Procarta DATA ED

#CREATING FUNCTIONS FOR DATA NORMALITY TRANSFORMATIONS  
  
#########FUNCTIONS  
############################  
fx\_z <- function(gene) {  
 gene\_std <- (gene - (mean(gene)))/(sd(gene))  
 return(gene\_std)  
}  
############################  
############################  
############################  
fx <- function(gene) {  
 gene\_std <- log10(gene)  
 return(gene\_std)  
}  
############################  
############################  
############################  
fx1 <- function(gene) {  
 gene\_std <- (gene - (mean(gene)))/(sd(gene))  
 return(gene\_std)  
}  
############################  
############################  
############################  
fx2 <- function(gene) {  
 gene\_std <- scale(gene)  
 return(gene\_std)  
}  
############################  
############################  
############################  
fx3 <- function(gene) {  
 gene\_std <- (gene)^(-1/2)  
 return(gene\_std)  
}  
############################  
############################  
############################  
fx4 <- function(gene) {  
 gene\_std <- log(gene)  
 return(gene\_std)  
}  
############################  
############################  
############################  
fx5 <- function(gene) {   
 gene <- (gene - min(gene)) / (max(gene) - min(gene))  
 return (gene)   
}  
############################  
############################  
############################  
fx\_prot <- function(protein,m,b) {  
 prot\_trans <- ((m)\*protein) + b  
 return(prot\_trans)  
}

EPX040 <- read.csv("/Users/f4L/Documents/GitHub/RStudioDataAnalysis/PROTEOMICS BIOSTATISTICS/dfc\_EPX040.csv")  
#EPX040 <- read.csv("E:/R STUDIO/LUM PLATES/dfc\_EPX040.csv")  
EPX040

## SUBJECT AGE SEX RACE DX BDNF\_Net\_MFI BDNF\_Fin\_Conc  
## 1 STANDARD1 NA NA NA  
## 2 STANDARD2 NA 7692.25 1805.00  
## 3 STANDARD3 NA 3218.75 526.46  
## 4 STANDARD4 NA 654.50 112.42  
## 5 STANDARD5 NA 150.25 29.89  
## 6 STANDARD6 NA 49.50 8.36  
## 7 STANDARD7 NA 22.50 1.95  
## 8 BACKGROUND0 NA 36.25 0.00  
## 9 15 69 MALE WHITE CONTROL NA NA  
## 10 16 17 MALE HISPANIC CONTROL NA NA  
## 11 17 54 MALE WHITE SUICIDE NA NA  
## 12 24 31 MALE WHITE MDD 12.25 0.05  
## 13 28 48 MALE WHITE CONTROL NA NA  
## 14 29 18 MALE WHITE CONTROL 14.75 0.64  
## 15 30 51 MALE WHITE SUICIDE NA NA  
## 16 33 77 MALE WHITE CONTROL NA NA  
## 17 36 84 FEMALE WHITE CONTROL NA NA  
## 18 40 80 FEMALE WHITE CONTROL NA NA  
## 19 41 73 FEMALE WHITE SUICIDE NA NA  
## 20 47 71 MALE HISPANIC CONTROL NA NA  
## 21 55 21 MALE WHITE SUICIDE 17.75 1.71  
## 22 63 42 MALE WHITE MDD 16.75 1.33  
## 23 68 43 MALE WHITE MDD NA NA  
## 24 69 53 FEMALE WHITE MDD 15.75 0.96  
## 25 79 54 MALE WHITE CONTROL NA NA  
## 26 82 50 MALE BLACK CONTROL NA NA  
## 27 83 69 MALE WHITE CONTROL NA NA  
## 28 87 47 MALE HISPANIC MDD NA NA  
## 29 93 52 MALE WHITE SUICIDE NA NA  
## 30 94 63 MALE WHITE MDD NA NA  
## 31 95 75 FEMALE WHITE MDD NA NA  
## 32 99 70 MALE WHITE MDD NA NA  
## 33 113 57 MALE WHITE MDD 19.75 2.54  
## 34 131 41 MALE WHITE MDD NA NA  
## 35 132 46 MALE WHITE MDD NA NA  
## 36 134 54 FEMALE X MDD 17.75 1.71  
## 37 141 44 MALE WHITE MDD NA NA  
## 38 147 75 MALE WHITE MDD NA NA  
## 39 148 84 MALE WHITE CONTROL 12.75 0.13  
## 40 153 52 FEMALE HISPANIC CONTROL NA NA  
## 41 156 54 MALE WHITE MDD NA NA  
## 42 162 54 FEMALE WHITE CONTROL NA NA  
## 43 167 78 FEMALE WHITE CONTROL NA NA  
## 44 170 49 MALE WHITE SUICIDE 15.25 0.80  
## 45 180 32 FEMALE HISPANIC SUICIDE NA NA  
## 46 181 64 MALE WHITE MDD 11.75 0.00  
## 47 192 73 MALE HISPANIC CONTROL NA NA  
## 48 193 79 FEMALE WHITE CONTROL NA NA  
## 49 194 63 FEMALE WHITE CONTROL NA NA  
## 50 197 76 MALE HISPANIC MDD NA NA  
## 51 198 52 FEMALE OTHER SUICIDE NA NA  
## 52 205 55 FEMALE WHITE MDD NA NA  
## 53 207 74 MALE HISPANIC CONTROL 36.25 10.39  
## 54 208 52 MALE WHITE SUICIDE NA NA  
## 55 210 68 MALE WHITE CONTROL NA NA  
## 56 216 23 FEMALE HISPANIC SUICIDE NA NA  
## 57 219 55 MALE WHITE SUICIDE NA NA  
## 58 228 60 FEMALE WHITE MDD NA NA  
## 59 229 63 FEMALE BLACK CONTROL 56.75 20.24  
## 60 232 57 MALE OTHER MDD NA NA  
## 61 247 39 MALE HISPANIC CONTROL 17.75 1.71  
## 62 261 67 MALE HISPANIC CONTROL NA NA  
## 63 264 47 MALE BLACK CONTROL 29.75 7.21  
## 64 275 71 FEMALE HISPANIC MDD NA NA  
## 65 280 56 FEMALE WHITE CONTROL NA NA  
## 66 281 50 MALE HISPANIC CONTROL 22.75 3.88  
## 67 282 79 MALE WHITE CONTROL NA NA  
## 68 284 82 MALE HISPANIC CONTROL NA NA  
## 69 286 65 MALE HISPANIC CONTROL 24.25 4.58  
## 70 287 44 MALE HISPANIC CONTROL NA NA  
## 71 290 61 FEMALE WHITE MDD NA NA  
## 72 296 48 FEMALE HISPANIC SUICIDE NA NA  
## 73 298 61 FEMALE HISPANIC CONTROL 11.75 0.00  
## 74 301 64 MALE HISPANIC CONTROL 11.75 0.00  
## 75 306 68 MALE HISPANIC MDD NA NA  
## 76 308 34 MALE WHITE CONTROL 13.25 0.23  
## 77 309 74 MALE HISPANIC CONTROL 50.75 17.40  
## 78 312 71 MALE HISPANIC CONTROL 91.75 35.96  
## CNTF\_Net\_MFI CNTF\_Fin\_Conc GDNF\_Net\_MFI GDNF\_Fin\_Conc NGFbeta\_Net\_MFI  
## 1 9625.50 7108.86 NA NA NA  
## 2 5460.50 1729.62 3622.50 87386.32 15150.50  
## 3 1926.25 428.24 2750.75 15498.61 5890.50  
## 4 544.00 110.70 1933.75 5835.78 2338.50  
## 5 143.25 26.06 569.25 1288.08 740.75  
## 6 48.25 6.98 135.75 331.68 225.25  
## 7 17.75 1.75 48.50 85.53 84.75  
## 8 34.50 0.00 65.25 0.00 10.75  
## 9 31.50 7.90 NA NA NA  
## 10 11.50 1.76 NA NA NA  
## 11 NA NA NA NA 7.25  
## 12 52.00 15.37 NA NA NA  
## 13 74.50 24.11 NA NA NA  
## 14 12.00 1.88 NA NA NA  
## 15 19.50 3.98 NA NA NA  
## 16 35.50 9.30 NA NA 3.25  
## 17 NA NA NA NA 4.75  
## 18 78.00 25.50 NA NA NA  
## 19 14.00 2.40 NA NA NA  
## 20 21.50 4.60 NA NA NA  
## 21 NA NA NA NA NA  
## 22 50.50 14.80 NA NA NA  
## 23 NA NA NA NA NA  
## 24 48.00 13.86 NA NA NA  
## 25 44.50 12.56 NA NA NA  
## 26 48.00 13.86 NA NA NA  
## 27 15.50 2.82 NA NA NA  
## 28 NA NA NA NA NA  
## 29 NA NA NA NA NA  
## 30 NA NA NA NA NA  
## 31 NA NA NA NA NA  
## 32 29.50 7.22 NA NA NA  
## 33 35.50 9.30 NA NA NA  
## 34 12.00 1.88 NA NA NA  
## 35 12.50 2.01 NA NA NA  
## 36 24.00 5.39 NA NA NA  
## 37 15.50 2.82 NA NA NA  
## 38 NA NA NA NA NA  
## 39 82.50 27.29 NA NA NA  
## 40 44.00 12.38 NA NA NA  
## 41 27.00 6.38 NA NA NA  
## 42 18.50 3.68 NA NA NA  
## 43 NA NA NA NA NA  
## 44 14.50 2.54 NA NA NA  
## 45 14.50 2.54 NA NA NA  
## 46 NA NA NA NA NA  
## 47 32.00 8.08 NA NA NA  
## 48 59.00 18.05 NA NA NA  
## 49 14.50 2.54 NA NA NA  
## 50 52.50 15.56 NA NA NA  
## 51 83.50 27.69 NA NA NA  
## 52 NA NA NA NA NA  
## 53 13.50 2.27 NA NA NA  
## 54 15.50 2.82 NA NA NA  
## 55 NA NA NA NA NA  
## 56 NA NA NA NA NA  
## 57 56.00 16.89 NA NA NA  
## 58 NA NA NA NA NA  
## 59 143.00 52.02 NA NA NA  
## 60 NA NA NA NA NA  
## 61 NA NA NA NA NA  
## 62 29.50 7.22 NA NA NA  
## 63 106.00 36.80 NA NA NA  
## 64 122.00 43.35 NA NA NA  
## 65 18.00 3.54 NA NA NA  
## 66 19.50 3.98 NA NA NA  
## 67 18.00 3.54 NA NA NA  
## 68 NA NA NA NA NA  
## 69 11.50 1.76 NA NA NA  
## 70 20.00 4.14 NA NA NA  
## 71 NA NA NA NA NA  
## 72 NA NA NA NA NA  
## 73 57.00 17.28 NA NA NA  
## 74 49.50 14.43 NA NA NA  
## 75 16.50 3.10 NA NA NA  
## 76 NA NA NA NA 4.75  
## 77 18.00 3.54 NA NA NA  
## 78 32.50 8.25 NA NA NA  
## NGFbeta\_Fin\_Conc GFAP\_Net\_MFI GFAP\_Fin\_Conc NF\_H\_Net\_MFI NF\_H\_Fin\_Conc  
## 1 NA 16937.00 39494.86 NA NA  
## 2 5619.80 6935.00 10316.55 NA NA  
## 3 1239.74 2201.00 2401.92 8276.25 12705.06  
## 4 356.87 868.50 702.76 4866.25 1984.04  
## 5 86.50 NA NA 1853.50 607.44  
## 6 20.09 244.75 69.61 282.25 140.81  
## 7 5.47 NA NA 70.75 36.47  
## 8 0.00 99.00 0.00 34.75 0.00  
## 9 NA 14116.00 58037.65 6979.75 9890.76  
## 10 NA 15449.00 67364.17 8147.25 22128.42  
## 11 0.05 13087.50 51426.04 8018.25 19730.04  
## 12 NA 10957.50 39187.10 6864.25 9304.75  
## 13 NA 14000.00 57267.38 7224.25 11342.40  
## 14 NA 16866.00 78308.07 7724.25 15673.04  
## 15 NA 12469.00 47678.04 6484.25 7711.80  
## 16 0.00 13767.00 55739.40 8378.25 NA  
## 17 0.00 14669.00 61798.95 7481.25 13279.01  
## 18 NA 14347.00 59590.73 6003.75 6218.21  
## 19 NA 11349.00 41298.99 6830.25 9142.53  
## 20 NA 12399.50 47267.15 8622.75 NA  
## 21 NA 14494.50 60595.94 7589.25 14261.61  
## 22 NA 10932.00 39051.59 5673.25 5418.46  
## 23 NA 15521.00 67893.76 8273.25 25015.33  
## 24 NA 16641.00 76494.88 NA NA  
## 25 NA 12831.00 49851.55 6910.25 9531.45  
## 26 NA 12076.00 45381.24 7306.75 11910.90  
## 27 NA 10682.00 37736.08 7040.25 10221.23  
## 28 NA 13837.00 56195.77 7771.25 16220.84  
## 29 NA 13885.00 56510.04 7276.25 11695.44  
## 30 NA 12993.00 50842.61 7882.25 17652.96  
## 31 NA 14131.00 58137.72 7693.25 15328.66  
## 32 NA 12829.00 49839.39 6485.25 7715.44  
## 33 NA 13942.00 56884.64 8768.25 NA  
## 34 NA 13176.00 51976.03 6651.25 8356.28  
## 35 NA 10391.00 36234.25 7510.75 13535.96  
## 36 NA 12723.00 49197.20 6843.25 9204.03  
## 37 NA 12366.00 47069.82 7820.25 16827.59  
## 38 NA 13652.50 54997.80 8095.25 21103.17  
## 39 NA 8149.00 25660.83 5877.75 5895.30  
## 40 NA 11212.00 40553.22 7938.25 18460.25  
## 41 NA 12283.50 46585.88 7392.75 12554.63  
## 42 NA 12741.00 49305.91 7730.75 15746.91  
## 43 NA 9992.00 34225.40 7753.25 16007.25  
## 44 NA 9992.00 34225.40 4943.25 4077.08  
## 45 NA 15629.00 68693.30 6346.25 7233.64  
## 46 NA 12551.00 48165.47 6128.25 6562.22  
## 47 NA 12163.00 45884.14 8090.25 21008.99  
## 48 NA 10813.50 38425.10 8618.75 NA  
## 49 NA 14147.00 58244.58 7202.75 11201.45  
## 50 NA 10219.00 35361.22 8058.25 20423.20  
## 51 NA 13311.00 52821.71 8816.75 NA  
## 52 NA 13969.00 57062.62 7320.25 12008.33  
## 53 NA 11515.50 42215.25 8196.25 23177.62  
## 54 NA 12283.00 46582.95 6697.75 8550.26  
## 55 NA 14078.50 57787.94 8329.25 NA  
## 56 NA 14545.00 60942.54 7371.25 12388.44  
## 57 NA 14685.50 61913.48 6411.75 7454.96  
## 58 NA 12514.50 47948.15 7450.25 13017.59  
## 59 NA 14213.00 58686.68 8567.25 NA  
## 60 NA 13584.00 54557.04 7272.25 11667.66  
## 61 NA 14466.50 60404.30 8895.25 NA  
## 62 NA 11855.00 44117.74 4321.75 3239.38  
## 63 NA 11197.00 40472.01 4512.25 3473.74  
## 64 NA 10190.00 35215.08 6539.25 7915.55  
## 65 NA 8272.00 26197.53 6903.75 9498.90  
## 66 NA 11312.50 41099.58 7002.25 10011.66  
## 67 NA 8901.00 29018.24 7131.75 10755.43  
## 68 NA 10541.50 37007.05 8742.25 NA  
## 69 NA 12942.00 50529.37 7667.75 15054.85  
## 70 NA 9374.50 31227.95 7034.25 10187.68  
## 71 NA 12213.00 46174.58 5877.25 5894.06  
## 72 NA 15805.00 70009.62 5100.75 4327.67  
## 73 NA 13054.00 51218.77 7480.25 13270.44  
## 74 NA 12076.00 45381.24 6985.25 9920.10  
## 75 NA 12072.00 45358.19 7027.25 10148.76  
## 76 0.00 14447.00 60271.07 8474.25 NA  
## 77 NA 8101.00 25452.69 8211.25 23516.51  
## 78 NA 9978.00 34155.96 7650.25 14871.69  
## S100B\_Net\_MFI S100B\_Fin\_Conc UCHL1\_Net\_MFI UCHL1\_Fin\_Conc  
## 1 188.75 15541.66 22628.25 3087824.07  
## 2 75.00 3604.00 NA NA  
## 3 8.50 94.79 16515.25 210426.23  
## 4 0.00 NA 10121.25 49282.25  
## 5 20.50 447.32 4323.50 12687.60  
## 6 0.00 NA 1193.50 3143.33  
## 7 0.50 1.03 297.50 786.54  
## 8 53.50 0.00 50.25 0.00  
## 9 480.50 NA 553.75 2971.44  
## 10 425.00 NA 110.75 456.58  
## 11 592.00 NA 10858.75 115070.70  
## 12 511.50 NA 8123.75 64415.10  
## 13 390.50 NA 3914.25 22391.45  
## 14 209.50 NA 1165.75 6143.13  
## 15 792.00 NA 2975.25 16226.70  
## 16 517.50 NA 1043.75 5513.87  
## 17 639.50 NA 691.25 3693.07  
## 18 445.00 NA 468.75 2517.75  
## 19 690.50 NA 209.75 1063.55  
## 20 891.50 NA 5373.25 33819.49  
## 21 364.50 NA 3701.75 20924.96  
## 22 913.50 NA 8311.25 67092.84  
## 23 568.50 NA 8419.75 68685.52  
## 24 780.00 NA 998.75 5282.08  
## 25 610.50 NA 711.25 3797.16  
## 26 526.00 NA 62.75 156.45  
## 27 1101.00 NA 931.75 4937.00  
## 28 717.00 NA 682.25 3646.18  
## 29 294.50 NA 131.25 585.22  
## 30 238.00 NA 369.75 1977.99  
## 31 488.00 NA 272.75 1431.65  
## 32 448.50 NA 734.75 3919.25  
## 33 1019.00 NA 605.25 3243.17  
## 34 187.50 29669.82 NA NA  
## 35 1185.50 NA 1402.25 7371.05  
## 36 423.00 NA NA NA  
## 37 243.50 NA 1684.25 8858.67  
## 38 292.00 NA 2289.25 12179.01  
## 39 1643.50 NA 1636.75 8605.88  
## 40 964.00 NA 805.75 4287.00  
## 41 879.50 NA 4092.75 23658.54  
## 42 712.50 NA 1841.75 9704.29  
## 43 1272.00 NA 1245.75 6557.00  
## 44 638.50 NA 145.25 672.27  
## 45 207.50 NA 104.25 415.57  
## 46 138.00 17868.99 1811.75 9542.30  
## 47 1002.00 NA 1679.25 8832.02  
## 48 2949.00 NA 4925.75 30038.53  
## 49 460.50 NA 1042.25 5506.14  
## 50 1771.00 NA 2257.25 11998.12  
## 51 1006.50 NA NA NA  
## 52 460.50 NA 1362.25 7162.34  
## 53 1441.50 NA 3432.25 19127.40  
## 54 311.00 NA 285.75 1506.16  
## 55 454.50 NA 2245.75 11933.27  
## 56 450.00 NA 546.75 2934.34  
## 57 334.50 NA 103.75 412.42  
## 58 790.50 NA 1688.25 8880.01  
## 59 765.50 NA 67.75 186.77  
## 60 529.00 NA 898.75 4766.96  
## 61 472.50 NA 1268.25 6673.65  
## 62 365.00 NA 1399.25 7355.38  
## 63 160.50 22936.59 76.25 239.29  
## 64 939.00 NA 1285.25 6761.86  
## 65 1079.00 NA 1178.25 6207.72  
## 66 320.50 NA 255.75 1333.52  
## 67 1380.50 NA 2301.25 12247.01  
## 68 1683.50 NA 2360.75 12585.55  
## 69 479.50 NA 187.75 931.87  
## 70 1699.50 NA 2440.75 13044.39  
## 71 319.50 NA 476.75 2560.78  
## 72 431.00 NA 4371.75 25706.85  
## 73 251.00 NA 68.25 189.83  
## 74 859.00 NA 601.75 3224.76  
## 75 775.50 NA 526.25 2825.44  
## 76 419.50 NA 520.25 2793.50  
## 77 1800.50 NA 1613.75 8483.82  
## 78 1223.50 NA 413.25 2216.96

EPX110 <- read.csv("/Users/f4L/Documents/GitHub/RStudioDataAnalysis/PROTEOMICS BIOSTATISTICS/dfc\_EPX110.csv")  
#EPX110 <- read.csv("E:/R STUDIO/LUM PLATES/dfc\_EPX110.csv")  
EPX110

## SUBJECT AGE SEX RACE DX BDNF\_Net\_MFI BDNF\_Fin\_Conc  
## 1 STANDARD1 NA NA NA  
## 2 STANDARD2 NA 14664.25 1937.56  
## 3 STANDARD3 NA 9371.75 545.89  
## 4 STANDARD4 NA 3868.25 132.06  
## 5 STANDARD5 NA 1093.25 30.61  
## 6 STANDARD6 NA 383.75 8.79  
## 7 STANDARD7 NA 159.50 1.93  
## 8 BACKGROUND0 NA 21.25 0.00  
## 9 15 69 MALE WHITE CONTROL NA NA  
## 10 16 17 MALE HISPANIC CONTROL NA NA  
## 11 17 54 MALE WHITE SUICIDE NA NA  
## 12 24 31 MALE WHITE MDD NA NA  
## 13 28 48 MALE WHITE CONTROL NA NA  
## 14 29 18 MALE WHITE CONTROL NA NA  
## 15 30 51 MALE WHITE SUICIDE NA NA  
## 16 33 77 MALE WHITE CONTROL NA NA  
## 17 36 84 FEMALE WHITE CONTROL NA NA  
## 18 40 80 FEMALE WHITE CONTROL NA NA  
## 19 41 73 FEMALE WHITE SUICIDE NA NA  
## 20 47 71 MALE HISPANIC CONTROL NA NA  
## 21 55 21 MALE WHITE SUICIDE NA NA  
## 22 63 42 MALE WHITE MDD 133.25 2.40  
## 23 68 43 MALE WHITE MDD NA NA  
## 24 69 53 FEMALE WHITE MDD NA NA  
## 25 79 54 MALE WHITE CONTROL NA NA  
## 26 82 50 MALE BLACK CONTROL NA NA  
## 27 83 69 MALE WHITE CONTROL NA NA  
## 28 87 47 MALE HISPANIC MDD NA NA  
## 29 93 52 MALE WHITE SUICIDE NA NA  
## 30 94 63 MALE WHITE MDD NA NA  
## 31 95 75 FEMALE WHITE MDD NA NA  
## 32 99 70 MALE WHITE MDD NA NA  
## 33 113 57 MALE WHITE MDD NA NA  
## 34 131 41 MALE WHITE MDD NA NA  
## 35 132 46 MALE WHITE MDD NA NA  
## 36 134 54 FEMALE X MDD NA NA  
## 37 141 44 MALE WHITE MDD NA NA  
## 38 147 75 MALE WHITE MDD NA NA  
## 39 148 84 MALE WHITE CONTROL 91.75 0.43  
## 40 153 52 FEMALE HISPANIC CONTROL NA NA  
## 41 156 54 MALE WHITE MDD NA NA  
## 42 162 54 FEMALE WHITE CONTROL NA NA  
## 43 167 78 FEMALE WHITE CONTROL NA NA  
## 44 170 49 MALE WHITE SUICIDE NA NA  
## 45 180 32 FEMALE HISPANIC SUICIDE NA NA  
## 46 181 64 MALE WHITE MDD NA NA  
## 47 192 73 MALE HISPANIC CONTROL NA NA  
## 48 193 79 FEMALE WHITE CONTROL NA NA  
## 49 194 63 FEMALE WHITE CONTROL NA NA  
## 50 197 76 MALE HISPANIC MDD NA NA  
## 51 198 52 FEMALE OTHER SUICIDE NA NA  
## 52 205 55 FEMALE WHITE MDD NA NA  
## 53 207 74 MALE HISPANIC CONTROL NA NA  
## 54 208 52 MALE WHITE SUICIDE NA NA  
## 55 210 68 MALE WHITE CONTROL NA NA  
## 56 216 23 FEMALE HISPANIC SUICIDE NA NA  
## 57 219 55 MALE WHITE SUICIDE NA NA  
## 58 228 60 FEMALE WHITE MDD NA NA  
## 59 229 63 FEMALE BLACK CONTROL 157.75 3.77  
## 60 232 57 MALE OTHER MDD NA NA  
## 61 247 39 MALE HISPANIC CONTROL NA NA  
## 62 261 67 MALE HISPANIC CONTROL NA NA  
## 63 264 47 MALE BLACK CONTROL 85.75 0.23  
## 64 275 71 FEMALE HISPANIC MDD NA NA  
## 65 280 56 FEMALE WHITE CONTROL NA NA  
## 66 281 50 MALE HISPANIC CONTROL NA NA  
## 67 282 79 MALE WHITE CONTROL NA NA  
## 68 284 82 MALE HISPANIC CONTROL NA NA  
## 69 286 65 MALE HISPANIC CONTROL NA NA  
## 70 287 44 MALE HISPANIC CONTROL NA NA  
## 71 290 61 FEMALE WHITE MDD NA NA  
## 72 296 48 FEMALE HISPANIC SUICIDE NA NA  
## 73 298 61 FEMALE HISPANIC CONTROL NA NA  
## 74 301 64 MALE HISPANIC CONTROL NA NA  
## 75 306 68 MALE HISPANIC MDD NA NA  
## 76 308 34 MALE WHITE CONTROL NA NA  
## 77 309 74 MALE HISPANIC CONTROL 92.75 0.47  
## 78 312 71 MALE HISPANIC CONTROL 159.75 3.88  
## EGF\_Net\_MFI EGF\_Fin\_Conc FGF\_2\_Net\_MFI FGF\_2\_Fin\_Conc HGF\_Net\_MFI  
## 1 2305.25 8308.98 7834.50 11279.53 10035.00  
## 2 1767.50 3203.32 5652.25 3878.93 6391.50  
## 3 888.25 740.55 2549.50 780.98 2588.50  
## 4 282.25 169.66 950.75 209.63 754.75  
## 5 60.25 39.11 240.25 48.78 174.00  
## 6 16.75 12.29 69.25 13.69 48.50  
## 7 4.00 2.58 20.25 3.12 15.00  
## 8 7.25 0.00 39.25 0.00 7.50  
## 9 0.75 0.03 6502.75 11604.48 432.00  
## 10 2.25 2.14 3852.75 3222.01 1556.50  
## 11 NA NA 5957.75 8941.50 311.50  
## 12 1.75 1.31 5836.25 8439.56 1823.00  
## 13 1.75 1.31 4994.75 5653.82 915.50  
## 14 14.75 21.84 4610.75 4697.77 727.00  
## 15 1.75 1.31 6140.25 9753.79 530.00  
## 16 3.25 3.87 4855.75 5288.72 798.50  
## 17 NA NA 5044.75 5790.84 1025.00  
## 18 NA NA 5267.25 6439.80 614.50  
## 19 2.75 3.00 5701.75 7917.17 1184.00  
## 20 1.75 1.31 4709.75 4928.87 884.50  
## 21 0.75 0.03 4517.75 4489.64 726.50  
## 22 0.75 0.03 6777.75 13257.28 934.50  
## 23 2.75 3.00 6719.75 12888.60 1187.50  
## 24 1.75 1.31 5781.25 8221.86 378.50  
## 25 1.75 1.31 5204.75 6250.80 806.50  
## 26 NA NA 5222.75 6304.68 1118.50  
## 27 2.75 3.00 4717.75 4947.99 1323.50  
## 28 NA NA 3917.75 3330.67 649.00  
## 29 NA NA 4087.75 3629.40 358.00  
## 30 0.75 0.03 5089.75 5916.84 2149.50  
## 31 1.75 1.31 4633.75 4750.56 1436.00  
## 32 1.75 1.31 5046.75 5796.39 865.00  
## 33 1.75 1.31 4959.75 5559.73 24.50  
## 34 4.25 5.60 4459.75 4364.06 2514.50  
## 35 3.75 4.74 3950.75 3386.98 708.50  
## 36 3.25 3.87 5500.75 7196.28 1359.00  
## 37 NA NA 3949.75 3385.27 680.50  
## 38 3.25 3.87 4186.75 3813.59 708.50  
## 39 2.75 3.00 4700.75 4907.44 965.50  
## 40 2.75 3.00 4909.75 5427.86 599.50  
## 41 0.75 0.03 3860.75 3235.22 570.50  
## 42 0.75 0.03 4444.75 4332.10 767.00  
## 43 1.75 1.31 4434.75 4310.90 584.50  
## 44 0.75 0.03 4532.75 4522.64 2445.50  
## 45 0.75 0.03 3858.75 3231.91 377.50  
## 46 0.75 0.03 3254.75 2349.40 707.00  
## 47 1.75 1.31 4779.75 5098.49 847.50  
## 48 NA NA 3730.25 3025.13 467.00  
## 49 0.75 0.03 4066.25 3590.41 1078.50  
## 50 NA NA 3735.25 3032.97 522.50  
## 51 0.75 0.03 5148.75 6085.99 47.50  
## 52 NA NA 5710.75 7951.08 324.50  
## 53 1.75 1.31 3687.25 2958.39 405.50  
## 54 1.75 1.31 4220.75 3878.67 722.50  
## 55 NA NA 4877.75 5345.00 660.50  
## 56 NA NA 2825.75 1843.32 461.50  
## 57 NA NA 3963.75 3409.39 724.50  
## 58 NA NA 5682.75 7846.05 325.00  
## 59 4.25 5.60 5651.75 7731.38 1430.50  
## 60 NA NA 3747.25 3051.85 325.50  
## 61 0.75 0.03 3901.25 3302.80 889.00  
## 62 0.75 0.03 4386.75 4210.44 769.00  
## 63 4.25 5.60 4395.75 4229.12 1569.50  
## 64 NA NA 3975.75 3430.18 1012.00  
## 65 3.75 4.74 4342.75 4120.17 1851.00  
## 66 2.75 3.00 4238.25 3912.53 596.50  
## 67 0.75 0.03 4138.75 3723.31 1639.00  
## 68 NA NA 3079.25 2131.62 537.00  
## 69 NA NA 5255.25 6403.09 2624.50  
## 70 NA NA 3598.75 2824.73 844.50  
## 71 1.75 1.31 5569.75 7436.07 901.50  
## 72 1.75 1.31 4095.75 3643.99 502.50  
## 73 1.75 1.31 5143.25 6070.03 1155.50  
## 74 0.75 0.03 5423.25 6936.04 1648.50  
## 75 2.25 2.14 6668.75 12573.59 1189.00  
## 76 0.75 0.03 5282.75 6487.52 1347.50  
## 77 3.75 4.74 5581.25 7476.80 3669.50  
## 78 3.75 4.74 5912.75 8752.14 3640.00  
## HGF\_Fin\_Conc LIF\_Net\_MFI LIF\_Fin\_Conc NGFbeta\_Net\_MFI NGFbeta\_Fin\_Conc  
## 1 23026.17 NA NA 16537.00 24393.36  
## 2 7066.29 2666.75 3747.92 9955.50 7272.28  
## 3 1604.13 1967.25 1240.86 4188.75 1681.79  
## 4 395.38 903.25 277.44 1381.50 407.81  
## 5 96.61 273.75 64.46 377.00 99.14  
## 6 26.93 90.00 18.30 113.75 27.93  
## 7 6.00 33.75 4.17 32.00 6.35  
## 8 0.00 6.75 0.00 12.50 0.00  
## 9 457.29 39.25 11.06 7.50 1.20  
## 10 1716.27 NA NA 4.00 0.21  
## 11 334.99 NA NA 4.50 0.31  
## 12 2064.99 NA NA 4.50 0.31  
## 13 963.50 NA NA 2.50 0.02  
## 14 761.46 24.25 3.76 8.50 1.56  
## 15 557.15 NA NA 2.50 0.02  
## 16 837.24 NA NA 4.50 0.31  
## 17 1084.45 NA NA 5.50 0.57  
## 18 644.07 NA NA NA NA  
## 19 1265.32 NA NA 7.00 1.03  
## 20 929.76 NA NA 4.00 0.21  
## 21 760.93 NA NA 3.50 0.12  
## 22 984.29 NA NA 6.00 0.71  
## 23 1269.38 NA NA 3.50 0.12  
## 24 403.01 NA NA 3.50 0.12  
## 25 845.78 NA NA 4.50 0.31  
## 26 1190.03 NA NA 4.50 0.31  
## 27 1429.53 NA NA 5.50 0.57  
## 28 679.85 NA NA 3.50 0.12  
## 29 382.22 NA NA NA NA  
## 30 2525.35 NA NA 3.50 0.12  
## 31 1565.96 NA NA NA NA  
## 32 908.65 52.25 17.63 5.50 0.57  
## 33 24.09 NA NA 3.50 0.12  
## 34 3087.64 NA NA 5.50 0.57  
## 35 742.01 NA NA 3.50 0.12  
## 36 1472.18 NA NA 4.50 0.31  
## 37 712.68 NA NA 4.50 0.31  
## 38 742.01 NA NA 2.50 0.02  
## 39 1018.38 NA NA 5.00 0.43  
## 40 628.57 NA NA 3.50 0.12  
## 41 598.70 NA NA 3.50 0.12  
## 42 803.73 NA NA 4.50 0.31  
## 43 613.11 NA NA 5.50 0.57  
## 44 2977.25 NA NA 2.50 0.02  
## 45 402.00 NA NA NA NA  
## 46 740.43 NA NA 5.50 0.57  
## 47 889.77 NA NA 3.00 0.06  
## 48 492.87 NA NA 3.50 0.12  
## 49 1144.59 NA NA 6.00 0.71  
## 50 549.48 NA NA 4.50 0.31  
## 51 52.68 NA NA 2.50 0.02  
## 52 348.21 NA NA 2.50 0.02  
## 53 430.40 NA NA NA NA  
## 54 756.72 NA NA 2.50 0.02  
## 55 691.82 NA NA NA NA  
## 56 487.28 19.25 1.62 NA NA  
## 57 758.83 NA NA NA NA  
## 58 348.72 NA NA 3.50 0.12  
## 59 1559.20 NA NA 2.50 0.02  
## 60 349.23 NA NA NA NA  
## 61 934.65 NA NA 3.50 0.12  
## 62 805.86 NA NA 2.50 0.02  
## 63 1732.75 NA NA 3.50 0.12  
## 64 1069.94 NA NA 4.50 0.31  
## 65 2103.00 NA NA 4.50 0.31  
## 66 625.48 NA NA 5.50 0.57  
## 67 1821.77 NA NA 3.50 0.12  
## 68 564.32 NA NA NA NA  
## 69 3267.77 NA NA 3.00 0.06  
## 70 886.54 NA NA 2.50 0.02  
## 71 948.24 NA NA NA NA  
## 72 529.05 NA NA NA NA  
## 73 1232.42 NA NA 3.50 0.12  
## 74 1834.05 NA NA 6.50 0.87  
## 75 1271.12 NA NA 4.50 0.31  
## 76 1458.33 17.25 0.89 3.00 0.06  
## 77 5264.87 NA NA 6.50 0.87  
## 78 5200.59 NA NA 8.50 1.56  
## PDGF\_BB\_Net\_MFI PDGF\_BB\_Fin\_Conc PlGF\_1\_Net\_MFI PlGF\_1\_Fin\_Conc SCF\_Net\_MFI  
## 1 18571.25 17840.34 10084.25 5183.05 13814.75  
## 2 10884.25 4789.58 7794.50 1873.22 7941.75  
## 3 3970.50 1146.92 3722.50 374.17 3092.50  
## 4 1026.25 292.01 1360.50 95.73 983.00  
## 5 239.75 70.09 395.50 24.12 236.25  
## 6 89.00 19.78 130.50 6.25 71.25  
## 7 43.50 4.27 57.00 1.48 35.25  
## 8 6.00 0.00 45.50 0.00 10.75  
## 9 NA NA NA NA 81.25  
## 10 NA NA NA NA 63.25  
## 11 NA NA NA NA 44.25  
## 12 NA NA NA NA 86.25  
## 13 NA NA NA NA 71.75  
## 14 NA NA NA NA 39.25  
## 15 NA NA NA NA 51.25  
## 16 NA NA NA NA 57.25  
## 17 NA NA NA NA 37.25  
## 18 NA NA NA NA 51.75  
## 19 NA NA NA NA 47.25  
## 20 NA NA NA NA 97.25  
## 21 NA NA NA NA 35.25  
## 22 NA NA NA NA 115.75  
## 23 NA NA NA NA 45.25  
## 24 NA NA NA NA 33.25  
## 25 NA NA NA NA 78.25  
## 26 NA NA NA NA 40.75  
## 27 NA NA NA NA 60.25  
## 28 NA NA NA NA 50.25  
## 29 NA NA NA NA 36.25  
## 30 NA NA NA NA 54.75  
## 31 NA NA NA NA 55.25  
## 32 NA NA NA NA 71.25  
## 33 NA NA NA NA NA  
## 34 NA NA NA NA 75.75  
## 35 NA NA NA NA 57.25  
## 36 NA NA NA NA 41.25  
## 37 NA NA NA NA 73.25  
## 38 NA NA NA NA 74.75  
## 39 NA NA NA NA 61.25  
## 40 NA NA NA NA 83.25  
## 41 NA NA NA NA 80.25  
## 42 NA NA NA NA 50.75  
## 43 NA NA NA NA 68.25  
## 44 NA NA NA NA 65.75  
## 45 NA NA NA NA 37.25  
## 46 NA NA 31.50 0.36 50.25  
## 47 NA NA NA NA 102.75  
## 48 NA NA NA NA 43.25  
## 49 NA NA NA NA 50.25  
## 50 NA NA NA NA 59.25  
## 51 NA NA NA NA 14.75  
## 52 NA NA NA NA 20.75  
## 53 NA NA NA NA 19.25  
## 54 NA NA NA NA 52.25  
## 55 NA NA NA NA 62.25  
## 56 NA NA NA NA 37.25  
## 57 NA NA NA NA 35.25  
## 58 NA NA 24.50 0.01 58.75  
## 59 NA NA NA NA 48.25  
## 60 NA NA NA NA 26.25  
## 61 NA NA NA NA 44.25  
## 62 NA NA NA NA 40.25  
## 63 NA NA NA NA 30.25  
## 64 NA NA NA NA 44.75  
## 65 NA NA NA NA 44.25  
## 66 NA NA NA NA 38.25  
## 67 NA NA NA NA 27.25  
## 68 NA NA NA NA 38.25  
## 69 NA NA NA NA 31.25  
## 70 NA NA NA NA 29.25  
## 71 NA NA NA NA 51.25  
## 72 NA NA NA NA 29.75  
## 73 NA NA NA NA 32.25  
## 74 NA NA NA NA 51.25  
## 75 NA NA NA NA 59.25  
## 76 NA NA NA NA 35.25  
## 77 NA NA NA NA 95.25  
## 78 NA NA NA NA 112.25  
## SCF\_Fin\_Conc VEGF\_A\_Net\_MFI VEGF\_A\_Fin\_Conc VEGF\_D\_Net\_MFI VEGF\_D\_Fin\_Conc  
## 1 4220.76 12213.00 19193.50 11200.50 8500.37  
## 2 993.89 6694.75 5132.72 5508.00 1720.17  
## 3 234.98 2792.75 1298.87 2281.75 461.54  
## 4 66.27 856.50 304.23 781.75 129.11  
## 5 15.68 239.25 75.23 208.00 29.35  
## 6 3.68 77.50 21.09 67.75 6.87  
## 7 1.04 25.25 4.72 33.50 2.01  
## 8 0.00 33.25 0.00 5.00 0.00  
## 9 8.86 31.75 13.25 NA NA  
## 10 6.15 118.75 69.26 NA NA  
## 11 3.34 41.25 19.04 11.00 0.01  
## 12 9.61 58.75 30.08 NA NA  
## 13 7.43 126.25 74.24 NA NA  
## 14 2.63 50.75 24.99 NA NA  
## 15 4.37 31.75 13.25 NA NA  
## 16 5.26 25.25 9.43 NA NA  
## 17 2.35 26.75 10.30 NA NA  
## 18 4.44 33.75 14.45 NA NA  
## 19 3.78 28.75 11.47 NA NA  
## 20 11.27 36.75 16.27 NA NA  
## 21 2.08 20.75 6.90 NA NA  
## 22 14.02 40.75 18.73 NA NA  
## 23 3.49 68.25 36.18 NA NA  
## 24 1.81 20.25 6.63 NA NA  
## 25 8.41 37.75 16.89 NA NA  
## 26 2.84 45.25 21.53 NA NA  
## 27 5.70 39.75 18.12 11.00 0.01  
## 28 4.22 35.75 15.66 NA NA  
## 29 2.22 28.75 11.47 NA NA  
## 30 4.88 42.25 19.66 NA NA  
## 31 4.96 67.75 35.86 NA NA  
## 32 7.36 16.75 4.78 NA NA  
## 33 NA 46.75 22.47 NA NA  
## 34 8.03 23.25 8.29 NA NA  
## 35 5.26 27.75 10.88 NA NA  
## 36 2.91 27.75 10.88 10.50 0.00  
## 37 7.66 48.25 23.41 NA NA  
## 38 7.88 77.75 42.33 NA NA  
## 39 5.85 64.75 33.93 11.00 0.01  
## 40 9.16 38.75 17.50 11.00 0.01  
## 41 8.71 55.75 28.16 NA NA  
## 42 4.29 55.25 27.85 NA NA  
## 43 6.90 54.75 27.53 NA NA  
## 44 6.53 27.75 10.88 12.50 0.08  
## 45 2.35 32.25 13.55 NA NA  
## 46 4.22 93.75 52.78 NA NA  
## 47 12.09 48.25 23.41 NA NA  
## 48 3.20 8.25 1.01 NA NA  
## 49 4.22 22.75 8.01 NA NA  
## 50 5.55 18.25 5.56 NA NA  
## 51 0.01 24.75 9.15 NA NA  
## 52 0.37 25.75 9.72 NA NA  
## 53 0.24 24.75 9.15 NA NA  
## 54 4.51 24.75 9.15 NA NA  
## 55 6.00 37.75 16.89 NA NA  
## 56 2.35 17.75 5.30 NA NA  
## 57 2.08 14.75 3.78 NA NA  
## 58 5.48 52.75 26.26 NA NA  
## 59 3.92 58.75 30.08 NA NA  
## 60 0.94 49.75 24.36 NA NA  
## 61 3.34 51.75 25.62 NA NA  
## 62 2.77 21.75 7.46 10.00 0.00  
## 63 1.42 29.75 12.06 53.00 9.36  
## 64 3.42 22.75 8.01 NA NA  
## 65 3.34 31.75 13.25 NA NA  
## 66 2.49 20.25 6.63 NA NA  
## 67 1.05 22.25 7.73 NA NA  
## 68 2.49 20.75 6.90 NA NA  
## 69 1.55 33.75 14.45 NA NA  
## 70 1.30 22.75 8.01 27.00 2.44  
## 71 4.37 20.75 6.90 NA NA  
## 72 1.36 26.75 10.30 NA NA  
## 73 1.68 35.25 15.36 NA NA  
## 74 4.37 47.75 23.10 36.00 4.64  
## 75 5.55 36.75 16.27 NA NA  
## 76 2.08 48.25 23.41 NA NA  
## 77 10.97 73.75 39.74 NA NA  
## 78 13.50 82.75 45.59 16.00 0.41

#SETTING UP STANDARDS DATAFRAME  
library(dplyr)

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

STD\_040 <- EPX040[1:7,]  
STD040\_pre <- select(STD\_040, -SUBJECT, -AGE, -SEX, -RACE, -DX)  
STD\_110 <- EPX110[1:7,]  
STD110\_pre <- select(STD\_110,-SUBJECT, -AGE, -SEX, -RACE, -DX)  
STDS <- c(1:7)  
STD040 <- data.frame(STDS,STD040\_pre ) # 8 PROTEINS  
STD110 <- data.frame(STDS,STD110\_pre )# 11 PROTEINSs

#SAMPLES DATAFRAME - STANDARDS EPX040 PLATE  
STD040

## STDS BDNF\_Net\_MFI BDNF\_Fin\_Conc CNTF\_Net\_MFI CNTF\_Fin\_Conc GDNF\_Net\_MFI  
## 1 1 NA NA 9625.50 7108.86 NA  
## 2 2 7692.25 1805.00 5460.50 1729.62 3622.50  
## 3 3 3218.75 526.46 1926.25 428.24 2750.75  
## 4 4 654.50 112.42 544.00 110.70 1933.75  
## 5 5 150.25 29.89 143.25 26.06 569.25  
## 6 6 49.50 8.36 48.25 6.98 135.75  
## 7 7 22.50 1.95 17.75 1.75 48.50  
## GDNF\_Fin\_Conc NGFbeta\_Net\_MFI NGFbeta\_Fin\_Conc GFAP\_Net\_MFI GFAP\_Fin\_Conc  
## 1 NA NA NA 16937.00 39494.86  
## 2 87386.32 15150.50 5619.80 6935.00 10316.55  
## 3 15498.61 5890.50 1239.74 2201.00 2401.92  
## 4 5835.78 2338.50 356.87 868.50 702.76  
## 5 1288.08 740.75 86.50 NA NA  
## 6 331.68 225.25 20.09 244.75 69.61  
## 7 85.53 84.75 5.47 NA NA  
## NF\_H\_Net\_MFI NF\_H\_Fin\_Conc S100B\_Net\_MFI S100B\_Fin\_Conc UCHL1\_Net\_MFI  
## 1 NA NA 188.75 15541.66 22628.25  
## 2 NA NA 75.00 3604.00 NA  
## 3 8276.25 12705.06 8.50 94.79 16515.25  
## 4 4866.25 1984.04 0.00 NA 10121.25  
## 5 1853.50 607.44 20.50 447.32 4323.50  
## 6 282.25 140.81 0.00 NA 1193.50  
## 7 70.75 36.47 0.50 1.03 297.50  
## UCHL1\_Fin\_Conc  
## 1 3087824.07  
## 2 NA  
## 3 210426.23  
## 4 49282.25  
## 5 12687.60  
## 6 3143.33  
## 7 786.54

S\_040 <- EPX040[9:78,]  
S\_040

## SUBJECT AGE SEX RACE DX BDNF\_Net\_MFI BDNF\_Fin\_Conc CNTF\_Net\_MFI  
## 9 15 69 MALE WHITE CONTROL NA NA 31.5  
## 10 16 17 MALE HISPANIC CONTROL NA NA 11.5  
## 11 17 54 MALE WHITE SUICIDE NA NA NA  
## 12 24 31 MALE WHITE MDD 12.25 0.05 52.0  
## 13 28 48 MALE WHITE CONTROL NA NA 74.5  
## 14 29 18 MALE WHITE CONTROL 14.75 0.64 12.0  
## 15 30 51 MALE WHITE SUICIDE NA NA 19.5  
## 16 33 77 MALE WHITE CONTROL NA NA 35.5  
## 17 36 84 FEMALE WHITE CONTROL NA NA NA  
## 18 40 80 FEMALE WHITE CONTROL NA NA 78.0  
## 19 41 73 FEMALE WHITE SUICIDE NA NA 14.0  
## 20 47 71 MALE HISPANIC CONTROL NA NA 21.5  
## 21 55 21 MALE WHITE SUICIDE 17.75 1.71 NA  
## 22 63 42 MALE WHITE MDD 16.75 1.33 50.5  
## 23 68 43 MALE WHITE MDD NA NA NA  
## 24 69 53 FEMALE WHITE MDD 15.75 0.96 48.0  
## 25 79 54 MALE WHITE CONTROL NA NA 44.5  
## 26 82 50 MALE BLACK CONTROL NA NA 48.0  
## 27 83 69 MALE WHITE CONTROL NA NA 15.5  
## 28 87 47 MALE HISPANIC MDD NA NA NA  
## 29 93 52 MALE WHITE SUICIDE NA NA NA  
## 30 94 63 MALE WHITE MDD NA NA NA  
## 31 95 75 FEMALE WHITE MDD NA NA NA  
## 32 99 70 MALE WHITE MDD NA NA 29.5  
## 33 113 57 MALE WHITE MDD 19.75 2.54 35.5  
## 34 131 41 MALE WHITE MDD NA NA 12.0  
## 35 132 46 MALE WHITE MDD NA NA 12.5  
## 36 134 54 FEMALE X MDD 17.75 1.71 24.0  
## 37 141 44 MALE WHITE MDD NA NA 15.5  
## 38 147 75 MALE WHITE MDD NA NA NA  
## 39 148 84 MALE WHITE CONTROL 12.75 0.13 82.5  
## 40 153 52 FEMALE HISPANIC CONTROL NA NA 44.0  
## 41 156 54 MALE WHITE MDD NA NA 27.0  
## 42 162 54 FEMALE WHITE CONTROL NA NA 18.5  
## 43 167 78 FEMALE WHITE CONTROL NA NA NA  
## 44 170 49 MALE WHITE SUICIDE 15.25 0.80 14.5  
## 45 180 32 FEMALE HISPANIC SUICIDE NA NA 14.5  
## 46 181 64 MALE WHITE MDD 11.75 0.00 NA  
## 47 192 73 MALE HISPANIC CONTROL NA NA 32.0  
## 48 193 79 FEMALE WHITE CONTROL NA NA 59.0  
## 49 194 63 FEMALE WHITE CONTROL NA NA 14.5  
## 50 197 76 MALE HISPANIC MDD NA NA 52.5  
## 51 198 52 FEMALE OTHER SUICIDE NA NA 83.5  
## 52 205 55 FEMALE WHITE MDD NA NA NA  
## 53 207 74 MALE HISPANIC CONTROL 36.25 10.39 13.5  
## 54 208 52 MALE WHITE SUICIDE NA NA 15.5  
## 55 210 68 MALE WHITE CONTROL NA NA NA  
## 56 216 23 FEMALE HISPANIC SUICIDE NA NA NA  
## 57 219 55 MALE WHITE SUICIDE NA NA 56.0  
## 58 228 60 FEMALE WHITE MDD NA NA NA  
## 59 229 63 FEMALE BLACK CONTROL 56.75 20.24 143.0  
## 60 232 57 MALE OTHER MDD NA NA NA  
## 61 247 39 MALE HISPANIC CONTROL 17.75 1.71 NA  
## 62 261 67 MALE HISPANIC CONTROL NA NA 29.5  
## 63 264 47 MALE BLACK CONTROL 29.75 7.21 106.0  
## 64 275 71 FEMALE HISPANIC MDD NA NA 122.0  
## 65 280 56 FEMALE WHITE CONTROL NA NA 18.0  
## 66 281 50 MALE HISPANIC CONTROL 22.75 3.88 19.5  
## 67 282 79 MALE WHITE CONTROL NA NA 18.0  
## 68 284 82 MALE HISPANIC CONTROL NA NA NA  
## 69 286 65 MALE HISPANIC CONTROL 24.25 4.58 11.5  
## 70 287 44 MALE HISPANIC CONTROL NA NA 20.0  
## 71 290 61 FEMALE WHITE MDD NA NA NA  
## 72 296 48 FEMALE HISPANIC SUICIDE NA NA NA  
## 73 298 61 FEMALE HISPANIC CONTROL 11.75 0.00 57.0  
## 74 301 64 MALE HISPANIC CONTROL 11.75 0.00 49.5  
## 75 306 68 MALE HISPANIC MDD NA NA 16.5  
## 76 308 34 MALE WHITE CONTROL 13.25 0.23 NA  
## 77 309 74 MALE HISPANIC CONTROL 50.75 17.40 18.0  
## 78 312 71 MALE HISPANIC CONTROL 91.75 35.96 32.5  
## CNTF\_Fin\_Conc GDNF\_Net\_MFI GDNF\_Fin\_Conc NGFbeta\_Net\_MFI NGFbeta\_Fin\_Conc  
## 9 7.90 NA NA NA NA  
## 10 1.76 NA NA NA NA  
## 11 NA NA NA 7.25 0.05  
## 12 15.37 NA NA NA NA  
## 13 24.11 NA NA NA NA  
## 14 1.88 NA NA NA NA  
## 15 3.98 NA NA NA NA  
## 16 9.30 NA NA 3.25 0.00  
## 17 NA NA NA 4.75 0.00  
## 18 25.50 NA NA NA NA  
## 19 2.40 NA NA NA NA  
## 20 4.60 NA NA NA NA  
## 21 NA NA NA NA NA  
## 22 14.80 NA NA NA NA  
## 23 NA NA NA NA NA  
## 24 13.86 NA NA NA NA  
## 25 12.56 NA NA NA NA  
## 26 13.86 NA NA NA NA  
## 27 2.82 NA NA NA NA  
## 28 NA NA NA NA NA  
## 29 NA NA NA NA NA  
## 30 NA NA NA NA NA  
## 31 NA NA NA NA NA  
## 32 7.22 NA NA NA NA  
## 33 9.30 NA NA NA NA  
## 34 1.88 NA NA NA NA  
## 35 2.01 NA NA NA NA  
## 36 5.39 NA NA NA NA  
## 37 2.82 NA NA NA NA  
## 38 NA NA NA NA NA  
## 39 27.29 NA NA NA NA  
## 40 12.38 NA NA NA NA  
## 41 6.38 NA NA NA NA  
## 42 3.68 NA NA NA NA  
## 43 NA NA NA NA NA  
## 44 2.54 NA NA NA NA  
## 45 2.54 NA NA NA NA  
## 46 NA NA NA NA NA  
## 47 8.08 NA NA NA NA  
## 48 18.05 NA NA NA NA  
## 49 2.54 NA NA NA NA  
## 50 15.56 NA NA NA NA  
## 51 27.69 NA NA NA NA  
## 52 NA NA NA NA NA  
## 53 2.27 NA NA NA NA  
## 54 2.82 NA NA NA NA  
## 55 NA NA NA NA NA  
## 56 NA NA NA NA NA  
## 57 16.89 NA NA NA NA  
## 58 NA NA NA NA NA  
## 59 52.02 NA NA NA NA  
## 60 NA NA NA NA NA  
## 61 NA NA NA NA NA  
## 62 7.22 NA NA NA NA  
## 63 36.80 NA NA NA NA  
## 64 43.35 NA NA NA NA  
## 65 3.54 NA NA NA NA  
## 66 3.98 NA NA NA NA  
## 67 3.54 NA NA NA NA  
## 68 NA NA NA NA NA  
## 69 1.76 NA NA NA NA  
## 70 4.14 NA NA NA NA  
## 71 NA NA NA NA NA  
## 72 NA NA NA NA NA  
## 73 17.28 NA NA NA NA  
## 74 14.43 NA NA NA NA  
## 75 3.10 NA NA NA NA  
## 76 NA NA NA 4.75 0.00  
## 77 3.54 NA NA NA NA  
## 78 8.25 NA NA NA NA  
## GFAP\_Net\_MFI GFAP\_Fin\_Conc NF\_H\_Net\_MFI NF\_H\_Fin\_Conc S100B\_Net\_MFI  
## 9 14116.0 58037.65 6979.75 9890.76 480.5  
## 10 15449.0 67364.17 8147.25 22128.42 425.0  
## 11 13087.5 51426.04 8018.25 19730.04 592.0  
## 12 10957.5 39187.10 6864.25 9304.75 511.5  
## 13 14000.0 57267.38 7224.25 11342.40 390.5  
## 14 16866.0 78308.07 7724.25 15673.04 209.5  
## 15 12469.0 47678.04 6484.25 7711.80 792.0  
## 16 13767.0 55739.40 8378.25 NA 517.5  
## 17 14669.0 61798.95 7481.25 13279.01 639.5  
## 18 14347.0 59590.73 6003.75 6218.21 445.0  
## 19 11349.0 41298.99 6830.25 9142.53 690.5  
## 20 12399.5 47267.15 8622.75 NA 891.5  
## 21 14494.5 60595.94 7589.25 14261.61 364.5  
## 22 10932.0 39051.59 5673.25 5418.46 913.5  
## 23 15521.0 67893.76 8273.25 25015.33 568.5  
## 24 16641.0 76494.88 NA NA 780.0  
## 25 12831.0 49851.55 6910.25 9531.45 610.5  
## 26 12076.0 45381.24 7306.75 11910.90 526.0  
## 27 10682.0 37736.08 7040.25 10221.23 1101.0  
## 28 13837.0 56195.77 7771.25 16220.84 717.0  
## 29 13885.0 56510.04 7276.25 11695.44 294.5  
## 30 12993.0 50842.61 7882.25 17652.96 238.0  
## 31 14131.0 58137.72 7693.25 15328.66 488.0  
## 32 12829.0 49839.39 6485.25 7715.44 448.5  
## 33 13942.0 56884.64 8768.25 NA 1019.0  
## 34 13176.0 51976.03 6651.25 8356.28 187.5  
## 35 10391.0 36234.25 7510.75 13535.96 1185.5  
## 36 12723.0 49197.20 6843.25 9204.03 423.0  
## 37 12366.0 47069.82 7820.25 16827.59 243.5  
## 38 13652.5 54997.80 8095.25 21103.17 292.0  
## 39 8149.0 25660.83 5877.75 5895.30 1643.5  
## 40 11212.0 40553.22 7938.25 18460.25 964.0  
## 41 12283.5 46585.88 7392.75 12554.63 879.5  
## 42 12741.0 49305.91 7730.75 15746.91 712.5  
## 43 9992.0 34225.40 7753.25 16007.25 1272.0  
## 44 9992.0 34225.40 4943.25 4077.08 638.5  
## 45 15629.0 68693.30 6346.25 7233.64 207.5  
## 46 12551.0 48165.47 6128.25 6562.22 138.0  
## 47 12163.0 45884.14 8090.25 21008.99 1002.0  
## 48 10813.5 38425.10 8618.75 NA 2949.0  
## 49 14147.0 58244.58 7202.75 11201.45 460.5  
## 50 10219.0 35361.22 8058.25 20423.20 1771.0  
## 51 13311.0 52821.71 8816.75 NA 1006.5  
## 52 13969.0 57062.62 7320.25 12008.33 460.5  
## 53 11515.5 42215.25 8196.25 23177.62 1441.5  
## 54 12283.0 46582.95 6697.75 8550.26 311.0  
## 55 14078.5 57787.94 8329.25 NA 454.5  
## 56 14545.0 60942.54 7371.25 12388.44 450.0  
## 57 14685.5 61913.48 6411.75 7454.96 334.5  
## 58 12514.5 47948.15 7450.25 13017.59 790.5  
## 59 14213.0 58686.68 8567.25 NA 765.5  
## 60 13584.0 54557.04 7272.25 11667.66 529.0  
## 61 14466.5 60404.30 8895.25 NA 472.5  
## 62 11855.0 44117.74 4321.75 3239.38 365.0  
## 63 11197.0 40472.01 4512.25 3473.74 160.5  
## 64 10190.0 35215.08 6539.25 7915.55 939.0  
## 65 8272.0 26197.53 6903.75 9498.90 1079.0  
## 66 11312.5 41099.58 7002.25 10011.66 320.5  
## 67 8901.0 29018.24 7131.75 10755.43 1380.5  
## 68 10541.5 37007.05 8742.25 NA 1683.5  
## 69 12942.0 50529.37 7667.75 15054.85 479.5  
## 70 9374.5 31227.95 7034.25 10187.68 1699.5  
## 71 12213.0 46174.58 5877.25 5894.06 319.5  
## 72 15805.0 70009.62 5100.75 4327.67 431.0  
## 73 13054.0 51218.77 7480.25 13270.44 251.0  
## 74 12076.0 45381.24 6985.25 9920.10 859.0  
## 75 12072.0 45358.19 7027.25 10148.76 775.5  
## 76 14447.0 60271.07 8474.25 NA 419.5  
## 77 8101.0 25452.69 8211.25 23516.51 1800.5  
## 78 9978.0 34155.96 7650.25 14871.69 1223.5  
## S100B\_Fin\_Conc UCHL1\_Net\_MFI UCHL1\_Fin\_Conc  
## 9 NA 553.75 2971.44  
## 10 NA 110.75 456.58  
## 11 NA 10858.75 115070.70  
## 12 NA 8123.75 64415.10  
## 13 NA 3914.25 22391.45  
## 14 NA 1165.75 6143.13  
## 15 NA 2975.25 16226.70  
## 16 NA 1043.75 5513.87  
## 17 NA 691.25 3693.07  
## 18 NA 468.75 2517.75  
## 19 NA 209.75 1063.55  
## 20 NA 5373.25 33819.49  
## 21 NA 3701.75 20924.96  
## 22 NA 8311.25 67092.84  
## 23 NA 8419.75 68685.52  
## 24 NA 998.75 5282.08  
## 25 NA 711.25 3797.16  
## 26 NA 62.75 156.45  
## 27 NA 931.75 4937.00  
## 28 NA 682.25 3646.18  
## 29 NA 131.25 585.22  
## 30 NA 369.75 1977.99  
## 31 NA 272.75 1431.65  
## 32 NA 734.75 3919.25  
## 33 NA 605.25 3243.17  
## 34 29669.82 NA NA  
## 35 NA 1402.25 7371.05  
## 36 NA NA NA  
## 37 NA 1684.25 8858.67  
## 38 NA 2289.25 12179.01  
## 39 NA 1636.75 8605.88  
## 40 NA 805.75 4287.00  
## 41 NA 4092.75 23658.54  
## 42 NA 1841.75 9704.29  
## 43 NA 1245.75 6557.00  
## 44 NA 145.25 672.27  
## 45 NA 104.25 415.57  
## 46 17868.99 1811.75 9542.30  
## 47 NA 1679.25 8832.02  
## 48 NA 4925.75 30038.53  
## 49 NA 1042.25 5506.14  
## 50 NA 2257.25 11998.12  
## 51 NA NA NA  
## 52 NA 1362.25 7162.34  
## 53 NA 3432.25 19127.40  
## 54 NA 285.75 1506.16  
## 55 NA 2245.75 11933.27  
## 56 NA 546.75 2934.34  
## 57 NA 103.75 412.42  
## 58 NA 1688.25 8880.01  
## 59 NA 67.75 186.77  
## 60 NA 898.75 4766.96  
## 61 NA 1268.25 6673.65  
## 62 NA 1399.25 7355.38  
## 63 22936.59 76.25 239.29  
## 64 NA 1285.25 6761.86  
## 65 NA 1178.25 6207.72  
## 66 NA 255.75 1333.52  
## 67 NA 2301.25 12247.01  
## 68 NA 2360.75 12585.55  
## 69 NA 187.75 931.87  
## 70 NA 2440.75 13044.39  
## 71 NA 476.75 2560.78  
## 72 NA 4371.75 25706.85  
## 73 NA 68.25 189.83  
## 74 NA 601.75 3224.76  
## 75 NA 526.25 2825.44  
## 76 NA 520.25 2793.50  
## 77 NA 1613.75 8483.82  
## 78 NA 413.25 2216.96

#SAMPLES DATAFRAME - STANDARDS EPX110 PLATE  
STD110

## STDS BDNF\_Net\_MFI BDNF\_Fin\_Conc EGF\_Net\_MFI EGF\_Fin\_Conc FGF\_2\_Net\_MFI  
## 1 1 NA NA 2305.25 8308.98 7834.50  
## 2 2 14664.25 1937.56 1767.50 3203.32 5652.25  
## 3 3 9371.75 545.89 888.25 740.55 2549.50  
## 4 4 3868.25 132.06 282.25 169.66 950.75  
## 5 5 1093.25 30.61 60.25 39.11 240.25  
## 6 6 383.75 8.79 16.75 12.29 69.25  
## 7 7 159.50 1.93 4.00 2.58 20.25  
## FGF\_2\_Fin\_Conc HGF\_Net\_MFI HGF\_Fin\_Conc LIF\_Net\_MFI LIF\_Fin\_Conc  
## 1 11279.53 10035.00 23026.17 NA NA  
## 2 3878.93 6391.50 7066.29 2666.75 3747.92  
## 3 780.98 2588.50 1604.13 1967.25 1240.86  
## 4 209.63 754.75 395.38 903.25 277.44  
## 5 48.78 174.00 96.61 273.75 64.46  
## 6 13.69 48.50 26.93 90.00 18.30  
## 7 3.12 15.00 6.00 33.75 4.17  
## NGFbeta\_Net\_MFI NGFbeta\_Fin\_Conc PDGF\_BB\_Net\_MFI PDGF\_BB\_Fin\_Conc  
## 1 16537.00 24393.36 18571.25 17840.34  
## 2 9955.50 7272.28 10884.25 4789.58  
## 3 4188.75 1681.79 3970.50 1146.92  
## 4 1381.50 407.81 1026.25 292.01  
## 5 377.00 99.14 239.75 70.09  
## 6 113.75 27.93 89.00 19.78  
## 7 32.00 6.35 43.50 4.27  
## PlGF\_1\_Net\_MFI PlGF\_1\_Fin\_Conc SCF\_Net\_MFI SCF\_Fin\_Conc VEGF\_A\_Net\_MFI  
## 1 10084.25 5183.05 13814.75 4220.76 12213.00  
## 2 7794.50 1873.22 7941.75 993.89 6694.75  
## 3 3722.50 374.17 3092.50 234.98 2792.75  
## 4 1360.50 95.73 983.00 66.27 856.50  
## 5 395.50 24.12 236.25 15.68 239.25  
## 6 130.50 6.25 71.25 3.68 77.50  
## 7 57.00 1.48 35.25 1.04 25.25  
## VEGF\_A\_Fin\_Conc VEGF\_D\_Net\_MFI VEGF\_D\_Fin\_Conc  
## 1 19193.50 11200.50 8500.37  
## 2 5132.72 5508.00 1720.17  
## 3 1298.87 2281.75 461.54  
## 4 304.23 781.75 129.11  
## 5 75.23 208.00 29.35  
## 6 21.09 67.75 6.87  
## 7 4.72 33.50 2.01

S\_110 <- EPX110[9:78,]  
S\_110

## SUBJECT AGE SEX RACE DX BDNF\_Net\_MFI BDNF\_Fin\_Conc EGF\_Net\_MFI  
## 9 15 69 MALE WHITE CONTROL NA NA 0.75  
## 10 16 17 MALE HISPANIC CONTROL NA NA 2.25  
## 11 17 54 MALE WHITE SUICIDE NA NA NA  
## 12 24 31 MALE WHITE MDD NA NA 1.75  
## 13 28 48 MALE WHITE CONTROL NA NA 1.75  
## 14 29 18 MALE WHITE CONTROL NA NA 14.75  
## 15 30 51 MALE WHITE SUICIDE NA NA 1.75  
## 16 33 77 MALE WHITE CONTROL NA NA 3.25  
## 17 36 84 FEMALE WHITE CONTROL NA NA NA  
## 18 40 80 FEMALE WHITE CONTROL NA NA NA  
## 19 41 73 FEMALE WHITE SUICIDE NA NA 2.75  
## 20 47 71 MALE HISPANIC CONTROL NA NA 1.75  
## 21 55 21 MALE WHITE SUICIDE NA NA 0.75  
## 22 63 42 MALE WHITE MDD 133.25 2.40 0.75  
## 23 68 43 MALE WHITE MDD NA NA 2.75  
## 24 69 53 FEMALE WHITE MDD NA NA 1.75  
## 25 79 54 MALE WHITE CONTROL NA NA 1.75  
## 26 82 50 MALE BLACK CONTROL NA NA NA  
## 27 83 69 MALE WHITE CONTROL NA NA 2.75  
## 28 87 47 MALE HISPANIC MDD NA NA NA  
## 29 93 52 MALE WHITE SUICIDE NA NA NA  
## 30 94 63 MALE WHITE MDD NA NA 0.75  
## 31 95 75 FEMALE WHITE MDD NA NA 1.75  
## 32 99 70 MALE WHITE MDD NA NA 1.75  
## 33 113 57 MALE WHITE MDD NA NA 1.75  
## 34 131 41 MALE WHITE MDD NA NA 4.25  
## 35 132 46 MALE WHITE MDD NA NA 3.75  
## 36 134 54 FEMALE X MDD NA NA 3.25  
## 37 141 44 MALE WHITE MDD NA NA NA  
## 38 147 75 MALE WHITE MDD NA NA 3.25  
## 39 148 84 MALE WHITE CONTROL 91.75 0.43 2.75  
## 40 153 52 FEMALE HISPANIC CONTROL NA NA 2.75  
## 41 156 54 MALE WHITE MDD NA NA 0.75  
## 42 162 54 FEMALE WHITE CONTROL NA NA 0.75  
## 43 167 78 FEMALE WHITE CONTROL NA NA 1.75  
## 44 170 49 MALE WHITE SUICIDE NA NA 0.75  
## 45 180 32 FEMALE HISPANIC SUICIDE NA NA 0.75  
## 46 181 64 MALE WHITE MDD NA NA 0.75  
## 47 192 73 MALE HISPANIC CONTROL NA NA 1.75  
## 48 193 79 FEMALE WHITE CONTROL NA NA NA  
## 49 194 63 FEMALE WHITE CONTROL NA NA 0.75  
## 50 197 76 MALE HISPANIC MDD NA NA NA  
## 51 198 52 FEMALE OTHER SUICIDE NA NA 0.75  
## 52 205 55 FEMALE WHITE MDD NA NA NA  
## 53 207 74 MALE HISPANIC CONTROL NA NA 1.75  
## 54 208 52 MALE WHITE SUICIDE NA NA 1.75  
## 55 210 68 MALE WHITE CONTROL NA NA NA  
## 56 216 23 FEMALE HISPANIC SUICIDE NA NA NA  
## 57 219 55 MALE WHITE SUICIDE NA NA NA  
## 58 228 60 FEMALE WHITE MDD NA NA NA  
## 59 229 63 FEMALE BLACK CONTROL 157.75 3.77 4.25  
## 60 232 57 MALE OTHER MDD NA NA NA  
## 61 247 39 MALE HISPANIC CONTROL NA NA 0.75  
## 62 261 67 MALE HISPANIC CONTROL NA NA 0.75  
## 63 264 47 MALE BLACK CONTROL 85.75 0.23 4.25  
## 64 275 71 FEMALE HISPANIC MDD NA NA NA  
## 65 280 56 FEMALE WHITE CONTROL NA NA 3.75  
## 66 281 50 MALE HISPANIC CONTROL NA NA 2.75  
## 67 282 79 MALE WHITE CONTROL NA NA 0.75  
## 68 284 82 MALE HISPANIC CONTROL NA NA NA  
## 69 286 65 MALE HISPANIC CONTROL NA NA NA  
## 70 287 44 MALE HISPANIC CONTROL NA NA NA  
## 71 290 61 FEMALE WHITE MDD NA NA 1.75  
## 72 296 48 FEMALE HISPANIC SUICIDE NA NA 1.75  
## 73 298 61 FEMALE HISPANIC CONTROL NA NA 1.75  
## 74 301 64 MALE HISPANIC CONTROL NA NA 0.75  
## 75 306 68 MALE HISPANIC MDD NA NA 2.25  
## 76 308 34 MALE WHITE CONTROL NA NA 0.75  
## 77 309 74 MALE HISPANIC CONTROL 92.75 0.47 3.75  
## 78 312 71 MALE HISPANIC CONTROL 159.75 3.88 3.75  
## EGF\_Fin\_Conc FGF\_2\_Net\_MFI FGF\_2\_Fin\_Conc HGF\_Net\_MFI HGF\_Fin\_Conc  
## 9 0.03 6502.75 11604.48 432.0 457.29  
## 10 2.14 3852.75 3222.01 1556.5 1716.27  
## 11 NA 5957.75 8941.50 311.5 334.99  
## 12 1.31 5836.25 8439.56 1823.0 2064.99  
## 13 1.31 4994.75 5653.82 915.5 963.50  
## 14 21.84 4610.75 4697.77 727.0 761.46  
## 15 1.31 6140.25 9753.79 530.0 557.15  
## 16 3.87 4855.75 5288.72 798.5 837.24  
## 17 NA 5044.75 5790.84 1025.0 1084.45  
## 18 NA 5267.25 6439.80 614.5 644.07  
## 19 3.00 5701.75 7917.17 1184.0 1265.32  
## 20 1.31 4709.75 4928.87 884.5 929.76  
## 21 0.03 4517.75 4489.64 726.5 760.93  
## 22 0.03 6777.75 13257.28 934.5 984.29  
## 23 3.00 6719.75 12888.60 1187.5 1269.38  
## 24 1.31 5781.25 8221.86 378.5 403.01  
## 25 1.31 5204.75 6250.80 806.5 845.78  
## 26 NA 5222.75 6304.68 1118.5 1190.03  
## 27 3.00 4717.75 4947.99 1323.5 1429.53  
## 28 NA 3917.75 3330.67 649.0 679.85  
## 29 NA 4087.75 3629.40 358.0 382.22  
## 30 0.03 5089.75 5916.84 2149.5 2525.35  
## 31 1.31 4633.75 4750.56 1436.0 1565.96  
## 32 1.31 5046.75 5796.39 865.0 908.65  
## 33 1.31 4959.75 5559.73 24.5 24.09  
## 34 5.60 4459.75 4364.06 2514.5 3087.64  
## 35 4.74 3950.75 3386.98 708.5 742.01  
## 36 3.87 5500.75 7196.28 1359.0 1472.18  
## 37 NA 3949.75 3385.27 680.5 712.68  
## 38 3.87 4186.75 3813.59 708.5 742.01  
## 39 3.00 4700.75 4907.44 965.5 1018.38  
## 40 3.00 4909.75 5427.86 599.5 628.57  
## 41 0.03 3860.75 3235.22 570.5 598.70  
## 42 0.03 4444.75 4332.10 767.0 803.73  
## 43 1.31 4434.75 4310.90 584.5 613.11  
## 44 0.03 4532.75 4522.64 2445.5 2977.25  
## 45 0.03 3858.75 3231.91 377.5 402.00  
## 46 0.03 3254.75 2349.40 707.0 740.43  
## 47 1.31 4779.75 5098.49 847.5 889.77  
## 48 NA 3730.25 3025.13 467.0 492.87  
## 49 0.03 4066.25 3590.41 1078.5 1144.59  
## 50 NA 3735.25 3032.97 522.5 549.48  
## 51 0.03 5148.75 6085.99 47.5 52.68  
## 52 NA 5710.75 7951.08 324.5 348.21  
## 53 1.31 3687.25 2958.39 405.5 430.40  
## 54 1.31 4220.75 3878.67 722.5 756.72  
## 55 NA 4877.75 5345.00 660.5 691.82  
## 56 NA 2825.75 1843.32 461.5 487.28  
## 57 NA 3963.75 3409.39 724.5 758.83  
## 58 NA 5682.75 7846.05 325.0 348.72  
## 59 5.60 5651.75 7731.38 1430.5 1559.20  
## 60 NA 3747.25 3051.85 325.5 349.23  
## 61 0.03 3901.25 3302.80 889.0 934.65  
## 62 0.03 4386.75 4210.44 769.0 805.86  
## 63 5.60 4395.75 4229.12 1569.5 1732.75  
## 64 NA 3975.75 3430.18 1012.0 1069.94  
## 65 4.74 4342.75 4120.17 1851.0 2103.00  
## 66 3.00 4238.25 3912.53 596.5 625.48  
## 67 0.03 4138.75 3723.31 1639.0 1821.77  
## 68 NA 3079.25 2131.62 537.0 564.32  
## 69 NA 5255.25 6403.09 2624.5 3267.77  
## 70 NA 3598.75 2824.73 844.5 886.54  
## 71 1.31 5569.75 7436.07 901.5 948.24  
## 72 1.31 4095.75 3643.99 502.5 529.05  
## 73 1.31 5143.25 6070.03 1155.5 1232.42  
## 74 0.03 5423.25 6936.04 1648.5 1834.05  
## 75 2.14 6668.75 12573.59 1189.0 1271.12  
## 76 0.03 5282.75 6487.52 1347.5 1458.33  
## 77 4.74 5581.25 7476.80 3669.5 5264.87  
## 78 4.74 5912.75 8752.14 3640.0 5200.59  
## LIF\_Net\_MFI LIF\_Fin\_Conc NGFbeta\_Net\_MFI NGFbeta\_Fin\_Conc PDGF\_BB\_Net\_MFI  
## 9 39.25 11.06 7.5 1.20 NA  
## 10 NA NA 4.0 0.21 NA  
## 11 NA NA 4.5 0.31 NA  
## 12 NA NA 4.5 0.31 NA  
## 13 NA NA 2.5 0.02 NA  
## 14 24.25 3.76 8.5 1.56 NA  
## 15 NA NA 2.5 0.02 NA  
## 16 NA NA 4.5 0.31 NA  
## 17 NA NA 5.5 0.57 NA  
## 18 NA NA NA NA NA  
## 19 NA NA 7.0 1.03 NA  
## 20 NA NA 4.0 0.21 NA  
## 21 NA NA 3.5 0.12 NA  
## 22 NA NA 6.0 0.71 NA  
## 23 NA NA 3.5 0.12 NA  
## 24 NA NA 3.5 0.12 NA  
## 25 NA NA 4.5 0.31 NA  
## 26 NA NA 4.5 0.31 NA  
## 27 NA NA 5.5 0.57 NA  
## 28 NA NA 3.5 0.12 NA  
## 29 NA NA NA NA NA  
## 30 NA NA 3.5 0.12 NA  
## 31 NA NA NA NA NA  
## 32 52.25 17.63 5.5 0.57 NA  
## 33 NA NA 3.5 0.12 NA  
## 34 NA NA 5.5 0.57 NA  
## 35 NA NA 3.5 0.12 NA  
## 36 NA NA 4.5 0.31 NA  
## 37 NA NA 4.5 0.31 NA  
## 38 NA NA 2.5 0.02 NA  
## 39 NA NA 5.0 0.43 NA  
## 40 NA NA 3.5 0.12 NA  
## 41 NA NA 3.5 0.12 NA  
## 42 NA NA 4.5 0.31 NA  
## 43 NA NA 5.5 0.57 NA  
## 44 NA NA 2.5 0.02 NA  
## 45 NA NA NA NA NA  
## 46 NA NA 5.5 0.57 NA  
## 47 NA NA 3.0 0.06 NA  
## 48 NA NA 3.5 0.12 NA  
## 49 NA NA 6.0 0.71 NA  
## 50 NA NA 4.5 0.31 NA  
## 51 NA NA 2.5 0.02 NA  
## 52 NA NA 2.5 0.02 NA  
## 53 NA NA NA NA NA  
## 54 NA NA 2.5 0.02 NA  
## 55 NA NA NA NA NA  
## 56 19.25 1.62 NA NA NA  
## 57 NA NA NA NA NA  
## 58 NA NA 3.5 0.12 NA  
## 59 NA NA 2.5 0.02 NA  
## 60 NA NA NA NA NA  
## 61 NA NA 3.5 0.12 NA  
## 62 NA NA 2.5 0.02 NA  
## 63 NA NA 3.5 0.12 NA  
## 64 NA NA 4.5 0.31 NA  
## 65 NA NA 4.5 0.31 NA  
## 66 NA NA 5.5 0.57 NA  
## 67 NA NA 3.5 0.12 NA  
## 68 NA NA NA NA NA  
## 69 NA NA 3.0 0.06 NA  
## 70 NA NA 2.5 0.02 NA  
## 71 NA NA NA NA NA  
## 72 NA NA NA NA NA  
## 73 NA NA 3.5 0.12 NA  
## 74 NA NA 6.5 0.87 NA  
## 75 NA NA 4.5 0.31 NA  
## 76 17.25 0.89 3.0 0.06 NA  
## 77 NA NA 6.5 0.87 NA  
## 78 NA NA 8.5 1.56 NA  
## PDGF\_BB\_Fin\_Conc PlGF\_1\_Net\_MFI PlGF\_1\_Fin\_Conc SCF\_Net\_MFI SCF\_Fin\_Conc  
## 9 NA NA NA 81.25 8.86  
## 10 NA NA NA 63.25 6.15  
## 11 NA NA NA 44.25 3.34  
## 12 NA NA NA 86.25 9.61  
## 13 NA NA NA 71.75 7.43  
## 14 NA NA NA 39.25 2.63  
## 15 NA NA NA 51.25 4.37  
## 16 NA NA NA 57.25 5.26  
## 17 NA NA NA 37.25 2.35  
## 18 NA NA NA 51.75 4.44  
## 19 NA NA NA 47.25 3.78  
## 20 NA NA NA 97.25 11.27  
## 21 NA NA NA 35.25 2.08  
## 22 NA NA NA 115.75 14.02  
## 23 NA NA NA 45.25 3.49  
## 24 NA NA NA 33.25 1.81  
## 25 NA NA NA 78.25 8.41  
## 26 NA NA NA 40.75 2.84  
## 27 NA NA NA 60.25 5.70  
## 28 NA NA NA 50.25 4.22  
## 29 NA NA NA 36.25 2.22  
## 30 NA NA NA 54.75 4.88  
## 31 NA NA NA 55.25 4.96  
## 32 NA NA NA 71.25 7.36  
## 33 NA NA NA NA NA  
## 34 NA NA NA 75.75 8.03  
## 35 NA NA NA 57.25 5.26  
## 36 NA NA NA 41.25 2.91  
## 37 NA NA NA 73.25 7.66  
## 38 NA NA NA 74.75 7.88  
## 39 NA NA NA 61.25 5.85  
## 40 NA NA NA 83.25 9.16  
## 41 NA NA NA 80.25 8.71  
## 42 NA NA NA 50.75 4.29  
## 43 NA NA NA 68.25 6.90  
## 44 NA NA NA 65.75 6.53  
## 45 NA NA NA 37.25 2.35  
## 46 NA 31.5 0.36 50.25 4.22  
## 47 NA NA NA 102.75 12.09  
## 48 NA NA NA 43.25 3.20  
## 49 NA NA NA 50.25 4.22  
## 50 NA NA NA 59.25 5.55  
## 51 NA NA NA 14.75 0.01  
## 52 NA NA NA 20.75 0.37  
## 53 NA NA NA 19.25 0.24  
## 54 NA NA NA 52.25 4.51  
## 55 NA NA NA 62.25 6.00  
## 56 NA NA NA 37.25 2.35  
## 57 NA NA NA 35.25 2.08  
## 58 NA 24.5 0.01 58.75 5.48  
## 59 NA NA NA 48.25 3.92  
## 60 NA NA NA 26.25 0.94  
## 61 NA NA NA 44.25 3.34  
## 62 NA NA NA 40.25 2.77  
## 63 NA NA NA 30.25 1.42  
## 64 NA NA NA 44.75 3.42  
## 65 NA NA NA 44.25 3.34  
## 66 NA NA NA 38.25 2.49  
## 67 NA NA NA 27.25 1.05  
## 68 NA NA NA 38.25 2.49  
## 69 NA NA NA 31.25 1.55  
## 70 NA NA NA 29.25 1.30  
## 71 NA NA NA 51.25 4.37  
## 72 NA NA NA 29.75 1.36  
## 73 NA NA NA 32.25 1.68  
## 74 NA NA NA 51.25 4.37  
## 75 NA NA NA 59.25 5.55  
## 76 NA NA NA 35.25 2.08  
## 77 NA NA NA 95.25 10.97  
## 78 NA NA NA 112.25 13.50  
## VEGF\_A\_Net\_MFI VEGF\_A\_Fin\_Conc VEGF\_D\_Net\_MFI VEGF\_D\_Fin\_Conc  
## 9 31.75 13.25 NA NA  
## 10 118.75 69.26 NA NA  
## 11 41.25 19.04 11.0 0.01  
## 12 58.75 30.08 NA NA  
## 13 126.25 74.24 NA NA  
## 14 50.75 24.99 NA NA  
## 15 31.75 13.25 NA NA  
## 16 25.25 9.43 NA NA  
## 17 26.75 10.30 NA NA  
## 18 33.75 14.45 NA NA  
## 19 28.75 11.47 NA NA  
## 20 36.75 16.27 NA NA  
## 21 20.75 6.90 NA NA  
## 22 40.75 18.73 NA NA  
## 23 68.25 36.18 NA NA  
## 24 20.25 6.63 NA NA  
## 25 37.75 16.89 NA NA  
## 26 45.25 21.53 NA NA  
## 27 39.75 18.12 11.0 0.01  
## 28 35.75 15.66 NA NA  
## 29 28.75 11.47 NA NA  
## 30 42.25 19.66 NA NA  
## 31 67.75 35.86 NA NA  
## 32 16.75 4.78 NA NA  
## 33 46.75 22.47 NA NA  
## 34 23.25 8.29 NA NA  
## 35 27.75 10.88 NA NA  
## 36 27.75 10.88 10.5 0.00  
## 37 48.25 23.41 NA NA  
## 38 77.75 42.33 NA NA  
## 39 64.75 33.93 11.0 0.01  
## 40 38.75 17.50 11.0 0.01  
## 41 55.75 28.16 NA NA  
## 42 55.25 27.85 NA NA  
## 43 54.75 27.53 NA NA  
## 44 27.75 10.88 12.5 0.08  
## 45 32.25 13.55 NA NA  
## 46 93.75 52.78 NA NA  
## 47 48.25 23.41 NA NA  
## 48 8.25 1.01 NA NA  
## 49 22.75 8.01 NA NA  
## 50 18.25 5.56 NA NA  
## 51 24.75 9.15 NA NA  
## 52 25.75 9.72 NA NA  
## 53 24.75 9.15 NA NA  
## 54 24.75 9.15 NA NA  
## 55 37.75 16.89 NA NA  
## 56 17.75 5.30 NA NA  
## 57 14.75 3.78 NA NA  
## 58 52.75 26.26 NA NA  
## 59 58.75 30.08 NA NA  
## 60 49.75 24.36 NA NA  
## 61 51.75 25.62 NA NA  
## 62 21.75 7.46 10.0 0.00  
## 63 29.75 12.06 53.0 9.36  
## 64 22.75 8.01 NA NA  
## 65 31.75 13.25 NA NA  
## 66 20.25 6.63 NA NA  
## 67 22.25 7.73 NA NA  
## 68 20.75 6.90 NA NA  
## 69 33.75 14.45 NA NA  
## 70 22.75 8.01 27.0 2.44  
## 71 20.75 6.90 NA NA  
## 72 26.75 10.30 NA NA  
## 73 35.25 15.36 NA NA  
## 74 47.75 23.10 36.0 4.64  
## 75 36.75 16.27 NA NA  
## 76 48.25 23.41 NA NA  
## 77 73.75 39.74 NA NA  
## 78 82.75 45.59 16.0 0.41

# WHICH COLUMNS WILL BE REMOVED?   
  
  
#NUMBER OF NAs PER COLUMN IN EXP040 SAMPLES  
  
VALUES\_040 <- sapply(S\_040, function(x) sum(is.na(x)))  
dfna040 <- data.frame(100\*(VALUES\_040/70))  
names(dfna040)[names(dfna040) == "X100....VALUES\_040.70."] <- "Percent Missing (%)"  
dfna040[order(dfna040$`Percent Missing (%)`),]

## [1] 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000  
## [7] 0.000000 0.000000 1.428571 4.285714 4.285714 15.714286  
## [13] 30.000000 30.000000 70.000000 70.000000 94.285714 94.285714  
## [19] 95.714286 100.000000 100.000000

dfna040

## Percent Missing (%)  
## SUBJECT 0.000000  
## AGE 0.000000  
## SEX 0.000000  
## RACE 0.000000  
## DX 0.000000  
## BDNF\_Net\_MFI 70.000000  
## BDNF\_Fin\_Conc 70.000000  
## CNTF\_Net\_MFI 30.000000  
## CNTF\_Fin\_Conc 30.000000  
## GDNF\_Net\_MFI 100.000000  
## GDNF\_Fin\_Conc 100.000000  
## NGFbeta\_Net\_MFI 94.285714  
## NGFbeta\_Fin\_Conc 94.285714  
## GFAP\_Net\_MFI 0.000000  
## GFAP\_Fin\_Conc 0.000000  
## NF\_H\_Net\_MFI 1.428571  
## NF\_H\_Fin\_Conc 15.714286  
## S100B\_Net\_MFI 0.000000  
## S100B\_Fin\_Conc 95.714286  
## UCHL1\_Net\_MFI 4.285714  
## UCHL1\_Fin\_Conc 4.285714

# BDNF, GDNF, NGF, S100B  
  
#--------------------------------------  
  
#NUMBER OF NAs PER COLUMN IN EXP110 SAMPLES  
  
VALUES\_110 <- sapply(S\_110, function(x) sum(is.na(x)))  
dfna110 <- data.frame(100\*(VALUES\_110/70))  
names(dfna110)[names(dfna110) == "X100....VALUES\_110.70."] <- "Percent Missing (%)"  
dfna110[order(dfna110$`Percent Missing (%)`),]

## [1] 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000  
## [7] 0.000000 0.000000 0.000000 0.000000 0.000000 1.428571  
## [13] 1.428571 17.142857 17.142857 27.142857 27.142857 84.285714  
## [19] 84.285714 91.428571 91.428571 92.857143 92.857143 97.142857  
## [25] 97.142857 100.000000 100.000000

dfna110

## Percent Missing (%)  
## SUBJECT 0.000000  
## AGE 0.000000  
## SEX 0.000000  
## RACE 0.000000  
## DX 0.000000  
## BDNF\_Net\_MFI 91.428571  
## BDNF\_Fin\_Conc 91.428571  
## EGF\_Net\_MFI 27.142857  
## EGF\_Fin\_Conc 27.142857  
## FGF\_2\_Net\_MFI 0.000000  
## FGF\_2\_Fin\_Conc 0.000000  
## HGF\_Net\_MFI 0.000000  
## HGF\_Fin\_Conc 0.000000  
## LIF\_Net\_MFI 92.857143  
## LIF\_Fin\_Conc 92.857143  
## NGFbeta\_Net\_MFI 17.142857  
## NGFbeta\_Fin\_Conc 17.142857  
## PDGF\_BB\_Net\_MFI 100.000000  
## PDGF\_BB\_Fin\_Conc 100.000000  
## PlGF\_1\_Net\_MFI 97.142857  
## PlGF\_1\_Fin\_Conc 97.142857  
## SCF\_Net\_MFI 1.428571  
## SCF\_Fin\_Conc 1.428571  
## VEGF\_A\_Net\_MFI 0.000000  
## VEGF\_A\_Fin\_Conc 0.000000  
## VEGF\_D\_Net\_MFI 84.285714  
## VEGF\_D\_Fin\_Conc 84.285714

# LIF, PIGF, VEGF\_D, BDNF, PDGF

library(dplyr)  
S040 <- select(S\_040, -BDNF\_Net\_MFI, -BDNF\_Fin\_Conc, -GDNF\_Net\_MFI, -GDNF\_Fin\_Conc, -S100B\_Net\_MFI, -S100B\_Fin\_Conc, -NGFbeta\_Net\_MFI, -NGFbeta\_Fin\_Conc)  
S110 <- select(S\_110, -LIF\_Net\_MFI, -LIF\_Fin\_Conc, -PlGF\_1\_Net\_MFI, -PlGF\_1\_Fin\_Conc, -VEGF\_D\_Net\_MFI, -VEGF\_D\_Fin\_Conc, -BDNF\_Net\_MFI, -BDNF\_Fin\_Conc, -PDGF\_BB\_Net\_MFI  
, -PDGF\_BB\_Fin\_Conc)  
  
#PROTEINS AVAILABLE TO STUDY:   
  
S110\_s <- S110[order(S110$DX),] # EGF / FGF2 / HGF / NGF B / SCF / VEGF A  
S040\_s <- S040[order(S040$DX),] # CNTF / GFAP / NFH / UCHL1  
  
#SUBSETS PER GROUP  
 S110\_ctl <- S110\_s[1:35,]  
 S110\_mdd <- S110\_s[36:70,]  
 S110\_sui <- S110\_s[59:70,]  
 S040\_ctl <- S040\_s[1:35,]  
 S040\_mdd <- S040\_s[36:70,]  
 S040\_sui <- S040\_s[59:70,]

# % OF PROTEINS AVAILABLE TO STUDY: (Cols >30% NAs removed)  
  
V2\_040 <- sapply(S040, function(x) sum(is.na(x)))  
V2040 <- data.frame(100\*(V2\_040/70))  
names(V2040)[names(V2040) == "X100....V2\_040.70."] <- "Percent Missing (%)"  
V2040

## Percent Missing (%)  
## SUBJECT 0.000000  
## AGE 0.000000  
## SEX 0.000000  
## RACE 0.000000  
## DX 0.000000  
## CNTF\_Net\_MFI 30.000000  
## CNTF\_Fin\_Conc 30.000000  
## GFAP\_Net\_MFI 0.000000  
## GFAP\_Fin\_Conc 0.000000  
## NF\_H\_Net\_MFI 1.428571  
## NF\_H\_Fin\_Conc 15.714286  
## UCHL1\_Net\_MFI 4.285714  
## UCHL1\_Fin\_Conc 4.285714

#\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
V2\_110 <- sapply(S110, function(x) sum(is.na(x)))  
V2110 <- data.frame(100\*(V2\_110/70))  
names(V2110)[names(V2110) == "X100....V2\_110.70."] <- "Percent Missing (%)"  
V2110

## Percent Missing (%)  
## SUBJECT 0.000000  
## AGE 0.000000  
## SEX 0.000000  
## RACE 0.000000  
## DX 0.000000  
## EGF\_Net\_MFI 27.142857  
## EGF\_Fin\_Conc 27.142857  
## FGF\_2\_Net\_MFI 0.000000  
## FGF\_2\_Fin\_Conc 0.000000  
## HGF\_Net\_MFI 0.000000  
## HGF\_Fin\_Conc 0.000000  
## NGFbeta\_Net\_MFI 17.142857  
## NGFbeta\_Fin\_Conc 17.142857  
## SCF\_Net\_MFI 1.428571  
## SCF\_Fin\_Conc 1.428571  
## VEGF\_A\_Net\_MFI 0.000000  
## VEGF\_A\_Fin\_Conc 0.000000

STD110$EGF\_Net\_MFI

## [1] 2305.25 1767.50 888.25 282.25 60.25 16.75 4.00

S110$EGF\_Net\_MFI

## [1] 0.75 2.25 NA 1.75 1.75 14.75 1.75 3.25 NA NA 2.75 1.75  
## [13] 0.75 0.75 2.75 1.75 1.75 NA 2.75 NA NA 0.75 1.75 1.75  
## [25] 1.75 4.25 3.75 3.25 NA 3.25 2.75 2.75 0.75 0.75 1.75 0.75  
## [37] 0.75 0.75 1.75 NA 0.75 NA 0.75 NA 1.75 1.75 NA NA  
## [49] NA NA 4.25 NA 0.75 0.75 4.25 NA 3.75 2.75 0.75 NA  
## [61] NA NA 1.75 1.75 1.75 0.75 2.25 0.75 3.75 3.75

#fit the model  
 GFAP\_log <- lm(STD040$GFAP\_Net\_MFI ~ log(STD040$GFAP\_Fin\_Conc))  
  
#view the output of the model  
summary(GFAP\_log)

##   
## Call:  
## lm(formula = STD040$GFAP\_Net\_MFI ~ log(STD040$GFAP\_Fin\_Conc))  
##   
## Residuals:  
## 1 2 3 4 6   
## 4428 -2303 -3486 -1824 3186   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -13279.4 6697.4 -1.983 0.1417   
## log(STD040$GFAP\_Fin\_Conc) 2436.6 838.5 2.906 0.0622 .  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 4104 on 3 degrees of freedom  
## (2 observations deleted due to missingness)  
## Multiple R-squared: 0.7379, Adjusted R-squared: 0.6505   
## F-statistic: 8.444 on 1 and 3 DF, p-value: 0.0622

STD040$GFAP\_Net\_MFI

## [1] 16937.00 6935.00 2201.00 868.50 NA 244.75 NA

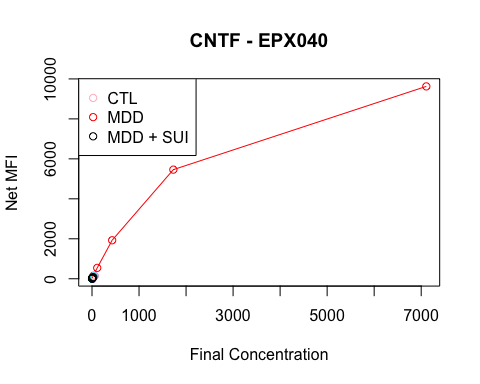
S040$GFAP\_Net\_MFI

## [1] 14116.0 15449.0 13087.5 10957.5 14000.0 16866.0 12469.0 13767.0 14669.0  
## [10] 14347.0 11349.0 12399.5 14494.5 10932.0 15521.0 16641.0 12831.0 12076.0  
## [19] 10682.0 13837.0 13885.0 12993.0 14131.0 12829.0 13942.0 13176.0 10391.0  
## [28] 12723.0 12366.0 13652.5 8149.0 11212.0 12283.5 12741.0 9992.0 9992.0  
## [37] 15629.0 12551.0 12163.0 10813.5 14147.0 10219.0 13311.0 13969.0 11515.5  
## [46] 12283.0 14078.5 14545.0 14685.5 12514.5 14213.0 13584.0 14466.5 11855.0  
## [55] 11197.0 10190.0 8272.0 11312.5 8901.0 10541.5 12942.0 9374.5 12213.0  
## [64] 15805.0 13054.0 12076.0 12072.0 14447.0 8101.0 9978.0

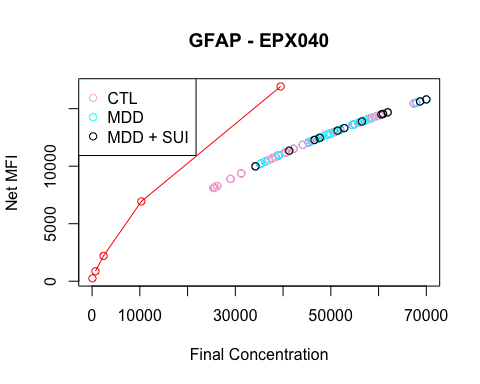
gfap\_ln\_y = 2436.6\*(log(S040$GFAP\_Net\_MFI)) -13279.4  
gfap\_ln\_y

## [1] 10002.469 10222.337 9818.137 9385.316 9982.364 10436.162 9700.177  
## [8] 9941.470 10096.102 10042.020 9470.854 9686.557 10066.943 9379.639  
## [15] 10233.666 10403.438 9769.909 9622.143 9323.270 9953.828 9962.266  
## [22] 9800.480 10005.057 9769.529 9972.248 9834.559 9255.971 9749.313  
## [29] 9679.966 9921.120 8663.768 9441.261 9663.655 9752.757 9160.565  
## [36] 9160.565 10250.562 9716.148 9639.634 9353.082 10007.815 9215.301  
## [43] 9859.397 9976.962 9506.341 9663.556 9995.988 10075.417 10098.841  
## [50] 9709.052 10019.156 9908.864 10062.231 9577.138 9437.999 9208.376  
## [57] 8700.271 9463.005 8878.843 9291.009 9790.897 9005.131 9649.630  
## [64] 10277.848 9811.892 9622.143 9621.336 10058.945 8649.373 9157.149

#STD040 - CNTF PLOT  
  
#S040 # CNTF / GFAP / NFH / UCHL1  
  
CNTF\_STD040 <- lm(STD040$CNTF\_Net\_MFI~STD040$CNTF\_Fin\_Conc)  
#CNTF\_040 <- lm(STD040$CNTF\_Net\_MFI~STD040$CNTF\_Net\_MFI)  
  
  
#STDs FROM EXP040 FOR BDNF  
plot(STD040$CNTF\_Net\_MFI~STD040$CNTF\_Fin\_Conc, type='n',col="red",xlab="Final Concentration", ylab="Net MFI", main="CNTF - EPX040")#, ylim=c(0,10000))  
lines(STD040$CNTF\_Net\_MFI~STD040$CNTF\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD040$CNTF\_Net\_MFI~STD040$CNTF\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","red","black"), pch=1)   
  
#SAMPLES FROM EXP040 FOR BDNF  
#lines(S040$CNTF\_Net\_MFI~S040$CNTF\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S040$CNTF\_Net\_MFI~S040$CNTF\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S040\_ctl$CNTF\_Net\_MFI~S040\_ctl$CNTF\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S040\_mdd$CNTF\_Net\_MFI~S040\_mdd$CNTF\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S040\_sui$CNTF\_Net\_MFI~S040\_sui$CNTF\_Fin\_Conc, col="black")#, na.rm=TRUE)



#STD040 - GFAP PLOT  
  
#S040 # CNTF / GFAP / NFH / UCHL1  
  
GFAP\_STD040 <- lm(STD040$GFAP\_Net\_MFI~STD040$GFAP\_Fin\_Conc)  
#summary(GFAP\_STD040)  
#CNTF\_040 <- lm(STD040$CNTF\_Net\_MFI~STD040$CNTF\_Net\_MFI)  
  
################ GIVEN CONCENTRATION (EXPECTED)  
GFAP\_STD\_exp <- c( 39900, 9975, 2493.75, 623.44, 155.86, 38.97, 9.74)  
  
################ CALCULATED W/ REMOVED NAs (OUTLIERS)  
GFAP\_x <- c(39494.86, 10316.55, 2401.92, 702.76, 69.61) #REMOVED NAs, & THESE WERE THE OBSERVED VALUES FOR THAT LOGIT MODEL  
GFAP\_y <- c(16937.00, 6935.00, 2201.00, 868.50, 244.75)  
#lines(GFAP\_y~GFAP\_x, col="black",lty=2)#, na.rm=TRUE)  
  
################ CALCULATED W/ NAs (OUTLIERS)################  
GFAP\_STDobs <- c(44825.86, 11219.31, 1463, 233.78, 3437.18, 10.76, 231.59) #these were retrieved from procarta without removing outliers (E & G)  
GFAP\_yall <- c(16937, 6935, 2201, 868.5, 3281, 244.75, 655.5)  
#lines(GFAP\_yall~GFAP\_STDobs, lty=2)  
  
#######POLYNOMIAL FIT  
GFAPx <- STD040$GFAP\_Fin\_Conc  
GFAPy <- STD040$GFAP\_Net\_MFI  
GFAP\_poly <- lm(GFAPy~GFAPx+I(GFAPx^2)+I(GFAPx^3))  
#lines(xplot,predict(GFAP\_poly,newdata=data.frame(x=xplot)), col="blue")  
  
  
#STDs FROM EXP040 FOR GFAP - REMOVED E & G.  
plot(STD040$GFAP\_Net\_MFI~STD040$GFAP\_Fin\_Conc, type='n',col="red",xlab="Final Concentration", ylab="Net MFI", main="GFAP - EPX040", xlim=c(0,70000))  
lines(STD040$GFAP\_Net\_MFI~STD040$GFAP\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD040$GFAP\_Net\_MFI~STD040$GFAP\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","cyan","black"), pch=1)   
#########################  
  
#SAMPLES FROM EXP040 FOR GFAP  
points(S040$GFAP\_Net\_MFI~S040$GFAP\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S040\_ctl$GFAP\_Net\_MFI~S040\_ctl$GFAP\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S040\_mdd$GFAP\_Net\_MFI~S040\_mdd$GFAP\_Fin\_Conc, col="cyan")  
points(S040\_sui$GFAP\_Net\_MFI~S040\_sui$GFAP\_Fin\_Conc, col="black")

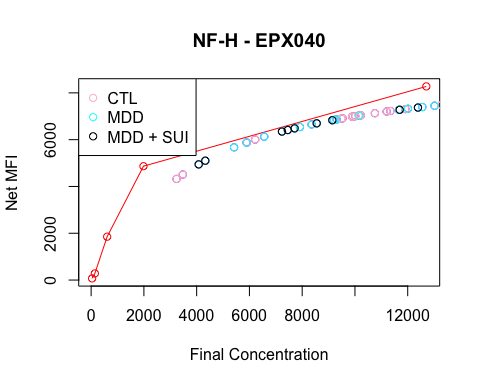


#########################  
  
#points(S040$GFAP\_Net\_MFI~gfap\_ln\_y, col="pink")#, na.rm=TRUE) # DATA TRANSFORMED IN LOG MODEL  
#points(STD040$GFAP\_Net\_MFI ~ log(STD040$GFAP\_Fin\_Conc))  
#########################  
#########################  
#TRANSFORMED CONCENTRATION W/ EQUATION CREATED THROUGH LINEAR REGRESSION MODEL W/ REMOVED OUTLIERS IN LINEAR MODEL  
GFAP\_t <- fx\_prot(S040$GFAP\_Net\_MFI, 4.125e-01, 1.066e+03 )  
#########################  
#########################

#STD040 - NF-H PLOT  
  
# S040 # CNTF / GFAP / NFH / UCHL1  
  
NFH\_STD040 <- lm(STD040$NF\_H\_Net\_MFI~STD040$NF\_H\_Fin\_Conc)  
summary(NFH\_STD040) # R^2 = 0.7585 / p < 0.05

##   
## Call:  
## lm(formula = STD040$NF\_H\_Net\_MFI ~ STD040$NF\_H\_Fin\_Conc)  
##   
## Residuals:  
## 3 4 5 6 7   
## -376.9 2441.7 228.8 -1071.4 -1222.3   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 1271.8291 908.2303 1.400 0.2559   
## STD040$NF\_H\_Fin\_Conc 0.5810 0.1577 3.683 0.0347 \*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 1713 on 3 degrees of freedom  
## (2 observations deleted due to missingness)  
## Multiple R-squared: 0.8189, Adjusted R-squared: 0.7585   
## F-statistic: 13.56 on 1 and 3 DF, p-value: 0.03469

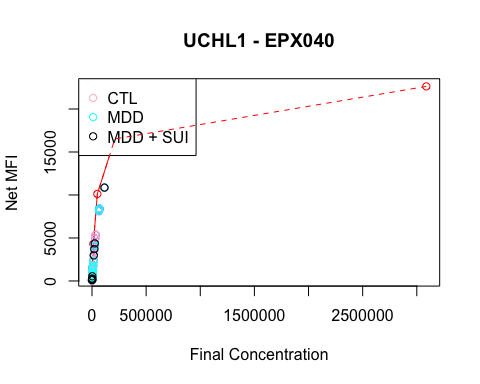
#STDs FROM EXP040 FOR BDNF  
plot(STD040$NF\_H\_Net\_MFI~STD040$NF\_H\_Fin\_Conc, type='n',col="cyan",xlab="Final Concentration", ylab="Net MFI", main="NF-H - EPX040")#, ylim=c(0,10000))  
lines(STD040$NF\_H\_Net\_MFI~STD040$NF\_H\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD040$NF\_H\_Net\_MFI~STD040$NF\_H\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","cyan","black"), pch=1)   
#SAMPLES FROM EXP040 FOR BDNF  
#lines(S040$NF\_H\_Net\_MFI~S040$NF\_H\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S040$NF\_H\_Net\_MFI~S040$NF\_H\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S040\_ctl$NF\_H\_Net\_MFI~S040\_ctl$NF\_H\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S040\_mdd$NF\_H\_Net\_MFI~S040\_mdd$NF\_H\_Fin\_Conc, col="cyan")  
points(S040\_sui$NF\_H\_Net\_MFI~S040\_sui$NF\_H\_Fin\_Conc, col="black")



# STD040 - UCHL1 PLOT  
  
# S040 # CNTF / GFAP / NFH / UCHL1  
  
UCHL1\_STD040 <- lm(STD040$UCHL1\_Net\_MFI~STD040$UCHL1\_Fin\_Conc)  
summary(UCHL1\_STD040) #R^2 = 0.4983 / p - 0.07103

##   
## Call:  
## lm(formula = STD040$UCHL1\_Net\_MFI ~ STD040$UCHL1\_Fin\_Conc)  
##   
## Residuals:  
## 1 3 4 5 6 7   
## -680.2 9293.6 3800.5 -1792.6 -4869.3 -5752.1   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 6.045e+03 2.893e+03 2.090 0.105   
## STD040$UCHL1\_Fin\_Conc 5.591e-03 2.289e-03 2.442 0.071 .  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 6350 on 4 degrees of freedom  
## (1 observation deleted due to missingness)  
## Multiple R-squared: 0.5986, Adjusted R-squared: 0.4983   
## F-statistic: 5.965 on 1 and 4 DF, p-value: 0.07103

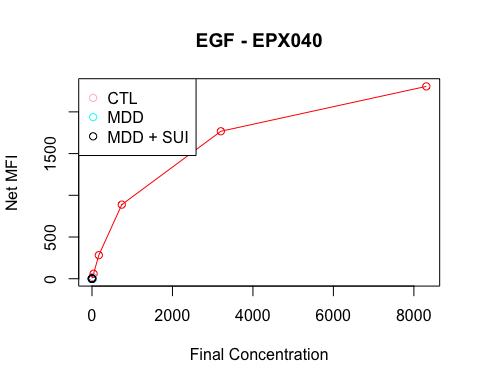
#STDs FROM EXP040 FOR UCHL1 / NAs REMOVED  
plot(STD040$UCHL1\_Net\_MFI~STD040$UCHL1\_Fin\_Conc, type='n',col="red",xlab="Final Concentration", ylab="Net MFI", main="UCHL1 - EPX040")#, xlim=c(0,80000))  
lines(STD040$UCHL1\_Net\_MFI~STD040$UCHL1\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD040$UCHL1\_Net\_MFI~STD040$UCHL1\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","cyan","black"), pch=1)   
#STDs FROM EXP040 FOR UCHL1 / NO NAs REMOVED  
uchl1\_x <-c(3087824.07,210426.23,49282.25,12687.60, 3143.33, 786.54)  
uchl1\_y <- c(22628.25,16515.25, 10121.25,4323.50 ,1193.50, 297.50)  
lines(uchl1\_y~uchl1\_x, col="red", lty=2)#, na.rm=TRUE)  
  
#SAMPLES FROM EXP040 FOR UCHL1  
points(S040$UCHL1\_Net\_MFI~S040$UCHL1\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S040\_ctl$UCHL1\_Net\_MFI~S040\_ctl$UCHL1\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S040\_mdd$UCHL1\_Net\_MFI~S040\_mdd$UCHL1\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S040\_sui$UCHL1\_Net\_MFI~S040\_sui$UCHL1\_Fin\_Conc, col="black")#, na.rm=TRUE)



# STD110 - EGF PLOT  
  
# S110 - EGF / FGF2 / HGF / NGF B / SCF / VEGF A  
  
EGF\_STD110 <- lm(STD110$EGF\_Net\_MFI~STD110$EGF\_Fin\_Conc)  
summary(EGF\_STD110) #R^2 = 0.8807 / p < 0.01

##   
## Call:  
## lm(formula = STD110$EGF\_Net\_MFI ~ STD110$EGF\_Fin\_Conc)  
##   
## Residuals:  
## 1 2 3 4 5 6 7   
## -270.92 611.61 417.45 -29.74 -215.42 -251.46 -261.51   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 264.79430 178.04714 1.487 0.19711   
## STD110$EGF\_Fin\_Conc 0.27818 0.05271 5.278 0.00325 \*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 400.2 on 5 degrees of freedom  
## Multiple R-squared: 0.8478, Adjusted R-squared: 0.8174   
## F-statistic: 27.86 on 1 and 5 DF, p-value: 0.003251

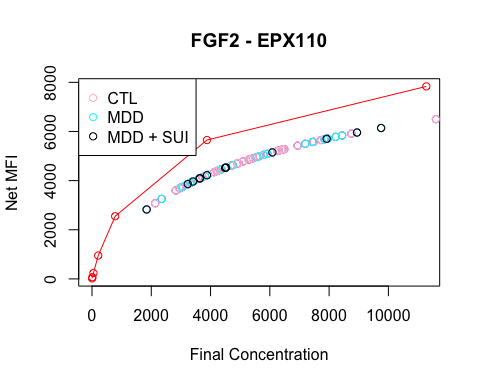
#STDs FROM EXP110 FOR EGF / NAs REMOVED  
plot(STD110$EGF\_Net\_MFI~STD110$EGF\_Fin\_Conc, type='n',col="red",xlab="Final Concentration", ylab="Net MFI", main="EGF - EPX040")#, ylim=c(0,10000))  
lines(STD110$EGF\_Net\_MFI~STD110$EGF\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD110$EGF\_Net\_MFI~STD110$EGF\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","cyan","black"), pch=1)   
#SAMPLES FROM EXP110 FOR EGF  
points(S110$EGF\_Net\_MFI~S110$EGF\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S110\_ctl$EGF\_Net\_MFI~S110\_ctl$EGF\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$EGF\_Net\_MFI~S110\_mdd$EGF\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$EGF\_Net\_MFI~S110\_sui$EGF\_Fin\_Conc, col="black")#, na.rm=TRUE)



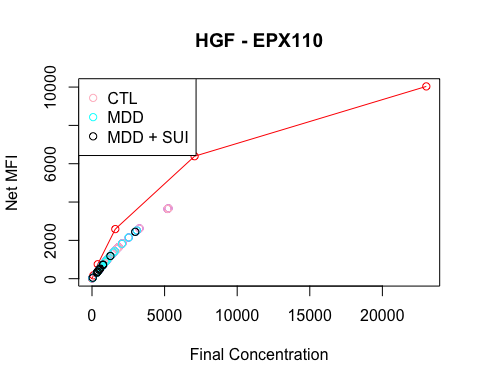
# STD110 - FGF2 PLOT  
  
# S110 - EGF / FGF2 / HGF / NGF B / SCF / VEGF A  
  
FGF\_2\_STD110 <- lm(STD110$FGF\_2\_Net\_MFI~STD110$FGF\_2\_Fin\_Conc)  
summary(FGF\_2\_STD110) #R^2 = 0.8807 / p < 0.01

##   
## Call:  
## lm(formula = STD110$FGF\_2\_Net\_MFI ~ STD110$FGF\_2\_Fin\_Conc)  
##   
## Residuals:  
## 1 2 3 4 5 6 7   
## -796.60 2105.03 1130.43 -75.83 -675.83 -822.73 -864.47   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 882.573 564.774 1.563 0.17888   
## STD110$FGF\_2\_Fin\_Conc 0.687 0.125 5.496 0.00272 \*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 1283 on 5 degrees of freedom  
## Multiple R-squared: 0.858, Adjusted R-squared: 0.8296   
## F-statistic: 30.21 on 1 and 5 DF, p-value: 0.002723

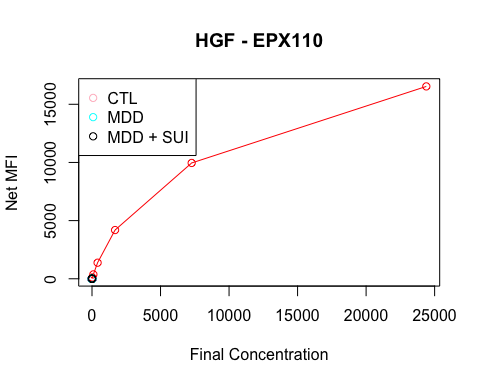
#STDs FROM EXP110 FOR FGF2 / NAs REMOVED  
plot(STD110$FGF\_2\_Net\_MFI~STD110$FGF\_2\_Fin\_Conc, type='n',col="red",xlab="Final Concentration", ylab="Net MFI", main="FGF2 - EPX110")#, ylim=c(0,10000))  
lines(STD110$FGF\_2\_Net\_MFI~STD110$FGF\_2\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD110$FGF\_2\_Net\_MFI~STD110$FGF\_2\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","cyan","black"), pch=1)   
#SAMPLES FROM EXP110 FOR FGF2  
points(S110$FGF\_2\_Net\_MFI~S110$FGF\_2\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S110\_ctl$FGF\_2\_Net\_MFI~S110\_ctl$FGF\_2\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$FGF\_2\_Net\_MFI~S110\_mdd$FGF\_2\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$FGF\_2\_Net\_MFI~S110\_sui$FGF\_2\_Fin\_Conc, col="black")#, na.rm=TRUE)



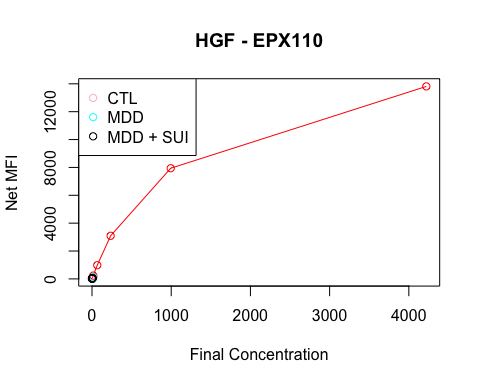
# STD110 - HGF PLOT  
  
# S110 - EGF / FGF2 / HGF / NGF B / SCF / VEGF A  
  
HGF\_STD110 <- lm(STD110$HGF\_Net\_MFI~STD110$HGF\_Fin\_Conc)  
#summary(HGF\_STD110) #R^2 = 0.8715 / p = 0.001325  
  
#STDs FROM EXP110 FOR FGF2 / NAs REMOVED  
plot(STD110$HGF\_Net\_MFI~STD110$HGF\_Fin\_Conc, type='n',col="red",xlab="Final Concentration", ylab="Net MFI", main="HGF - EPX110")#, ylim=c(0,10000))  
lines(STD110$HGF\_Net\_MFI~STD110$HGF\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD110$HGF\_Net\_MFI~STD110$HGF\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","cyan","black"), pch=1)   
#SAMPLES FROM EXP110 FOR FGF2  
points(S110$HGF\_Net\_MFI~S110$HGF\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S110\_ctl$HGF\_Net\_MFI~S110\_ctl$HGF\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$HGF\_Net\_MFI~S110\_mdd$HGF\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$HGF\_Net\_MFI~S110\_sui$HGF\_Fin\_Conc, col="black")#, na.rm=TRUE)



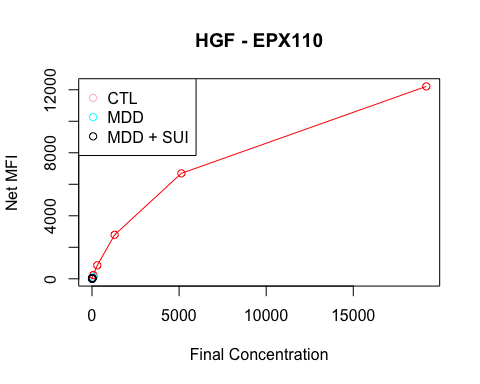
# STD110 - NGF B PLOT  
  
# S110 - EGF / FGF2 / HGF / NGF B / SCF / VEGF A  
  
HGF\_STD110 <- lm(STD110$NGFbeta\_Net\_MFI~STD110$NGFbeta\_Fin\_Conc)  
#summary(HGF\_STD110) #R^2 = 0.8715 / p = 0.001325  
  
#STDs FROM EXP110 FOR FGF2 / NAs REMOVED  
plot(STD110$NGFbeta\_Net\_MFI~STD110$NGFbeta\_Fin\_Conc, type='n',col="red",xlab="Final Concentration", ylab="Net MFI", main="HGF - EPX110")#, ylim=c(0,10000))  
lines(STD110$NGFbeta\_Net\_MFI~STD110$NGFbeta\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD110$NGFbeta\_Net\_MFI~STD110$NGFbeta\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","cyan","black"), pch=1)   
#SAMPLES FROM EXP110 FOR FGF2  
points(S110$NGFbeta\_Net\_MFI~S110$NGFbeta\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S110\_ctl$NGFbeta\_Net\_MFI~S110\_ctl$NGFbeta\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$NGFbeta\_Net\_MFI~S110\_mdd$NGFbeta\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$NGFbeta\_Net\_MFI~S110\_sui$NGFbeta\_Fin\_Conc, col="black")#, na.rm=TRUE)



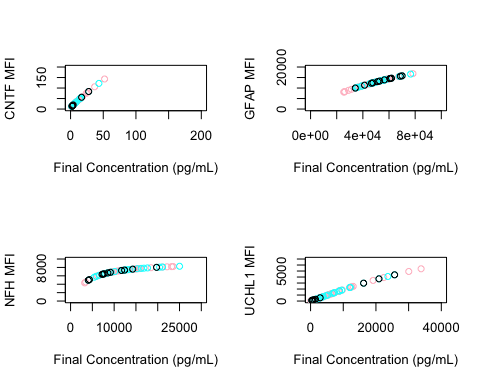
# STD110 - NGF B PLOT  
  
# S110 - EGF / FGF2 / HGF / NGF B / SCF / VEGF A  
  
SCF\_STD110 <- lm(STD110$SCF\_Net\_MFI~STD110$SCF\_Fin\_Conc)  
#summary(HGF\_STD110) #R^2 = 0.8715 / p = 0.001325  
  
#STDs FROM EXP110 FOR FGF2 / NAs REMOVED  
plot(STD110$SCF\_Net\_MFI~STD110$SCF\_Fin\_Conc, type='n',col="red",xlab="Final Concentration", ylab="Net MFI", main="HGF - EPX110")#, ylim=c(0,10000))  
lines(STD110$SCF\_Net\_MFI~STD110$SCF\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD110$SCF\_Net\_MFI~STD110$SCF\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","cyan","black"), pch=1)   
#SAMPLES FROM EXP110 FOR FGF2  
points(S110$SCF\_Net\_MFI~S110$SCF\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S110\_ctl$SCF\_Net\_MFI~S110\_ctl$SCF\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$SCF\_Net\_MFI~S110\_mdd$SCF\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$SCF\_Net\_MFI~S110\_sui$SCF\_Fin\_Conc, col="black")#, na.rm=TRUE)



# STD110 - NGF B PLOT  
  
# S110 - EGF / FGF2 / HGF / NGF B / SCF / VEGF A  
  
  
HGF\_STD110 <- lm(STD110$VEGF\_A\_Net\_MFI~STD110$VEGF\_A\_Fin\_Conc)  
#summary(HGF\_STD110) #R^2 = 0.8715 / p = 0.001325  
  
#STDs FROM EXP110 FOR FGF2 / NAs REMOVED  
plot(STD110$VEGF\_A\_Net\_MFI~STD110$VEGF\_A\_Fin\_Conc, type='n',col="red",xlab="Final Concentration", ylab="Net MFI", main="HGF - EPX110")#, ylim=c(0,10000))  
lines(STD110$VEGF\_A\_Net\_MFI~STD110$VEGF\_A\_Fin\_Conc, col="red")#, na.rm=TRUE)  
points(STD110$VEGF\_A\_Net\_MFI~STD110$VEGF\_A\_Fin\_Conc, col="red")#, na.rm=TRUE)  
legend("topleft", legend=c("CTL", "MDD", "MDD + SUI"), col=c("pink","cyan","black"), pch=1)   
#SAMPLES FROM EXP110 FOR FGF2  
points(S110$VEGF\_A\_Net\_MFI~S110$VEGF\_A\_Fin\_Conc, col="purple")#, na.rm=TRUE)  
points(S110\_ctl$VEGF\_A\_Net\_MFI~S110\_ctl$VEGF\_A\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$VEGF\_A\_Net\_MFI~S110\_mdd$VEGF\_A\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$VEGF\_A\_Net\_MFI~S110\_sui$VEGF\_A\_Fin\_Conc, col="black")#, na.rm=TRUE)

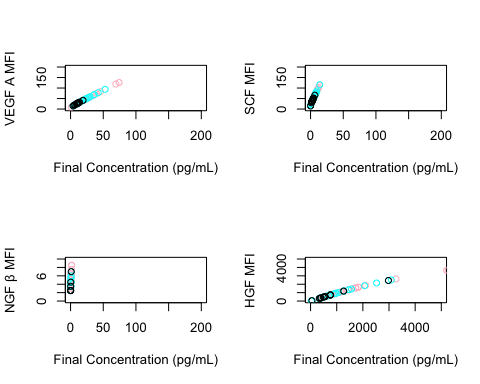


#################  
# S040 #  
# CNTF / GFAP / NFH / UCHL1  
#################  
par(mfrow=c(2,2))  
#################  
plot(S040\_ctl$CNTF\_Net\_MFI~S040\_ctl$CNTF\_Fin\_Conc, col="pink", ylim=c(0,200), xlim=c(0,200), type='n', ylab="CNTF MFI", xlab="Final Concentration (pg/mL)")  
points(S040\_ctl$CNTF\_Net\_MFI~S040\_ctl$CNTF\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S040\_mdd$CNTF\_Net\_MFI~S040\_mdd$CNTF\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S040\_sui$CNTF\_Net\_MFI~S040\_sui$CNTF\_Fin\_Conc, col="black")#, na.rm=TRUE)  
#################  
plot(S040\_ctl$GFAP\_Net\_MFI~S040\_ctl$GFAP\_Fin\_Conc, col="pink", ylim=c(0,20000), xlim=c(0,100000), type='n', ylab="GFAP MFI", xlab="Final Concentration (pg/mL)")  
points(S040\_ctl$GFAP\_Net\_MFI~S040\_ctl$GFAP\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S040\_mdd$GFAP\_Net\_MFI~S040\_mdd$GFAP\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S040\_sui$GFAP\_Net\_MFI~S040\_sui$GFAP\_Fin\_Conc, col="black")#, na.rm=TRUE)  
#################  
plot(S040\_ctl$NF\_H\_Net\_MFI~S040\_ctl$NF\_H\_Fin\_Conc, col="pink", ylim=c(0,10000), xlim=c(0,30000), type='n', ylab="NFH MFI", xlab="Final Concentration (pg/mL)")  
points(S040\_ctl$NF\_H\_Net\_MFI~S040\_ctl$NF\_H\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S040\_mdd$NF\_H\_Net\_MFI~S040\_mdd$NF\_H\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S040\_sui$NF\_H\_Net\_MFI~S040\_sui$NF\_H\_Fin\_Conc, col="black")#, na.rm=TRUE)  
#################  
plot(S040\_ctl$UCHL1\_Net\_MFI~S040\_ctl$UCHL1\_Fin\_Conc, col="pink", ylim=c(0,7000), xlim=c(0,40000), type='n', ylab="UCHL1 MFI", xlab="Final Concentration (pg/mL)")  
points(S040\_ctl$UCHL1\_Net\_MFI~S040\_ctl$UCHL1\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S040\_mdd$UCHL1\_Net\_MFI~S040\_mdd$UCHL1\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S040\_sui$UCHL1\_Net\_MFI~S040\_sui$UCHL1\_Fin\_Conc, col="black")#, na.rm=TRUE)

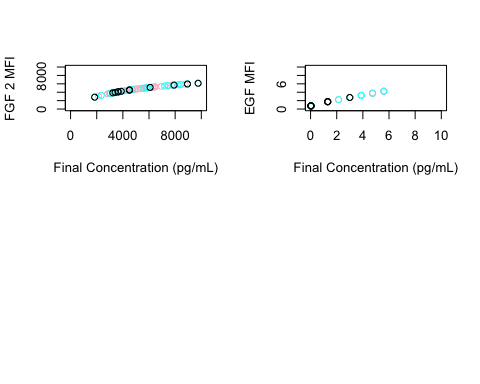


#################

#################  
# S110 #  
# EGF / FGF2 / HGF / NGF B / SCF / VEGF A  
#################  
par(mfrow=c(2,2))  
#################  
plot(S110\_ctl$VEGF\_A\_Net\_MFI~S110\_ctl$VEGF\_A\_Fin\_Conc, col="pink", ylim=c(0,200), xlim=c(0,200), type='n', ylab="VEGF A MFI", xlab="Final Concentration (pg/mL)")  
points(S110\_ctl$VEGF\_A\_Net\_MFI~S110\_ctl$VEGF\_A\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$VEGF\_A\_Net\_MFI~S110\_mdd$VEGF\_A\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$VEGF\_A\_Net\_MFI~S110\_sui$VEGF\_A\_Fin\_Conc, col="black")#, na.rm=TRUE)  
#################  
plot(S110\_ctl$SCF\_Net\_MFI~S110\_ctl$SCF\_Fin\_Conc, col="pink", ylim=c(0,200), xlim=c(0,200), type='n', ylab="SCF MFI", xlab="Final Concentration (pg/mL)")  
points(S110\_ctl$SCF\_Net\_MFI~S110\_ctl$SCF\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$SCF\_Net\_MFI~S110\_mdd$SCF\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$SCF\_Net\_MFI~S110\_sui$SCF\_Fin\_Conc, col="black")#, na.rm=TRUE)  
#################  
plot(S110\_ctl$NGFbeta\_Net\_MFI~S110\_ctl$NGFbeta\_Fin\_Conc, col="pink", ylim=c(0,10), xlim=c(0,200), type='n', ylab="NGF β MFI", xlab="Final Concentration (pg/mL)")  
points(S110\_ctl$NGFbeta\_Net\_MFI~S110\_ctl$NGFbeta\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$NGFbeta\_Net\_MFI~S110\_mdd$NGFbeta\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$NGFbeta\_Net\_MFI~S110\_sui$NGFbeta\_Fin\_Conc, col="black")#, na.rm=TRUE)  
#################  
plot(S110\_ctl$HGF\_Net\_MFI~S110\_ctl$HGF\_Fin\_Conc, col="pink", ylim=c(0,5000), xlim=c(0,5000), type='n', ylab="HGF MFI", xlab="Final Concentration (pg/mL)")  
points(S110\_ctl$HGF\_Net\_MFI~S110\_ctl$HGF\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$HGF\_Net\_MFI~S110\_mdd$HGF\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$HGF\_Net\_MFI~S110\_sui$HGF\_Fin\_Conc, col="black")#, na.rm=TRUE)



#################  
plot(S110\_ctl$FGF\_2\_Net\_MFI~S110\_ctl$FGF\_2\_Fin\_Conc, col="pink", ylim=c(0,10000), xlim=c(0,10000), type='n', ylab="FGF 2 MFI", xlab="Final Concentration (pg/mL)")  
points(S110\_ctl$FGF\_2\_Net\_MFI~S110\_ctl$FGF\_2\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$FGF\_2\_Net\_MFI~S110\_mdd$FGF\_2\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$FGF\_2\_Net\_MFI~S110\_sui$FGF\_2\_Fin\_Conc, col="black")#, na.rm=TRUE)  
#################  
plot(S110\_ctl$EGF\_Net\_MFI~S110\_ctl$EGF\_Fin\_Conc, col="pink", ylim=c(0,10), xlim=c(0,10), type='n', ylab="EGF MFI", xlab="Final Concentration (pg/mL)")  
points(S110\_ctl$EGF\_Net\_MFI~S110\_ctl$EGF\_Fin\_Conc, col="pink")#, na.rm=TRUE)  
points(S110\_mdd$EGF\_Net\_MFI~S110\_mdd$EGF\_Fin\_Conc, col="cyan")#, na.rm=TRUE)  
points(S110\_sui$EGF\_Net\_MFI~S110\_sui$EGF\_Fin\_Conc, col="black")#, na.rm=TRUE)



# STATISTICAL ANALYSIS OF RELEVANT PROTEINS  
# EXP110 - EGF / FGF2 / HGF / NGF B / SCF / VEGF A  
# EXP040 - CNTF / GFAP / NFH / UCHL1  
  
####################  
########DATA TO USE  
#S040$CNTF\_Fin\_Conc  
#S040$GFAP\_Fin\_Conc  
#S040$NF\_H\_Fin\_Conc  
#S040$UCHL1\_Fin\_Conc  
#S110$EGF\_Fin\_Conc  
#S110$FGF\_2\_Fin\_Conc  
#S110$HGF\_Fin\_Conc  
#S110$NGFbeta\_Fin\_Conc  
#S110$SCF\_Fin\_Conc  
#S110$VEGF\_A\_Fin\_Conc  
  
####################  
#DATA TRANSFORMATION  
GFAP\_norm <- fx( S040$GFAP\_Fin\_Conc )  
NFH\_norm <- fx( S040$NF\_H\_Fin\_Conc )  
UCHL1\_norm <- fx( S040$UCHL1\_Fin\_Conc )  
CNTF\_norm <- fx(S040$CNTF\_Fin\_Conc)  
FGF2\_norm <- fx( S110$FGF\_2\_Fin\_Conc )  
VEGFA\_norm <- fx( S110$VEGF\_A\_Fin\_Conc )  
#EGF\_norm <- fx( S110$EGF\_Fin\_Conc )  
#HGF\_norm <- fx1( S110$HGF\_Fin\_Conc )  
#NGFB\_norm <- fx1( S110$NGFbeta\_Fin\_Conc )  
#SCF\_norm <- fx1( S110$SCF\_Fin\_Conc )  
  
####################  
#DATA TRANSFORMATION  
shapiro.test( GFAP\_norm ) # 0.00% NAs

##   
## Shapiro-Wilk normality test  
##   
## data: GFAP\_norm  
## W = 0.96891, p-value = 0.07912

shapiro.test( NFH\_norm ) # 15.71% NAs (& OOR)

##   
## Shapiro-Wilk normality test  
##   
## data: NFH\_norm  
## W = 0.9723, p-value = 0.1971

shapiro.test( UCHL1\_norm )# 4.29% NAs

##   
## Shapiro-Wilk normality test  
##   
## data: UCHL1\_norm  
## W = 0.97264, p-value = 0.146

shapiro.test( FGF2\_norm ) # 0.00% NAs

##   
## Shapiro-Wilk normality test  
##   
## data: FGF2\_norm  
## W = 0.9849, p-value = 0.5634

shapiro.test( VEGFA\_norm )# 0.00% NAs

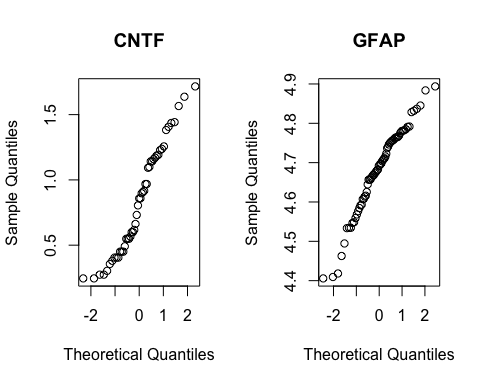
##   
## Shapiro-Wilk normality test  
##   
## data: VEGFA\_norm  
## W = 0.97369, p-value = 0.1472

shapiro.test( CNTF\_norm ) # NON-PARAMETRIC # 30.00% NAs

##   
## Shapiro-Wilk normality test  
##   
## data: CNTF\_norm  
## W = 0.94469, p-value = 0.02262

#shapiro.test( EGF\_norm )# NON-PARAMETRIC # 27.14% NAs  
#shapiro.test( HGF\_norm )# NON-PARAMETRIC # 0.00% NAs  
#shapiro.test( NGFB\_norm )# NON-PARAMETRIC # 17.14% NAs  
#shapiro.test( SCF\_norm )# NON-PARAMETRIC # 1.43% NAs

par(mfrow=c(1,2))  
qqnorm(CNTF\_norm, main="CNTF") # ASSUME PARAMETRIC CONDITIONS SINCE IT POSES SIMILARITY TO GFAP  
qqnorm(GFAP\_norm, main="GFAP") # GFAP IS NORMAL PER SHAPIRO WILKS TEST



######################### S040  
#PARAMETRIC DATA ANALYSIS  
  
#PARAMETERS:   
####AGE  
####SEX  
####RACE  
####DX  
  
# RELEVANT = GFAP (0% NAs), UCHL1 (4.28% NAs)  
  
#INDEPENDENT LMs - S040  
GFAP\_norm\_lm1 <- aov(GFAP\_norm~S040$AGE+S040$SEX+S040$RACE+S040$DX)  
NFH\_norm\_lm1 <- aov(NFH\_norm~S040$AGE+S040$SEX+S040$RACE+S040$DX)  
UCHL1\_norm\_lm1 <- aov(UCHL1\_norm~S040$AGE+S040$SEX+S040$RACE+S040$DX)  
CNTF\_norm\_lm1 <- aov(CNTF\_norm~S040$AGE+S040$SEX+S040$RACE+S040$DX)  
  
#INTERDEPENDENT LMs - S040  
GFAP\_norm\_lm2 <- aov(GFAP\_norm~S040$AGE\*S040$SEX\*S040$RACE\*S040$DX)  
NFH\_norm\_lm2 <- aov(NFH\_norm~S040$AGE\*S040$SEX\*S040$RACE\*S040$DX)  
UCHL1\_norm\_lm2 <- aov(UCHL1\_norm~S040$AGE\*S040$SEX\*S040$RACE\*S040$DX)  
CNTF\_norm\_lm2 <- aov(CNTF\_norm~S040$AGE\*S040$SEX\*S040$RACE\*S040$DX)  
  
#######################  
  
anova( GFAP\_norm\_lm1 )# AGE (P < 0.001)

## Analysis of Variance Table  
##   
## Response: GFAP\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)   
## S040$AGE 1 0.13609 0.136086 12.9209 0.0006506 \*\*\*  
## S040$SEX 1 0.02929 0.029290 2.7810 0.1005164   
## S040$RACE 4 0.01623 0.004057 0.3852 0.8183787   
## S040$DX 2 0.00315 0.001577 0.1498 0.8612197   
## Residuals 61 0.64247 0.010532   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

anova( GFAP\_norm\_lm2 )# AGE (P < 0.001) // AGE:RACE:DX (P < 0.05)

## Analysis of Variance Table  
##   
## Response: GFAP\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)   
## S040$AGE 1 0.13609 0.136086 13.5033 0.0006432 \*\*\*  
## S040$SEX 1 0.02929 0.029290 2.9063 0.0952847 .   
## S040$RACE 4 0.01623 0.004057 0.4026 0.8057249   
## S040$DX 2 0.00315 0.001577 0.1565 0.8555856   
## S040$AGE:S040$SEX 1 0.00039 0.000390 0.0387 0.8448739   
## S040$AGE:S040$RACE 3 0.02964 0.009880 0.9804 0.4106882   
## S040$SEX:S040$RACE 2 0.00040 0.000199 0.0197 0.9804545   
## S040$AGE:S040$DX 2 0.02292 0.011462 1.1373 0.3299274   
## S040$SEX:S040$DX 2 0.01267 0.006334 0.6285 0.5380859   
## S040$RACE:S040$DX 2 0.03668 0.018341 1.8199 0.1740209   
## S040$AGE:S040$SEX:S040$RACE 1 0.00336 0.003360 0.3334 0.5665910   
## S040$AGE:S040$SEX:S040$DX 2 0.04351 0.021753 2.1585 0.1275731   
## S040$AGE:S040$RACE:S040$DX 1 0.04160 0.041603 4.1281 0.0482428 \*   
## S040$SEX:S040$RACE:S040$DX 1 0.00786 0.007863 0.7803 0.3818648   
## Residuals 44 0.44343 0.010078   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

anova( NFH\_norm\_lm1 )

## Analysis of Variance Table  
##   
## Response: NFH\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)  
## S040$AGE 1 0.00017 0.000172 0.0040 0.9498  
## S040$SEX 1 0.01558 0.015580 0.3627 0.5498  
## S040$RACE 4 0.16888 0.042219 0.9828 0.4255  
## S040$DX 2 0.15835 0.079173 1.8430 0.1689  
## Residuals 50 2.14795 0.042959

anova( NFH\_norm\_lm2 )

## Analysis of Variance Table  
##   
## Response: NFH\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)  
## S040$AGE 1 0.00017 0.000172 0.0036 0.9525  
## S040$SEX 1 0.01558 0.015580 0.3269 0.5711  
## S040$RACE 4 0.16888 0.042219 0.8859 0.4825  
## S040$DX 2 0.15835 0.079173 1.6613 0.2045  
## S040$AGE:S040$SEX 1 0.00673 0.006730 0.1412 0.7093  
## S040$AGE:S040$RACE 2 0.15011 0.075057 1.5750 0.2213  
## S040$SEX:S040$RACE 1 0.03357 0.033566 0.7043 0.4070  
## S040$AGE:S040$DX 2 0.04384 0.021918 0.4599 0.6351  
## S040$SEX:S040$DX 2 0.07211 0.036055 0.7566 0.4768  
## S040$RACE:S040$DX 2 0.08348 0.041741 0.8759 0.4254  
## S040$AGE:S040$SEX:S040$RACE 1 0.07795 0.077954 1.6358 0.2093  
## S040$AGE:S040$SEX:S040$DX 2 0.00288 0.001441 0.0302 0.9702  
## S040$AGE:S040$RACE:S040$DX 1 0.00927 0.009266 0.1944 0.6620  
## S040$SEX:S040$RACE:S040$DX 1 0.00005 0.000049 0.0010 0.9745  
## Residuals 35 1.66796 0.047656

anova( UCHL1\_norm\_lm1 )# RACE (P < 0.001)

## Analysis of Variance Table  
##   
## Response: UCHL1\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)   
## S040$AGE 1 0.0855 0.08555 0.2760 0.6012825   
## S040$SEX 1 0.7567 0.75665 2.4415 0.1235146   
## S040$RACE 3 6.5387 2.17957 7.0327 0.0004028 \*\*\*  
## S040$DX 2 0.9640 0.48198 1.5552 0.2196785   
## Residuals 59 18.2851 0.30992   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

anova( UCHL1\_norm\_lm2 )# RACE (P < 0.001) / AGE:DX ( P - 0.05) / SEX:RACE:DX (P < 0.05)

## Analysis of Variance Table  
##   
## Response: UCHL1\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)   
## S040$AGE 1 0.0855 0.08555 0.3113 0.5797707   
## S040$SEX 1 0.7567 0.75665 2.7535 0.1043199   
## S040$RACE 3 6.5387 2.17957 7.9315 0.0002548 \*\*\*  
## S040$DX 2 0.9640 0.48198 1.7540 0.1852440   
## S040$AGE:S040$SEX 1 0.0482 0.04818 0.1753 0.6774944   
## S040$AGE:S040$RACE 2 1.3199 0.65997 2.4016 0.1026194   
## S040$SEX:S040$RACE 2 0.0211 0.01057 0.0384 0.9623129   
## S040$AGE:S040$DX 2 1.7380 0.86901 3.1624 0.0523216 .   
## S040$SEX:S040$DX 2 0.3982 0.19910 0.7245 0.4903786   
## S040$RACE:S040$DX 2 0.4839 0.24193 0.8804 0.4219574   
## S040$AGE:S040$SEX:S040$RACE 1 0.2999 0.29994 1.0915 0.3019747   
## S040$AGE:S040$SEX:S040$DX 2 0.2610 0.13050 0.4749 0.6251633   
## S040$AGE:S040$RACE:S040$DX 1 0.4650 0.46500 1.6922 0.2002455   
## S040$SEX:S040$RACE:S040$DX 1 1.4336 1.43357 5.2168 0.0273678 \*   
## Residuals 43 11.8163 0.27480   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

anova( CNTF\_norm\_lm1 )

## Analysis of Variance Table  
##   
## Response: CNTF\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)   
## S040$AGE 1 0.5657 0.56567 4.3323 0.04384 \*  
## S040$SEX 1 0.3920 0.39204 3.0025 0.09084 .  
## S040$RACE 4 1.7492 0.43730 3.3491 0.01864 \*  
## S040$DX 2 0.3952 0.19758 1.5132 0.23253   
## Residuals 40 5.2228 0.13057   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

anova( CNTF\_norm\_lm2 )

## Analysis of Variance Table  
##   
## Response: CNTF\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)   
## S040$AGE 1 0.56567 0.56567 4.8677 0.03640 \*  
## S040$SEX 1 0.39204 0.39204 3.3735 0.07771 .  
## S040$RACE 4 1.74919 0.43730 3.7630 0.01521 \*  
## S040$DX 2 0.39517 0.19758 1.7002 0.20232   
## S040$AGE:S040$SEX 1 0.08271 0.08271 0.7117 0.40656   
## S040$AGE:S040$RACE 2 0.00067 0.00034 0.0029 0.99712   
## S040$SEX:S040$RACE 2 0.94354 0.47177 4.0597 0.02922 \*  
## S040$AGE:S040$DX 2 0.06797 0.03399 0.2925 0.74884   
## S040$SEX:S040$DX 2 0.31736 0.15868 1.3655 0.27296   
## S040$RACE:S040$DX 2 0.36423 0.18211 1.5671 0.22772   
## S040$AGE:S040$SEX:S040$RACE 1 0.13870 0.13870 1.1935 0.28465   
## S040$AGE:S040$SEX:S040$DX 1 0.05260 0.05260 0.4526 0.50703   
## S040$AGE:S040$RACE:S040$DX 1 0.23361 0.23361 2.0102 0.16812   
## Residuals 26 3.02145 0.11621   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

#########################  
#PARAMETRIC DATA ANALYSIS S110  
  
#PARAMETERS:   
####AGE  
####SEX  
####RACE  
####DX  
  
#RELEVANT = VEGF A (0% NAs)  
  
#INDEPENDENT LMs - S110  
FGF2\_norm\_lm1 <- aov(FGF2\_norm~S110$AGE+S110$SEX+S110$RACE+S110$DX)  
VEGFA\_norm\_lm1 <- aov(VEGFA\_norm~S110$AGE+S110$SEX+S110$RACE+S110$DX)  
  
#INTERDEPENDENT LMs - S110  
FGF2\_norm\_lm2 <- aov(FGF2\_norm~S110$AGE\*S110$SEX\*S110$RACE\*S110$DX)  
VEGFA\_norm\_lm2 <- aov(VEGFA\_norm~S110$AGE\*S110$SEX\*S110$RACE\*S110$DX)  
  
#######################  
  
anova( FGF2\_norm\_lm1 )

## Analysis of Variance Table  
##   
## Response: FGF2\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)  
## S110$AGE 1 0.01389 0.013887 0.3871 0.5361  
## S110$SEX 1 0.00102 0.001016 0.0283 0.8669  
## S110$RACE 4 0.19726 0.049314 1.3747 0.2532  
## S110$DX 2 0.01679 0.008393 0.2340 0.7921  
## Residuals 61 2.18819 0.035872

anova( FGF2\_norm\_lm2 )

## Analysis of Variance Table  
##   
## Response: FGF2\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)  
## S110$AGE 1 0.01389 0.013887 0.3891 0.5360  
## S110$SEX 1 0.00102 0.001016 0.0285 0.8668  
## S110$RACE 4 0.19726 0.049314 1.3819 0.2558  
## S110$DX 2 0.01679 0.008393 0.2352 0.7914  
## S110$AGE:S110$SEX 1 0.01087 0.010868 0.3045 0.5838  
## S110$AGE:S110$RACE 3 0.21572 0.071908 2.0150 0.1257  
## S110$SEX:S110$RACE 2 0.01526 0.007631 0.2138 0.8083  
## S110$AGE:S110$DX 2 0.12368 0.061839 1.7328 0.1886  
## S110$SEX:S110$DX 2 0.05700 0.028498 0.7986 0.4564  
## S110$RACE:S110$DX 2 0.01614 0.008071 0.2262 0.7985  
## S110$AGE:S110$SEX:S110$RACE 1 0.01114 0.011136 0.3121 0.5793  
## S110$AGE:S110$SEX:S110$DX 2 0.10976 0.054878 1.5378 0.2262  
## S110$AGE:S110$RACE:S110$DX 1 0.01185 0.011848 0.3320 0.5674  
## S110$SEX:S110$RACE:S110$DX 1 0.04658 0.046581 1.3053 0.2594  
## Residuals 44 1.57019 0.035686

anova( VEGFA\_norm\_lm1 )# SEX (P - 0.07) / # DX (P < 0.05)

## Analysis of Variance Table  
##   
## Response: VEGFA\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)   
## S110$AGE 1 0.1021 0.10208 1.0738 0.30419   
## S110$SEX 1 0.3103 0.31032 3.2642 0.07574 .  
## S110$RACE 4 0.0599 0.01498 0.1576 0.95883   
## S110$DX 2 0.6385 0.31925 3.3581 0.04135 \*  
## Residuals 61 5.7991 0.09507   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

anova( VEGFA\_norm\_lm2 )#

## Analysis of Variance Table  
##   
## Response: VEGFA\_norm  
## Df Sum Sq Mean Sq F value Pr(>F)   
## S110$AGE 1 0.1021 0.10208 0.9472 0.33575   
## S110$SEX 1 0.3103 0.31032 2.8795 0.09678 .  
## S110$RACE 4 0.0599 0.01498 0.1390 0.96687   
## S110$DX 2 0.6385 0.31925 2.9623 0.06209 .  
## S110$AGE:S110$SEX 1 0.0005 0.00046 0.0043 0.94817   
## S110$AGE:S110$RACE 3 0.2056 0.06854 0.6359 0.59585   
## S110$SEX:S110$RACE 2 0.0340 0.01701 0.1579 0.85445   
## S110$AGE:S110$DX 2 0.2588 0.12941 1.2008 0.31063   
## S110$SEX:S110$DX 2 0.0431 0.02155 0.2000 0.81947   
## S110$RACE:S110$DX 2 0.1408 0.07038 0.6530 0.52543   
## S110$AGE:S110$SEX:S110$RACE 1 0.0001 0.00011 0.0010 0.97508   
## S110$AGE:S110$SEX:S110$DX 2 0.3006 0.15028 1.3945 0.25871   
## S110$AGE:S110$RACE:S110$DX 1 0.0603 0.06027 0.5593 0.45852   
## S110$SEX:S110$RACE:S110$DX 1 0.0136 0.01356 0.1258 0.72453   
## Residuals 44 4.7419 0.10777   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

##############################################  
#COUNT NAs in the CNTF Concentration column VS DX  
##############################################  
DEMOG <- data.frame(S040$AGE, S040$SEX, S040$RACE, S040$DX)  
names(DEMOG)[names(DEMOG) == "S040.AGE"] <- "AGE"  
names(DEMOG)[names(DEMOG) == "S040.SEX"] <- "SEX"  
names(DEMOG)[names(DEMOG) == "S040.RACE"] <- "RACE"  
names(DEMOG)[names(DEMOG) == "S040.DX"] <- "DX"  
cntf\_df <- cbind(CNTF\_norm, DEMOG)  
cntfdf <- data.frame(cntf\_df)  
#cntfdf\_o <- cntfdf[order(cntfdf$CNTF\_norm),]  
#cntfdf\_o  
##############################################  
  
cntfdf2 <- sapply(cntfdf, function(x) sum(is.na(x)))  
cntfdf\_2 <- data.frame(cntfdf2)  
names(cntfdf\_2)[names(cntfdf\_2) == "cntfdf2"] <- "NAs"  
cntfdf\_2

## NAs  
## CNTF\_norm 21  
## AGE 0  
## SEX 0  
## RACE 0  
## DX 0

##############################################  
#COUNT NAs in the CNTF Concentration column VS DX  
##############################################  
# SUMMARY OF NAs per DX GROUP  
library(dplyr)  
cntfdf %>%  
 group\_by(DX) %>%  
 summarise(NAs = sum(is.na(CNTF\_norm)))

## # A tibble: 3 × 2  
## DX NAs  
## <chr> <int>  
## 1 CONTROL 6  
## 2 MDD 10  
## 3 SUICIDE 5

# SUMMARY OF NAs per SEX GROUP  
cntfdf %>%  
 group\_by(SEX) %>%  
 summarise(NAs = sum(is.na(CNTF\_norm)))

## # A tibble: 2 × 2  
## SEX NAs  
## <chr> <int>  
## 1 FEMALE 8  
## 2 MALE 13

count(DEMOG, SEX)

## SEX n  
## 1 FEMALE 22  
## 2 MALE 48

demogcount <- c(22,48)  
CTNF\_NA <- c(8,13)

##############################################  
#MAKE IT INTO A DATAFRAME  
  
  
  
ast1 <- c("FEMALE", "MALE", "TOTAL")  
ast2 <- as.numeric(c(8,13,21))  
ast3 <- as.numeric(c(14,35,49))  
ast4 <- as.numeric(c(22,48,70))  
ast5 <- as.numeric(c(36.36, 27.08, 30.01))  
CNTF\_SEX\_DF <- data.frame(ast1,ast2,ast3, ast4, ast5)  
names(CNTF\_SEX\_DF)[names(CNTF\_SEX\_DF) == "ast1"] <- "SEX"  
names(CNTF\_SEX\_DF)[names(CNTF\_SEX\_DF) == "ast2"] <- "CTNF NAs"  
names(CNTF\_SEX\_DF)[names(CNTF\_SEX\_DF) == "ast3"] <- "NON.NAs"  
names(CNTF\_SEX\_DF)[names(CNTF\_SEX\_DF) == "ast4"] <- "Total"  
names(CNTF\_SEX\_DF)[names(CNTF\_SEX\_DF) == "ast5"] <- "NAs.percent"  
CNTF\_SEX\_DF

## SEX CTNF NAs NON.NAs Total NAs.percent  
## 1 FEMALE 8 14 22 36.36  
## 2 MALE 13 35 48 27.08  
## 3 TOTAL 21 49 70 30.01

CNTFsexmatrix <- CNTF\_SEX\_DF[1:2, 2:3]  
#CNTFSEXDF

####not relevant  
CNTFsexmatrix

## CTNF NAs NON.NAs  
## 1 8 14  
## 2 13 35

round(prop.table(CNTFsexmatrix)\*100, 2) #PROPORTION IS OVER 70

## CTNF NAs NON.NAs  
## 1 11.43 20  
## 2 18.57 50

###DEMOGRAPHIC DISTRIBUTION  
DEMOG[order(DEMOG$DX),]

## AGE SEX RACE DX  
## 1 69 MALE WHITE CONTROL  
## 2 17 MALE HISPANIC CONTROL  
## 5 48 MALE WHITE CONTROL  
## 6 18 MALE WHITE CONTROL  
## 8 77 MALE WHITE CONTROL  
## 9 84 FEMALE WHITE CONTROL  
## 10 80 FEMALE WHITE CONTROL  
## 12 71 MALE HISPANIC CONTROL  
## 17 54 MALE WHITE CONTROL  
## 18 50 MALE BLACK CONTROL  
## 19 69 MALE WHITE CONTROL  
## 31 84 MALE WHITE CONTROL  
## 32 52 FEMALE HISPANIC CONTROL  
## 34 54 FEMALE WHITE CONTROL  
## 35 78 FEMALE WHITE CONTROL  
## 39 73 MALE HISPANIC CONTROL  
## 40 79 FEMALE WHITE CONTROL  
## 41 63 FEMALE WHITE CONTROL  
## 45 74 MALE HISPANIC CONTROL  
## 47 68 MALE WHITE CONTROL  
## 51 63 FEMALE BLACK CONTROL  
## 53 39 MALE HISPANIC CONTROL  
## 54 67 MALE HISPANIC CONTROL  
## 55 47 MALE BLACK CONTROL  
## 57 56 FEMALE WHITE CONTROL  
## 58 50 MALE HISPANIC CONTROL  
## 59 79 MALE WHITE CONTROL  
## 60 82 MALE HISPANIC CONTROL  
## 61 65 MALE HISPANIC CONTROL  
## 62 44 MALE HISPANIC CONTROL  
## 65 61 FEMALE HISPANIC CONTROL  
## 66 64 MALE HISPANIC CONTROL  
## 68 34 MALE WHITE CONTROL  
## 69 74 MALE HISPANIC CONTROL  
## 70 71 MALE HISPANIC CONTROL  
## 4 31 MALE WHITE MDD  
## 14 42 MALE WHITE MDD  
## 15 43 MALE WHITE MDD  
## 16 53 FEMALE WHITE MDD  
## 20 47 MALE HISPANIC MDD  
## 22 63 MALE WHITE MDD  
## 23 75 FEMALE WHITE MDD  
## 24 70 MALE WHITE MDD  
## 25 57 MALE WHITE MDD  
## 26 41 MALE WHITE MDD  
## 27 46 MALE WHITE MDD  
## 28 54 FEMALE X MDD  
## 29 44 MALE WHITE MDD  
## 30 75 MALE WHITE MDD  
## 33 54 MALE WHITE MDD  
## 38 64 MALE WHITE MDD  
## 42 76 MALE HISPANIC MDD  
## 44 55 FEMALE WHITE MDD  
## 50 60 FEMALE WHITE MDD  
## 52 57 MALE OTHER MDD  
## 56 71 FEMALE HISPANIC MDD  
## 63 61 FEMALE WHITE MDD  
## 67 68 MALE HISPANIC MDD  
## 3 54 MALE WHITE SUICIDE  
## 7 51 MALE WHITE SUICIDE  
## 11 73 FEMALE WHITE SUICIDE  
## 13 21 MALE WHITE SUICIDE  
## 21 52 MALE WHITE SUICIDE  
## 36 49 MALE WHITE SUICIDE  
## 37 32 FEMALE HISPANIC SUICIDE  
## 43 52 FEMALE OTHER SUICIDE  
## 46 52 MALE WHITE SUICIDE  
## 48 23 FEMALE HISPANIC SUICIDE  
## 49 55 MALE WHITE SUICIDE  
## 64 48 FEMALE HISPANIC SUICIDE

names(DEMOG)[names(DEMOG) == "S040.AGE"] <- "AGE"  
names(DEMOG)[names(DEMOG) == "S040.SEX"] <- "SEX"  
names(DEMOG)[names(DEMOG) == "S040.RACE"] <- "RACE"  
names(DEMOG)[names(DEMOG) == "S040.DX"] <- "DX"  
  
#  
count(DEMOG, SEX)# F = 22 / M = 48

## SEX n  
## 1 FEMALE 22  
## 2 MALE 48

count(DEMOG, DX) # C = 35, MDD = 35, MDD + SUI = 12

## DX n  
## 1 CONTROL 35  
## 2 MDD 23  
## 3 SUICIDE 12

count(DEMOG, RACE)

## RACE n  
## 1 BLACK 3  
## 2 HISPANIC 22  
## 3 OTHER 2  
## 4 WHITE 42  
## 5 X 1

table(cut(DEMOG$AGE,breaks=seq.int(from=10,to=80,by=10)))

##   
## (10,20] (20,30] (30,40] (40,50] (50,60] (60,70] (70,80]   
## 2 2 4 13 17 14 15

#hist(table(cut(DEMOG$AGE,breaks=seq.int(from=10,to=80,by=10))), main="Histogram of Age Frequencies", xlab=c("Age Groups"))

tapply(DEMOG$AGE, DEMOG$DX, mean)

## CONTROL MDD SUICIDE   
## 61.65714 56.82609 46.83333

tapply(DEMOG$AGE, DEMOG$RACE, mean)

## BLACK HISPANIC OTHER WHITE X   
## 53.33333 57.68182 54.50000 57.97619 54.00000

tapply(DEMOG$AGE, DEMOG$SEX, mean)

## FEMALE MALE   
## 60.31818 56.25000

#DEMOGRAPHICS FOR CTNF  
  
S\_D\_n <- data.frame(count(cntfdf, SEX, DX))  
R\_D\_n <- data.frame(count(cntfdf, RACE, DX))  
sdn <- S\_D\_n[order(S\_D\_n$DX),]  
rdn <- R\_D\_n[order(R\_D\_n$DX),]  
  
# TURN sdn INTO A TABLE  
DX\_1 <- c("CONTROL", "MDD", "MDD + SUI")  
MALES\_1 <- c(25, 16, 7)  
FEMALES\_1 <- c(10,7,5)  
t\_sdn <- data.frame(DX\_1, MALES\_1, FEMALES\_1)  
t\_sdn

## DX\_1 MALES\_1 FEMALES\_1  
## 1 CONTROL 25 10  
## 2 MDD 16 7  
## 3 MDD + SUI 7 5

# TURN rdn INTO A TABLE  
RACE\_2 <- c("BLACK", "HISPANIC", "WHITE", "OTHER", "X")  
CONTROL\_2 <- c(3, 15, 17, NA, NA)  
MDD\_2 <- c(NA, 4, 17, 1, 1)  
SUI\_2 <- c(NA, 3, 8, 1, NA)  
t\_rdn <- data.frame(RACE\_2, CONTROL\_2, MDD\_2, SUI\_2)  
t\_rdn

## RACE\_2 CONTROL\_2 MDD\_2 SUI\_2  
## 1 BLACK 3 NA NA  
## 2 HISPANIC 15 4 3  
## 3 WHITE 17 17 8  
## 4 OTHER NA 1 1  
## 5 X NA 1 NA