```
(***Note: Values for generating these plots are embedded within the raw data set,
which is too large to upload onto the public data repository***)

lptov1Color = ColorData["Legacy", "Turquoise"];

lptopmColor = RGBColor["#009ade"];

dateMouseSessionListLPtoV1 = {{"081522", "Mouse23054", "Session1"},
   {"081622", "Mouse23054", "Session1"}, {"043023", "Mouse23134", "Session2"},
   {"043023", "Mouse23167", "Session1"}, {"050423", "Mouse23167", "Session1"}};

dateMouseSessionListLPtoPM =
  {{"062222", "Mouse22597", "Session1"}, {"062222", "Mouse22597", "Session2"},
   {"072122", "Mouse23087", "Session1"}, {"072122", "Mouse23096", "Session1"},
   {"072122", "Mouse23096", "Session2"}, {"073022", "Mouse23087", "Session1"},
   {"080122", "Mouse23079", "Session1"}, {"080222", "Mouse23079", "Session1"},
   {"080122", "Mouse23060", "Session1"}, {"080222", "Mouse23060", "Session1"}};

roisListLPtoV1 =
  Table[Range[Length[FileNames["*", File[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
        dateMouseSessionListLPtoV1[[n, 1]], "/", dateMouseSessionListLPtoV1[[n, 2]], "/",
        dateMouseSessionListLPtoV1[[n, 3]], "/dFOverF0TimeSeries_CellBodies/"]]]]],
   {n, 1, Length[dateMouseSessionListLPtoV1]}];

roisListLPtoPM =
  Table[Range[Length[FileNames["*", File[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
        dateMouseSessionListLP[[n, 1]], "/", dateMouseSessionListLP[[n, 2]], "/",
        dateMouseSessionListLP[[n, 3]], "/dFOverF0TimeSeries_CellBodies/"]]]]],
   {n, 1, Length[dateMouseSessionListLP]}];

(*********************************************)
(*******Generate plot in Figure S6B***************)
(*********************************************)

staFRLPtoV1 =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
       dateMouseSessionListLPtoV1[[n, 1]], "/",
       dateMouseSessionListLPtoV1[[n, 2]], "/", dateMouseSessionListLPtoV1[[n, 3]],
       "/PMSpikeTriggeredAvgAxonActivity_FRestimates/",
       "overallFRsta", ToString[roi], ".txt"], "List"],
    {roi, roisListLPtoV1[[n]]}], {n, 1, Length[dateMouseSessionListLPtoV1]}];

catenatedSTAfrLPtoV1 = Flatten[staFRLPtoV1, 1];

meanCatenatedSTAfrLPtoV1 = Mean[catenatedSTAfrLPtoV1];

semCatenatedSTAfrLPtoV1 =
  (# / Sqrt@Length[catenatedSTAfrLPtoV1]) & /@ StandardDeviation[catenatedSTAfrLPtoV1];

staFRLPtoPM =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
       dateMouseSessionListLPtoPM[[n, 1]], "/",
       dateMouseSessionListLPtoPM[[n, 2]], "/", dateMouseSessionListLPtoPM[[n, 3]],
       "/PMSpikeTriggeredAvgAxonActivity_FRestimates/",
       "overallFRsta", ToString[roi], ".txt"], "List"],
    {roi, roisListLPtoPM[[n]]}], {n, 1, Length[dateMouseSessionListLPtoPM]}];
```

```
catenatedSTAfrLPtoPM = Flatten[staFRLPtoPM, 1];

meanCatenatedSTAfrLPtoPM = Mean[catenatedSTAfrLPtoPM];

semCatenatedSTAfrLPtoPM =
  (# / Sqrt@Length[catenatedSTAfrLPtoPM]) & /@ StandardDeviation[catenatedSTAfrLPtoPM];
```

In[ ]:= (**********)

In[ ]:= (**********)

```
staRandFRLPtoV1 =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
       dateMouseSessionListLPtoV1[[n, 1]], "/",
       dateMouseSessionListLPtoV1[[n, 2]], "/", dateMouseSessionListLPtoV1[[n, 3]],
       "/PMSpikeTriggeredAvgAxonActivity_FRestimates/",
       "overallFRstaRand", ToString[roi], ".txt"], "List"],
    {roi, roisListLPtoV1[[n]]}], {n, 1, Length[dateMouseSessionListLPtoV1]}];

catenatedSTARfrLPtoV1 = Flatten[staRandFRLPtoV1, 1];

meanCatenatedSTARfrLPtoV1 = Mean[catenatedSTARfrLPtoV1];

semCatenatedSTARfrLPtoV1 =
  (# / Sqrt@Length[catenatedSTARfrLPtoV1]) & /@ StandardDeviation[catenatedSTARfrLPtoV1];

staRandFRLPtoPM =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
       dateMouseSessionListLPtoPM[[n, 1]], "/",
       dateMouseSessionListLPtoPM[[n, 2]], "/", dateMouseSessionListLPtoPM[[n, 3]],
       "/PMSpikeTriggeredAvgAxonActivity_FRestimates/",
       "overallFRstaRand", ToString[roi], ".txt"], "List"],
    {roi, roisListLPtoPM[[n]]}], {n, 1, Length[dateMouseSessionListLPtoPM]}];

catenatedSTARfrLPtoPM = Flatten[staRandFRLPtoPM, 1];

meanCatenatedSTARfrLPtoPM = Mean[catenatedSTARfrLPtoPM];

semCatenatedSTARfrLPtoPM =
  (# / Sqrt@Length[catenatedSTARfrLPtoPM]) & /@ StandardDeviation[catenatedSTARfrLPtoPM];
```

In[ ]:= (**********)

```
catenatedLPtoV1rawMinusShuff = catenatedSTAfrLPtoV1 - catenatedSTARfrLPtoV1;

meanCatenatedLPtoV1rawMinusShuff = Mean[catenatedLPtoV1rawMinusShuff];

semCatenatedLPtoV1rawMinusShuff = (# / Sqrt@Length[catenatedLPtoV1rawMinusShuff]) & /@
   StandardDeviation[catenatedLPtoV1rawMinusShuff];
```

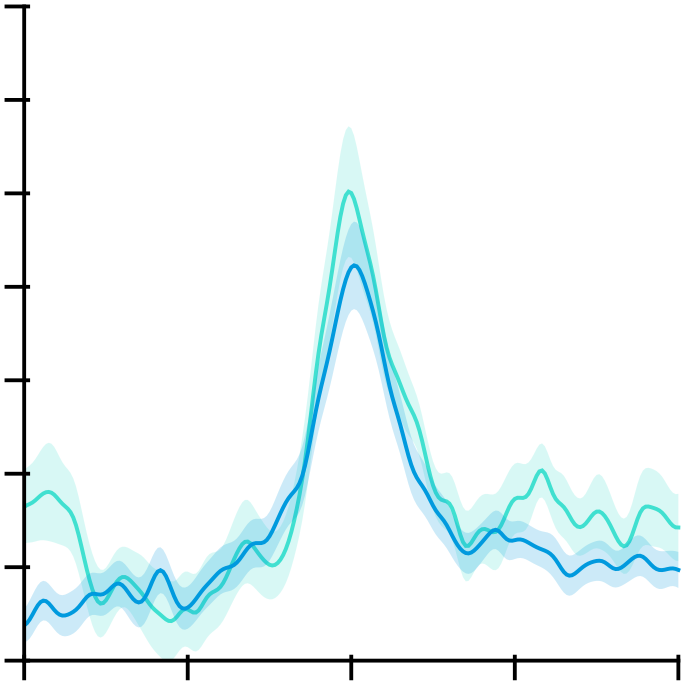
In[ ]:= (**********)

```
catenatedLPtoPMrawMinusShuff = catenatedSTAfrLPtoPM - catenatedSTARfrLPtoPM;

meanCatenatedLPtoPMrawMinusShuff = Mean[catenatedLPtoPMrawMinusShuff];

semCatenatedLPtoPMrawMinusShuff = (# / Sqrt@Length[catenatedLPtoPMrawMinusShuff]) & /@
   StandardDeviation[catenatedLPtoPMrawMinusShuff];
```

```
lptov1STArms = ListLinePlot[{meanCatenatedLPtoV1rawMinusShuff,
    meanCatenatedLPtoV1rawMinusShuff + semCatenatedLPtoV1rawMinusShuff,
    meanCatenatedLPtoV1rawMinusShuff - semCatenatedLPtoV1rawMinusShuff},
   Filling → {1 → {{2}, Directive[Opacity[0.2], lptov1Color]},
     1 → {{3}, Directive[Opacity[0.2], lptov1Color]},
     4 → {{5}, Directive[Opacity[0.2], lptov1Color]},
     4 → {{6}, Directive[Opacity[0.2], lptov1Color]}},
   PlotStyle → {{lptov1Color, Thickness[0.006]}, Transparent, Transparent},
   DataRange → {-4, 4}, PlotRange → {{-4, 4}, {-0.0005, 0.003}}, FrameTicks →
    {{LinTicks[-0.0005, 0.003, MajorTickLength → {0, .03}, MinorTickLength → {0, 0}],
      None}, {LinTicks[-4, 4, MajorTickLength → {0, .03}, MinorTickLength → {0, 0}], None}},
   Axes → False, TicksStyle → Thick, FrameStyle → Thick,
   Frame → {{True, None}, {True, None}}, AspectRatio → 1,
   FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]];

lptopmSTArms = ListLinePlot[{meanCatenatedLPtoPMrawMinusShuff,
    meanCatenatedLPtoPMrawMinusShuff + semCatenatedLPtoPMrawMinusShuff,
    meanCatenatedLPtoPMrawMinusShuff - semCatenatedLPtoPMrawMinusShuff},
   Filling → {1 → {{2}, Directive[Opacity[0.2], lptopmColor]},
     1 → {{3}, Directive[Opacity[0.2], lptopmColor]},
     4 → {{5}, Directive[Opacity[0.2], lptopmColor]},
     4 → {{6}, Directive[Opacity[0.2], lptopmColor]}},
   PlotStyle → {{lptopmColor, Thickness[0.006]}, Transparent, Transparent},
   DataRange → {-4, 4}, PlotRange → {{-4, 4}, {-0.0005, 0.003}}, FrameTicks →
    {{LinTicks[-0.0005, 0.003, MajorTickLength → {0, .03}, MinorTickLength → {0, 0}],
      None}, {LinTicks[-4, 4, MajorTickLength → {0, .03}, MinorTickLength → {0, 0}], None}},
   Axes → False, TicksStyle → Thick, FrameStyle → Thick,
   Frame → {{True, None}, {True, None}}, AspectRatio → 1,
   FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]];
```

```
Show[lptov1STArms, lpSTArms]
```

Out[ ]=



```
(*********************************************)
(*******Generate plot in Figure S6C***************)
(*********************************************)

lptov1PeakSizes =
  Table[Table[Max[staFRLPtoV1[[n, m]]] - Mean[Table[staFRLPtoV1[[n, m, i]], {i, 1, 60}]],
    {m, 1, Length[roisListLPtoV1[[n]]]}], {n, 1, Length[roisListLPtoV1]}];
```

In[ ]:=
```
lpPeakSizes =
  Table[Table[Max[staFRLP[[n, m]]] - Mean[Table[staFRLP[[n, m, i]], {i, 1, 60}]],
    {m, 1, Length[roisListLP[[n]]]}], {n, 1, Length[roisListLP]}];
```

In[ ]:=
```
(******)
```

In[ ]:=
```
(**********************)
```

```
lptov1AxonCharts = Show[BoxWhiskerChart[Flatten@lptov1PeakSizes,
    {{"Whiskers", Directive[Darker@lptov1Color, Thick]},
     {"Fences", Directive[Darker@lptov1Color, Thick]}, {"MedianMarker",
      Directive[Darker@lptov1Color, Thickness[0.009]]}}, PlotRange → {All, {0, 0.011}},
    ChartStyle → Directive[lptov1Color, Opacity[0.3]], Frame → False],
   DistributionChart[Flatten@lptov1PeakSizes, PlotRange → {All, {0, 0.011}},
    ChartStyle → Directive[EdgeForm[Transparent], Opacity[0.2], lptov1Color],
    Frame → False], FrameTicks →
    {{LinTicks[0, 0.011, MajorTickLength → {0, .03}, MinorTickLength → {0, 0}], None},
     {None, None}}, Axes → False, TicksStyle → Thick,
   FrameStyle → Directive[Transparent, Thick], Frame → {{True, None}, {None, None}},
   FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]];
```

```
lptopmAxonCharts = Show[BoxWhiskerChart[Flatten@lptopmPeakSizes,
    {{"Whiskers", Directive[Darker@lptopmColor, Thick]},
     {"Fences", Directive[Darker@lptopmColor, Thick]}, {"MedianMarker",
      Directive[Darker@lptopmColor, Thickness[0.009]]}}, PlotRange → {All, {0, 0.011}},
    ChartStyle → Directive[lptopmColor, Opacity[0.3]], Frame → False],
   DistributionChart[Flatten@lptopmPeakSizes, PlotRange → {All, {0, 0.011}},
    ChartStyle → Directive[EdgeForm[Transparent], Opacity[0.2], lptopmColor],
    Frame → False], FrameTicks →
    {{LinTicks[0, 0.011, MajorTickLength → {0, .03}, MinorTickLength → {0, 0}], None},
     {None, None}}, Axes → False, TicksStyle → Thick,
   FrameStyle → Directive[Transparent, Thick], Frame → {{True, None}, {None, None}},
   FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]];

transp = Show[BoxWhiskerChart[Flatten@lptopmPeakSizes,
    {{"Whiskers", Directive[Transparent, Thick]}, {"Fences", Directive[Transparent,
       Thick]}, {"MedianMarker", Directive[Transparent, Thickness[0.009]]}},
    PlotRange → {All, {0, 0.011}}, ChartStyle → Transparent, Frame → False],
   DistributionChart[Flatten@lptopmPeakSizes, PlotRange → {All, {0, 0.011}},
    ChartStyle → Directive[EdgeForm[Transparent], Opacity[0.2], Transparent],
    Frame → False], FrameTicks →
    {{LinTicks[0, 0.011, MajorTickLength → {0, .03}, MinorTickLength → {0, 0}], None},
     {None, None}}, Axes → False, TicksStyle → Thick,
   FrameStyle → Directive[Black, Thick], Frame → {{True, None}, {None, None}},
   FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]];

GraphicsRow[{lptov1AxonCharts, lptopmAxonCharts, transp}, Spacings → {{-280, -280, -420}}]
```

Out[ ]=