```
dateMouseSessionListV1 = {{"030921", "Mouse23324", "Session4"},
    {"031621", "Mouse23324", "Session2"}, {"032021", "Mouse23324", "Session4"},
    {"030821", "Mouse23321", "Session1"}, {"031121", "Mouse23321", "Session2"},
    {"031621", "Mouse23321", "Session2"}, {"031921", "Mouse23321", "Session2"},
    {"010621", "Mouse23332", "Session1"}, {"010821", "Mouse23332", "Session2"},
    {"011321", "Mouse23332", "Session1"}, {"011821", "Mouse23332", "Session1"},
    {"010921", "Mouse23305", "Session2"}, {"011121", "Mouse23305", "Session2"},
    {"121020", "Mouse23312", "Session4"}, {"121420", "Mouse23312", "Session2"}};

dateMouseSessionListV2m = {{"030221", "Mouse23310", "Session1"},
    {"021721", "Mouse23338", "Session1"}, {"030221", "Mouse23338", "Session1"},
    {"031621", "Mouse23338", "Session1"}, {"031821", "Mouse23338", "Session2"},
    {"011721", "Mouse23390", "Session2"}, {"011821", "Mouse23390", "Session2"},
    {"022821", "Mouse23390", "Session1"}, {"021221", "Mouse23359", "Session2"},
    {"010321", "Mouse23382", "Session1"}, {"010621", "Mouse23382", "Session2"}};

(*********************************************)
(******Generate plots in Figure S3F***************)
(*********************************************)

meanDFFpupilCCV1 = ToExpression /@ Import[
    "F:/FigureGeneration/FigureS2/FigureS2Data/CellBodies/V1/ValuesForPlotting/
      meanDFFpupilCrossCorr_V1.txt", "List"];

semDFFpupilCCV1 = ToExpression /@ Import[
    "F:/FigureGeneration/FigureS2/FigureS2Data/CellBodies/V1/ValuesForPlotting/
      semDFFpupilCrossCorr_V1.txt", "List"];
```

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

```
meanDFFpupilCCV2m = ToExpression /@ Import[
    "F:/FigureGeneration/FigureS2/FigureS2Data/CellBodies/V2m/ValuesForPlotting/
      meanDFFpupilCrossCorr_V2m.txt", "List"];

semDFFpupilCCV2m = ToExpression /@ Import[
    "F:/FigureGeneration/FigureS2/FigureS2Data/CellBodies/V2m/ValuesForPlotting/
      semDFFpupilCrossCorr_V2m.txt", "List"];
```

```
In[ ]:= ListLinePlot[{Part[#, 2] & /@ meanDFFpupilCCV1,
      Part[#, 2] & /@ meanDFFpupilCCV1 + (Part[#, 2] & /@ semDFFpupilCCV1),
      Part[#, 2] & /@ meanDFFpupilCCV1 - (Part[#, 2] & /@ semDFFpupilCCV1),
      Part[#, 2] & /@ meanDFFpupilCCV2m,
      Part[#, 2] & /@ meanDFFpupilCCV2m + (Part[#, 2] & /@ semDFFpupilCCV2m),
      Part[#, 2] & /@ meanDFFpupilCCV2m - (Part[#, 2] & /@ semDFFpupilCCV2m)}, Filling →
     {1 → {{2}, Directive[Opacity[0.2], Blue]}, 1 → {{3}, Directive[Opacity[0.2], Blue]},
      4 → {{5}, Directive[Opacity[0.2], Purple]}, 4 → {{6}, Directive[Opacity[0.2], Purple]}},
    PlotStyle → {{Blue, Thickness[0.006]}, Transparent, Transparent, {Purple,
       Thickness[0.006]}, Transparent, Transparent, {Darker@Orange, Thickness[0.006]},
      Transparent, Transparent, {Darker@Yellow, Thickness[0.006]}, Transparent, Transparent},
    DataRange → {-8, 8}, PlotRange → {{-8, 8}, {-0.06, 0.04}}, FrameTicks →
     {{LinTicks[-0.06, 0.04, MajorTickLength → {0, .03}, MinorTickLength → {0, 0}], None},
      {LinTicks[-8, 8, 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]]
```

Out[ ]=
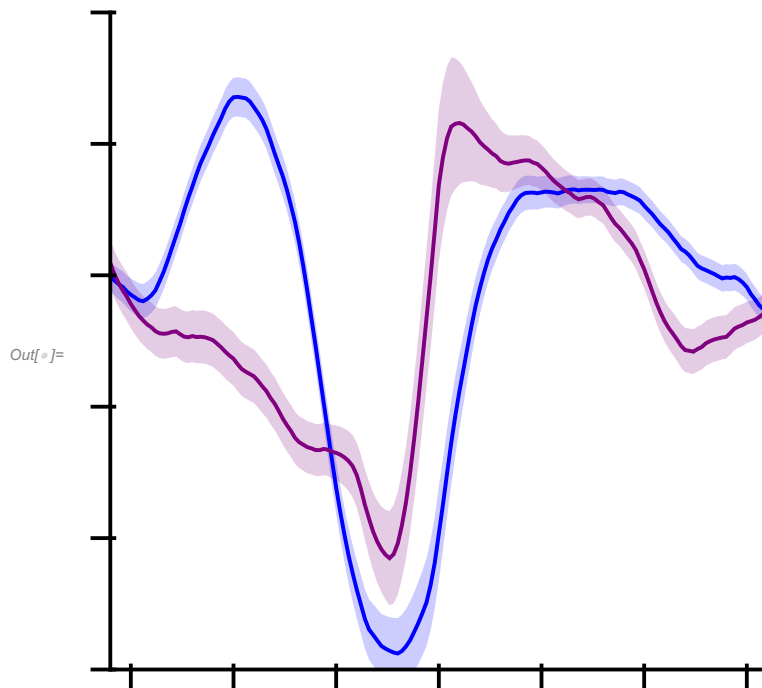

```
(***********************************************)
(******Generate plots in Figure S3G***************)
(***********************************************)

meanDFFpupilPhaseV1 = ToExpression /@ Import[
    "F:/FigureGeneration/FigureS2/FigureS2Data/CellBodies/V1/ValuesForPlotting/
      meanDFFpupilPhase_V1.txt", "List"];

semDFFpupilPhaseV1 = ToExpression /@ Import[
    "F:/FigureGeneration/FigureS2/FigureS2Data/CellBodies/V1/ValuesForPlotting/
      semDFFpupilPhase_V1.txt", "List"];
```

```
meanDFFpupilPhaseV2m = ToExpression /@ Import[
    "F:/FigureGeneration/FiguresS2/FigureS2Data/CellBodies/V2m/ValuesForPlotting/
      meanDFFpupilPhase_V2m.txt", "List"];

semDFFpupilPhaseV2m = ToExpression /@ Import[
    "F:/FigureGeneration/FiguresS2/FigureS2Data/CellBodies/V2m/ValuesForPlotting/
      semDFFpupilPhase_V2m.txt", "List"];
```

In[●]:= `ListLinePlot[{Part[#, 2] & /@ meanDFFpupilPhaseV1,`
    `Part[#, 2] & /@ meanDFFpupilPhaseV1 + (Part[#, 2] & /@ semDFFpupilPhaseV1),`
    `Part[#, 2] & /@ meanDFFpupilPhaseV1 - (Part[#, 2] & /@ semDFFpupilPhaseV1),`
    `Part[#, 2] & /@ meanDFFpupilPhaseV2m,`
    `Part[#, 2] & /@ meanDFFpupilPhaseV2m + (Part[#, 2] & /@ semDFFpupilPhaseV2m),`
    `Part[#, 2] & /@ meanDFFpupilPhaseV2m - (Part[#, 2] & /@ semDFFpupilPhaseV2m)}, Filling →`
  `{1 → {{2}, Directive[Opacity[0.2], Blue]}, 1 → {{3}, Directive[Opacity[0.2], Blue]},`
   `4 → {{5}, Directive[Opacity[0.2], Purple]}, 4 → {{6}, Directive[Opacity[0.2], Purple]}},`
  `PlotStyle → {{Blue, Thickness[0.006]}, Transparent, Transparent,`
   `{Purple, Thickness[0.006]}, Transparent, Transparent},`
  DataRange → $\left\{-\pi, \frac{31 \pi}{32}\right\}$`, PlotRange → {{-π, π}, {-0.13, 0.13}}, FrameTicks →`
   `{{LinTicks[-0.13, 0.13, MajorTickLength → {0, .03}, MinorTickLength → {0, 0}], None},`
    `{LinTicks[-π, π, π/2, 4, TickLabelFunction → (Rationalize[# / π] * π &),`
      `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]]`

Out[●]=
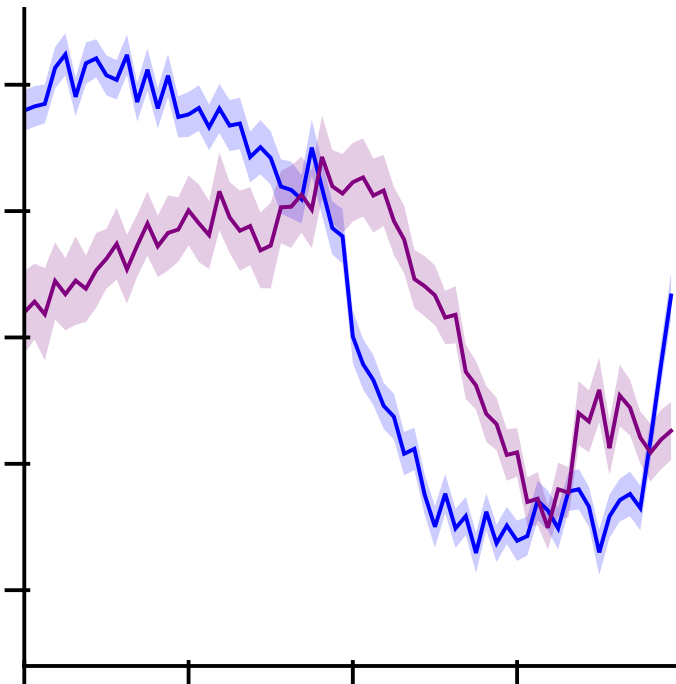

```
(********************************************)
(******Generate plots in Figure S3H***************)
(********************************************)
```

```
peakCCValsV1 = ToExpression /@ Import[
    "F:/FigureGeneration/FigureS2/FigureS2Data/CellBodies/V1/ValuesForPlotting/
      peakDFFpupilCC_V1.txt", "List"];

peakCCValsV2m = ToExpression /@ Import[
    "F:/FigureGeneration/FigureS2/FigureS2Data/CellBodies/V2m/ValuesForPlotting/
      peakDFFpupilCC_V2m.txt", "List"];

v1Charts = Show[BoxWhiskerChart[peakCCValsV1,
    {{"Whiskers", Directive[Blue, Thick]}, {"Fences", Directive[Blue, Thick]},
     {"MedianMarker", Directive[Blue, Thickness[0.009]]}}, PlotRange → {All, {0, 0.7}},
    ChartStyle → Directive[Blue, Opacity[0.3]], Frame → False],
   DistributionChart[peakCCValsV1, PlotRange → {All, {0, 0.7}},
    ChartStyle → Directive[EdgeForm[Transparent], Opacity[0.2], Blue], Frame → False],
   FrameTicks → {{LinTicks[0, 0.7, 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]];

pmCharts = Show[BoxWhiskerChart[peakCCValsV2m,
    {{"Whiskers", Directive[Purple, Thick]}, {"Fences", Directive[Purple, Thick]},
     {"MedianMarker", Directive[Purple, Thickness[0.009]]}}, PlotRange → {All, {0, 0.7}},
    ChartStyle → Directive[Purple, Opacity[0.3]], Frame → False],
   DistributionChart[peakCCValsV2m, PlotRange → {All, {0, 0.7}},
    ChartStyle → Directive[EdgeForm[Transparent], Opacity[0.2], Purple], Frame → False],
   FrameTicks → {{LinTicks[0, 0.7, 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[peakCCValsV2m, {{"Whiskers", Directive[Transparent, Thick]},
     {"Fences", Directive[Transparent, Thick]},
     {"MedianMarker", Directive[Transparent, Thickness[0.009]]}},
    PlotRange → {All, {0, 0.7}}, ChartStyle → Transparent, Frame → False],
   DistributionChart[peakCCValsV2m, PlotRange → {All, {0, 0.7}}, ChartStyle →
     Directive[EdgeForm[Transparent], Opacity[0.2], Transparent], Frame → False],
   FrameTicks → {{LinTicks[0, 0.7, 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]];
```

In[●]:= **GraphicsRow[{v1Charts, pmCharts, transp}, Spacings → {{-280, -280, -320}}]**

Out[●]=