 24.181, 3.34345}
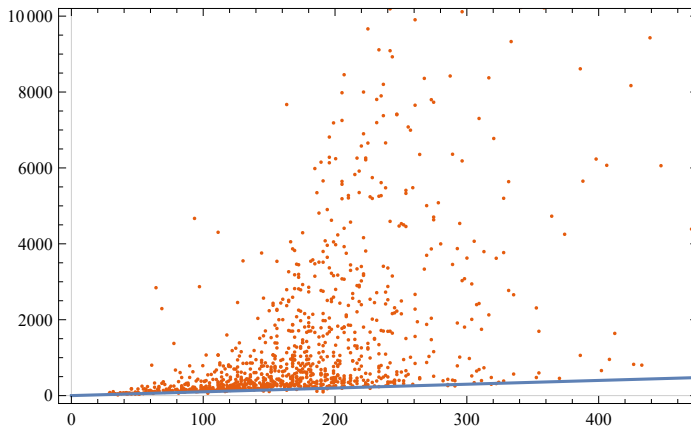
EYrainbow_leucine_large, Null Organelles Excluded:

a[i]: {0.0563306, 2.04486, 1.15134, 1.65373, 0.244904, 0.814932}

$$
b[i,j]: \begin{pmatrix}
-0.0657253 & -0.261834 & 0.010063 & -0.0555318 & 0.24793 & -0.156858 \\
b\$14508[2, 1] & 0.929668 & -0.0553148 & 0.0494852 & -0.163582 & -0.0452303 \\
b\$14508[3, 1] & b\$14508[3, 2] & 0.0080651 & -0.00809441 & -0.0222354 & -0.0125062 \\
b\$14508[4, 1] & b\$14508[4, 2] & b\$14508[4, 3] & -0.00480908 & -0.0798616 & 0.0784637 \\
b\$14508[5, 1] & b\$14508[5, 2] & b\$14508[5, 3] & b\$14508[5, 4] & 0.14583 & -0.139182 \\
b\$14508[6, 1] & b\$14508[6, 2] & b\$14508[6, 3] & b\$14508[6, 4] & b\$14508[6, 5] & 0.132638
\end{pmatrix}
$$

c: 8.73153

alpha[i]: {−0.644591, 0.594088, 1.25099, −0.823046, 0.545933, 0.394545}

Adjusted R Square: 0.983538

p-values for parameter z-statistics:
 {0.96106, 0.452549, 0.181731, 0.0117347, 0.847813, 0.362646, 0.286113, 0.0835603, 0.661097,
  0.149357, 0.0160564, 0.0648707, 0.163819, 0.600998, 0.307907, 0.155351, 0.530069, 0.802593,
  0.622129, 0.600027, 0.610315, 0.682608, 0.059487, 0.0134385, 0.0041345, 0.0718114, 0.00907382,
  0.362869, 0.000984223, 3.19194×10^{-15}, 0.00154247, 2.01986×10^{-8}, 1.17755×10^{-9}, 0.000600029}

t-statistics for parameter estimates:
 {0.0488385, 0.751528, 1.33657, 2.52565, 0.19197, 0.91084, −1.06738, −1.73249, 0.438557,
  −1.44315, 2.4126, −1.84862, 1.39358, −0.523167, 1.02026, −1.42218, −0.628165,
  0.250073, −0.493021, −0.524564, −0.509818, −0.409052, −1.88718, 2.47727, 2.87575,
  −1.80263, 2.61545, 0.910415, −3.30688, 8.03648, 3.17719, −5.66597, 6.15403, 3.44493}
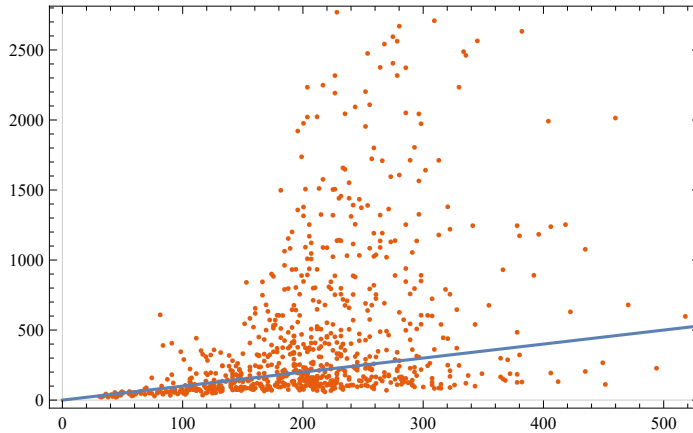
EYrainbowWhi5Up_betaEstrodiol, Null Organelles Excluded:

a[i]: {4.54891, 20.3794, -296.475, 6.26267, 14.5556, -16.4669}

$$
b[i,j]: \begin{pmatrix}
0.146396 & -1.10991 & -0.669914 & 0.119984 & 0.168517 & -0.401359 \\
b\$14646[2, 1] & 6.04524 & -6.56303 & 1.24744 & -0.954179 & 0.364823 \\
b\$14646[3, 1] & b\$14646[3, 2] & 91.5896 & -2.24536 & -7.47329 & 3.7148 \\
b\$14646[4, 1] & b\$14646[4, 2] & b\$14646[4, 3] & 0.117995 & -0.420101 & -0.153807 \\
b\$14646[5, 1] & b\$14646[5, 2] & b\$14646[5, 3] & b\$14646[5, 4] & 0.457192 & -0.178164 \\
b\$14646[6, 1] & b\$14646[6, 2] & b\$14646[6, 3] & b\$14646[6, 4] & b\$14646[6, 5] & 0.694052
\end{pmatrix}
$$

c: 239.26

alpha[i]: {1.18138, 0.438105, 0.333174, 1.87722, 0.741403, 1.51238}

Adjusted R Square: 0.983706

p-values for parameter z-statistics:
{0.281877, 0.150095, 0.582323, 0.439661, 0.0819993, 0.0329787, 0.0132297, 0.0000169754, 0.700281,
0.527166, 0.138474, 0.0146168, 0.00226201, 0.418276, 0.0105491, 0.00282697, 0.377801, 0.603376,
0.547236, 0.24661, 0.379254, 0.500916, 0.129496, 0.677518, 0.00175066, 0.432986, 0.0105446,
0.569403, 1.0339×10^{-40}, 6.78131×10^{-59}, 0.0335698, 2.87383×10^{-6}, 7.74359×10^{-122}, 0.000019766}

t-statistics for parameter estimates:
{1.07714, 1.44116, -0.550314, 0.773315, 1.74232, -2.13761, 2.4854, -4.33889, -0.385138,
0.632732, 1.4836, -2.44931, 3.06754, -0.810012, 2.56588, -2.99915, 0.882653,
0.519845, -0.602271, -1.15983, 0.879965, 0.673483, -1.51832, -0.41607, 3.14463,
-0.784654, 2.56603, 0.569266, 14.4997, 18.2688, 2.13042, 4.72765, 30.598, 4.3042}