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

ln[ ]:= v1Color = RGBColor["#ff1f5b"];

ln[ ]:= lpColor = RGBColor["#009ade"];

ln[ ]:= lmColor = RGBColor["#f28522"];

ln[ ]:= controlColor = Black;

ln[ ]:= (*****)

ln[ ]:= dateMouseListControl = {{ "012122", "Mouse22550"}, {"012822", "Mouse22549"},
    {"121621", "Mouse22525"}, {"121721", "Mouse22599"}, {"011122", "Mouse22598"},
    {"032923", "Mouse23149"}, {"033023", "Mouse23128"}, {"033123", "Mouse23149"},
    {"070323", "Mouse23149"}, {"070423", "Mouse23128"}, {"070723", "Mouse23128"} };

ln[ ]:= (**V1 axons, eOPN3**)

ln[ ]:= dateMouseListV1axons =
    {{ "012722", "Mouse22504"}, {"121821", "Mouse22485"}, {"062723", "Mouse23154"},
    {"062723", "Mouse23182"}, {"063023", "Mouse23154"}, {"063023", "Mouse23182"} };

ln[ ]:= (**LP axons, eOPN3**)

ln[ ]:= dateMouseListLPaxons =
    {{ "050123", "Mouse23133"}, {"050123", "Mouse23142"}, {"050323", "Mouse23133"},
    {"050323", "Mouse23142"}, {"051823", "Mouse23198"}, {"052623", "Mouse23198"},
    {"052623", "Mouse23105"}, {"062923", "Mouse23139"}, {"070223", "Mouse23139"} };

ln[ ]:= (**LM axons, eOPN3**)

ln[ ]:= dateMouseListLMaxons =
    {{ "062623", "Mouse23152"}, {"062823", "Mouse23152"}, {"062923", "Mouse23190"},
    {"070123", "Mouse23190"}, {"070723", "Mouse23666"}, {"071223", "Mouse23666"} };

ln[ ]:= (*****)

ln[ ]:= pairedROIsListControl =
    Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
        dateMouseListControl[[n, 1]], "/", dateMouseListControl[[n, 2]],
        "/PairedAnalysis/", dateMouseListControl[[n, 1]], "_", dateMouseListControl[[n, 2]],
        "_pairedROIsPupil.txt"], "List"], {n, 1, Length[dateMouseListControl]};

ln[ ]:= pairedROIsListV1axons =
    Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
        dateMouseListV1axons[[n, 1]], "/", dateMouseListV1axons[[n, 2]],
        "/PairedAnalysis/", dateMouseListV1axons[[n, 1]], "_", dateMouseListV1axons[[n, 2]],
        "_pairedROIsPupil.txt"], "List"], {n, 1, Length[dateMouseListV1axons]};

ln[ ]:= pairedROIsListLPaxons =
    Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
        dateMouseListLPaxons[[n, 1]], "/", dateMouseListLPaxons[[n, 2]],
        "/PairedAnalysis/", dateMouseListLPaxons[[n, 1]], "_", dateMouseListLPaxons[[n, 2]],
        "_pairedROIsPupil.txt"], "List"], {n, 1, Length[dateMouseListLPaxons]};

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In[ ]:= pairedROIsListLMaxons =
  Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
    dateMouseListLMaxons[[n, 1]], "/", dateMouseListLMaxons[[n, 2]],
    "/PairedAnalysis/", dateMouseListLMaxons[[n, 1]], "_", dateMouseListLMaxons[[n, 2]],
    "_pairedROIsPupil.txt"], "List"], {n, 1, Length[dateMouseListLMaxons]};

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

In[ ]:= pupilCCControlDark =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
    dateMouseListControl[[n, 1]], "/", dateMouseListControl[[n, 2]], "/", "Session1",
    "/Pupil/", dateMouseListControl[[n, 1]], "_", dateMouseListControl[[n, 2]],
    "_", "Session1", "_", "dFFpupilCrossCorr_ROI", ToString[roi], ".txt"], "List"],
    {roi, pairedROIsListControl[[n]]}], {n, 1, Length[dateMouseListControl]};

In[ ]:= pupilCCControlLED =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
    dateMouseListControl[[n, 1]], "/", dateMouseListControl[[n, 2]], "/", "Session2",
    "/Pupil/", dateMouseListControl[[n, 1]], "_", dateMouseListControl[[n, 2]],
    "_", "Session2", "_", "dFFpupilCrossCorr_ROI", ToString[roi], ".txt"], "List"],
    {roi, pairedROIsListControl[[n]]}], {n, 1, Length[dateMouseListControl]};

In[ ]:= pupilCCV1axonsDark =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
    dateMouseListV1axons[[n, 1]], "/", dateMouseListV1axons[[n, 2]], "/", "Session1",
    "/Pupil/", dateMouseListV1axons[[n, 1]], "_", dateMouseListV1axons[[n, 2]],
    "_", "Session1", "_", "dFFpupilCrossCorr_ROI", ToString[roi], ".txt"], "List"],
    {roi, pairedROIsListV1axons[[n]]}], {n, 1, Length[dateMouseListV1axons]};

In[ ]:= pupilCCV1axonsLED =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
    dateMouseListV1axons[[n, 1]], "/", dateMouseListV1axons[[n, 2]], "/", "Session2",
    "/Pupil/", dateMouseListV1axons[[n, 1]], "_", dateMouseListV1axons[[n, 2]],
    "_", "Session2", "_", "dFFpupilCrossCorr_ROI", ToString[roi], ".txt"], "List"],
    {roi, pairedROIsListV1axons[[n]]}], {n, 1, Length[dateMouseListV1axons]};

In[ ]:= pupilCCLPaxonsDark =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
    dateMouseListLPaxons[[n, 1]], "/", dateMouseListLPaxons[[n, 2]], "/", "Session1",
    "/Pupil/", dateMouseListLPaxons[[n, 1]], "_", dateMouseListLPaxons[[n, 2]],
    "_", "Session1", "_", "dFFpupilCrossCorr_ROI", ToString[roi], ".txt"], "List"],
    {roi, pairedROIsListLPaxons[[n]]}], {n, 1, Length[dateMouseListLPaxons]};

In[ ]:= pupilCCLPaxonsLED =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
    dateMouseListLPaxons[[n, 1]], "/", dateMouseListLPaxons[[n, 2]], "/", "Session2",
    "/Pupil/", dateMouseListLPaxons[[n, 1]], "_", dateMouseListLPaxons[[n, 2]],
    "_", "Session2", "_", "dFFpupilCrossCorr_ROI", ToString[roi], ".txt"], "List"],
    {roi, pairedROIsListLPaxons[[n]]}], {n, 1, Length[dateMouseListLPaxons]};

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ln[ ]:= pupilCCLMaxonsDark =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
    dateMouseListLMaxons[[n, 1]], "/", dateMouseListLMaxons[[n, 2]], "/", "Session1",
    "/Pupil/", dateMouseListLMaxons[[n, 1]], "_", dateMouseListLMaxons[[n, 2]],
    "_", "Session1", "_", "dFFpupilCrossCorr_ROI", ToString[roi], ".txt"], "List"],
    {roi, pairedROIsListLMaxons[[n]]}], {n, 1, Length[dateMouseListLMaxons]};

ln[ ]:= pupilCCLMaxonsLED =
  Table[Table[ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/",
    dateMouseListLMaxons[[n, 1]], "/", dateMouseListLMaxons[[n, 2]], "/", "Session2",
    "/Pupil/", dateMouseListLMaxons[[n, 1]], "_", dateMouseListLMaxons[[n, 2]],
    "_", "Session2", "_", "dFFpupilCrossCorr_ROI", ToString[roi], ".txt"], "List"],
    {roi, pairedROIsListLMaxons[[n]]}], {n, 1, Length[dateMouseListLMaxons]};

ln[ ]:= catenatedPupilCCControlDark = Flatten[pupilCCControlDark, 1];

ln[ ]:= catenatedPupilCCControlLED = Flatten[pupilCCControlLED, 1];

ln[ ]:= catenatedPupilCCV1axonsDark = Flatten[pupilCCV1axonsDark, 1];

ln[ ]:= catenatedPupilCCV1axonsLED = Flatten[pupilCCV1axonsLED, 1];

ln[ ]:= catenatedPupilCCLPaxonsDark = Flatten[pupilCCLPaxonsDark, 1];

ln[ ]:= catenatedPupilCCLPaxonsLED = Flatten[pupilCCLPaxonsLED, 1];

ln[ ]:= catenatedPupilCCLMaxonsDark = Flatten[pupilCCLMaxonsDark, 1];

ln[ ]:= catenatedPupilCCLMaxonsLED = Flatten[pupilCCLMaxonsLED, 1];

ln[ ]:= (*****);

ln[ ]:= (***)

ln[ ]:= meanCatenatedPupilCCControlDark = Mean[catenatedPupilCCControlDark];

ln[ ]:= semCatenatedPupilCCControlDark = (#/Sqrt@Length[catenatedPupilCCControlDark]) & /@
  StandardDeviation[catenatedPupilCCControlDark];

ln[ ]:= (***)

ln[ ]:= meanCatenatedPupilCCV1axonsDark = Mean[catenatedPupilCCV1axonsDark];

ln[ ]:= semCatenatedPupilCCV1axonsDark = (#/Sqrt@Length[catenatedPupilCCV1axonsDark]) & /@
  StandardDeviation[catenatedPupilCCV1axonsDark];

ln[ ]:= (***)

ln[ ]:= meanCatenatedPupilCCLPaxonsDark = Mean[catenatedPupilCCLPaxonsDark];

ln[ ]:= semCatenatedPupilCCLPaxonsDark = (#/Sqrt@Length[catenatedPupilCCLPaxonsDark]) & /@
  StandardDeviation[catenatedPupilCCLPaxonsDark];

ln[ ]:= (***)

ln[ ]:= meanCatenatedPupilCCLMaxonsDark = Mean[catenatedPupilCCLMaxonsDark];

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In[ ]:= semCatenatedPupilCCLMaxonsDark = ( # / Sqrt@Length[catenatedPupilCCLMaxonsDark] ) & /@
        StandardDeviation[catenatedPupilCCLMaxonsDark];

In[ ]:= (*** )

In[ ]:= meanCatenatedPupilCCControlLED = Mean[catenatedPupilCCControlLED];

In[ ]:= semCatenatedPupilCCControlLED = ( # / Sqrt@Length[catenatedPupilCCControlLED] ) & /@
        StandardDeviation[catenatedPupilCCControlLED];

In[ ]:= (*** )

In[ ]:= meanCatenatedPupilCCV1axonsLED = Mean[catenatedPupilCCV1axonsLED];

In[ ]:= semCatenatedPupilCCV1axonsLED = ( # / Sqrt@Length[catenatedPupilCCV1axonsLED] ) & /@
        StandardDeviation[catenatedPupilCCV1axonsLED];

In[ ]:= (*** )

In[ ]:= meanCatenatedPupilCCLPaxonsLED = Mean[catenatedPupilCCLPaxonsLED];

In[ ]:= semCatenatedPupilCCLPaxonsLED = ( # / Sqrt@Length[catenatedPupilCCLPaxonsLED] ) & /@
        StandardDeviation[catenatedPupilCCLPaxonsLED];

In[ ]:= (*** )

In[ ]:= meanCatenatedPupilCCLMaxonsLED = Mean[catenatedPupilCCLMaxonsLED];

In[ ]:= semCatenatedPupilCCLMaxonsLED = ( # / Sqrt@Length[catenatedPupilCCLMaxonsLED] ) & /@
        StandardDeviation[catenatedPupilCCLMaxonsLED];

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

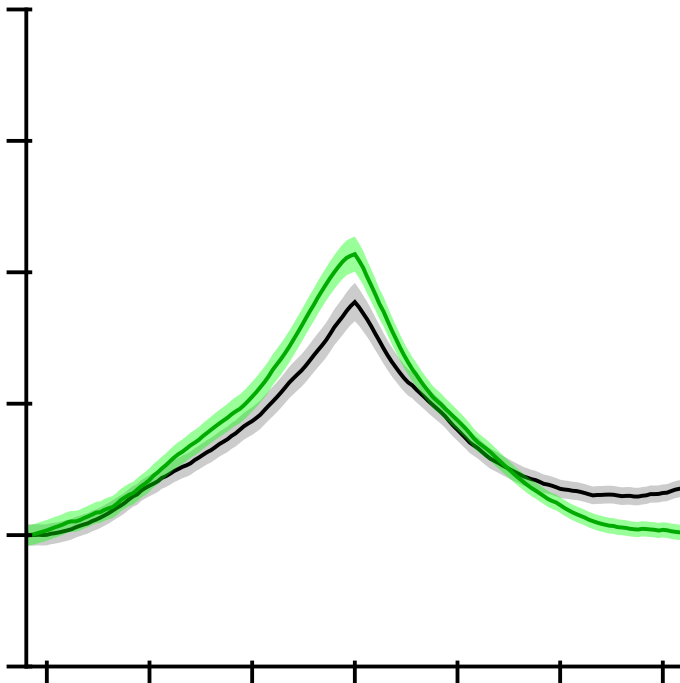
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In[ ]:= Show[ListLinePlot[{Part[#, 2] & /@meanCatenatedPupilCCControlDark,
  Part[#, 2] & /@meanCatenatedPupilCCControlDark +
    (Part[#, 2] & /@semCatenatedPupilCCControlDark),
  Part[#, 2] & /@meanCatenatedPupilCCControlDark -
    (Part[#, 2] & /@semCatenatedPupilCCControlDark)}, Filling ->
  {1 -> {{2}, Directive[Opacity[0.4], Gray]}, 1 -> {{3}, Directive[Opacity[0.4], Gray]}},
PlotStyle -> {{Black, Thickness[0.006]}, Transparent, Transparent},
DataRange -> {-8, 8}, PlotRange -> {{-8, 8}, {-0.05, 0.2}}, FrameTicks ->
  {{LinTicks[-0.05, 0.2, 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}},
FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]},
ListLinePlot[{Part[#, 2] & /@meanCatenatedPupilCCControlLED,
  Part[#, 2] & /@meanCatenatedPupilCCControlLED +
    (Part[#, 2] & /@semCatenatedPupilCCControlLED),
  Part[#, 2] & /@meanCatenatedPupilCCControlLED -
    (Part[#, 2] & /@semCatenatedPupilCCControlLED)}, Filling ->
  {1 -> {{2}, Directive[Opacity[0.4], Green]}, 1 -> {{3}, Directive[Opacity[0.4], Green]}},
PlotStyle -> {{Darker@Green, Thickness[0.006]}, Transparent, Transparent},
DataRange -> {-8, 8}, PlotRange -> {{-8, 8}, {-0.05, 0.2}}, FrameTicks ->
  {{LinTicks[-0.05, 0.2, 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}},
FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]}, AspectRatio -> 1]

```

Out[ ]:=

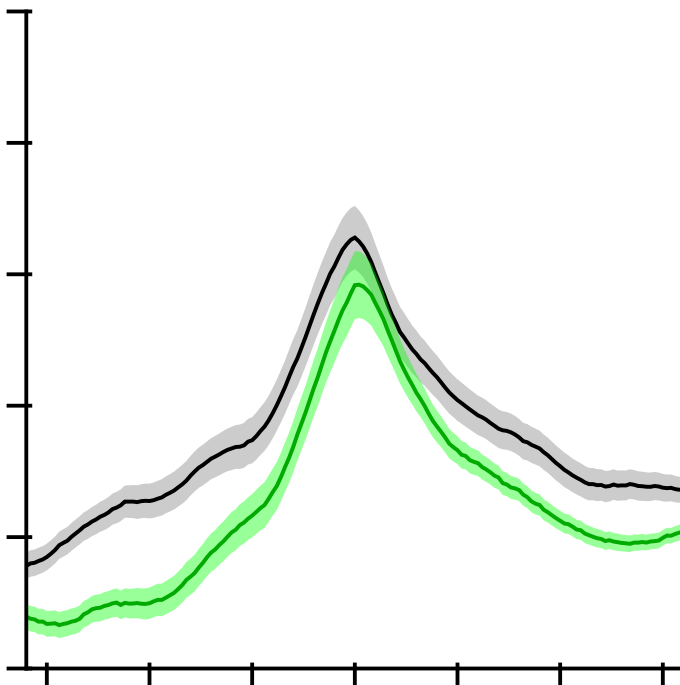


```

In[ ]:= Show[ListLinePlot[{Part[#, 2] & /@meanCatenatedPupilCCV1axonsDark,
  Part[#, 2] & /@meanCatenatedPupilCCV1axonsDark +
    (Part[#, 2] & /@semCatenatedPupilCCV1axonsDark),
  Part[#, 2] & /@meanCatenatedPupilCCV1axonsDark -
    (Part[#, 2] & /@semCatenatedPupilCCV1axonsDark)}, Filling ->
  {1 -> {{2}, Directive[Opacity[0.4], Gray]}, 1 -> {{3}, Directive[Opacity[0.4], Gray]}},
  PlotStyle -> {{Black, Thickness[0.006]}, Transparent, Transparent},
  DataRange -> {-8, 8}, PlotRange -> {{-8, 8}, {-0.05, 0.2}}, FrameTicks ->
  {{LinTicks[-0.05, 0.2, 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}},
  FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]},
ListLinePlot[{Part[#, 2] & /@meanCatenatedPupilCCV1axonsLED,
  Part[#, 2] & /@meanCatenatedPupilCCV1axonsLED +
    (Part[#, 2] & /@semCatenatedPupilCCV1axonsLED),
  Part[#, 2] & /@meanCatenatedPupilCCV1axonsLED -
    (Part[#, 2] & /@semCatenatedPupilCCV1axonsLED)}, Filling ->
  {1 -> {{2}, Directive[Opacity[0.4], Green]}, 1 -> {{3}, Directive[Opacity[0.4], Green]}},
  PlotStyle -> {{Darker@Green, Thickness[0.006]}, Transparent, Transparent},
  DataRange -> {-8, 8}, PlotRange -> {{-8, 8}, {-0.05, 0.2}}, FrameTicks ->
  {{LinTicks[-0.05, 0.2, 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}},
  FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0], AspectRatio -> 1]

```

Out[ ]:=

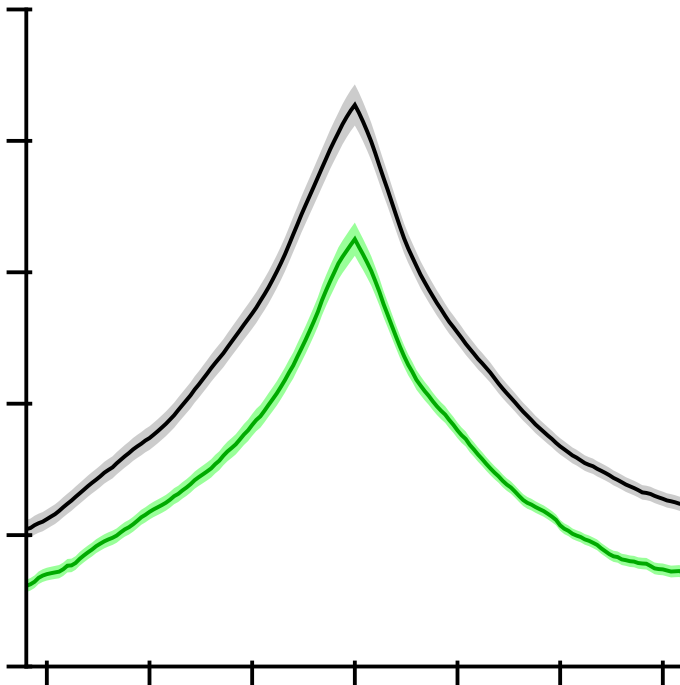


```

In[ ]:= Show[ListLinePlot[{Part[#, 2] & /@meanCatenatedPupilCCLPaxonsDark,
  Part[#, 2] & /@meanCatenatedPupilCCLPaxonsDark +
    (Part[#, 2] & /@semCatenatedPupilCCLPaxonsDark),
  Part[#, 2] & /@meanCatenatedPupilCCLPaxonsDark -
    (Part[#, 2] & /@semCatenatedPupilCCLPaxonsDark)}, Filling ->
  {1 -> {{2}, Directive[Opacity[0.4], Gray]}, 1 -> {{3}, Directive[Opacity[0.4], Gray]}},
  PlotStyle -> {{Black, Thickness[0.006]}, Transparent, Transparent},
  DataRange -> {-8, 8}, PlotRange -> {{-8, 8}, {-0.05, 0.2}}, FrameTicks ->
  {{LinTicks[-0.05, 0.2, 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}},
  FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]},
ListLinePlot[{Part[#, 2] & /@meanCatenatedPupilCCLPaxonsLED,
  Part[#, 2] & /@meanCatenatedPupilCCLPaxonsLED +
    (Part[#, 2] & /@semCatenatedPupilCCLPaxonsLED),
  Part[#, 2] & /@meanCatenatedPupilCCLPaxonsLED -
    (Part[#, 2] & /@semCatenatedPupilCCLPaxonsLED)}, Filling ->
  {1 -> {{2}, Directive[Opacity[0.4], Green]}, 1 -> {{3}, Directive[Opacity[0.4], Green]}},
  PlotStyle -> {{Darker@Green, Thickness[0.006]}, Transparent, Transparent},
  DataRange -> {-8, 8}, PlotRange -> {{-8, 8}, {-0.05, 0.2}}, FrameTicks ->
  {{LinTicks[-0.05, 0.2, 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}},
  FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0], AspectRatio -> 1]

```

Out[ ]:=



```

In[ ]:= Show[ListLinePlot[{Part[#, 2] & /@meanCatenatedPupilCCLMaxonsDark,
  Part[#, 2] & /@meanCatenatedPupilCCLMaxonsDark +
    (Part[#, 2] & /@semCatenatedPupilCCLMaxonsDark),
  Part[#, 2] & /@meanCatenatedPupilCCLMaxonsDark -
    (Part[#, 2] & /@semCatenatedPupilCCLMaxonsDark)}, Filling ->
  {1 -> {{2}, Directive[Opacity[0.4], Gray]}, 1 -> {{3}, Directive[Opacity[0.4], Gray]}},
  PlotStyle -> {{Black, Thickness[0.006]}, Transparent, Transparent},
  DataRange -> {-8, 8}, PlotRange -> {{-8, 8}, {-0.05, 0.2}}, FrameTicks ->
  {{LinTicks[-0.05, 0.2, 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}},
  FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0]},
ListLinePlot[{Part[#, 2] & /@meanCatenatedPupilCCLMaxonsLED,
  Part[#, 2] & /@meanCatenatedPupilCCLMaxonsLED +
    (Part[#, 2] & /@semCatenatedPupilCCLMaxonsLED),
  Part[#, 2] & /@meanCatenatedPupilCCLMaxonsLED -
    (Part[#, 2] & /@semCatenatedPupilCCLMaxonsLED)}, Filling ->
  {1 -> {{2}, Directive[Opacity[0.4], Green]}, 1 -> {{3}, Directive[Opacity[0.4], Green]}},
  PlotStyle -> {{Darker@Green, Thickness[0.006]}, Transparent, Transparent},
  DataRange -> {-8, 8}, PlotRange -> {{-8, 8}, {-0.05, 0.2}}, FrameTicks ->
  {{LinTicks[-0.05, 0.2, 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}},
  FrameTicksStyle -> Directive[FontOpacity -> 0, FontSize -> 0], AspectRatio -> 1]

```

Out[ ]:=

