```
(***Input identifying information***)

date = ToString[Evaluate[Input["Input the date of the experiment"]]]

mouse = ToString[Evaluate[Input["Input the mouse identity (e.g. Mouse123)"]]]

sessionNum = Evaluate[Input["Input the session number"]]

(***Import the frame times for the 2P images and calculate the frame rate***)

tpFrameTimes =
  Drop[Drop[(Import[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date,
       "/", mouse, "/Session", ToString[sessionNum], "/", date, "_", mouse, "_",
       "Session", ToString[sessionNum], "_2PFrameTimes.txt"], "List"]), 16], -1];

tpFrameRate = Round[Length[tpFrameTimes] / (Last[tpFrameTimes] - First[tpFrameTimes])];

(***For each ROI picked for the session, upload the extracted dF/F0 time series***)

numROIs =
  Length[FileNames["*", File[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date,
      "/", mouse, "/Session", ToString[sessionNum], "/dFOverF0TimeSeries/"]]]];

Table[Evaluate@ToExpression[StringJoin["dFFts", ToString[n]]] =
    ToExpression /@ Import[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/",
       date, "/", mouse, "/Session", ToString[sessionNum], "/dFoverF0TimeSeries/",
       date, "_", mouse, "_Session", ToString[sessionNum], "_",
       "dFoverF0ts_ROI", ToString[n], ".txt"], "List"];, {n, 1, numROIs}];

(***Import the Spike2 file indicating onset times of the noise movies***)

vStimOnsets =
  Drop[Drop[(Import[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date,
       "/", mouse, "/Session", ToString[sessionNum], "/", date, "_", mouse, "_",
       "Session", ToString[sessionNum], "_VisStimOnsetTimes.txt"], "List"]), 16], -1];

(***Get interpolation functions for the dF/F0 time series for each ROI***)

Table[Evaluate@ToExpression[StringJoin["dFFInterpFunc", ToString[n]]] =
    Interpolation[ToExpression[StringJoin["dFFts", ToString[n]]]];, {n, 1, numROIs}];

(***For each ROI,
calculate the raw evoked dF/F0 for around each stimulus presentation onset,
which includes 1 s prior stimulus onset and 3 s post stimulus offset***)
Table[Evaluate@ToExpression[StringJoin["evokedRawDFFs", ToString[n]]] =
    Table[Table[(ToExpression[StringJoin["dFFInterpFunc", ToString[n]]])[i],
      {i, vStimOnsets[[x]] - 1, vStimOnsets[[x]] + 5, 1 / tpFrameRate}],
     {x, 1, Length[vStimOnsets]}];, {n, 1, numROIs}];
```

```
(***For each ROI, calculate the baseline (0.5 s pre-stim) -
 subtracted evoked dF/F0 for each stimulus presentation***)
Table[Evaluate@ToExpression[StringJoin["blSubtractEvokedDFFs", ToString[n]]] =
    Table[Table[(ToExpression[StringJoin["dFFInterpFunc", ToString[n]]])[i] -
       (Mean[Table[(ToExpression[StringJoin["dFFInterpFunc", ToString[n]]])[j],
          {j, vStimOnsets[[x]] - 1, vStimOnsets[[x]]}]]),
      {i, vStimOnsets[[x]] - 1, vStimOnsets[[x]] + 5, 1/tpFrameRate}],
     {x, 1, Length[vStimOnsets]}];, {n, 1, numROIs}];

(***For each ROI,
calculate the z-scored dF/F0 for around each stimulus presentation onset,
which includes 1 s prior stimulus onset and 3 s post stimulus offset***)

Table[Evaluate@ToExpression[StringJoin["baselineMeans", ToString[n]]] =
    Table[Mean[Table[(ToExpression[StringJoin["dFFInterpFunc", ToString[n]]])[k],
       {k, vStimOnsets[[x]] - 1, vStimOnsets[[x]], 1/tpFrameRate}]],
     {x, 1, Length[vStimOnsets]}];, {n, 1, numROIs}];

Table[Evaluate@ToExpression[StringJoin["baselineSDs", ToString[n]]] = Table[
     StandardDeviation[Table[(ToExpression[StringJoin["dFFInterpFunc", ToString[n]]])[
        k], {k, vStimOnsets[[x]] - 1, vStimOnsets[[x]], 1/tpFrameRate}]],
     {x, 1, Length[vStimOnsets]}];, {n, 1, numROIs}];

Table[Evaluate@ToExpression[StringJoin["evokedZscoredDFFs", ToString[n]]] =
    Table[Table[(((ToExpression[StringJoin["dFFInterpFunc", ToString[n]]])[i]) -
         (ToExpression[StringJoin["baselineMeans", ToString[n]]])[[x]]) /
       ((ToExpression[StringJoin["baselineSDs", ToString[n]]])[[x]]),
      {i, vStimOnsets[[x]] - 1, vStimOnsets[[x]] + 5, 1/tpFrameRate}],
     {x, 1, Length[vStimOnsets]}];, {n, 1, numROIs}];

evokedTimeVals = Table[n, {n, -1, 5, 1/tpFrameRate}];

(***Import the mat file containing the stimulus properties
 (Grating or Plaid #) for each stimulus presentation in the session***)

dirList =
  Round /@ Flatten[Import["C:/Users/garrett/Desktop/RandomDotStimuli/dirList.mat"]];

coherList =
  Round /@ Flatten[Import["C:/Users/garrett/Desktop/RandomDotStimuli/coherList.mat"]];

(***Check that vStimOnsets and stimProps are same length***)

{Length[vStimOnsets], Length[dirList], Length[vStimOnsets] == Length[dirList]}

(***Find the positions at which each of the 4 dot motion directions was presented.***)

Table[Evaluate@ToExpression[StringJoin["pos", ToString[n], "dir"]] =
    Flatten[Position[dirList, n]];, {n, {0, 90, 180, 270}}];

(***Find the positions at which each of the 8 motion coherence values was used.***)

Table[Evaluate@ToExpression[StringJoin["pos", ToString[n], "coher"]] =
    Flatten[Position[coherList, n]];, {n, {20, 25, 31, 40, 50, 63, 79, 100}}];
```

```
In[•]:= (***Find the positions of each direction-coherence combination***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["pos", ToString[n], "dir", ToString[m], "coher"]] =
          Intersection[ToExpression[StringJoin["pos", ToString[n], "dir"]],
           ToExpression[StringJoin["pos", ToString[m], "coher"]]];,
         {n, {0, 90, 180, 270}}, {m, {20, 25, 31, 40, 50, 63, 79, 100}}];

In[•]:= (***For each ROI, make a time series of raw evoked dF/F0,
        baseline-subtracted evoked dF/F0, and mean baseline-subtracted evoked dF/F0***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["evokedRawDFFsTS", ToString[n]]] =
          Table[Partition[Riffle[evokedTimeVals,
              (ToExpression[StringJoin["evokedRawDFFs", ToString[n]]])[[m]]], 2], {m, 1, Length[
              (ToExpression[StringJoin["evokedRawDFFs", ToString[n]]])]}];, {n, 1, numROIs}];

In[•]:= Table[Evaluate@ToExpression[StringJoin["blSubtractEvokedDFFsTS", ToString[n]]] =
          Table[Partition[Riffle[evokedTimeVals,
              (ToExpression[StringJoin["blSubtractEvokedDFFs", ToString[n]]])[[m]]], 2],
            {m, 1, Length[(ToExpression[StringJoin["blSubtractEvokedDFFs", ToString[n]]])]}];,
          {n, 1, numROIs}];

In[•]:= Table[Evaluate@ToExpression[StringJoin["meanBLSubtractEvokedDFFsTS", ToString[n]]] =
          Mean[Table[Partition[Riffle[evokedTimeVals,
               (ToExpression[StringJoin["blSubtractEvokedDFFs", ToString[n]]])[[m]]], 2],
             {m, 1, Length[(ToExpression[StringJoin["blSubtractEvokedDFFs",
                  ToString[n]]])]}]];, {n, 1, numROIs}];

In[•]:= (***For each ROI, make a time series of z-scored dF/F0 and mean z-scored dF/F0,***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["zScoredDFFsTS", ToString[n]]] =
          Table[Partition[Riffle[evokedTimeVals,
              (ToExpression[StringJoin["evokedZscoredDFFs", ToString[n]]])[[m]]], 2],
            {m, 1, Length[(ToExpression[StringJoin["evokedZscoredDFFs", ToString[n]]])]}];, {n,
          1, numROIs}];

In[•]:= Table[Evaluate@ToExpression[StringJoin["meanZscoredDFFsTS", ToString[n]]] =
          Mean[Table[Partition[Riffle[evokedTimeVals,
               (ToExpression[StringJoin["evokedZscoredDFFs", ToString[n]]])[[m]]], 2],
             {m, 1, Length[(ToExpression[StringJoin["evokedZscoredDFFs",
                  ToString[n]]])]}]];, {n, 1, numROIs}];

In[•]:= (***For each ROI,
        collect the peri-stimulus dF/F traces for each dot motion direction***)

In[•]:= Table[Table[Evaluate@
             ToExpression[StringJoin["periStimDFF", ToString[m], "PosDirROI", ToString[n]]] =
            (ToExpression[StringJoin["evokedRawDFFsTS", ToString[n]]])[[
             ToExpression[StringJoin["pos", ToString[m], "dir"]]]];,
          {n, 1, numROIs}];, {m, {0, 90, 180, 270}}];
```

```
In[•]:= Table[Table[Evaluate@ToExpression[
          StringJoin["periStimDFFblSub", ToString[m], "PosDirROI", ToString[n]]] =
         (ToExpression[StringJoin["blSubtractEvokedDFFsTS", ToString[n]]])[[
          ToExpression[StringJoin["pos", ToString[m], "dir"]]]];,
        {n, 1, numROIs}];, {m, {0, 90, 180, 270}}];

In[•]:= (***For each ROI,
     collect the peri-stimulus z-scored dF/F traces for each dot motion direction***)

In[•]:= Table[
       Table[Evaluate@ToExpression[StringJoin["periStimZscoredDFF", ToString[m], "PosDirROI",
           ToString[n]]] = (ToExpression[StringJoin["zScoredDFFsTS", ToString[n]]])[[
          ToExpression[StringJoin["pos", ToString[m], "dir"]]]];,
        {n, 1, numROIs}];, {m, {0, 90, 180, 270}}];

In[•]:= (***For each ROI,
     calculate the z-scored mean response to the presentation of each dot motion direction***)

In[•]:= Table[Evaluate@
         ToExpression[StringJoin["zScoredRespAt", ToString[m], "PosDirROI", ToString[n]]] =
         (Mean[Part[#, 2] & /@ Mean[Table[N@Take[(ToExpression[StringJoin[
                    "periStimZscoredDFF", ToString[m], "PosDirROI", ToString[n]]])[[k]],
                {tpFrameRate + 1, (tpFrameRate + 1) + (2 * tpFrameRate)}], {k, 1,
               Length[(ToExpression[StringJoin["periStimZscoredDFF", ToString[m], "PosDirROI",
                   ToString[n]]])]}]]]);, {n, 1, numROIs}, {m, {0, 90, 180, 270}}];

In[•]:= (***Calculate significance of visual responsiveness
      for dot motion for each ROI.  To be significantly responsive,
     at least one dot motion direction must drive the cell to significance, p/4 < 0.05***)

In[•]:= Table[Evaluate@ToExpression[
          StringJoin["evokedRawDFFs", "PosDir", ToString[j], "ROI", ToString[n]]] =
        Table[Table[(ToExpression[StringJoin["dFFInterpFunc", ToString[n]]])[i],
          {i, vStimOnsets[[x]] - 1, vStimOnsets[[x]] + 5, 1/tpFrameRate}],
         {x, ToExpression[StringJoin["pos", ToString[j], "dir"]]}];,
       {n, 1, numROIs}, {j, {0, 90, 180, 270}}];

In[•]:= Table[Evaluate@ToExpression[
          StringJoin["gratingVisRespPVal", "PosDir", ToString[j], "ROI", ToString[n]]] =
        Quiet[TTest[{Mean /@ (Take[#, tpFrameRate] & /@ (ToExpression[
                 StringJoin["evokedRawDFFs", "PosDir", ToString[j], "ROI", ToString[n]]])),
            Mean /@ (Take[#, {tpFrameRate + 1, (tpFrameRate + 1) + (2 * tpFrameRate)}] & /@
                (ToExpression[StringJoin["evokedRawDFFs",
                   "PosDir", ToString[j], "ROI", ToString[n]]]))},
          AlternativeHypothesis → "Less"]];, {n, 1, numROIs}, {j, {0, 90, 180, 270}}];

In[•]:= Table[Evaluate@ToExpression[StringJoin["gratingPvalList", "ROI", ToString[n]]] =
        Flatten@Table[ToExpression[StringJoin["gratingVisRespPVal", "PosDir",
            ToString[j], "ROI", ToString[n]]], {j, {0, 90, 180, 270}}];, {n, 1, numROIs}];
```

```
In[•]:= sigRespROIs = DeleteCases[
          Table[If[AnyTrue[ToExpression[StringJoin["gratingPvalList", "ROI", ToString[n]]],
             # < (0.05 / 4) &], n, Null], {n, 1, numROIs}], Null];

In[•]:= (***Visualize average responses of significantly
         responsive ROIs to each dot motion direction***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["maxRespValDir", ToString[n]]] =
          Max[Flatten[{Part[#, 2] & /@
               Mean[(ToExpression[StringJoin["periStimDFFblSub0PosDirROI", ToString[n]]])],
             Part[#, 2] & /@ Mean[(ToExpression[StringJoin[
                  "periStimDFFblSub90PosDirROI", ToString[n]]])], Part[#, 2] & /@
               Mean[(ToExpression[StringJoin["periStimDFFblSub180PosDirROI", ToString[n]]])],
             Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSub270PosDirROI",
                  ToString[n]]])]}]];, {n, sigRespROIs}];

In[•]:= Table[Evaluate@ToExpression[StringJoin["minRespValDir", ToString[n]]] =
          Min[Flatten[{Part[#, 2] & /@
               Mean[(ToExpression[StringJoin["periStimDFFblSub0PosDirROI", ToString[n]]])],
             Part[#, 2] & /@ Mean[(ToExpression[StringJoin[
                  "periStimDFFblSub90PosDirROI", ToString[n]]])], Part[#, 2] & /@
               Mean[(ToExpression[StringJoin["periStimDFFblSub180PosDirROI", ToString[n]]])],
             Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSub270PosDirROI",
                  ToString[n]]])]}]];, {n, sigRespROIs}];

In[•]:= Manipulate[GraphicsGrid[{{ListLinePlot[
           Mean[(ToExpression[StringJoin["periStimDFFblSub0PosDirROI", ToString[n]]])],
           PlotRange → {{-1, 5}, {(ToExpression[StringJoin["minRespValDir", ToString[n]]]),
              (ToExpression[StringJoin["maxRespValDir", ToString[n]]])}}], ListLinePlot[
           Mean[(ToExpression[StringJoin["periStimDFFblSub90PosDirROI", ToString[n]]])],
           PlotRange → {{-1, 5}, {(ToExpression[StringJoin["minRespValDir", ToString[n]]]),
              (ToExpression[StringJoin["maxRespValDir", ToString[n]]])}}]}, {ListLinePlot[
           Mean[(ToExpression[StringJoin["periStimDFFblSub180PosDirROI", ToString[n]]])],
           PlotRange → {{-1, 5}, {(ToExpression[StringJoin["minRespValDir", ToString[n]]]),
              (ToExpression[StringJoin["maxRespValDir", ToString[n]]])}}], ListLinePlot[
           Mean[(ToExpression[StringJoin["periStimDFFblSub270PosDirROI", ToString[n]]])],
           PlotRange →
            {{-1, 5}, {(ToExpression[StringJoin["minRespValDir", ToString[n]]]), (ToExpression[
                 StringJoin["maxRespValDir", ToString[n]]])}}]}}], {n, Range[numROIs]}]

In[•]:= (***For each significantly responsive ROI,
         determine the dot motion direction for which responses were
          largest.  This direction will be used in the coherence analysis below***)

In[•]:= dirs = {0, 90, 180, 270};
```

```
In[•]:= Table[Evaluate@ToExpression[StringJoin["bestDir", "ROI", ToString[n]]] = dirs[[Flatten[
          Position[{ToExpression[StringJoin["zScoredRespAt0", "PosDirROI", ToString[n]]],
            ToExpression[StringJoin["zScoredRespAt90", "PosDirROI", ToString[n]]],
            ToExpression[StringJoin["zScoredRespAt180", "PosDirROI", ToString[n]]],
            ToExpression[StringJoin["zScoredRespAt270", "PosDirROI", ToString[n]]]},
           Max[{ToExpression[StringJoin["zScoredRespAt0", "PosDirROI", ToString[n]]],
             ToExpression[StringJoin["zScoredRespAt90", "PosDirROI", ToString[n]]],
             ToExpression[StringJoin["zScoredRespAt180", "PosDirROI", ToString[n]]],
             ToExpression[StringJoin["zScoredRespAt270", "PosDirROI",
               ToString[n]]]}]]][[1]]]];, {n, sigRespROIs}];

In[•]:= (*************************************************************************
         *******)
        (**********************Analysis for dot
         motion coherence correlation*******************)
        (*************************************************************************
         *******)

In[•]:= (***For each responsive ROI, collect the peri-
         stimulus dF/F traces for each motion coherence level at the best motion direction***)

In[•]:= Table[Table[Evaluate@ToExpression[
            StringJoin["periStimDFFbestDir", ToString[m], "PosCoherROI", ToString[n]]] =
           (ToExpression[StringJoin["evokedRawDFFsTS", ToString[n]]])[[ToExpression[
            StringJoin["pos", ToString[ToExpression[StringJoin["bestDirROI", ToString[n]]]],
             "dir", ToString[m], "coher"]]]];,
        {n, sigRespROIs}];, {m, {20, 25, 31, 40, 50, 63, 79, 100}}];

In[•]:= Table[Table[Evaluate@ToExpression[
            StringJoin["periStimDFFblSubbestDir", ToString[m], "PosCoherROI", ToString[n]]] =
           (ToExpression[StringJoin["blSubtractEvokedDFFsTS", ToString[n]]])[[
            ToExpression[StringJoin["pos", ToString[ToExpression[
                StringJoin["bestDirROI", ToString[n]]]], "dir", ToString[m], "coher"]]]];,
        {n, sigRespROIs}];, {m, {20, 25, 31, 40, 50, 63, 79, 100}}];

In[•]:= (***For each ROI,
        collect the peri-stimulus z-scored dF/F traces for each dot motion direction***)

In[•]:= Table[Table[Evaluate@ToExpression[StringJoin[
              "periStimZscoredDFFbestDir", ToString[m], "PosCoherROI", ToString[n]]] =
           (ToExpression[StringJoin["zScoredDFFsTS", ToString[n]]])[[ToExpression[
            StringJoin["pos", ToString[ToExpression[StringJoin["bestDirROI", ToString[n]]]],
             "dir", ToString[m], "coher"]]]];,
        {n, sigRespROIs}];, {m, {20, 25, 31, 40, 50, 63, 79, 100}}];

In[•]:= (***For each ROI,
        calculate the z-scored mean response to the presentation of each dot motion direction***)
```

```
In[•]:= Table[Evaluate@ToExpression[
          StringJoin["zScoredRespAtbestDir", ToString[m], "PosCoherROI", ToString[n]]] =
        (Mean[Part[#, 2] & /@ Mean[Table[N@Take[(ToExpression[StringJoin[
                    "periStimZscoredDFFbestDir", ToString[m], "PosCoherROI", ToString[n]]])[[
                k]], {tpFrameRate + 1, (tpFrameRate + 1) + (2 * tpFrameRate)}],
              {k, 1, Length[(ToExpression[StringJoin["periStimZscoredDFFbestDir",
                    ToString[m], "PosCoherROI", ToString[n]]])]}]]]);,
      {n, sigRespROIs}, {m, {20, 25, 31, 40, 50, 63, 79, 100}}];

In[•]:= (***For each responsive ROI, create a vector of mean responses to random
     dot motion of each coherence level for the best direction of motion***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["respVectROI", ToString[n]]] =
        Table[ToExpression[StringJoin["zScoredRespAtbestDir", ToString[m], "PosCoherROI",
           ToString[n]]], {m, {20, 25, 31, 40, 50, 63, 79, 100}}];, {n, sigRespROIs}];

In[•]:= (***Calculate the correlation between each response vector
     and the vector of motion coherence values.  This final value is a
     measure of each ROI's selectivity for random dot motion coherence***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["motionCorrROI", ToString[n]]] =
        Correlation[{20, 25, 31, 40, 50, 63, 79, 100},
         ToExpression[StringJoin["respVectROI", ToString[n]]]];, {n, sigRespROIs}];

In[•]:= (***Visualize average responses of significantly responsive ROIs
     to each dot motion coherence level for the best motion direction**)

In[•]:= Table[Evaluate@ToExpression[StringJoin["maxRespValCoher", ToString[n]]] =
        Max[Flatten[{Part[#, 2] & /@ Mean[(ToExpression[
                StringJoin["periStimDFFblSubbestDir20", "PosCoherROI", ToString[n]]])],
           Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir25",
                "PosCoherROI", ToString[n]]])], Part[#, 2] & /@ Mean[(ToExpression[
                StringJoin["periStimDFFblSubbestDir31", "PosCoherROI", ToString[n]]])],
           Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir40",
                "PosCoherROI", ToString[n]]])], Part[#, 2] & /@ Mean[(ToExpression[
                StringJoin["periStimDFFblSubbestDir50", "PosCoherROI", ToString[n]]])],
           Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir63",
                "PosCoherROI", ToString[n]]])], Part[#, 2] & /@ Mean[(ToExpression[
                StringJoin["periStimDFFblSubbestDir79", "PosCoherROI", ToString[n]]])],
           Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir100",
                "PosCoherROI", ToString[n]]])]}]];, {n, sigRespROIs}];
```

```
In[•]:= Table[Evaluate@ToExpression[StringJoin["minRespValCoher", ToString[n]]] =
          Min[Flatten[{Part[#, 2] & /@ Mean[(ToExpression[
                  StringJoin["periStimDFFblSubbestDir20", "PosCoherROI", ToString[n]]])],
              Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir25",
                   "PosCoherROI", ToString[n]]])], Part[#, 2] & /@ Mean[(ToExpression[
                  StringJoin["periStimDFFblSubbestDir31", "PosCoherROI", ToString[n]]])],
              Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir40",
                   "PosCoherROI", ToString[n]]])], Part[#, 2] & /@ Mean[(ToExpression[
                  StringJoin["periStimDFFblSubbestDir50", "PosCoherROI", ToString[n]]])],
              Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir63",
                   "PosCoherROI", ToString[n]]])], Part[#, 2] & /@ Mean[(ToExpression[
                  StringJoin["periStimDFFblSubbestDir79", "PosCoherROI", ToString[n]]])],
              Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir100",
                   "PosCoherROI", ToString[n]]])]}]];, {n, sigRespROIs}];

In[•]:= Manipulate[{GraphicsRow[{ListLinePlot[Mean[
             (ToExpression[StringJoin["periStimDFFblSubbestDir20PosCoherROI", ToString[n]]])],
            PlotRange → {{-1, 5}, {(ToExpression[StringJoin["minRespValCoher", ToString[n]]]),
               (ToExpression[StringJoin["maxRespValCoher", ToString[n]]])}}],
          ListLinePlot[Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir25PosCoherROI",
                ToString[n]]])], PlotRange → {{-1, 5},
             {(ToExpression[StringJoin["minRespValCoher", ToString[n]]]), (ToExpression[
                StringJoin["maxRespValCoher", ToString[n]]])}}], ListLinePlot[Mean[
             (ToExpression[StringJoin["periStimDFFblSubbestDir31PosCoherROI", ToString[n]]])],
            PlotRange → {{-1, 5}, {(ToExpression[StringJoin["minRespValCoher", ToString[n]]]),
               (ToExpression[StringJoin["maxRespValCoher", ToString[n]]])}}],
          ListLinePlot[Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir40PosCoherROI",
                ToString[n]]])], PlotRange → {{-1, 5},
             {(ToExpression[StringJoin["minRespValCoher", ToString[n]]]), (ToExpression[
                StringJoin["maxRespValCoher", ToString[n]]])}}], ListLinePlot[Mean[
             (ToExpression[StringJoin["periStimDFFblSubbestDir50PosCoherROI", ToString[n]]])],
            PlotRange → {{-1, 5}, {(ToExpression[StringJoin["minRespValCoher", ToString[n]]]),
               (ToExpression[StringJoin["maxRespValCoher", ToString[n]]])}}],
          ListLinePlot[Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir63PosCoherROI",
                ToString[n]]])], PlotRange →
            {{-1, 5}, {(ToExpression[StringJoin["minRespValCoher", ToString[n]]]),
               (ToExpression[StringJoin["maxRespValCoher", ToString[n]]])}}],
          ListLinePlot[Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir79PosCoherROI",
                ToString[n]]])], PlotRange →
            {{-1, 5}, {(ToExpression[StringJoin["minRespValCoher", ToString[n]]]),
               (ToExpression[StringJoin["maxRespValCoher", ToString[n]]])}}],
          ListLinePlot[Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir100PosCoherROI",
                ToString[n]]])], PlotRange →
            {{-1, 5}, {(ToExpression[StringJoin["minRespValCoher", ToString[n]]]),
               (ToExpression[StringJoin["maxRespValCoher", ToString[n]]])}}]}],
        ToExpression[StringJoin["motionCorrROI", ToString[n]]]}, {n,
        sigRespROIs}]
```

```
In[•]:= (**************************Export data**************************)

In[•]:= (***Export the identities of the ROIs
         that were significantly responsive to random dots***)

In[•]:= Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
           "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
           ToString[sessionNum], "_", "sigResponsiveGratingROIs", ".txt"], sigRespROIs];

In[•]:= (***Export the identities of the ROIs that were significantly responsive to plaids***)

In[•]:= (***For each responsove ROI, export a vector of the mean baseline-
         subtracted peri-stimulus dF/F traces for each dot motion direction***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
           "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
           ToString[sessionNum], "_", "periStimDFFtraces_4Dirs_ROI", ToString[n], ".txt"],
          {Mean[(ToExpression[StringJoin["periStimDFFblSub0PosDirROI", ToString[n]]])],
           Mean[(ToExpression[StringJoin["periStimDFFblSub90PosDirROI", ToString[n]]])],
           Mean[(ToExpression[StringJoin["periStimDFFblSub180PosDirROI", ToString[n]]])],
           Mean[(ToExpression[StringJoin["periStimDFFblSub270PosDirROI", ToString[n]]])]}], {n,
          sigRespROIs}];

In[•]:= (***For each responsive ROI,
         export a vector of the mean Z-scored dF/F for each dot motion direction***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
           "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
           ToString[sessionNum], "_", "zScoredDFF_4Dirs_ROI", ToString[n], ".txt"],
          {ToExpression[StringJoin["zScoredRespAt0", "PosDirROI", ToString[n]]],
           ToExpression[StringJoin["zScoredRespAt90", "PosDirROI", ToString[n]]],
           ToExpression[StringJoin["zScoredRespAt180", "PosDirROI", ToString[n]]], ToExpression[
            StringJoin["zScoredRespAt270", "PosDirROI", ToString[n]]]}], {n, sigRespROIs}];

In[•]:= (***For each responsove ROI, export a vector of the mean baseline-subtracted peri-
         stimulus dF/F traces for each motion coherence level at the best direction***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/",
           date, "/", mouse, "/Session", ToString[sessionNum], "/VisStimResults/",
           date, "_", mouse, "_Session", ToString[sessionNum], "_",
           "periStimDFFtraces_8Cohers_BestDir_ROI", ToString[n], ".txt"], {Mean[
            (ToExpression[StringJoin["periStimDFFblSubbestDir20PosCoherROI", ToString[n]]])],
           Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir25PosCoherROI",
                ToString[n]]])], Mean[(ToExpression[
              StringJoin["periStimDFFblSubbestDir31PosCoherROI", ToString[n]]])], Mean[
            (ToExpression[StringJoin["periStimDFFblSubbestDir40PosCoherROI", ToString[n]]])],
           Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir50PosCoherROI",
                ToString[n]]])], Mean[(ToExpression[
              StringJoin["periStimDFFblSubbestDir63PosCoherROI", ToString[n]]])], Mean[
            (ToExpression[StringJoin["periStimDFFblSubbestDir79PosCoherROI", ToString[n]]])],
           Mean[(ToExpression[StringJoin["periStimDFFblSubbestDir100PosCoherROI",
                ToString[n]]])]}], {n, sigRespROIs}];
```

```
In[ ]:= (***For each responsove ROI, export a vector of the mean Z-
         scored dF/F for each motion coherence level at the best direction***)

In[ ]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
          "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
          ToString[sessionNum], "_", "zScoredDFF_8Cohers_BestDir_ROI", ToString[n], ".txt"],
        ToExpression[StringJoin["respVectROI", ToString[n]]]], {n, sigRespROIs}];

In[ ]:= (***For each responsove ROI,
        export the correlation between responses and motion coherence***)

In[ ]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/",
          mouse, "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse,
          "_Session", ToString[sessionNum], "_", "motionCorr_ROI", ToString[n], ".txt"],
        ToExpression[StringJoin["motionCorrROI", ToString[n]]]], {n, sigRespROIs}];
```