

Supplementary Data

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Sub FullmacroTest()  
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' FullmacroTest Macro  
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Sheets("TargetScanHuman_8.0").Select  
Sheets("TargetScanHuman_8.0").Copy After:=Sheets(1)  
Columns("D:J").Select  
Selection.Delete Shift:=xlToLeft  
Range("C4").Select  
Columns("A:A").ColumnWidth = 22  
Columns("B:B").ColumnWidth = 18.83  
Columns("C:C").ColumnWidth = 15.17  
Range("D2").Select  
Application.CutCopyMode = False  
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-3],RC[-3])"  
Range("D2").Select  
Selection.AutoFill Destination:=Range("D2:D10000"), Type:=xlFillDefault  
Range("D2:D10000").Select  
Range("D1").Select  
Selection.AutoFilter  
ActiveSheet.Range("$A$1:$D$10000").AutoFilter Field:=4, Criteria1:=">=2"  
Columns("A:D").Select  
Selection.Copy  
Columns("E:E").Select  
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _  
:=False, Transpose:=False  
Columns("A:D").Select  
Range("D1").Activate  
Application.CutCopyMode = False  
Selection.Delete Shift:=xlToLeft  
Selection.ColumnWidth = 20.33  
Range("E4").Select
```

```
Sheets("TargetScanHuman_8.0 (2)").Select
Sheets("TargetScanHuman_8.0 (2)").Copy After:=Sheets(2)
Sheets("TargetScanHuman_8.0 (2)").Select
Sheets("TargetScanHuman_8.0 (2)").Name = "Results"
Range("F10").Select
Sheets("TargetScanHuman_8.0 (3)").Select
Sheets("TargetScanHuman_8.0 (3)").Name = "seed match breakdown"
Columns("D:D").Select
Selection.Delete Shift:=xlToLeft
Range("E1").Select
ActiveCell.FormulaR1C1 = "Seed match Type"
Range("G2").Select
Columns("E:E").ColumnWidth = 15.5
Range("F1").Select
ActiveCell.FormulaR1C1 = "Number"
Range("G1").Select
ActiveCell.FormulaR1C1 = "Percent"
Range("E2").Select
ActiveCell.FormulaR1C1 = "8mer"
Range("E3").Select
ActiveCell.FormulaR1C1 = "7mer-m8"
Range("E4").Select
ActiveCell.FormulaR1C1 = "7mer-1A"
Range("F2").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-3],RC[-1])"
Range("F3").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-3],RC[-1])"
Range("F4").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-3],RC[-1])"
Range("E5").Select
ActiveCell.FormulaR1C1 = "Total"
Range("F5").Select
Application.CutCopyMode = False
```

```
ActiveCell.FormulaR1C1 = "=SUM(R[-3]C:R[-1]C)"
Range("G2").Select
ActiveCell.FormulaR1C1 = "=RC[-1]/R[3]C[-1]*100"
Range("G3").Select
ActiveCell.FormulaR1C1 = "=RC[-1]/R[2]C[-1]*100"
Range("G4").Select
ActiveCell.FormulaR1C1 = "=RC[-1]/R[1]C[-1]*100"
Range("G5").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=SUM(R[-3]C:R[-1]C)"
    Range("E1:G1").Select
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With
Selection.Font.Underline = xlUnderlineStyleSingle
Selection.Font.Bold = True
Range("G11").Select
    Sheets("Results").Select
Rows("1:1").Select
Selection.Delete Shift:=xlUp
Columns("A:D").Select
ActiveWorkbook.Worksheets("Results").Sort.SortFields.Clear
ActiveWorkbook.Worksheets("Results").Sort.SortFields.Add2 Key:=Range( _
    "A1:A1047779"), SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:= _
    xlSortNormal
With ActiveWorkbook.Worksheets("Results").Sort
    .SetRange Range("A1:D1047779")
    .Header = xlGuess
    .MatchCase = False
    .Orientation = xlTopToBottom
    .SortMethod = xlPinYin
    .Apply
End With
    Sheets("Results").Select
Sheets("Results").Copy After:=Sheets(3)
```

```
Sheets("Results (2)").Select
Sheets("Results (2)").Name = "Breakdown by site numbers"
Range("F1").Select
ActiveCell.FormulaR1C1 = "Number of sites"
Range("G4").Select
Columns("F:F").ColumnWidth = 13.33
Range("G1").Select
ActiveCell.FormulaR1C1 = "miRNA"
Range("H1").Select
ActiveCell.FormulaR1C1 = "Used for Calculations"
Range("H6").Select
Columns("H:H").ColumnWidth = 15.5
Columns("H:H").ColumnWidth = 17
Range("F1:G1").Select
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With
Selection.Font.Bold = True
Selection.Font.Underline = xlUnderlineStyleSingle
Range("F2").Select
ActiveCell.FormulaR1C1 = "1"
Range("F3").Select
ActiveCell.FormulaR1C1 = "2"
Range("F4").Select
ActiveCell.FormulaR1C1 = "3"
Range("F5").Select
ActiveCell.FormulaR1C1 = "4"
Range("F6").Select
ActiveCell.FormulaR1C1 = "5"
Range("F2:F6").Select
Selection.AutoFill Destination:=Range("F2:F50"), Type:=xlFillDefault
Range("F2:F50").Select
Range("F51").Select
ActiveCell.FormulaR1C1 = "50+"
Range("H2").Select
```

```
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],1)"
Range("H2").Select
Selection.AutoFill Destination:=Range("H2:H50"), Type:=xlFillDefault
Range("H2:H50").Select
Range("H3").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],2)"
Range("H4").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],3)"
Range("H5").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],4)"
Range("H6").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],5)"
Range("H7").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],6)"
Range("H8").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],7)"
Range("H9").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],8)"
Range("H10").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],9)"
Range("H11").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],10)"
Range("H12").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],11)"
Range("H13").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],12)"
Range("H14").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],13)"
Range("H15").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],14)"
Range("H16").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],15)"
Range("H17").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],16)"
Range("H18").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],17)"
Range("H19").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],118)"
Range("H20").Select
```

ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],19)"
Range("H21").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],20)"
Range("H22").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],21)"
Range("H23").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],22)"
Range("H24").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],23)"
Range("H25").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],24)"
Range("H26").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],25)"
Range("H27").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],26)"
Range("H28").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],27)"
Range("H29").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],28)"
Range("H30").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],29)"
Range("H31").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],30)"
Range("H32").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],31)"
Range("H33").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],32)"
Range("H34").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],33)"
Range("H35").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],34)"
Range("H36").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],35)"
Range("H37").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],36)"
Range("H38").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],37)"
Range("H39").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],38)"
Range("H40").Select

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ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],39)"
Range("H41").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],40)"
Range("H42").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],41)"
Range("H43").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],42)"
Range("H44").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],43)"
Range("H45").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],44)"
Range("H46").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],45)"
Range("H47").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],46)"
Range("H48").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],47)"
Range("H49").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],48)"
Range("H50").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],49)"
Range("H51").Select
ActiveCell.FormulaR1C1 = "=COUNTIF(C[-4],">49")"
Range("G2").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=RC[1]/RC[-1]"
Range("G3").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=RC[1]/RC[-1]"
Range("G3").Select
Selection.AutoFill Destination:=Range("G3:G50"), Type:=xlFillDefault
Range("G3:G50").Select
Range("F52").Select
ActiveCell.FormulaR1C1 = "Total"
Range("G52").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=+SUM(R[-50]C:R[-1]C)"
Range("G53").Select
Columns("A:C").Select
Range("C1").Activate
```

```
Selection.Delete Shift:=xlToLeft
Range("H7").Select
    Range("E52").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=SUM(R[-50]C:R[-1]C)"
Range("E53").Select
Sheets("TargetScanHuman_8.0").Select
Sheets("TargetScanHuman_8.0").Copy After:=Sheets(4)
Columns("A:A").Select
Selection.Delete Shift:=xlToLeft
Columns("B:I").Select
Selection.Delete Shift:=xlToLeft
Columns("A:A").Select
Selection.TextToColumns Destination:=Range("A1"), DataType:=xlDelimited, _
    TextQualifier:=xlDoubleQuote, ConsecutiveDelimiter:=False, Tab:=False, _
    Semicolon:=False, Comma:=False, Space:=False, Other:=True, OtherChar _
    :=" ", FieldInfo:=Array(Array(1, 1), Array(2, 1)), TrailingMinusNumbers:=True
Columns("A:A").Select
ActiveWorkbook.Worksheets("TargetScanHuman_8.0 (2)").Sort.SortFields.Clear
ActiveWorkbook.Worksheets("TargetScanHuman_8.0 (2)").Sort.SortFields.Add2 Key _
    :=Range("A1:A10000"), SortOn:=xlSortOnValues, Order:=xlAscending, _
    DataOption:=xlSortNormal
With ActiveWorkbook.Worksheets("TargetScanHuman_8.0 (2)").Sort
    .SetRange Range("A1:A10000")
    .Header = xlNo
    .MatchCase = False
    .Orientation = xlTopToBottom
    .SortMethod = xlPinYin
    .Apply
End With
Range("A1").Select
Selection.Copy
Range("D1").Select
ActiveSheet.Paste
Columns("B:B").Select
Application.CutCopyMode = False
ActiveWorkbook.Worksheets("TargetScanHuman_8.0 (2)").Sort.SortFields.Clear
ActiveWorkbook.Worksheets("TargetScanHuman_8.0 (2)").Sort.SortFields.Add2 Key _
    :=Range("B1:B10000"), SortOn:=xlSortOnValues, Order:=xlDescending, _
    DataOption:=xlSortNormal
```

```
With ActiveWorkbook.Worksheets("TargetScanHuman_8.0 (2)").Sort
    .SetRange Range("A1:B10000")
    .Header = xlNo
    .MatchCase = False
    .Orientation = xlTopToBottom
    .SortMethod = xlPinYin
    .Apply
End With
Range("B1").Select
Selection.Copy
Range("C1").Select
ActiveSheet.Paste
Columns("A:B").Select
Range("B1").Activate
Application.CutCopyMode = False
Selection.Delete Shift:=xlToLeft
Range("B1").Select
Selection.ClearContents
ActiveCell.FormulaR1C1 = "0"
Range("C4").Select
    Rows("1:1").Select
Selection.Insert Shift:=xlDown, CopyOrigin:=xlFormatFromLeftOrAbove
Range("A1").Select
ActiveCell.FormulaR1C1 = "End"
Range("B1").Select
ActiveCell.FormulaR1C1 = "Start"
Range("D7").Select
Sheets("TargetScanHuman_8.0 (2)").Select
Sheets("TargetScanHuman_8.0 (2)").Copy After:=Sheets(5)
Sheets("TargetScanHuman_8.0 (3)").Name = "Data Clean UP"
Columns("A:B").Select
Selection.Delete Shift:=xlToLeft
Sheets("Breakdown by site numbers").Select
Range("D52").Select
Selection.Copy
Sheets("TargetScanHuman_8.0 (2)").Select
Range("D2").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Sheets("Breakdown by site numbers").Select
```

```
Range("E52").Select
Application.CutCopyMode = False
Selection.Copy
Sheets("TargetScanHuman_8.0 (2)").Select
Range("E2").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Range("G1").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "BP per mRNAS"
Range("G3").Select
ActiveCell.FormulaR1C1 = "BP per mRNA sites"
Range("G5").Select
ActiveCell.FormulaR1C1 = "mRNAS per BP"
Range("G7").Select
ActiveCell.FormulaR1C1 = "mRNA sites per BP"
Range("C2").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=RC[-2]-RC[-1]"
Range("G2").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=RC[-4]/RC[-3]"
Range("G4").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=R[-2]C[-4]/R[-2]C[-2]"
Range("G6").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=R[-4]C[-3]/R[-4]C[-4]"
Range("G8").Select
Application.CutCopyMode = False
ActiveCell.FormulaR1C1 = "=R[-6]C[-2]/R[-6]C[-4]"
Range("G9").Select
Sheets("Breakdown by site numbers").Select
Columns("C:E").Select
Selection.Copy
Sheets("Data Clean UP").Select
Columns("A:C").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Range("G21").Select
```

```
Columns("A:A").ColumnWidth = 36.33
Columns("A:A").ColumnWidth = 36.17
Range("A52").Select
Application.CutCopyMode = False
Selection.ClearContents
ActiveCell.FormulaR1C1 = "Total Number of mRNAs with multiple sites"
Range("A53").Select
ActiveCell.FormulaR1C1 = "Total Number of sites"
Range("C52").Select
Selection.Copy
Range("B53").Select
ActiveSheet.Paste
Columns("C:C").Select
Application.CutCopyMode = False
Selection.Delete Shift:=xlToLeft
Sheets("seed match breakdown").Select
Range("E1:G5").Select
Selection.Copy
Sheets("Data Clean UP").Select
Range("D1").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Columns("D:D").ColumnWidth = 19.33
Sheets("TargetScanHuman_8.0 (2)").Select
Range("G1:G8").Select
Application.CutCopyMode = False
Selection.Copy
Sheets("Data Clean UP").Select
Range("H1").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Columns("H:H").ColumnWidth = 19.5
Rows("1:1").Select
Application.CutCopyMode = False
Selection.Insert Shift:=xlDown, CopyOrigin:=xlFormatFromLeftOrAbove
Range("A1").Select
ActiveCell.FormulaR1C1 = "mRNA with Multiple Sites"
Range("A1").Select
With Selection.Interior
    .Pattern = xlSolid
```

```
.PatternColorIndex = xlAutomatic
.Color = 65535
.TintAndShade = 0
.PatternTintAndShade = 0
End With
Range("D1").Select
ActiveCell.FormulaR1C1 = "Structure "
Range("D1").Select
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With
Range("H1").Select
ActiveCell.FormulaR1C1 = "Density"
Range("H1").Select
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With
End Sub
```