```
(***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 csv file containing the stimulus
 properties for each stimulus presentation in the session***)

stimProps = Import[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/",
    date, "/", mouse, "/Session", ToString[sessionNum], "/", date, "_",
    mouse, "_", "Session", ToString[sessionNum], "_StimProps.csv"]];

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

(***Extract grating orientation for each stimulus presented***)

sizes = Round /@ (Part[#, 6] & /@ stimProps);

sizeList = Part[#, 1] & /@ Sort[Tally[sizes]];

(***Find the positions at which each of the 8 stimulus sizes was presented***)

pos7deg = Flatten[Position[sizes, 7]];

pos17deg = Flatten[Position[sizes, 17]];

pos26deg = Flatten[Position[sizes, 26]];
```

```
In[•]:= pos36deg = Flatten[Position[sizes, 36]];

In[•]:= pos46deg = Flatten[Position[sizes, 46]];

In[•]:= pos56deg = Flatten[Position[sizes, 56]];

In[•]:= pos65deg = Flatten[Position[sizes, 65]];

In[•]:= pos75deg = Flatten[Position[sizes, 75]];

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,
    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,
    but JUST for the smaller stimulus sizes***)
    Table[Evaluate@ToExpression[StringJoin["evokedRawDFFsSmall", ToString[n]]] =
      Table[Table[(ToExpression[StringJoin["dFFInterpFunc", ToString[n]]])[i],
        {i, vStimOnsets[[x]] - 1, vStimOnsets[[x]] + 5, 1/tpFrameRate}],
       {x, Sort[Join[pos7deg, pos17deg, pos26deg, pos36deg]]}];, {n, 1, numROIs}];

In[•]:= (***For each ROI, calculate the baseline (0.5 s pre-stim)-
     subtracted evoked dF/F0 for each stimulus presentation,
    bjt just for smaller stimuli***)
    Table[Evaluate@ToExpression[StringJoin["blSubtractEvokedDFFsSmall", 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, Sort[Join[pos7deg, pos17deg, pos26deg, pos36deg]]}];, {n, 1, numROIs}];
```

```
In[•]:= (***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,
    but JUST for the larger stimulus sizes***)
    Table[Evaluate@ToExpression[StringJoin["evokedRawDFFsLarge", ToString[n]]] =
      Table[Table[(ToExpression[StringJoin["dFFInterpFunc", ToString[n]]])[i],
        {i, vStimOnsets[[x]] - 1, vStimOnsets[[x]] + 5, 1 / tpFrameRate}],
       {x, Sort[Join[pos46deg, pos56deg, pos65deg, pos75deg]]}];, {n, 1, numROIs}];

In[•]:= (***For each ROI, calculate the baseline (0.5 s pre-stim) -
     subtracted evoked dF/F0 for each stimulus presentation,
    bjt just for larger stimuli***)
    Table[Evaluate@ToExpression[StringJoin["blSubtractEvokedDFFsLarge", 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, Sort[Join[pos46deg, pos56deg, pos65deg, pos75deg]]}];, {n, 1, numROIs}];

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, but JUST for smaller stimuli***)

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

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

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

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, but JUST for larger stimuli***)

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

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

In[•]:= Table[Evaluate@ToExpression[StringJoin["meanBLSubtractEvokedDFFsLargeTS", ToString[n]]] =
      Mean[Table[Partition[Riffle[evokedTimeVals,
           (ToExpression[StringJoin["blSubtractEvokedDFFsLarge", ToString[n]]])[[m]]], 2],
         {m, 1, Length[(ToExpression[StringJoin["blSubtractEvokedDFFsLarge",
              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[•]:= (***To quantify visual responsiveness of each ROI,
    perform a T test comparing the mean dF/F 1 s before stimulus
     onset and the mean dF/F during the 2 s stimulus presentation,
    across all stimulus presentations.  Do the T test for both smaller and larger stimuli***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["visRespPValSmallROI", ToString[n]]] =
      Quiet[TTest[{Mean /@ (Take[#, tpFrameRate] & /@
            (ToExpression[StringJoin["evokedRawDFFsSmall", ToString[n]]])),
         Mean /@ (Take[#, {tpFrameRate + 1, (tpFrameRate + 1) + (2 * tpFrameRate)}] & /@
            (ToExpression[StringJoin["evokedRawDFFsSmall", ToString[n]]]))},
        AlternativeHypothesis → "Less"]];, {n, 1, numROIs}];

In[•]:= Table[Evaluate@ToExpression[StringJoin["visRespPValLargeROI", ToString[n]]] =
      Quiet[TTest[{Mean /@ (Take[#, tpFrameRate] & /@
            (ToExpression[StringJoin["evokedRawDFFsLarge", ToString[n]]])),
         Mean /@ (Take[#, {tpFrameRate + 1, (tpFrameRate + 1) + (2 * tpFrameRate)}] & /@
            (ToExpression[StringJoin["evokedRawDFFsLarge", ToString[n]]]))},
        AlternativeHypothesis → "Less"]];, {n, 1, numROIs}];

In[•]:= pValListSmall =
     Table[ToExpression[StringJoin["visRespPValSmallROI", ToString[n]]], {n, 1, numROIs}];

In[•]:= pValListLarge =
     Table[ToExpression[StringJoin["visRespPValLargeROI", ToString[n]]], {n, 1, numROIs}];
```

```
In[•]:= (***Extract the ROIs with significant responses,
    meaning a p-value below 0.01 for either the smaller stimuli or the larger stimuli***)

In[•]:= sigRespROIs =
      DeleteCases[Table[If[pValListSmall[[n]] < 0.01 || pValListLarge[[n]] < 0.01, n, Null],
        {n, 1, numROIs}], Null];

In[•]:= (***For each ROI,
    visualize the p-value and overall evoked responses relative to baseline***)

In[•]:= Table[{{StringJoin["ROI", ToString[n]],
        ToExpression[StringJoin["visRespPValSmallROI", ToString[n]]], ListLinePlot[
         ToExpression[StringJoin["meanBLSubtractEvokedDFFsSmallTS", ToString[n]]]]},
       {StringJoin["ROI", ToString[n]], ToExpression[StringJoin["visRespPValLargeROI",
          ToString[n]]], ListLinePlot[ToExpression[StringJoin[
           "meanBLSubtractEvokedDFFsLargeTS", ToString[n]]]]}}, {n, numROIs}] // TableForm

In[•]:= (***For each ROI, calculate a new dF/F value that indicates
     its overall visual responsiveness aross all stimulus presentations,
    where F0 is the mean dF/F 1 s before stimulus onset and F is the mean dF/F during the 2-
     s stimulus presentation***)

In[•]:= Table[
      Evaluate@ToExpression[StringJoin["overallVisDFF", ToString[n]]] = (Mean[Part[#, 2] & /@
            Take[Mean[(ToExpression[StringJoin["evokedRawDFFsTS", ToString[n]]])],
             {tpFrameRate + 1, (tpFrameRate + 1) + (2 * tpFrameRate)}]] - Mean[Part[#, 2] & /@
            Take[Mean[(ToExpression[StringJoin["evokedRawDFFsTS", ToString[n]]])],
             tpFrameRate]]) / Mean[Part[#, 2] & /@
          Take[Mean[(ToExpression[StringJoin["evokedRawDFFsTS", ToString[n]]])],
           tpFrameRate]];, {n, 1, numROIs}];

In[•]:= (***For each ROI, calculate an additional measure of overall visual
     responsiveness aross all stimulus presentations, which, instead of a new dF/F,
    is the mean z-scored dF/F during the 2 s of stimulus presentation***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["overallVisZScore", ToString[n]]] = Mean[
        Part[#, 2] & /@ Take[Mean[(ToExpression[StringJoin["zScoredDFFsTS", ToString[n]]])],
          {tpFrameRate + 1, (tpFrameRate + 1) + (2 * tpFrameRate)}]];, {n, 1, numROIs}];

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

In[•]:= Table[Table[Evaluate@
          ToExpression[StringJoin["periStimDFF", ToString[m], "DegROI", ToString[n]]] =
         (ToExpression[StringJoin["evokedRawDFFsTS", ToString[n]]])[[ToExpression[
           StringJoin["pos", ToString[m], "deg"]]]];, {n, 1, numROIs}];, {m, sizeList}];

In[•]:= Table[Table[Evaluate@
          ToExpression[StringJoin["periStimDFFblSub", ToString[m], "DegROI", ToString[n]]] =
         (ToExpression[StringJoin["blSubtractEvokedDFFsTS", ToString[n]]])[[ToExpression[
           StringJoin["pos", ToString[m], "deg"]]]];, {n, 1, numROIs}];, {m, sizeList}];

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

```
In[•]:= Table[Table[Evaluate@ToExpression[
          StringJoin["periStimZscoredDFF", ToString[m], "DegROI", ToString[n]]] =
         (ToExpression[StringJoin["zScoredDFFsTS", ToString[n]]])[[ToExpression[
          StringJoin["pos", ToString[m], "deg"]]]];, {n, 1, numROIs}];, {m, sizeList}];

In[•]:= (***For visualization purposes (size):***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["maxRespValSize", ToString[n]]] =
     Max[Flatten[{Part[#, 2] & /@
          Mean[(ToExpression[StringJoin["periStimDFFblSub7DegROI", ToString[n]]])],
         Part[#, 2] & /@ Mean[(ToExpression[StringJoin[
              "periStimDFFblSub17DegROI", ToString[n]]])], Part[#, 2] & /@
          Mean[(ToExpression[StringJoin["periStimDFFblSub26DegROI", ToString[n]]])],
         Part[#, 2] & /@ Mean[(ToExpression[StringJoin[
              "periStimDFFblSub36DegROI", ToString[n]]])], Part[#, 2] & /@
          Mean[(ToExpression[StringJoin["periStimDFFblSub46DegROI", ToString[n]]])],
         Part[#, 2] & /@ Mean[(ToExpression[StringJoin[
              "periStimDFFblSub56DegROI", ToString[n]]])], Part[#, 2] & /@
          Mean[(ToExpression[StringJoin["periStimDFFblSub65DegROI", ToString[n]]])],
         Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSub75DegROI",
              ToString[n]]])]}]];, {n, 1, numROIs}];

In[•]:= Table[Evaluate@ToExpression[StringJoin["minRespValSize", ToString[n]]] =
     Min[Flatten[{Part[#, 2] & /@
          Mean[(ToExpression[StringJoin["periStimDFFblSub7DegROI", ToString[n]]])],
         Part[#, 2] & /@ Mean[(ToExpression[StringJoin[
              "periStimDFFblSub17DegROI", ToString[n]]])], Part[#, 2] & /@
          Mean[(ToExpression[StringJoin["periStimDFFblSub26DegROI", ToString[n]]])],
         Part[#, 2] & /@ Mean[(ToExpression[StringJoin[
              "periStimDFFblSub36DegROI", ToString[n]]])], Part[#, 2] & /@
          Mean[(ToExpression[StringJoin["periStimDFFblSub46DegROI", ToString[n]]])],
         Part[#, 2] & /@ Mean[(ToExpression[StringJoin[
              "periStimDFFblSub56DegROI", ToString[n]]])], Part[#, 2] & /@
          Mean[(ToExpression[StringJoin["periStimDFFblSub65DegROI", ToString[n]]])],
         Part[#, 2] & /@ Mean[(ToExpression[StringJoin["periStimDFFblSub75DegROI",
              ToString[n]]])]}]];, {n, 1, numROIs}];

In[•]:= (***For each ROI,
    calculate the mean response to the presentation of each stimulus size,
    which is a new trial-averaged dF/F,
    where F0 for each trial is the mean dF/F 1 s before stimulus
     onset and F is the mean dF/F during the 2 s stimulus presentation***)
```

```
In[•]:= Table[Evaluate@ToExpression[StringJoin["respAt", ToString[m], "DegROI", ToString[n]]] =
          ((Mean[Part[#, 2] & /@ Mean[Table[N@Take[(ToExpression[StringJoin["periStimDFF",
                          ToString[m], "DegROI", ToString[n]]])[[k]], {tpFrameRate + 1,
                      (tpFrameRate + 1) + (2 * tpFrameRate)}], {k, 1, Length[(ToExpression[
                       StringJoin["periStimDFF", ToString[m], "DegROI", ToString[n]]])]}]]]) -
             (Mean[Part[#, 2] & /@ Mean[Table[N@Take[(ToExpression[StringJoin["periStimDFF",
                          ToString[m], "DegROI", ToString[n]]])[[k]], tpFrameRate],
                   {k, 1, Length[(ToExpression[StringJoin["periStimDFF", ToString[m],
                        "DegROI", ToString[n]]])]}]]])) /
            (Mean[Part[#, 2] & /@ Mean[Table[N@Take[(ToExpression[StringJoin["periStimDFF",
                       ToString[m], "DegROI", ToString[n]]])[[k]], tpFrameRate],
                  {k, 1, Length[(ToExpression[StringJoin["periStimDFF", ToString[m],
                       "DegROI", ToString[n]]])]}]]]);, {n, 1, numROIs}, {m, sizeList}];

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

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

In[•]:= (***Make size tuning curves***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["respVsSizeROI", ToString[n]]] =
          {{7, ToExpression[StringJoin["respAt7DegROI", ToString[n]]]},
           {17, ToExpression[StringJoin["respAt17DegROI", ToString[n]]]},
           {26, ToExpression[StringJoin["respAt26DegROI", ToString[n]]]},
           {36, ToExpression[StringJoin["respAt36DegROI", ToString[n]]]},
           {46, ToExpression[StringJoin["respAt46DegROI", ToString[n]]]},
           {56, ToExpression[StringJoin["respAt56DegROI", ToString[n]]]},
           {65, ToExpression[StringJoin["respAt65DegROI", ToString[n]]]},
           {75, ToExpression[StringJoin["respAt75DegROI", ToString[n]]]}};, {n, 1, numROIs}];

In[•]:= (***Make size tuning curves from z-scored dF/F***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["zScoredRespVsSizeROI", ToString[n]]] =
          {{7, ToExpression[StringJoin["zScoredRespAt7DegROI", ToString[n]]]},
           {17, ToExpression[StringJoin["zScoredRespAt17DegROI", ToString[n]]]},
           {26, ToExpression[StringJoin["zScoredRespAt26DegROI", ToString[n]]]},
           {36, ToExpression[StringJoin["zScoredRespAt36DegROI", ToString[n]]]},
           {46, ToExpression[StringJoin["zScoredRespAt46DegROI", ToString[n]]]},
           {56, ToExpression[StringJoin["zScoredRespAt56DegROI", ToString[n]]]}, {65,
            ToExpression[StringJoin["zScoredRespAt65DegROI", ToString[n]]]}, {75, ToExpression[
             StringJoin["zScoredRespAt75DegROI", ToString[n]]]}};, {n, 1, numROIs}];

In[•]:= (**Visualize the size tuning responses and size
      tuning curves for each significantly responsive ROI**)
```

```
In[•]:= Manipulate[
 GraphicsGrid[{{ListLinePlot[Mean[ToExpression[StringJoin["periStimDFFblSub7DegROI",
        ToString[ROI]]]], PlotLabel → "7 deg",
     PlotRange → {All, {ToExpression[StringJoin["minRespValSize", ToString[ROI]]],
        ToExpression[StringJoin["maxRespValSize", ToString[ROI]]]}}], ListLinePlot[
     Mean[ToExpression[StringJoin["periStimDFFblSub17DegROI", ToString[ROI]]]],
     PlotLabel → "17 deg",
     PlotRange → {All, {ToExpression[StringJoin["minRespValSize", ToString[ROI]]],
        ToExpression[StringJoin["maxRespValSize", ToString[ROI]]]}}], ListLinePlot[
     Mean[ToExpression[StringJoin["periStimDFFblSub26DegROI", ToString[ROI]]]],
     PlotLabel → "26 Deg",
     PlotRange → {All, {ToExpression[StringJoin["minRespValSize", ToString[ROI]]],
        ToExpression[StringJoin["maxRespValSize", ToString[ROI]]]}}], ListLinePlot[
     Mean[ToExpression[StringJoin["periStimDFFblSub36DegROI", ToString[ROI]]]],
     PlotLabel → "36 Deg",
     PlotRange → {All, {ToExpression[StringJoin["minRespValSize", ToString[ROI]]],
        ToExpression[StringJoin["maxRespValSize", ToString[ROI]]]}}], ListLinePlot[
     Mean[ToExpression[StringJoin["periStimDFFblSub46DegROI", ToString[ROI]]]],
     PlotLabel → "46 Deg",
     PlotRange → {All, {ToExpression[StringJoin["minRespValSize", ToString[ROI]]],
        ToExpression[StringJoin["maxRespValSize", ToString[ROI]]]}}], ListLinePlot[
     Mean[ToExpression[StringJoin["periStimDFFblSub56DegROI", ToString[ROI]]]],
     PlotLabel → "56 Deg",
     PlotRange → {All, {ToExpression[StringJoin["minRespValSize", ToString[ROI]]],
        ToExpression[StringJoin["maxRespValSize", ToString[ROI]]]}}], ListLinePlot[
     Mean[ToExpression[StringJoin["periStimDFFblSub65DegROI", ToString[ROI]]]],
     PlotLabel → "65 Deg",
     PlotRange → {All, {ToExpression[StringJoin["minRespValSize", ToString[ROI]]],
        ToExpression[StringJoin["maxRespValSize", ToString[ROI]]]}}], ListLinePlot[
     Mean[ToExpression[StringJoin["periStimDFFblSub75DegROI", ToString[ROI]]]],
     PlotLabel → "75 Deg",
     PlotRange → {All, {ToExpression[StringJoin["minRespValSize", ToString[ROI]]],
        ToExpression[StringJoin["maxRespValSize", ToString[ROI]]]}}]}}],
  ImageSize → Full], {ROI, sigRespROIs}]

In[•]:= Manipulate[ListLinePlot[ToExpression[StringJoin["respVsSizeROI", ToString[ROI]]],
  Joined → True], {ROI, sigRespROIs}]

In[•]:= (***Compute the suppression index for each ROI from dF/F***)

In[•]:= Table[Evaluate@ToExpression[StringJoin["suppIndex", ToString[n]]] =
    (Max[Part[#, 2] & /@ (ToExpression[StringJoin["respVsSizeROI", ToString[n]]])] -
       Last[Part[#, 2] & /@ (ToExpression[StringJoin["respVsSizeROI", ToString[n]]])]) /
     (Max[Part[#, 2] & /@ (ToExpression[StringJoin["respVsSizeROI", ToString[n]]])]);, {n,
   1, numROIs}];

In[•]:= (***Compute the suppression index for each ROI from z-scored dF/F***)
```

```
In[•]:= Table[Evaluate@ToExpression[StringJoin["suppIndexZscored", ToString[n]]] =
          (Max[Part[#, 2] & /@ (ToExpression[StringJoin["zScoredRespVsSizeROI", ToString[n]]])] -
             Last[Part[#, 2] & /@
                (ToExpression[StringJoin["zScoredRespVsSizeROI", ToString[n]]])]) /
           (Max[Part[#, 2] & /@ (ToExpression[StringJoin["zScoredRespVsSizeROI",
                 ToString[n]]])]);, {n, 1, numROIs}];

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

In[•]:= (***Export the P-values for visual responsiveness of each ROI***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
          "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
          ToString[sessionNum], "_", "visResp_pValSmallStim", ToString[n], ".txt"],
         ToExpression[StringJoin["visRespPValSmallROI", ToString[n]]], {n, 1, numROIs}];

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
          "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
          ToString[sessionNum], "_", "visResp_pValLargeStim", ToString[n], ".txt"],
         ToExpression[StringJoin["visRespPValLargeROI", ToString[n]]], {n, 1, numROIs}];

In[•]:= (***Export the list of the identities of the significantly responsive ROIs***)

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

Out[•]= C:/Users/garrett/Desktop/Garrett_Local/090522/Mouse23056/Session1/VisStimResults/090522
          _Mouse23056_Session1_sigResponsiveROIs.txt

In[•]:= (***Export dF/F values for overall visual responsiveness for each ROI***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/",
          mouse, "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse,
          "_Session", ToString[sessionNum], "_", "overallVisDFF_ROI", ToString[n], ".txt"],
         ToExpression[StringJoin["overallVisDFF", ToString[n]]], {n, 1, numROIs}];

In[•]:= (***Export z-scored dF/F values for overall visual responsiveness for each ROI***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
          "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
          ToString[sessionNum], "_", "overallVisDFFZScored_ROI", ToString[n], ".txt"],
         ToExpression[StringJoin["overallVisZScore", ToString[n]]], {n, 1, numROIs}];

In[•]:= (***Export the mean, baseline subtracted dF/F trace for each ROI***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
          "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
          ToString[sessionNum], "_", "overallVisDFFtrace_ROI", ToString[n], ".txt"],
         N@ToExpression[StringJoin["meanBLSubtractEvokedDFFsTS", ToString[n]]], {n,
         1, numROIs}];

In[•]:= (***Export the mean, z-scored dF/F trace for each ROI***)
```

```
In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
          "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
          ToString[sessionNum], "_", "overallVisZscoredDFFtrace_ROI", ToString[n], ".txt"],
         N@ToExpression[StringJoin["meanZscoredDFFsTS", ToString[n]]]], {n, 1, numROIs}];

In[•]:= (***Export the size tuning data for each responsive ROI***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/",
          mouse, "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse,
          "_Session", ToString[sessionNum], "_", "sizeTuning_ROI", ToString[n], ".txt"],
         ToExpression[StringJoin["respVsSizeROI", ToString[n]]]], {n, 1, numROIs}];

In[•]:= (***Export the Z-SCORED size tuning data for each responsive ROI***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
          "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
          ToString[sessionNum], "_", "sizeTuningZscored_ROI", ToString[n], ".txt"],
         ToExpression[StringJoin["zScoredRespVsSizeROI", ToString[n]]]], {n, 1, numROIs}];

In[•]:= (***Export the suppression indices for each responsive ROI***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/",
          mouse, "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse,
          "_Session", ToString[sessionNum], "_", "suppIndex_ROI", ToString[n], ".txt"],
         ToExpression[StringJoin["suppIndex", ToString[n]]]], {n, 1, numROIs}];

In[•]:= (***Export the Z-SCORED suppression indices for each responsive ROI***)

In[•]:= Table[Export[StringJoin["C:/Users/garrett/Desktop/Garrett_Local/", date, "/", mouse,
          "/Session", ToString[sessionNum], "/VisStimResults/", date, "_", mouse, "_Session",
          ToString[sessionNum], "_", "suppIndexZscored_ROI", ToString[n], ".txt"],
         ToExpression[StringJoin["suppIndexZscored", ToString[n]]]], {n, 1, numROIs}];
```