Load and Check File Quantifications

Keith A. Baggerly, Shannon Neeley, and Kevin R. Coombes

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1 Introduction

Here, we load the raw quantification data from Dressman et al, and compare these with the values that we obtain directly from the CEL files.

2 Options and Libraries

```
> options(width = 80)
```

```
> library(affy)
> library(geneplotter)
```

3 Describing The Raw Data

The paper makes reference to 119 ovarian tumors and 12 ovarian cancer cell lines. The tumors were acquired from either Duke or the Moffitt cancer center. The tumor samples were all from patients treated with primary platinum-based therapy. Patients either exhibited a complete response (CR = 1) or an incomplete response (NR = 0). To build a predictive model, the tumor samples were randomly split into a training set of 83 samples and a test set of 36 samples. Most of the patients showed a complete response: 59/83 in the training set and 26/36 in the testing set. If we ignore the training/test divide, there 85 CR patients and 34 NR patients. We do not know which samples were in the training set and which samples were in the test set.

All of the tumor samples were run on Affy U133A chips, and the samples were quantified using the RMA methods in Bioconductor. The paper mentions that the cell lines were run on Affy U133+2's, but we didn't see any indication as to where the quantifications for the cell lines could be found.

The tumor samples were quantified using MAS5.0 in an earlier study (Nature 2006); those quantificiations were posted to GEO as GSE3149. The GEO posting actually lists values for 153 arrays, not 119. For 8 samples (1024, 1877, 2063, 2424, 2479, 2505, 2673, and 2739) there are two listings in GEO (e.g., 1024_a and 1024_b), suggesting that these may have been rerun. For these 8, we don't know which of these we're working with.

Further information is given at the Duke website, http://data.cgt.duke.edu/platinum.php. There are 4 files as of September 30, 2007.

• **PlatinumJCO.zip**. This contains the 119 initial CEL files from which the tumor sample quantifications were derived. The files are in version 3 (human readable) format.

- correctedplatinum_RMA.xls. This contains the RMA quantifications of the 119 tumor samples. We're not quite sure what the "corrected" in the name refers to. There are 22115 rows of data, as opposed to the 22283 probesets on the array; 168 probes have been excluded. There are 68 AFFX control probes on this chip, which are likely missing, but we don't know which others were omitted yet. The first row gives the sample id.
- OVCclinicalinfo.xls. This gives, for each of the 119 tumor samples, an ID to identify the array, post-treatment survival in months, grade, stage, debulking status (optimal or suboptimal), CA 125 post-treatment level, and NR/CR status (NR = 0, CR = 1).
- **Parameters for SSS software.txt**. This gives the parameter values they used when running their software. Unfortunately, several entries refer to files that were not posted as such (e.g., "data.txt", "response.txt", "weight2.txt", and "lung_censor.91.txt"), so these are useful only in terms of suggesting the input format. It also lists NVARIABLES = 6088, which may refer to a subset of the probesets available.

There is also a link to the software package used, SSS (for "shotgun stochastic search"), at http://xpress.isds.duke.edu:8080/sss/.

4 Loading the Raw Data

We begin by loading the quantifications provided; we saved the xls file in csv format to make this easier.

```
> rda <- "ovcaRMAFromXLS"</pre>
> rdaFile <- paste("RDataObjects", paste(rda, "Rda", sep = "."),</pre>
      sep = .Platform$file.sep)
+
>
 if (file.exists(rdaFile)) {
      cat(paste("loading", rda, "from cache\n"))
+
+
      load(rdaFile)
  } else {
+
      ovcaRMAFromXLS <- read.table(file.path("DukeWebSite", "correctedPlatinum_RMA.csv"),</pre>
+
          header = TRUE, sep = ",", row.names = 1, check.names = FALSE)
+
      ovcaRMAFromXLS <- as.matrix(ovcaRMAFromXLS)</pre>
+
+
      save(ovcaRMAFromXLS, file = rdaFile)
+ }
```

loading ovcaRMAFromXLS from cache

Let's take a look at the first few values just to make sure everything looks ok.

> dim(ovcaRMAFromXLS)

[1] 22115 119

> ovcaRMAFromXLS[1:3, 1:5]

	0.08	1024	1447	1451	1504
1007_s_at	11.348198	10.326897	10.981040	10.751732	10.792526
1053_at	5.808186	6.420700	6.060294	6.123403	6.834273
117_at	7.062677	6.985818	7.089425	6.682984	6.974176

Looks ok.

We'd also like to get this information from the CEL files. We begin with a bit of parsing, in order to line the CEL file names up with the short identifiers used in ovcaRMAFromXLS.

```
> celFiles <- dir(file.path("DukeWebSite", "PlatinumJCO"))
> length(celFiles)
```

[1] 119

```
> celFiles[1:3]
```

```
[1] "0074_1772_h133a_872.cel" "0074_1773_h133a_922.cel"
[3] "0074_1774_h133a_1451.cel"
```

Looking at the cel file names, there is a common structure. We want the short string that is prefixed by "h133a_" and suffixed by ".cel".

```
> temp1 <- unlist(strsplit(celFiles, ".cel"))</pre>
> temp1[1:3]
[1] "0074_1772_h133a_872" "0074_1773_h133a_922" "0074_1774_h133a_1451"
> temp2 <- unlist(lapply(strsplit(temp1, "h133a_"), function(x) {</pre>
      x[2]
+
+ }))
> temp2[1:3]
[1] "872" "922" "1451"
> celShortNames <- temp2</pre>
> rm("temp1", "temp2")
> names(celShortNames) <- celFiles</pre>
> names(celFiles) <- celShortNames</pre>
> celFiles[1:3]
                        872
                                                     922
 "0074_1772_h133a_872.cel" "0074_1773_h133a_922.cel"
                       1451
"0074_1774_h133a_1451.cel"
> celShortNames[1:3]
0074_1772_h133a_872.cel 0074_1773_h133a_922.cel 0074_1774_h133a_1451.cel
                    "872"
                                               "922"
                                                                        "1451"
```

The names shown here appear to make sense. Before we use them, let's make sure that they agree with what we get from the quantification table.

```
> sum(!is.na(match(celShortNames, colnames(ovcaRMAFromXLS))))
```

[1] 117

> celShortNames[is.na(match(celShortNames, colnames(ovcaRMAFromXLS)))]

0074_1827_h133a_.08.cel 0074_2484_h133a_3250.cel ".08" "3250"

```
> colnames(ovcaRMAFromXLS)[is.na(match(colnames(ovcaRMAFromXLS),
```

```
+ celShortNames))]
```

[1] "0.08" "3249"

All but two of the names match. In the case of "0.08", I suspect that the leading 0 was added by Excel at some point. In the case of 3249 vs 3250, we will assume for now that these refer to the same sample and there was simply a typo. In both of these cases, we fix things by changing the values of celShortNames to match those from ovcaRMAFromXLS.

```
> celShortNames["0074_1827_h133a_.08.cel"] <- "0.08"
> celShortNames["0074_2484_h133a_3250.cel"] <- "3249"
> sum(!is.na(match(celShortNames, colnames(ovcaRMAFromXLS))))
[1] 119
> names(celFiles)[celFiles == "0074_1827_h133a_.08.cel"] <- "0.08"</pre>
> names(celFiles)[celFiles == "0074_2484_h133a_3250.cel"] <- "3249"</pre>
> sum(!is.na(match(names(celFiles), colnames(ovcaRMAFromXLS))))
[1] 119
Now the names line up.
   Next, we the CEL files supplied using RMA.
> rda <- "ovcaRMAFromCELEset"</pre>
> rdaFile <- paste("RDataObjects", paste(rda, "Rda", sep = "."),</pre>
      sep = .Platform$file.sep)
> if (file.exists(rdaFile)) {
+
      cat(paste("loading", rda, "from cache\n"))
      load(rdaFile)
+
+ } else {
      ovcaRMAFromCELEset <- justRMA(celfile.path = file.path("DukeWebSite",</pre>
+
+
          "PlatinumJCO"))
+
      save(ovcaRMAFromCELEset, file = rdaFile)
+ }
```

loading ovcaRMAFromCELEset from cache

For this analysis, we're willing to work with the matrix of expression values rather than the full ExpressionSet to allow for greater parallelism with ovcaRMAFromXLS. Let's extract this, and adjust the names.

```
> ovcaRMAFromCEL <- exprs(ovcaRMAFromCELEset)
> ovcaRMAFromCEL[1:3, 1:3]
```

```
0074_1772_h133a_872.cel 0074_1773_h133a_922.cel
1007_s_at
                        10.637310
                                                10.730829
1053_at
                         6.614612
                                                 6.452423
                                                 7.264226
117_at
                         6.774868
          0074_1774_h133a_1451.cel
1007_s_at
                         10.869773
1053_at
                         6.323276
117_at
                          7.157966
> colnames(ovcaRMAFromCEL) <- celShortNames[colnames(ovcaRMAFromCEL)]</pre>
> ovcaRMAFromCEL[1:3, 1:3]
                872
                          922
                                   1451
1007_s_at 10.637310 10.730829 10.869773
1053_at
           6.614612 6.452423 6.323276
117_at
           6.774868 7.264226 7.157966
```

5 Comparing Quantifications

Our first question here has to do with identifying the probesets that are "missing" from ovcaRMAFromXLS.

```
> omittedProbesets <- setdiff(rownames(ovcaRMAFromCEL), rownames(ovcaRMAFromXLS))
> length(omittedProbesets)
```

[1] 168

```
> affyControls <- grep("^AFFX", omittedProbesets)
> length(affyControls)
```

[1] 68

```
> omittedProbesets[-affyControls]
```

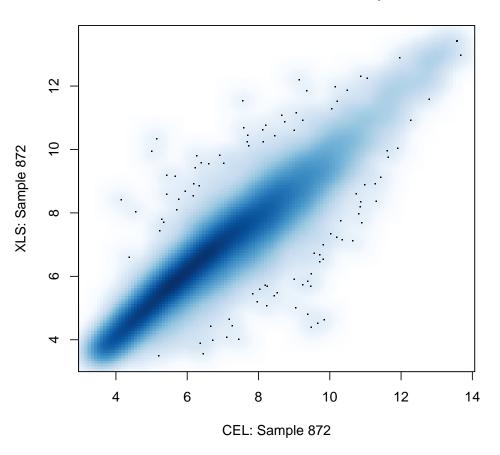
[1]	"200000_s_at"	"200001_at"	"200002_at"	"200003_s_at"	"200004_at"
[6]	"200005_at"	"200006_at"	"200007_at"	"200008_s_at"	"200009_at"
[11]	"200010_at"	"200011_s_at"	"200012_x_at"	"200013_at"	"200014_s_at"
[16]	"200015_s_at"	"200016_x_at"	"200017_at"	"200018_at"	"200019_s_at"
[21]	"200020_at"	"200021_at"	"200022_at"	"200023_s_at"	"200024_at"
[26]	"200025_s_at"	"200026_at"	"200027_at"	"200028_s_at"	"200029_at"
[31]	"200030_s_at"	"200031_s_at"	"200032_s_at"	"200033_at"	"200034_s_at"
[36]	"200035_at"	"200036_s_at"	"200037_s_at"	"200038_s_at"	"200039_s_at"
[41]	"200040_at"	"200041_s_at"	"200042_at"	"200043_at"	"200044_at"
[46]	"200045_at"	"200046_at"	"200047_s_at"	"200048_s_at"	"200049_at"
[51]	"200050_at"	"200051_at"	"200052_s_at"	"200053_at"	"200054_at"
[56]	"200055_at"	"200056_s_at"	"200057_s_at"	"200058_s_at"	"200059_s_at"
[61]	"200060_s_at"	"200061_s_at"	"200062_s_at"	"200063_s_at"	"200064_at"
[66]	"200065_s_at"	"200066_at"	"200067_x_at"	"200068_s_at"	"200069_at"
[71]	"200070_at"	"200071_at"	"200072_s_at"	"200073_s_at"	"200074_s_at"
[76]	"200075_s_at"	"200076_s_at"	"200077_s_at"	"200078_s_at"	"200079_s_at"

[81] "200080_s_at" "200081_s_at" "200082_s_at" "200083_at" "200084_at"
[86] "200085_s_at" "200086_s_at" "200087_s_at" "200088_x_at" "200089_s_at"
[91] "200090_at" "200091_s_at" "200092_s_at" "200093_s_at" "200094_s_at"
[96] "200095_x_at" "200096_s_at" "200097_s_at" "200098_s_at" "200099_s_at"

As expected, the 68 Affymetrix controls are among those dropped. The numerical prefixes for the other 100 run sequentially from 200000 to 200099, so they do form a contiguous block. We have no idea why these were omitted.

Our next question has to do with how well the two sets of numerical values agree for the probesets that remain. Let's take a look at this agreement the first sample in ovcaRMAFromCEL, sample 872.

```
> smoothScatter(ovcaRMAFromCEL[rownames(ovcaRMAFromXLS), "872"],
+ ovcaRMAFromXLS[, "872"], xlab = "CEL: Sample 872", ylab = "XLS: Sample 872",
+ main = "Two RMA Quantifications of Sample 872")
```



Two RMA Quantifications of Sample 872

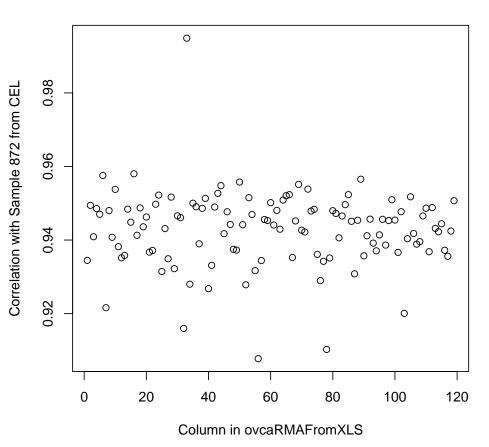
Actually, the agreement is not as good as we would have expected *a priori*. We do not necessarily expect the values to coincide perfectly (including other samples in the RMA modeling might tweak the

normalization). But we wouldn't expect expression levels for a given gene to change by a factor or 20 or more either, and there presence of points with x-values near 10 and y-values near 5 implies precisely this given the log2 nature of RMA values.

Let's take a look at the correlations between the results for sample 872 from ovcaRMAFromCEL and all of the samples in ovcaRMAFromXLS, to see if there is simply poor correlation throughout.

```
> corWith872 <- cor(ovcaRMAFromCEL[rownames(ovcaRMAFromXLS), "872"],
+ ovcaRMAFromXLS)
> plot(t(corWith872), xlab = "Column in ovcaRMAFromXLS", ylab = "Correlation with Sample 872 from CEL",
+ main = "Correlations of 872 from CEL with All Columns of XLS")
> colnames(corWith872)[which.max(corWith872)]
```

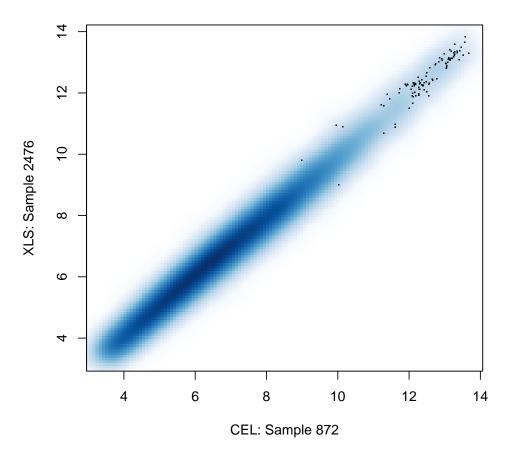
```
[1] "2476"
```



Correlations of 872 from CEL with All Columns of XLS

Actually, there is one sample that is clearly the best match. However, in ovcaRMAFromXLS, this column is identified as coming from sample 2476. Let's plot these two quantifications against each other.

```
> smoothScatter(ovcaRMAFromCEL[rownames(ovcaRMAFromXLS), "872"],
+ ovcaRMAFromXLS[, "2476"], xlab = "CEL: Sample 872", ylab = "XLS: Sample 2476",
+ main = "Two RMA Quantifications: 872 From CEL, 2476 From XLS")
```



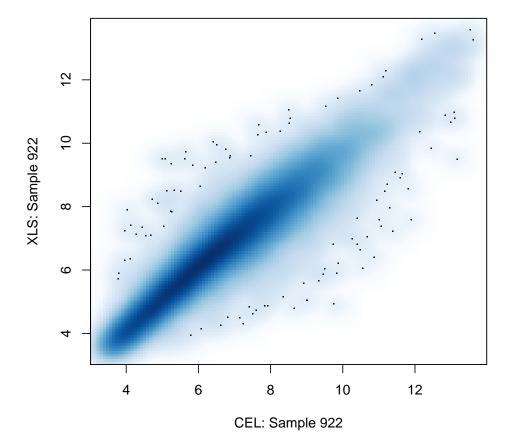
Two RMA Quantifications: 872 From CEL, 2476 From XLS

This is the type of agreement that we would expect to see between two quantifications of the same file with minor modifications in processing.

The mismatch that we see here suggests that the the results for sample 872 are mislabeled in ovcaR-MAFromXLS. If this is the case, and these were indeed the quantifications used to derive clinical conclusions, those conclusions may be mistaken.

Let's look at the next sample (sample 922) as a quick check to see whether this mixup is a fluke.

```
> smoothScatter(ovcaRMAFromCEL[rownames(ovcaRMAFromXLS), "922"],
+ ovcaRMAFromXLS[, "922"], xlab = "CEL: Sample 922", ylab = "XLS: Sample 922",
+ main = "Two RMA Quantifications of Sample 922")
```



Two RMA Quantifications of Sample 922

Again, the fit is poor when the names match.

```
> corWith922 <- cor(ovcaRMAFromCEL[rownames(ovcaRMAFromXLS), "922"],</pre>
```

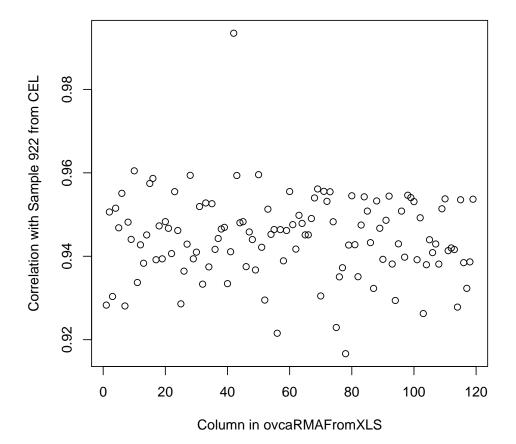
```
+ ovcaRMAFromXLS)
```

```
> plot(t(corWith922), xlab = "Column in ovcaRMAFromXLS", ylab = "Correlation with Sample 922 from CEL",
```

```
+ main = "Correlations of 922 from CEL with All Columns of XLS")
```

```
> colnames(corWith922)[which.max(corWith922)]
```

```
[1] "2895"
```

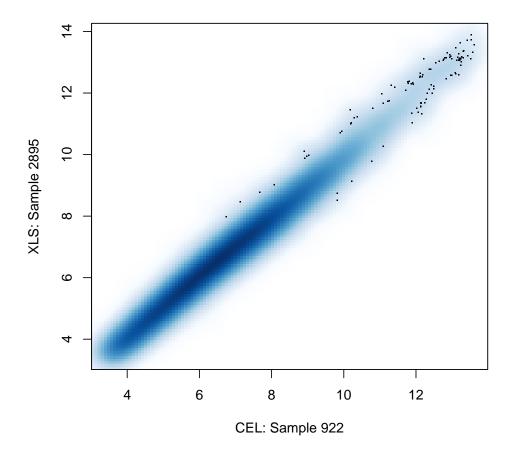


Correlations of 922 from CEL with All Columns of XLS

Again, there is a clear best match; in this case it is with 2895.

```
> smoothScatter(ovcaRMAFromCEL[rownames(ovcaRMAFromXLS), "922"],
```

- + ovcaRMAFromXLS[, "2895"], xlab = "CEL: Sample 922", ylab = "XLS: Sample 2895",
- + main = "Two RMA Quantifications: 922 From CEL, 2895 From XLS")

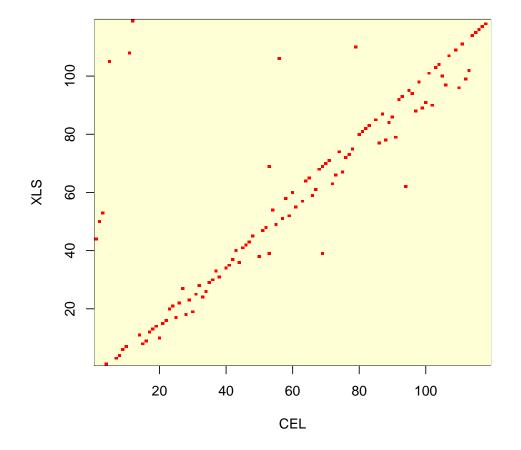


Two RMA Quantifications: 922 From CEL, 2895 From XLS

Again, the fit with the best match looks just like what we might expect from two quantifications of the same file. The mislabeling does not appear to have been a fluke.

At this point, we need to know just how extensive the problem is. Let's take a look at all of the correlations.

```
> corCELWithXLS <- cor(ovcaRMAFromCEL[rownames(ovcaRMAFromXLS),
+ ], ovcaRMAFromXLS[, colnames(ovcaRMAFromCEL)])
> image(1:119, 1:119, corCELWithXLS < 0.98, xlab = "CEL", ylab = "XLS",
+ main = "Corr > 0.98, Names in ovcaRMAFromCEL Order")
```

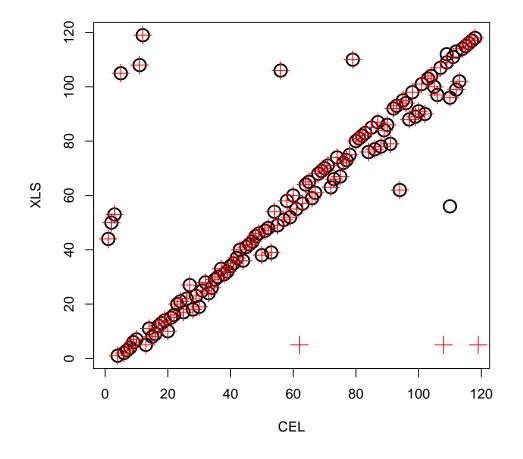


Corr > 0.98, Names in ovcaRMAFromCEL Order

Looking at where the high correlations are, and ordering the sample names along each axis to match that for ovcaRMAFromCEL (alphabetic ordering of the CEL file names), we see that while there are only 32 cases where we have matches, most of the high correlations are very close to the main diagonal. Further, those not on the diagonal are consistently slightly below it. This suggests some type of indexing offset, though we do not have an explanation for it.

Now we want to specify our best guess as to what the mapping should be. We do this by first searching the correlation matrix for values that are the biggest to be found in their respective rows and columns. When row and column maxima coincide, we've found a good match. Rows and columns that remain ambiguous will then be dealt with.

```
> bestXLSFitsToGivenCEL <- max.col(corCELWithXLS)
> bestCELFitsToGivenXLS <- max.col(t(corCELWithXLS))
> plot(bestCELFitsToGivenXLS, 1:119, cex = 2, lwd = 2, xlab = "CEL",
+ ylab = "XLS", main = "Row and Col Maximum Correlations")
> points(1:119, bestXLSFitsToGivenCEL, pch = 3, cex = 2, col = "red")
```



Row and Col Maximum Correlations

Looking at the plot, we see that the maxima coincide for 116 of the 119 samples. We first identify the CEL files which did not find their match on the first try.

```
> which(duplicated(bestXLSFitsToGivenCEL))
```

```
[1] 62 108 119
```

```
> bestXLSFitsToGivenCEL[c(62, 108, 119)]
```

```
[1] 5 5 5
```

```
> which(bestXLSFitsToGivenCEL == 5)
```

```
[1] 13 62 108 119
```

```
> bestCELFitsToGivenXLS[5]
```

```
[1] 13
```

```
> rownames(corCELWithXLS)[c(62, 108, 119)]
[1] "D2358" "M3484" "M810"
Next, we look for the XLS entries that don't find their best match immediately.
> which(duplicated(bestCELFitsToGivenXLS))
[1] 96 112 113
> bestCELFitsToGivenXLS[c(96, 112, 113)]
[1] 110 109 112
> which(bestCELFitsToGivenXLS == 110)
[1] 56 96
> bestXLSFitsToGivenCEL[110]
[1] 96
> which(bestCELFitsToGivenXLS == 109)
[1] 109 112
> bestXLSFitsToGivenCEL[109]
[1] 109
> which(bestCELFitsToGivenXLS == 112)
[1] 99 113
> bestXLSFitsToGivenCEL[112]
[1] 99
> colnames(corCELWithXLS)[c(56, 112, 113)]
[1] "D1837" "M4161" "M444"
```

Now we know which ones to be on the alert for. The XLS quantifications for D1837, M4161, and M444 do not have very good matches the set of CEL file quantifications.

6 Expanding the Mapping

In addition to the 119 ovarian CEL files supplied on the website for Dressman et al, there are 146 ovarian CEL files supplied on the website for Bild et al (Nature 2006); the latter are a superset of the former. We can also quantify this larger set.

```
> rda <- "ovcaRMAFromBildEset"
> rdaFile <- paste("RDataObjects", paste(rda, "Rda", sep = "."),
+ sep = .Platform$file.sep)
> if (file.exists(rdaFile)) {
+ cat(paste("loading", rda, "from cache\n"))
+ load(rdaFile)
+ } else {
+ ovcaRMAFromBildEset <- justRMA(celfile.path = file.path("OtherData",
+ "BildNature06", "OvarianTumorData"))
+ save(ovcaRMAFromBildEset, file = rdaFile)
+ }</pre>
```

loading ovcaRMAFromBildEset from cache

```
> ovcaRMAFromBild <- exprs(ovcaRMAFromBildEset)</pre>
```

Given the larger set, let's check the correlations again, and tabulate the XLS file name, the best matching CEL file name, the best matching Bild file name, and the top three Bild correlation values for each XLS file. First, put together the structure.

```
> corBildWithXLS <- cor(ovcaRMAFromBild[rownames(ovcaRMAFromXLS),</pre>
      ], ovcaRMAFromXLS)
+
> bildCheck <- cbind(xlsName = colnames(corCELWithXLS), celName = colnames(corCELWithXLS),</pre>
      bildName = colnames(corCELWithXLS), bildCor1 = rep(0, 119),
+
+
      bildCor2 = rep(0, 119), bildCor3 = rep(0, 119))
> for (i1 in 1:length(colnames(corCELWithXLS))) {
      bildCheck[i1, "celName"] <- rownames(corCELWithXLS)[which.max(corCELWithXLS[,</pre>
+
          i1])]
+
      bildCheck[i1, "bildName"] <- rownames(corBildWithXLS)[which.max(corBildWithXLS[,</pre>
+
           colnames(corCELWithXLS)[i1]])]
+
      bildCheck[i1, 4:6] <- sort(corBildWithXLS[, colnames(corCELWithXLS)[i1]])[c(146,</pre>
+
+
          145, 144)]
+ }
> bildCheck <- as.data.frame(bildCheck)</pre>
> bildCheck["xlsName"] <- as.character(bildCheck[, "xlsName"])</pre>
> bildCheck["celName"] <- as.character(bildCheck[, "celName"])</pre>
> bildCheck["bildName"] <- as.character(bildCheck[, "bildName"])</pre>
> bildCheck[, "bildCor1"] <- as.numeric(as.character(bildCheck[,</pre>
      "bildCor1"]))
+
> bildCheck[, "bildCor2"] <- as.numeric(as.character(bildCheck[,</pre>
      "bildCor2"]))
+
> bildCheck[, "bildCor3"] <- as.numeric(as.character(bildCheck[,</pre>
      "bildCor3"]))
+
> bildCheck <- bildCheck[order(bildCheck[, "bildName"]), ]</pre>
> rownames(bildCheck) <- 1:119</pre>
```

Next, take a look at the mappings.

> bildCheck

M2807 1784 0074_01827_h133a_1784.cel 0.992820 0.956227 0.955730 2 M3484 0.08 0074_01828_h133a_1615.cel 0.9914995 0.968161 0.967050 4 1784 1615 0074_01834_h133a_1615.cel 0.9941985 0.9467627 0.9468388 5 0.08 1665 0074_01834_h133a_1245.cel 0.9944930 0.9407033 0.9483169 6 860 2465 0074_01835_h133a_2166.cel 0.9964930 0.948303 0.9483186 9 2465 1074 0074_01906_h133a_174.cel 0.9865430 0.9485033 0.9483186 9 2465 1074 0074_01906_h133a_2647.cel 0.9965663 0.960576 0.956221 11 2999 2967 0074_02003_h133a_257.cel 0.9945379 0.960576 0.956221 12 2473 0074_02026_h133a_102.cel 0.9945479 0.9604171 0.9562820 14 2967 0074_02026_h133a_1224.cel 0.9954379 0.9604171 0.9563739 14 2967		xlsName	celName	bildName	bildCor1	bildCor2 bildCor3	5
3 M810 860 0074_01828_h133a_600.cel 0.9914995 0.9688161 0.9670850 4 1784 1615 0074_01829_h133a_1615.cel 0.974812 0.9710153 0.968388 5 0.08 1665 0074_01836_h133a_1245.cel 0.984509 0.9467627 0.9463406 6 860 2465 0074_01836_h133a_1242.cel 0.980840 0.9485003 0.9483186 9 2465 1774 0074_01906_h133a_1774.cel 0.980840 0.948503 0.960821 11 2999 2967 0074_01906_h133a_2673.cel 0.992082 0.9605766 0.9607776 12 3142 2573 0074_02004_h133a_2807.cel 0.994323 0.9607769 0.9682319 14 2967 3102 0074_02026_h133a_2102.cel 0.9956447 0.9718080 0.9697766 15 2573 2802 0074_02028_h133a_2424.cel 0.9954379 0.9604171 0.959766 16 2849 0474_02028_h133a_2476.cel 0.994233 0.9626413 0.9563763	1	M2807	1784	0074_01776_h133a_1784.cel	0.9926820	0.9566297 0.9557930)
4 1784 1615 0074_01830_h133a_1665.cel 0.9941898 0.9467627 0.9463366 5 0.08 1665 0074_01835_h133a_2465.cel 0.9845509 0.9440225 0.9440143 7 1615 2999 0074_01835_h133a_2999.cel 0.9964939 0.9708033 0.9692109 8 1665 3142 0074_01906_h133a_1774.cel 0.9856440 0.9450324 0.9431743 10 2064 2064 0074_01908_h133a_2667.cel 0.992522 0.960766 0.987774 12 2173 0074_02003_h133a_2573.cel 0.9945379 0.9604171 0.951595 13 1774 2849 0074_02026_h133a_2802.cel 0.9945379 0.9604171 0.951595 16 2849 2424 0074_02028_h133a_2424.cel 0.9945180 0.9546375 0.953739 17 3102 2063 0074_02029_h133a_2476.cel 0.9945141 0.955870 0.956363 19 2424 2895 0074_02403_h133a_2895.cel 0.990188 0.9626413 0.9593705	2	M3484	0.08	0074_01827_h133a08.cel	0.9881092	0.9473432 0.9470600)
5 0.08 1665 0074_01830_h133a_1665.cel 0.9941898 0.946727 0.946306 6 860 2465 0074_01835_h133a_2465.cel 0.9864890 0.9460235 0.9492109 8 1665 3142 0074_01836_h133a_3142.cel 0.9868840 0.9485033 0.9492109 8 1665 3142 0074_01906_h133a_1774.cel 0.9856633 0.9605726 0.957776 11 2999 2967 0074_01909_h133a_2677.cel 0.984232 0.9607770 0.9687777 12 3142 2573 0074_02005_h133a_2102.cel 0.994232 0.9607779 0.9687764 14 2967 3102 0074_02026_h133a_2102.cel 0.994234 0.9607779 0.9687764 13 1774 2849 0074_02026_h133a_2102.cel 0.994244 0.9718080 0.9697769 0.9697769 14 2867 3102 0063 0074_02026_h133a_2163.cel 0.994247 0.971708 0.956437 0.956431 16 2849 2444 0074_1772_h133a_2281.cel	3	M810	860	0074_01828_h133a_860.cel	0.9914995	0.9688161 0.9670850	1
6 860 2465 0074_01834_h133a_2465.cel 0.9845509 0.9440225 0.9401433 7 1615 2999 0074_01835_h133a_2999.cel 0.9984939 0.970833 0.9485103 8 1665 3142 0074_01906_h133a_1774.cel 0.9808440 0.9453324 0.9481743 10 2064 0074_01906_h133a_267.cel 0.9857445 0.9712619 0.9607676 0.9607761 11 2999 2967 0074_02005_h133a_2573.cel 0.9987445 0.9712619 0.9697764 13 1774 2849 0074_02026_h133a_2802.cel 0.9945379 0.9604171 0.951595 16 2849 2424 0074_02028_h133a_2424.cel 0.9945379 0.9604171 0.951595 16 2849 2424 0074_02029_h133a_2663.cel 0.974740 0.9546375 0.953705 17 3102 2063 074_02400_h133a_2891.cel 0.994180 0.9562461 0.9583705 12 2476 0074_1772_h133a_272.cel 0.9941231 0.9562461 0.9583705 <	4	1784	1615	0074_01829_h133a_1615.cel	0.9748212	0.9710153 0.9683388	;
1615 2999 0074_01835_h133a_2999.cel 0.9964939 0.9700833 0.9692109 8 1665 3142 0074_01836_h133a_1174.cel 0.9864140 0.9463030 0.9483184 10 2064 2064 0074_01906_h133a_2667.cel 0.9854140 0.9453324 0.9483184 11 2999 2967 0074_01909_h133a_267.cel 0.992682 0.960766 0.957776 12 3142 2573 0074_02005_h133a_2849.cel 0.9984232 0.9697679 0.9682319 14 2967 3102 0074_02026_h133a_2424.cel 0.9945379 0.9604171 0.958248 15 2573 2802 0074_02028_h133a_2424.cel 0.9945379 0.9604171 0.951595 16 2849 2424 0074_02028_h133a_2456.cel 0.9945480 0.954820 0.954280 17 3102 2063 0074_0240_h133a_2856.cel 0.99404180 0.9563870 0.9563816 12 2476 0074_0240_h133a_2850.cel 0.994243 0.9564370 0.9583862 22	5	0.08	1665	0074_01830_h133a_1665.cel	0.9941898	0.9467627 0.9463406	;
8 1665 3142 0074_01836_h133a_3142.cel 0.9808840 0.9485003 0.9483186 9 2465 1774 0074_01906_h133a_1774.cel 0.9856140 0.9485033 0.9608221 11 2999 2967 0074_01909_h133a_2267.cel 0.9920582 0.9605766 0.9577776 12 3142 2573 0074_02005_h133a_22649.cel 0.9987445 0.9712619 0.9682319 14 2967 0074_02005_h133a_1202.cel 0.9955498 0.964171 0.9591595 15 2573 2802 0074_02029_h133a_2424.cel 0.9955498 0.9546375 0.9542840 18 2802 2476 0074_02029_h133a_2495.cel 0.990148 0.9626131 0.9583765 20 2063 2981 0074_02400_h133a_2895.cel 0.997743 0.956246 0.9533962 21 2442 2895 0074_02403_h133a_2892.cel 0.997414 0.982611 0.9661397 0.956226 22 2476 872 0074_1772_h133a_1451.cel 0.9981752 0.9582837 0.96	6	860	2465	0074_01834_h133a_2465.cel	0.9845509	0.9440225 0.9440143	5
9 2465 1774 0074_01906_h133a_1774.cel 0.9854140 0.9453324 0.9431743 10 2064 0074_01908_h133a_2667.cel 0.9856633 0.9661539 0.9605766 0.9577776 11 2999 2967 0074_02003_h133a_2573.cel 0.9874445 0.9712619 0.9697764 12 3142 2573 0074_02004_h133a_2802.cel 0.9984322 0.9604771 0.9582319 14 2967 3102 0074_02026_h133a_2802.cel 0.9995497 0.9604171 0.9591595 16 2849 2424 0074_02028_h133a_2460.cel 0.9995498 0.9546375 0.95337399 17 3102 2063 0074_02029_h133a_2476.cel 0.9995498 0.956670 0.956363 19 2424 2860 0074_02029_h133a_2855.cel 0.990188 0.9562461 0.9583705 20 2063 2981 0074_0203_h133a_2855.cel 0.990188 0.9626413 0.958370 21 3249 3249 0074_1772_h133a_3252.cel 0.9907420 0.958370 0.	7	1615	2999	0074_01835_h133a_2999.cel	0.9964939	0.9700833 0.9692109)
10 2064 2064 0074_01908_h133a_2064.cel 0.9856633 0.9661539 0.9608221 11 2999 2967 0074_01909_h133a_2673.cel 0.9820582 0.9605766 0.9577776 12 3142 2573 0074_02003_h133a_2573.cel 0.982432 0.9697764 13 1774 2849 0074_02005_h133a_21242.cel 0.9954347 0.9718080 0.9697266 15 2573 2802 0074_02028_h133a_2424.cel 0.995488 0.9546375 0.9554820 0.9542840 16 2849 2424 0074_02028_h133a_2426.cel 0.994180 0.9508705 0.9554820 0.9542840 17 3102 2063 0074_0203_h133a_285.cel 0.9904180 0.9508705 0.956363 19 2424 2895 0074_02403_h133a_2872.cel 0.9904371 0.9562461 0.9538962 20 0074_1772_h133a_3272.cel 0.9904370 0.9604397 0.9562752 21 3249 0074_1772_h133a_1262.cel 0.991310 0.9632513 0.952577 2	8	1665	3142	0074_01836_h133a_3142.cel	0.9808840	0.9485003 0.9483186	;
11 2999 2967 0074_01909_h133a_2967.cel 0.9920582 0.9605766 0.9577776 12 3142 2573 0074_02003_h133a_2573.cel 0.9874445 0.9712619 0.9697764 13 1774 2849 0074_02004_h133a_2849.cel 0.998423 0.9697679 0.9662319 14 2967 3102 0074_02026_h133a_2802.cel 0.995447 0.9718080 0.9697766 15 2573 2802 0074_02026_h133a_2802.cel 0.9945379 0.9604171 0.9551595 16 2849 2424 0074_02029_h133a_2863.cel 0.994548 0.9546370 0.9501535 18 2802 2476 0074_02394_h133a_281.cel 0.9990188 0.9626413 0.9593755 20 2063 2981 0074_02403_h133a_2851.cel 0.994323 0.964340 0.963875 21 3249 3049 0074_0177_h133a_3250.cel 0.994233 0.963457 0.955726 21 3249 3047_07_h14_h133a_1451.cel 0.993233 0.960377 0.956360	9	2465	1774	0074_01906_h133a_1774.cel	0.9854140	0.9453324 0.9431743	5
12 3142 2573 0074_02003_h133a_2573.cel 0.9874445 0.9712619 0.969779 0.9682319 13 1774 2849 0074_02005_h133a_3102.cel 0.9984232 0.9697679 0.9682319 14 2967 3102 0074_02026_h133a_2802.cel 0.9950447 0.9718080 0.9697266 15 2573 2802 0074_02028_h133a_2802.cel 0.9955498 0.9546375 0.9537399 16 2849 2424 0074_02029_h133a_24976.cel 0.9944180 0.9554820 0.9542840 18 2802 2476 0074_02403_h133a_2895.cel 0.990188 0.9562613 0.9553892 20 2063 2981 0074_02403_h133a_2895.cel 0.9927437 0.9604397 0.9588962 21 3249 3074_02403_h133a_292.cel 0.9928437 0.9604397 0.9588962 22 2476 872 0074_1772_h133a_152.cel 0.9928437 0.9604397 0.9585888 23 2895 922 0074_1775_h133a_152.cel 0.9928437 0.9606119 0.9558513 24 2981 1451 0074_1775_h133a_1564.cel	10	2064	2064	0074_01908_h133a_2064.cel	0.9856633	0.9661539 0.9608221	
13 1774 2849 0074_02004_h133a_2849.cel 0.9984232 0.9697679 0.9682319 14 2967 3102 0074_02005_h133a_3102.cel 0.9950447 0.9718080 0.9697266 15 2573 2802 0074_02026_h133a_2622.cel 0.9945379 0.9604171 0.9551895 16 2849 2424 0074_02028_h133a_263.cel 0.9974740 0.9554820 0.9542840 18 2802 2476 0074_02028_h133a_2895.cel 0.990188 0.9626413 0.9637675 2063 2981 0074_02434_h133a_281.cel 0.997743 0.9562461 0.953765 21 3249 0074_02484_h133a_3250.cel 0.997743 0.9562461 0.953765 22 2476 872 0074_1772_h133a_1851.cel 0.9943223 0.9636400 0.9618316 23 2895 922 0074_1774_h133a_1851.cel 0.992437 0.9604370 0.959764 24 2981 1451 0074_1776_h133a_152.cel 0.993170 0.952577 256 272 <	11	2999	2967	0074_01909_h133a_2967.cel	0.9920582	0.9605766 0.9577776	;
14 2967 3102 0074_02005_h133a_3102.cel 0.9950447 0.9718080 0.9697266 15 2573 2802 0074_02028_h133a_2802.cel 0.9945379 0.9604171 0.951595 16 2849 2424 0074_02028_h133a_2424.cel 0.9955498 0.956375 0.95237399 17 3102 2063 0074_02029_h133a_2476.cel 0.990188 0.9626413 0.9503765 20 2063 2981 0074_02403_h133a_2895.cel 0.990188 0.9626413 0.953705 20 2063 2981 0074_02403_h133a_281.cel 0.9957414 0.9824611 0.9637875 21 3249 3249 0074_1772_h133a_322.cel 0.9943223 0.963400 0.9618316 23 2895 922 0074_1775_h133a_1526.cel 0.99437170 0.9632513 0.9623755 25 872 1526 0074_1778_h133a_1246.cel 0.9910125 0.9666119 0.9552577 28 1526 2075 0074_1778_h133a_12415.cel 0.9912310 0.9568317 0.956386 </td <td>12</td> <td>3142</td> <td>2573</td> <td>0074_02003_h133a_2573.cel</td> <td>0.9874445</td> <td>0.9712619 0.9697764</td> <td>:</td>	12	3142	2573	0074_02003_h133a_2573.cel	0.9874445	0.9712619 0.9697764	:
15 2573 2802 0074_02026_h133a_2802.cel 0.9945379 0.9604171 0.9591595 16 2849 2424 0074_02028_h133a_2424.cel 0.9955498 0.9546375 0.9537399 17 3102 2063 0074_02029_h133a_2063.cel 0.990188 0.9564820 0.9508070 0.9508370 19 2424 2895 0074_02400_h133a_2895.cel 0.9901188 0.9626413 0.9593705 20 2063 2981 0074_02403_h133a_2981.cel 0.9907414 0.9826411 0.9637875 21 3249 3249 0074_1772_h133a_1281.cel 0.9957743 0.9664977 0.9538962 22 2476 872 0074_1773_h133a_922.cel 0.994323 0.9604397 0.9537264 24 2981 1451 0074_1777_h133a_1526.cel 0.991710 0.9632513 0.9623755 25 872 1526 0074_1778_h133a_1264.cel 0.9911025 0.9606119 0.952577 28 1526 2075 0074_178_h133a_22075.cel 0.9913210 0.9568317 </td <td>13</td> <td>1774</td> <td>2849</td> <td>0074_02004_h133a_2849.cel</td> <td>0.9984232</td> <td>0.9697679 0.9682319</td> <td>)</td>	13	1774	2849	0074_02004_h133a_2849.cel	0.9984232	0.9697679 0.9682319)
16 2849 2424 0074_02028_h133a_2424.cel 0.9955498 0.9546375 0.9537399 17 3102 2063 0074_02029_h133a_2063.cel 0.9724740 0.9554820 0.9528400 18 2802 2476 0074_02209_h133a_2895.cel 0.990188 0.9626413 0.9593705 20 2063 2981 0074_02408_h133a_2891.cel 0.9957414 0.9824611 0.9637875 21 3249 3249 0074_02408_h133a_2921.cel 0.9928437 0.9604397 0.9537264 22 2476 872 0074_1772_h133a_1451.cel 0.9928437 0.9604397 0.9597264 24 2981 1451 0074_1775_h133a_1526.cel 0.991710 0.9632513 0.9623755 25 872 1526 0074_1775_h133a_1526.cel 0.9816869 0.9597752 0.9585888 26 922 1834 0074_1778_h133a_22075.cel 0.9966748 0.9660119 0.9552577 28 1526 0074_1780_h133a_2419.cel 0.9927894 0.95608517 0.9565815	14	2967	3102	0074_02005_h133a_3102.cel	0.9950447	0.9718080 0.9697266	;
17 3102 2063 0074_02029_h133a_2063.cel 0.9724740 0.9554820 0.9542840 18 2802 2476 0074_02394_h133a_2476.cel 0.9904180 0.9508070 0.9506363 19 2424 2895 0074_02403_h133a_2895.cel 0.9900188 0.9626413 0.953705 20 2063 2981 0074_02403_h133a_2981.cel 0.9957414 0.9824611 0.9637875 21 3249 3249 0074_02484_h133a_3250.cel 0.9957144 0.962453 0.962450 0.9538962 22 2476 872 0074_1772_h133a_1872.cel 0.9924317 0.9604397 0.9597764 24 2981 1451 0074_1775_h133a_1526.cel 0.991025 0.9606119 0.9558263 25 872 1526 0074_1777_h133a_1834.cel 0.9966748 0.9606119 0.9592577 28 1526 2075 0074_1778_h133a_2204.cel 0.991025 0.9606119 0.9556369 30 1846 2419 0074_1781_h133a_1504.cel 0.992784 0.9568317 0.9556369 30 1846 2419 0074_1900_h133a	15	2573	2802	0074_02026_h133a_2802.cel	0.9945379	0.9604171 0.9591595	,
18 2802 2476 0074_02394_h133a_2476.cel 0.9944180 0.9508070 0.9506363 19 2424 2895 0074_02400_h133a_2895.cel 0.9900188 0.9626413 0.953705 20 2063 2981 0074_02403_h133a_2891.cel 0.9957144 0.9824611 0.9637875 21 3249 0074_02484_h133a_3250.cel 0.9957144 0.982461 0.9638962 22 2476 872 0074_1773_h133a_922.cel 0.9943223 0.966400 0.9618316 23 2895 922 0074_1774_h133a_1451.cel 0.9928437 0.9604397 0.9597264 24 2981 1451 0074_1775_h133a_1526.cel 0.9937170 0.9632513 0.9623755 25 872 1526 0074_1779_h133a_1267.cel 0.9991025 0.954054 0.9532677 28 1526 2075 0074_1779_h133a_2075.cel 0.9966748 0.964004 0.961208 29 1834 204 0074_178_h133a_1675.cel 0.991025 0.9568517 0.9556369	16	2849	2424	0074_02028_h133a_2424.cel	0.9955498	0.9546375 0.9537399)
19242428950074_02400_h133a_2895.cel0.99001880.96264130.959370520206329810074_02403_h133a_2981.cel0.99574140.98246110.963787521324932490074_02484_h133a_3250.cel0.99777430.95622460.95389622224768720074_1772_h133a_872.cel0.9943230.96364000.96183162328959220074_1774_h133a_1451.cel0.99284370.9603970.959775224298114510074_1775_h133a_1526.cel0.99371700.96325130.96237552587215260074_1777_h133a_1834.cel0.96956200.95440540.953642127145118460074_1778_h133a_1275.cel0.9967480.96040040.951220829183422040074_1780_h133a_2040.cel0.99110250.96061190.955636930184624190074_1781_h133a_1675.cel0.99278940.95603170.956381531207516750074_183_h133a_2422.cel0.99703650.95965360.957398332220424220074_190_h133a_1623.cel0.98828330.95666660.966250835242216230074_190_h133a_1623.cel0.98762880.957649436150423240074_1905_h133a_1623.cel0.98178510.955739338162319290074_2019_h133a_1623.cel0.9930110.95586010.95739337159016740074_1905_h133a_1624.cel0.9932159<	17	3102	2063	0074_02029_h133a_2063.cel	0.9724740	0.9554820 0.9542840)
20206329810074_02403_h133a_2981.cel0.99574140.98246110.963787521324932490074_02484_h133a_3250.cel0.98777430.95622460.95389622224768720074_1772_h133a_872.cel0.99432230.96364000.96183162328959220074_1773_h133a_922.cel0.99284370.96043970.959726424298114510074_1777_h133a_1526.cel0.99284370.96043970.959726424298114510074_1775_h133a_1526.cel0.9917070.96325130.96237552587215260074_1777_h133a_1834.cel0.96956200.95440540.953642127145118460074_1778_h133a_1846.cel0.99110250.96061190.959257728152620750074_1780_h133a_2204.cel0.99123100.95683170.955636930184624190074_1781_h133a_1675.cel0.99278940.95693600.949958832220424220074_183_h133a_1675.cel0.99518900.95636660.956250831207516750074_1901_h133a_1590.cel0.9828330.95656660.956250832220424220074_1904_h133a_222.cel0.98706280.95736550.957144334167515900074_1904_h133a_1623.cel0.9862600.96369480.957649436150423240074_1907_h133a_1623.cel0.98178510.95218430.948779437159016740074_1	18	2802	2476	0074_02394_h133a_2476.cel	0.9944180	0.9508070 0.9506363	5
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32220424220074_1833_h133a_2422.cel0.99703650.95965360.957398333241915040074_1900_h133a_1504.cel0.99389240.95068570.949222934167515900074_1901_h133a_1590.cel0.98828330.95656660.956250835242216230074_1902_h133a_1623.cel0.98625600.96369480.957649436150423240074_1904_h133a_2324.cel0.98762880.95736550.957144337159016740074_1905_h133a_1674.cel0.99300110.95586010.955739338162319290074_1907_h133a_1929.cel0.98178510.95218430.948779439232421980074_2019_h133a_2198.cel0.99321590.97025290.969894340167418770074_2020_h133a_2046.cel0.99544220.96275580.958196842219824790074_2021_h133a_2479.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2673.cel0.99611200.95617900.9543924	30	1846	2419	0074_1781_h133a_2419.cel	0.9927894	0.9589094 0.9565815	,
33241915040074_1900_h133a_1504.cel0.99389240.95068570.949222934167515900074_1901_h133a_1590.cel0.98828330.95656660.956250835242216230074_1902_h133a_1623.cel0.98625600.96369480.957649436150423240074_1904_h133a_2324.cel0.98762880.95736550.957144337159016740074_1905_h133a_1674.cel0.99300110.95586010.955739338162319290074_1907_h133a_1929.cel0.98178510.95218430.948779439232421980074_2019_h133a_2198.cel0.99321590.97025290.969894340167418770074_2020_h133a_2046.cel0.99544220.96275580.958196842219824790074_2021_h133a_2479.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.994662410.95035250.949889744204610240074_2030_h133a_1024.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	31	2075	1675	0074_1831_h133a_1675.cel	0.9951890	0.9503800 0.9499588	;
34167515900074_1901_h133a_1590.cel0.98828330.95656660.956250835242216230074_1902_h133a_1623.cel0.98625600.96369480.957649436150423240074_1904_h133a_2324.cel0.98762880.95736550.957144337159016740074_1905_h133a_1674.cel0.99300110.95586010.955739338162319290074_1907_h133a_1929.cel0.98178510.95218430.948779439232421980074_1989_h133a_2198.cel0.99321590.97025290.969894340167418770074_2019_h133a_1877.cel0.99460440.95235800.946407141192920460074_2020_h133a_2046.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	32	2204	2422	0074_1833_h133a_2422.cel	0.9970365	0.9596536 0.9573983	5
35242216230074_1902_h133a_1623.cel0.98625600.96369480.957649436150423240074_1904_h133a_2324.cel0.98762880.95736550.957144337159016740074_1905_h133a_1674.cel0.99300110.95586010.955739338162319290074_1907_h133a_1929.cel0.98178510.95218430.948779439232421980074_1989_h133a_2198.cel0.99321590.97025290.969894340167418770074_2019_h133a_1877.cel0.99460440.95235800.946407141192920460074_2020_h133a_2046.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	33	2419	1504	0074_1900_h133a_1504.cel	0.9938924	0.9506857 0.9492229)
36150423240074_1904_h133a_2324.cel0.98762880.95736550.957144337159016740074_1905_h133a_1674.cel0.99300110.95586010.955739338162319290074_1907_h133a_1929.cel0.98178510.95218430.948779439232421980074_2019_h133a_2198.cel0.99321590.97025290.969894340167418770074_2019_h133a_1877.cel0.99460440.95235800.946407141192920460074_2020_h133a_2046.cel0.99544220.96275580.958196842219824790074_2021_h133a_2479.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	34	1675	1590	0074_1901_h133a_1590.cel	0.9882833	0.9565666 0.9562508	;
37159016740074_1905_h133a_1674.cel0.99300110.95586010.955739338162319290074_1907_h133a_1929.cel0.98178510.95218430.948779439232421980074_1989_h133a_2198.cel0.99321590.97025290.969894340167418770074_2019_h133a_1877.cel0.99460440.95235800.946407141192920460074_2020_h133a_2046.cel0.99544220.96275580.958196842219824790074_2021_h133a_2479.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	35	2422	1623	0074_1902_h133a_1623.cel	0.9862560	0.9636948 0.9576494	:
38162319290074_1907_h133a_1929.cel0.98178510.95218430.948779439232421980074_1989_h133a_2198.cel0.99321590.97025290.969894340167418770074_2019_h133a_1877.cel0.99460440.95235800.946407141192920460074_2020_h133a_2046.cel0.99544220.96275580.958196842219824790074_2021_h133a_2479.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	36						
39232421980074_1989_h133a_2198.cel0.99321590.97025290.969894340167418770074_2019_h133a_1877.cel0.99460440.95235800.946407141192920460074_2020_h133a_2046.cel0.99544220.96275580.958196842219824790074_2021_h133a_2479.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	37	1590	1674	0074_1905_h133a_1674.cel	0.9930011	0.9558601 0.9557393	;
40167418770074_2019_h133a_1877.cel0.99460440.95235800.946407141192920460074_2020_h133a_2046.cel0.99544220.96275580.958196842219824790074_2021_h133a_2479.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	38	1623	1929				
41192920460074_2020_h133a_2046.cel0.99544220.96275580.958196842219824790074_2021_h133a_2479.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	39	2324	2198	0074_1989_h133a_2198.cel	0.9932159	0.9702529 0.9698943	;
42219824790074_2021_h133a_2479.cel0.99717000.95161410.951190943187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	40	1674	1877	0074_2019_h133a_1877.cel	0.9946044	0.9523580 0.9464071	
43187725420074_2027_h133a_2542.cel0.99109250.95142890.949795344204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	41	1929	2046	0074_2020_h133a_2046.cel	0.9954422	0.9627558 0.9581968	;
44204610240074_2030_h133a_1024.cel0.98662410.95035250.949889745247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924		2198	2479				
45247927390074_2031_h133a_2739.cel0.99476680.95462570.954330046254226730074_2032_h133a_2673.cel0.99611200.95617900.9543924	43	1877	2542	0074_2027_h133a_2542.cel	0.9910925	0.9514289 0.9497953	;
46 2542 2673 0074_2032_h133a_2673.cel 0.9961120 0.9561790 0.9543924	44	2046					
		2479	2739				
47 1024 2505 0074_2033_h133a_2505.cel 0.9927848 0.9602439 0.9590956			2673				
	47	1024	2505	0074_2033_h133a_2505.cel	0.9927848	0.9602439 0.9590956	j.

48	2739	1447	0074_2395_h133a_1447.cel 0.9928757 0.9640413 0.961805	
49	2673	1913	0074_2396_h133a_1913.cel 0.9909242 0.9587711 0.9585163	
50	2505	1552	0074_2397_h133a_1552.cel 0.9941829 0.9647011 0.9634440	
51	1447	1578	0074_2398_h133a_1578.cel 0.9935861 0.9578255 0.9564654	
52	1913	3107		
53	1552	3018	0074_2401_h133a_3018.cel 0.9947323 0.9535522 0.9533976	
54	1578	3090	0074_2402_h133a_3090.cel 0.9909406 0.9585605 0.9561683	
55	3107		0193_00000_h133a_D1805.cel 0.9872051 0.9504583 0.9493932	
56	3018		0193_00000_h133a_D1859.cel 0.9912899 0.9543120 0.9512162	
57	D2098		0193_00000_h133a_D2098.cel 0.9947249 0.9609262 0.9602408	
58	3090		0193_00000_h133a_D2208.cel 0.9950948 0.9550372 0.9542026	
59	D1805	D2342	0193_00000_h133a_D2342.cel 0.9961207 0.9733474 0.9685885	5
60	D1859	D2421	0193_00000_h133a_D2421.cel 0.9968884 0.9675697 0.9667683	1
61	D2208		0193_00000_h133a_D2480.cel 0.9875381 0.9593251 0.9579144	
62	D2342	D2557	0193_00000_h133a_D2557.cel 0.9942855 0.9668900 0.9650679	Э
63	D2421	D2576	0193_00000_h133a_D2576.cel 0.9947073 0.9600370 0.9584904	4
64	D2480	D2581	0193_00000_h133a_D2581.cel 0.9896129 0.9634672 0.9588543	3
65	D2557	D2611	0193_00000_h133a_D2611.cel 0.9949943 0.9576065 0.9545058	8
66	D2576	D2629	0193_00000_h133a_D2629.cel 0.9950710 0.9685574 0.9662622	2
67	D2581	D2640	0193_00000_h133a_D2640.cel 0.9966334 0.9677558 0.9663792	2
68	D2611	D2648	0193_00000_h133a_D2648.cel 0.9949376 0.9550945 0.9498308	5
69	D2629	D2727	0193_00000_h133a_D2727.cel 0.9700504 0.9493768 0.9464584	4
70	D2640	D2738	0193_00000_h133a_D2738.cel 0.9926036 0.9479970 0.9471094	4
71	D2648	D2776	0193_00000_h133a_D2776.cel 0.9913903 0.9350622 0.9348196	6
72	D2727	D2792	0193_00000_h133a_D2792.cel 0.9943549 0.9610750 0.9608598	8
73	D2738	M1054	0193_00000_h133a_M1054.cel 0.9924206 0.9597049 0.9542828	5
74	D2358	M1390	0193_00000_h133a_M1390.cel 0.9967037 0.9613274 0.9609212	2
75	M1390	M1572	0193_00000_h133a_M1572.cel 0.9956644 0.9582878 0.9567982	2
76	D2776	M17	0193_00000_h133a_M17.cel 0.9921536 0.9613312 0.9593830	0
77	D2792	M2070	0193_00000_h133a_M2070.cel 0.9968531 0.9605534 0.9588873	3
78	M1054	M2437	0193_00000_h133a_M2437.cel 0.9953592 0.9529479 0.9525583	3
79	M17	M3142	0193_00000_h133a_M3142.cel 0.9967593 0.9620009 0.9569580	0
80	M1572	M359	0193_00000_h133a_M359.cel 0.9893443 0.9609522 0.9608295	5
81	M2070	M4161	0193_00000_h133a_M4161.cel 0.9972001 0.9671245 0.9645470	0
82	M2437	M444	0193_00000_h133a_M444.cel 0.9968686 0.9686836 0.9627136	
83	M3142	D1837	0193_10000_h133a_D1837.cel 0.9956409 0.9596538 0.9586865	5
84	M4161		0193_10000_h133a_D2159.cel 0.9940312 0.9592796 0.9568668	
85	M444		0193_10000_h133a_D2171.cel 0.9933361 0.9610775 0.9577707	
86	D1837	M359	0193_10000_h133a_D2247.cel 0.9886348 0.9316258 0.9291977	7
87	D2332		0193_10000_h133a_D2332.cel 0.9959141 0.9666855 0.9659542	
88	D2432		0193_10000_h133a_D2432.cel 0.9963716 0.9651230 0.9650317	
89	D2433		0193_10000_h133a_D2433.cel 0.9946305 0.9614134 0.9579562	
90	D2559		0193_10000_h133a_D2559.cel 0.9937811 0.9663077 0.9627052	
91	D2560		0193_10000_h133a_D2560.cel 0.9964361 0.9813157 0.960749	
92	D2572		0193_10000_h133a_D2572.cel 0.9963744 0.9590666 0.9502720	
93	D2575		0193_10000_h133a_D2575.cel 0.9915036 0.9744510 0.9682305	
94	D2603		0193_10000_h133a_D2603.cel 0.9860988 0.9634429 0.9630732	
95	M359		0193_10000_h133a_D2668.cel 0.9961116 0.9667837 0.9667216	
-				

96	D2689	D2689	0193_10000_h133a_D2689.cel	0.9954061	0.9684339	0.9682928
97	D2691	D2691	0193_10000_h133a_D2691.cel	0.9956504	0.9493081	0.9482940
98	D2700	D2700	0193_10000_h133a_D2700.cel	0.9895614	0.9479288	0.9479090
99	D2726	D2726	0193_10000_h133a_D2726.cel	0.9925030	0.9603756	0.9578855
100	D2733	D2733	0193_10000_h133a_D2733.cel	0.9966983	0.9704670	0.9690580
101	D2749	D2749	0193_10000_h133a_D2749.cel	0.9956807	0.9436386	0.9430509
102	D2668	M1055	0193_10000_h133a_M1055.cel	0.9941089	0.9646771	0.9621903
103	M120	M120	0193_10000_h133a_M120.cel	0.9952542	0.9647887	0.9633458
104	M1241	M1241	0193_10000_h133a_M1241.cel	0.9969275	0.9579454	0.9572306
105	M1503	M1503	0193_10000_h133a_M1503.cel	0.9943912	0.9601343	0.9594766
106	M1891	M1891	0193_10000_h133a_M1891.cel	0.9911004	0.9678596	0.9637527
107	M1055	M2097	0193_10000_h133a_M2097.cel	0.9958288	0.9642369	0.9634825
108	M2184	M2184	0193_10000_h133a_M2184.cel	0.9945751	0.9579148	0.9565246
109	M2515	M2515	0193_10000_h133a_M2515.cel	0.9947837	0.9513034	0.9436120
110	M2729	M2729	0193_10000_h133a_M2729.cel	0.9904464	0.9563503	0.9558432
111	M2097	M2807	0193_10000_h133a_M2807.cel	0.9958400	0.9649520	0.9638534
112	M337	M337	0193_10000_h133a_M337.cel	0.9897121	0.9559832	0.9525690
113	M3514	M3514	0193_10000_h133a_M3514.cel	0.9965436	0.9686661	0.9665613
114	M3627	M3627	0193_10000_h133a_M3627.cel	0.9967617	0.9568071	0.9550400
115	M485	M485	0193_10000_h133a_M485.cel	0.9940410	0.9580871	0.9533050
116	M503	M503	0193_10000_h133a_M503.cel	0.9925675	0.9605806	0.9595132
117	M5668	M5668	0193_10000_h133a_M5668.cel	0.9939380	0.9604345	0.9579929
118	M5775	M5775	0193_10000_h133a_M5775.cel	0.9959831	0.9537094	0.9528543
119	M6199	M6199	0193_10000_h133a_M6199.cel	0.9945113	0.9598195	0.9564696

Looking at the mappings above, the results are mostly consistent with what we found before, in that the CEL mappings match the Bild mappings. However, there are three discrepancies:

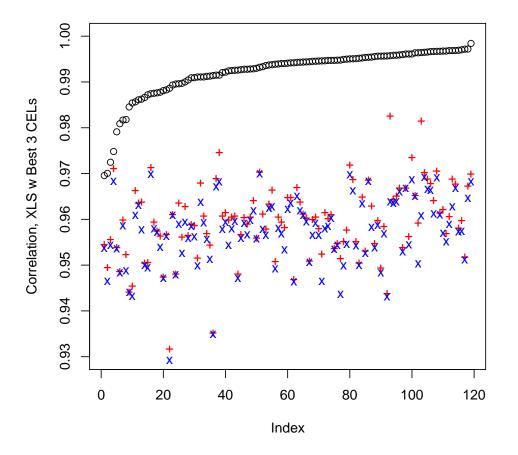
- Row 84, XLS M4161, CEL M3514, Bild D2159
- Row 85, XLS M444, CEL M4161, Bild D2171
- Row 86, XLS D1837, CEL M359, Bild D2247

These are the three ambiguous cases noted in the section above. Looking at these three rows, it is clear that the new best fit is much better in each instance, as the correlations are now 0.994, 0.993, and 0.989, respectively, with the next best being 0.961 or less. For these three entries in the XLS quantifications, the source files are not in the PlatinumJCO files. Conversely, the three samples D2358, M3484, and M810 are named in the XLS file, but their quantifications are not present.

As noted above, the type of mismatch seen using the names of the CEL files to order things suggests a systematic offset, in most cases of 3 rows.

Let's check how good the fits are at this point.

```
> plot(bildCheck[order(bildCheck[, 4]), 4], ylim = c(0.93, 1),
+ xlab = "Index", ylab = "Correlation, XLS w Best 3 CELs",
+ main = "Correlation of XLS Files with 3 Best CELs, Sorted by Max Corr")
> points(bildCheck[order(bildCheck[, 4]), 5], ylim = c(0.93, 1),
+ col = "red", pch = "+")
> points(bildCheck[order(bildCheck[, 4]), 6], ylim = c(0.93, 1),
+ col = "blue", pch = "x")
```



Correlation of XLS Files with 3 Best CELs, Sorted by Max Cor

Here, we've plotted the three best correlations for each XLS quantification, sorted so that the maximum correlations are monotonically increasing. What we see is that there is a very large gap between the best correlations and the others – there is a very "clear winner" for almost all of the samples. The least clear case corresponds to XLS 1784, CEL 1615, which has the third lowest maximum correlation overall. Here, however, we have some additional consistency in that the match chosen fits with the systematic name offset noted above.

7 Summary

- 1. One hundred probe sets (with consecutive probe set IDs starting with 200000_s_at) were omitted from the reported Excel RMA quantifications.
- 2. Two of the CEL file names do not match names in the Excel spreadsheet.
- 3. More importantly, based on the correlation coefficients, the sample names appear to have been scrambled between the CEL files and the Excel spreadsheet. Only 32 out of 119 samples appear to have the

correct names in the Excel spreadsheet; most of the problems appear to arise from an undetermined indexing error.

- 4. For 116 out of 119 samples, we can fairly reliably reconstruct the correct mapping of names. The other three samples do not have obvious matches.
- 5. The 119 CEL files that are part of the study by Dressman form a subset of the 146 CEL that are part of the study by Bild. The three anomolous columns on the Excel spreadsheet give better matches to three of the files that are in the Bild set but not type Dressman set.

8 Appendix

8.1 Saves

There are a few objects we have constructed here that we would like to keep around.

```
> save(celFiles, file = paste("RDataObjects", "celFiles.Rda", sep = .Platform$file.sep))
> save(celShortNames, file = paste("RDataObjects", "celShortNames.Rda",
      sep = .Platform$file.sep))
+
> save(ovcaRMAFromCEL, file = paste("RDataObjects", "ovcaRMAFromCEL.Rda",
      sep = .Platform$file.sep))
+
 save(corCELWithXLS, file = paste("RDataObjects", "corCELWithXLS.Rda",
>
+
      sep = .Platform$file.sep))
 save(ovcaRMAFromBild, file = paste("RDataObjects", "ovcaRMAFromBild.Rda",
>
      sep = .Platform$file.sep))
+
> save(corBildWithXLS, file = paste("RDataObjects", "corBildWithXLS.Rda",
      sep = .Platform$file.sep))
+
> save(bildCheck, file = paste("RDataObjects", "bildCheck.Rda",
      sep = .Platform$file.sep))
+
```

8.2 SessionInfo

> sessionInfo()

R version 2.5.1 (2007-06-27) i386-pc-mingw32

locale:

LC_COLLATE=English_United States.1252;LC_CTYPE=English_United States.1252;LC_MONETARY=English_United States.1252;LC_MONETARY=English_United States.1252;LC_CTYPE=English_United States.1252;LC_MONETARY=English_United States.1252;LC_CTYPE=English_United States.1252;LC_MONETARY=English_United States.1252;LC_CTYPE=English_United States.1252;LC_MONETARY=English_United States.1252;LC_CTYPE=English_United States.1252;LC_MONETARY=English_United States.

```
attached base packages:
[1] "splines"
                "tools"
                                        "graphics" "grDevices" "utils"
                            "stats"
[7] "datasets" "methods"
                            "base"
other attached packages:
       survival ClassDiscovery
                                       cluster ClassComparison
                                                                     PreProcess
         "2.32"
                       "2.5.0"
                                       "1.11.7"
                                                        "2.5.0"
                                                                        "2.5.0"
                   geneplotter
      oompaBase
                                       lattice
                                                       annotate
                                                                           affy
        "2.5.0"
                       "1.14.0"
                                      "0.15-11"
                                                       "1.14.1"
                                                                       "1.14.2"
```

affyio Biobase "1.4.1" "1.14.1"