In[1]:=
```
SetDirectory[NotebookDirectory[]]
isoformRatios = Select[Import["isoform_ratio_table.tsv"], #[[2]] ≠ "NA" &]
```

Out[1]=
```
/Users/verve/mr1
```

Out[2]=
```
{{SRA run accession number, tissue, MR1:NM_001195000 normalized count,
   MR1:NM_001531 normalized count, NM_001531:NM_001195000 ratio},
  {SRR810619, Heart, 28.1182, 0, 0}, {SRR1433131, Blood Vessel, 27.0468, 0, 0},
  {SRR660426, Skin, 20.5036, 0, 0}, {SRR662462, Skin, 18.8588, 0, 0},
  {SRR658837, Skin, 18.6104, 0, 0}, {SRR659049, Nerve, 18.3581, 0, 0},
  {SRR1340598, Ovary, 18.2956, 0, 0}, ··· 9388 ··· ,
  {SRR627449, Brain, 5.52558, 5.52558, 0.5},
  {SRR1326292, Muscle, 6.43383, 6.43383, 0.5},
  {SRR1076847, Blood, 7.06841, 7.06841, 0.5},
  {SRR665393, Brain, 7.68966, 7.68966, 0.5},
  {SRR662103, Adipose Tissue, 7.9359, 7.9359, 0.5},
  {SRR663549, Lung, 8.87566, 8.87566, 0.5}, {SRR614455, Brain, 8.9945, 8.9945, 0.5}}
```

large output | show less | show more | show all | set size limit...

In[3]:=
```
tissues =
 DeleteDuplicates[isoformRatios[[Range[2, Length[isoformRatios]]]][[All, 2]]]
```

Out[3]=
```
{Heart, Blood Vessel, Skin, Nerve, Ovary, Colon, Adipose Tissue, Esophagus, Brain,
 Breast, Stomach, Small Intestine, Uterus, Muscle, Adrenal Gland, Pancreas,
 Liver, Bladder, Testis, Thyroid, Pituitary, Blood, Lung, Fallopian Tube,
 Prostate, Vagina, Salivary Gland, Kidney, Cervix Uteri, Spleen, Bone Marrow}
```

In[4]:=
```
stratifiedIsoformRatios =
  Table[#[[5]] & /@ Select[isoformRatios, #[[2]] == tissues[[i]] &],
   {i, 1, Length[tissues]}];
```

In[5]:=
```
{sortedTissues, sortedStratifiedIsoformRatios} =
  Transpose[Sort[Transpose[{tissues, stratifiedIsoformRatios}],
    Median[#1[[2]]] < Median[#2[[2]]] &]];
```

In[6]:=
```
chartLabelTransform = Rotate[#, 70 Degree] &
```

Out[6]=
```
#1 &
```

In[7]:=
```
medians = Median /@ sortedStratifiedIsoformRatios
```

Out[7]=
```
{0.142857, 0.147059, 0.15, 0.153846, 0.15625, 0.160715, 0.160715, 0.166666,
 0.166666, 0.166667, 0.166667, 0.166667, 0.168561, 0.170455, 0.171429, 0.18,
 0.1875, 0.190477, 0.193549, 0.200001, 0.20924, 0.20943, 0.211782, 0.214286,
 0.222223, 0.227273, 0.230769, 0.234042, 0.235486, 0.255211, 0.260563}
```

In[8]:=
```
lowerBound = Min[medians]
```

Out[8]=
```
0.142857
```

In[9]:=
```
upperBound = Max[medians]
```

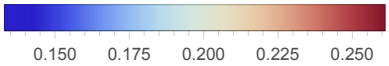
Out[9]=
```
0.260563
```

In[10]:=
```
customThermometer =
 ColorData["ThermometerColors"][(# - lowerBound) / (upperBound - lowerBound)] &
```

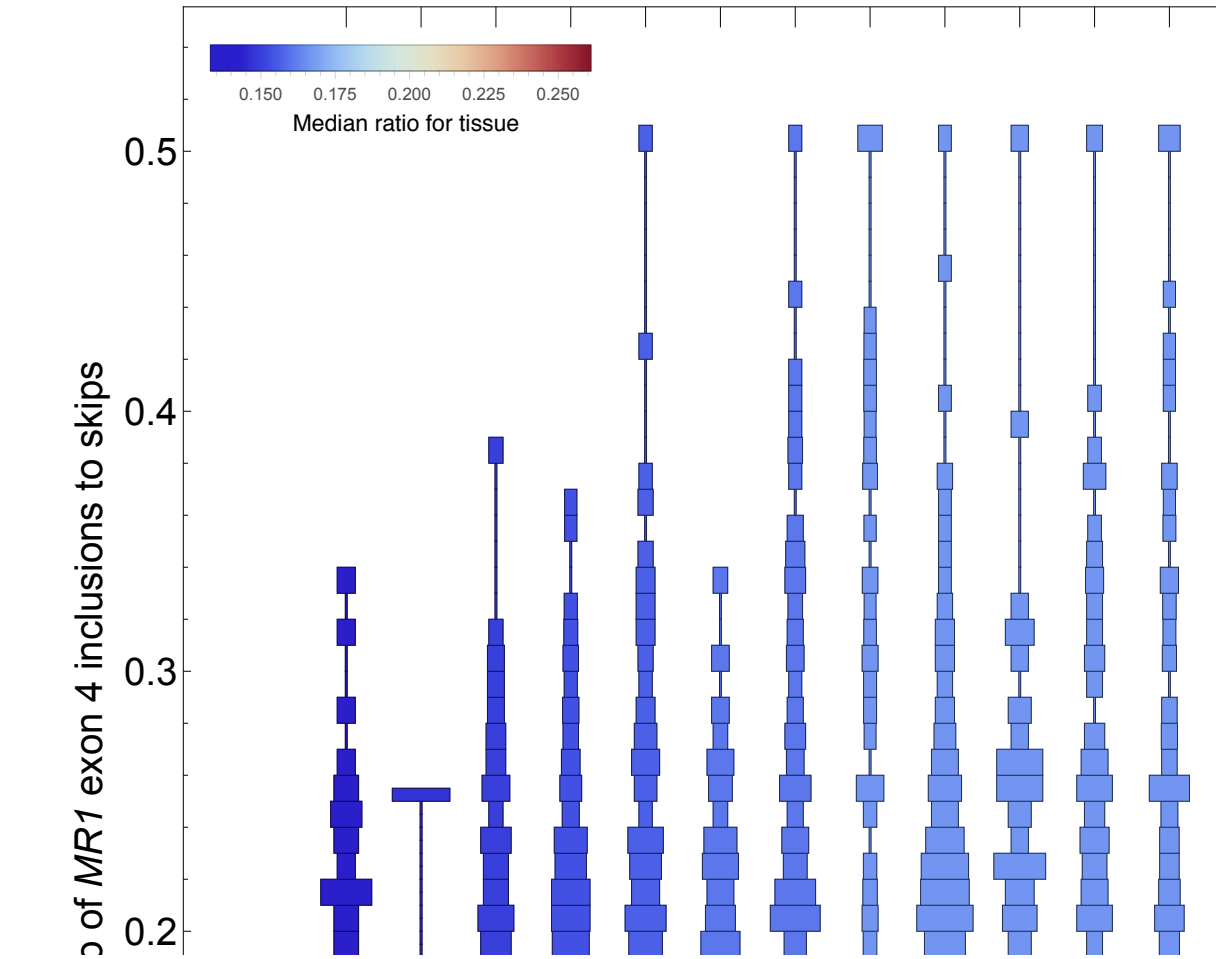
Out[10]=
$$\text{ColorData}[\text{ThermometerColors}]\left[\frac{\#1 - \text{lowerBound}}{\text{upperBound} - \text{lowerBound}}\right] \&$$

In[11]:=
```
legend = BarLegend[{customThermometer, {lowerBound - .01, upperBound}},
  LegendLayout → "Row", LegendMargins → 0]
```

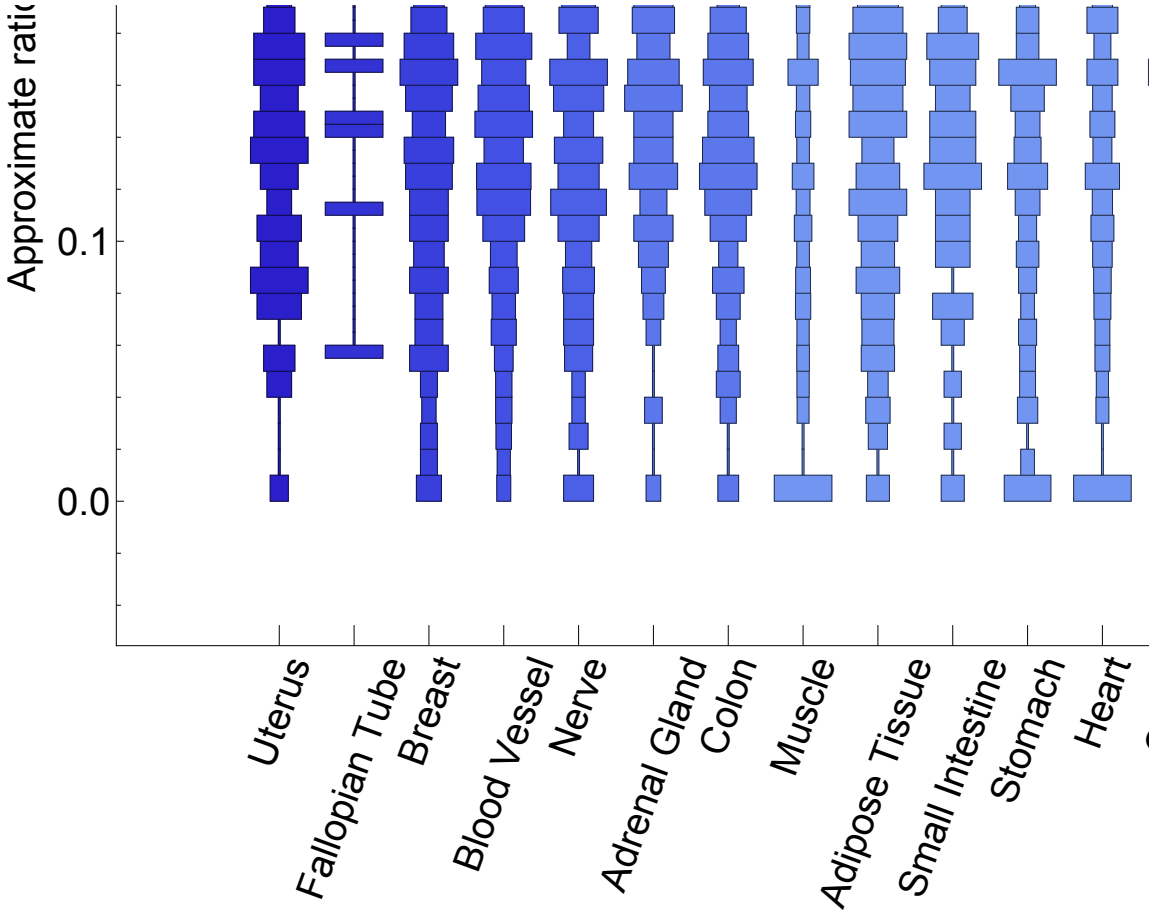
Out[11]=



In[12]:=
```
histogramDensityPlot =
 Show[Legended[DistributionChart[sortedStratifiedIsoformRatios, ChartLabels →
    chartLabelTransform /@ sortedTissues, BarSpacing → .3, ChartElementFunction →
    (ChartElementDataFunction["HistogramDensity", "Bins" → 40]),
   BaseStyle → {FontName → "Helvetica", FontSize → 20},
   ImageSize → {1500, 1000}, Frame → True, FrameLabel →
    {"GTEx tissue", "Approximate ratio of MR1 exon 4 inclusions to skips"},
   ChartStyle → Table[ColorData["ThermometerColors"][
      (medians[[i]] - lowerBound) / (upperBound - lowerBound)],
     {i, 1, Length[medians]}]], Placed[legend, {.08, .96}]],
  Graphics[Style[Text["Median ratio for tissue", {1.8, .51}],
    FontFamily → "Helvetica", FontSize → 12]]]
```



Out[12]=



In[13]:=
```
Export["histogramDensityPlot.pdf", histogramDensityPlot]
```

Out[13]= histogramDensityPlot.pdf