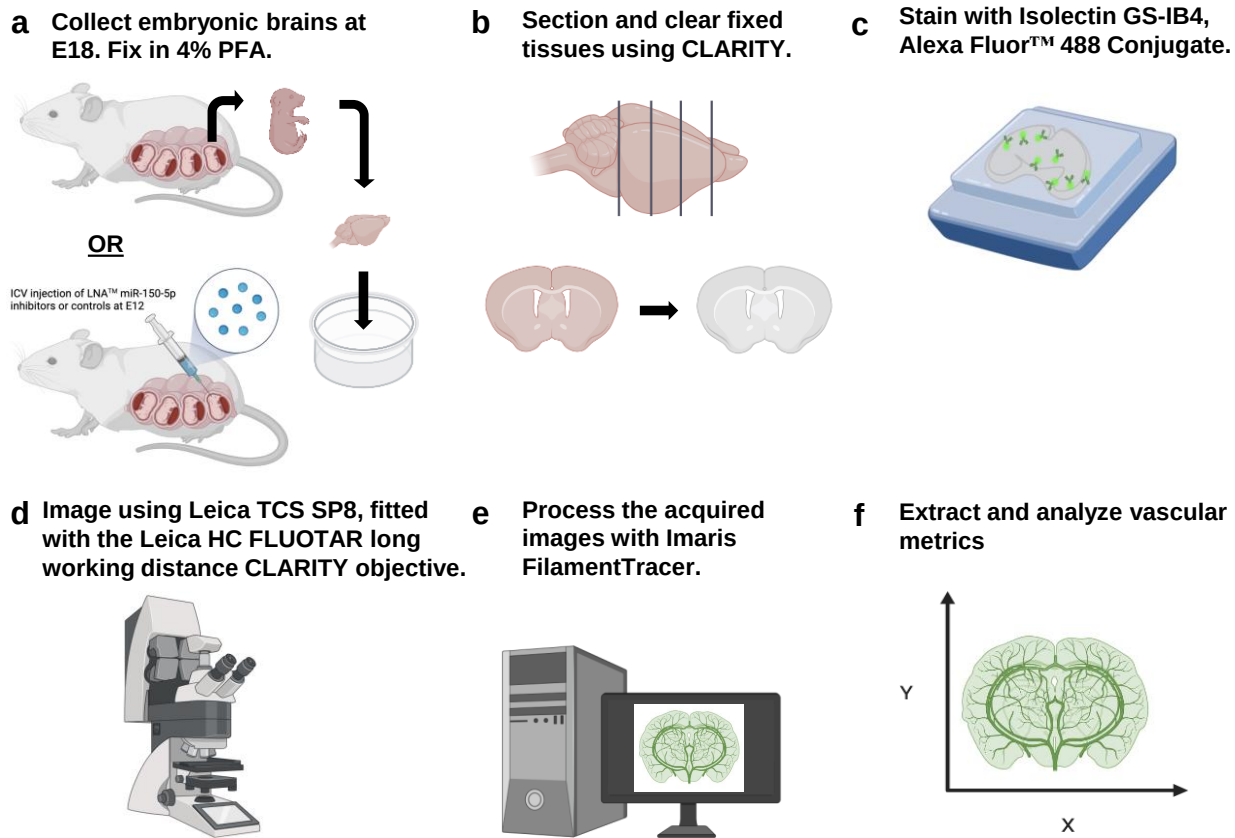
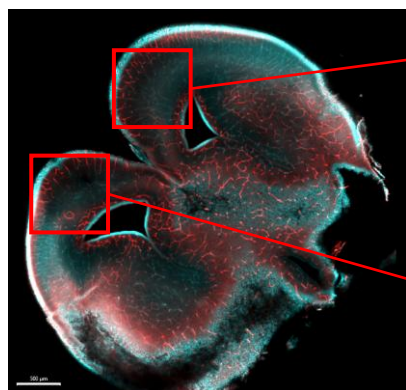




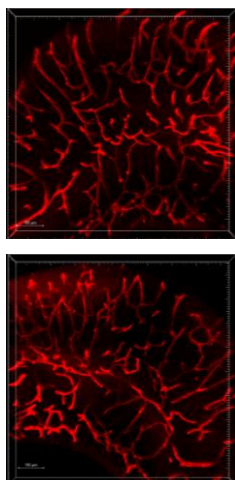
Supplemental Figure 1. Tissue clearing and imaging workflow

a, Illustration depicting intracerebroventricular injections and embryo harvesting. **b**, Illustration depicting cortex sectioning and clearing via CLARITY. **c**, Illustration depicting tissue staining with isolectin GS-IB4 and AlexaFluor™ 488 conjugate. **d**, Illustration depicting confocal microscopy. **e**, Illustration depicting image processing by Imaris FilamentTracer. **f**, Illustration depicting analysis of extracted vascular metrics.

a Brain slice depicting cortical regions selected for analysis



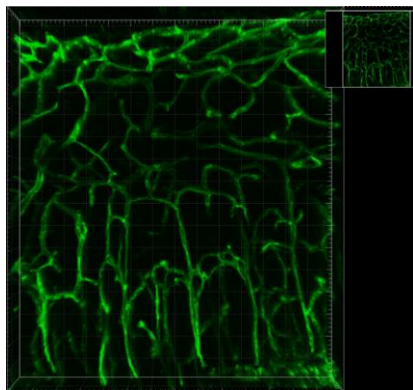
b 3D images of cortical regions



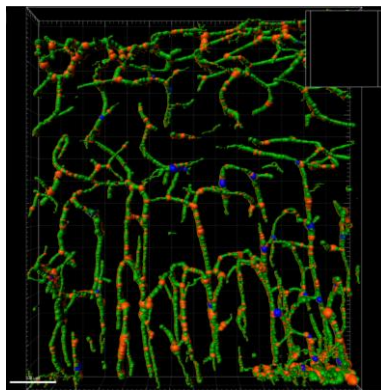
Supplemental Figure 2. Representative cortex section

a, Representative full brain slice depicting selected regions of cortex for analysis. **b**, Representative 3D vascular images from selected regions of cortex.

a 3D image of cortical region
without Imaris surface mask

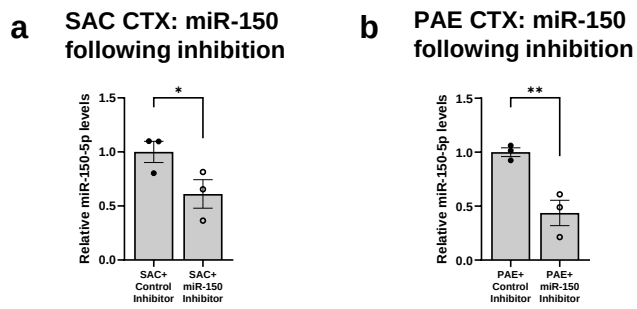


b 3D image of cortical region
with Imaris surface mask



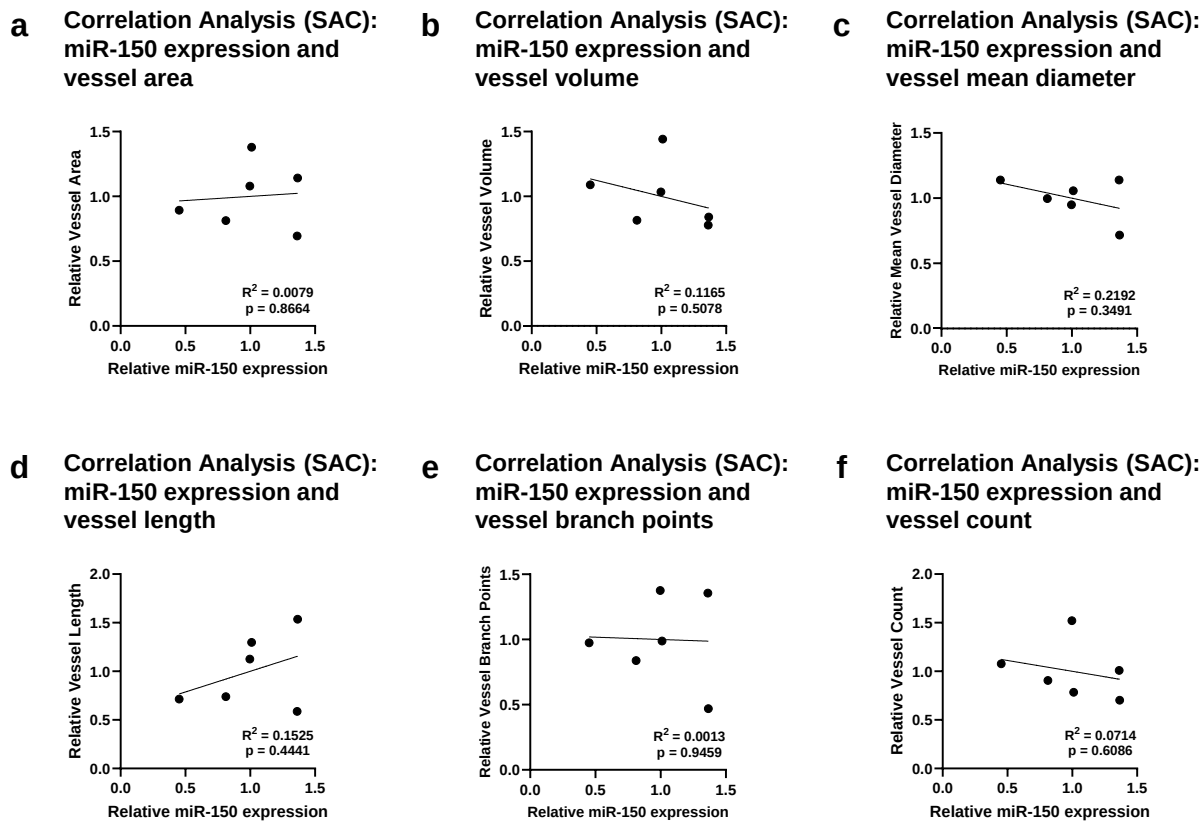
Supplemental Figure 3. Imaris surface mask for 3D images

a, Representative 3D image of brain microvasculature without Imaris surface mask. **b**, Representative 3D image of brain microvasculature with Imaris surface mask.



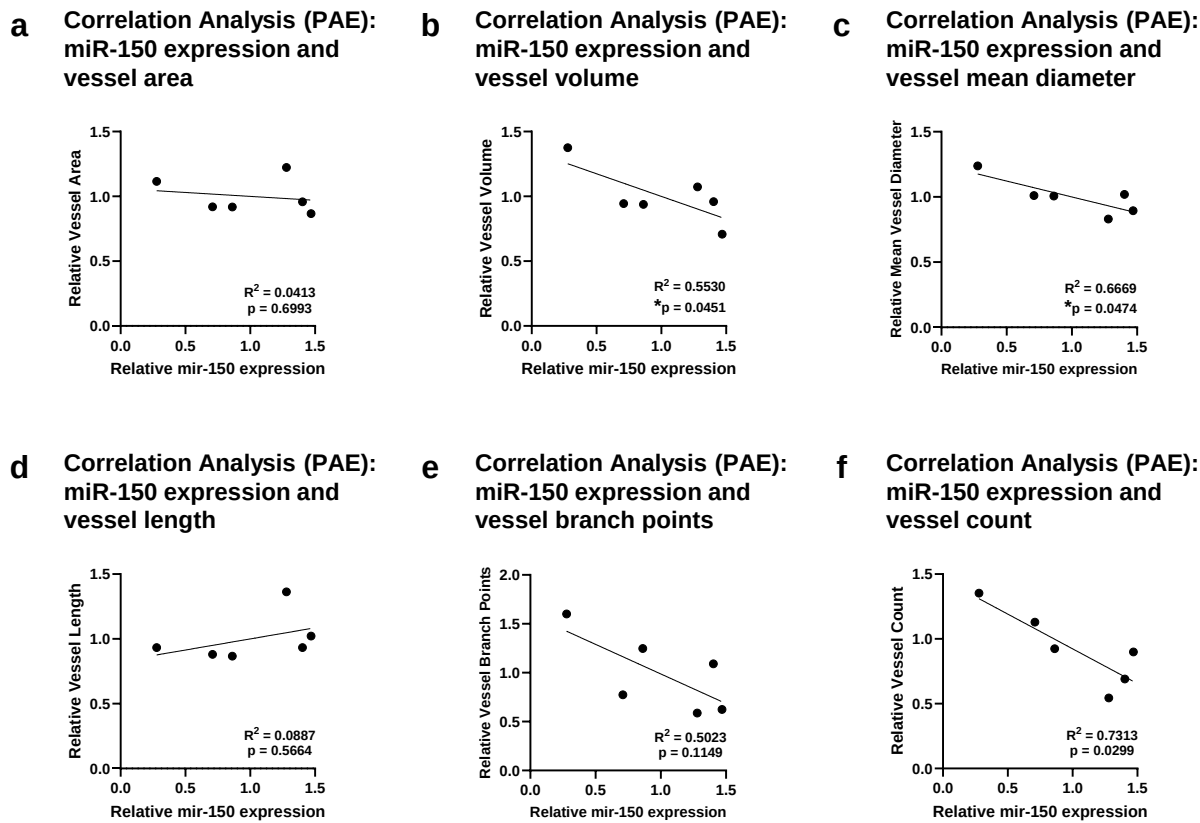
Supplemental Figure 4. Efficacy of inhibition of miR-150-5p via intracerebroventricular injection.

a, miR-150-5p levels in control and miR-150-5p inhibitor injections in SAC cortex tissue (n=3, p=0.0358). **b**, miR-150-5p levels in control and miR-150-5p inhibitor injections in PAE cortex tissue (n=3, p=0.0053).



Supplemental Figure 5. Correlation analysis of miR-150-5p expression and vascular parameters in SAC samples

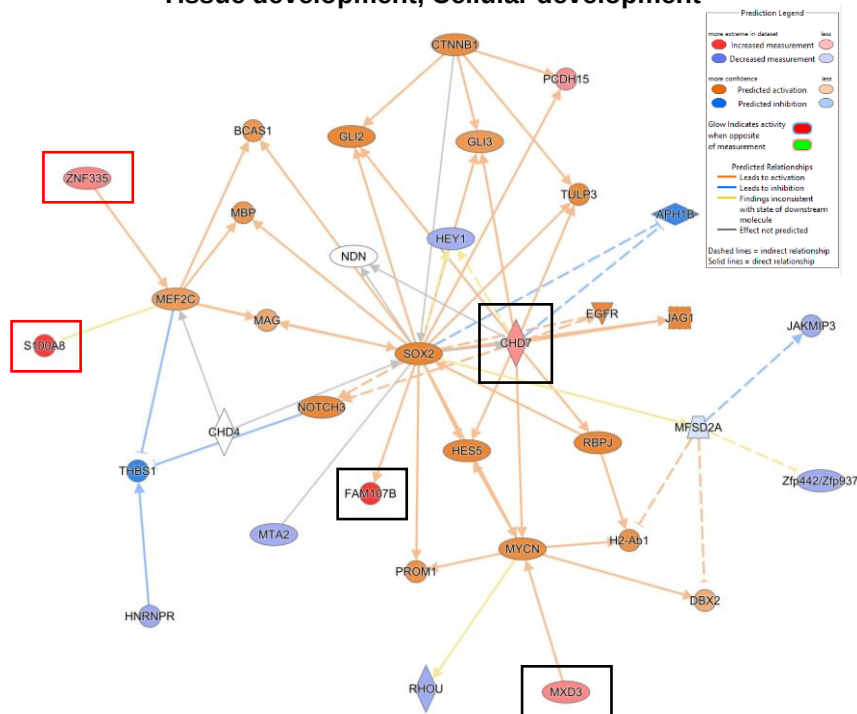
a, Correlation between miR-150-5p expression and vessel area in SAC cortex ($R^2=0.0079$, $p=0.8664$). **b**, Correlation between miR-150-5p expression and vessel volume in SAC cortex ($R^2=0.1165$, $p=0.5078$). **c**, Correlation between miR-150-5p expression and vessel mean diameter in SAC cortex ($R^2=0.2192$, $p=0.3491$). **d**, Correlation between miR-150-5p expression and vessel length in SAC cortex ($R^2=0.1525$, $p=0.4441$). **e**, Correlation between miR-150-5p expression and vessel branch points in SAC cortex ($R^2=0.0013$, $p=0.9459$). **f**, Correlation between miR-150-5p expression and vessel count in SAC cortex ($R^2=0.0714$, $p=0.6086$).



Supplemental Figure 6. Correlation analysis of miR-150-5p expression and vascular parameters in PAE samples

a, Correlation between miR-150-5p expression and vessel area in PAE cortex ($R^2=0.0413$, $p=0.6993$). **b**, Correlation between miR-150-5p expression and vessel volume in PAE cortex ($R^2=0.5530$, $p=0.0451$). **c**, Correlation between miR-150-5p expression and vessel mean diameter in PAE cortex ($R^2=0.6669$, $p=0.0474$). **d**, Correlation between miR-150-5p expression and vessel length in PAE cortex ($R^2=0.0887$, $p=0.5664$). **e**, Correlation between miR-150-5p expression and vessel branch points in PAE cortex ($R^2=0.5023$, $p=0.1149$). **f**, Correlation between miR-150-5p expression and vessel count in PAE cortex ($R^2=0.7313$, $p=0.0299$).

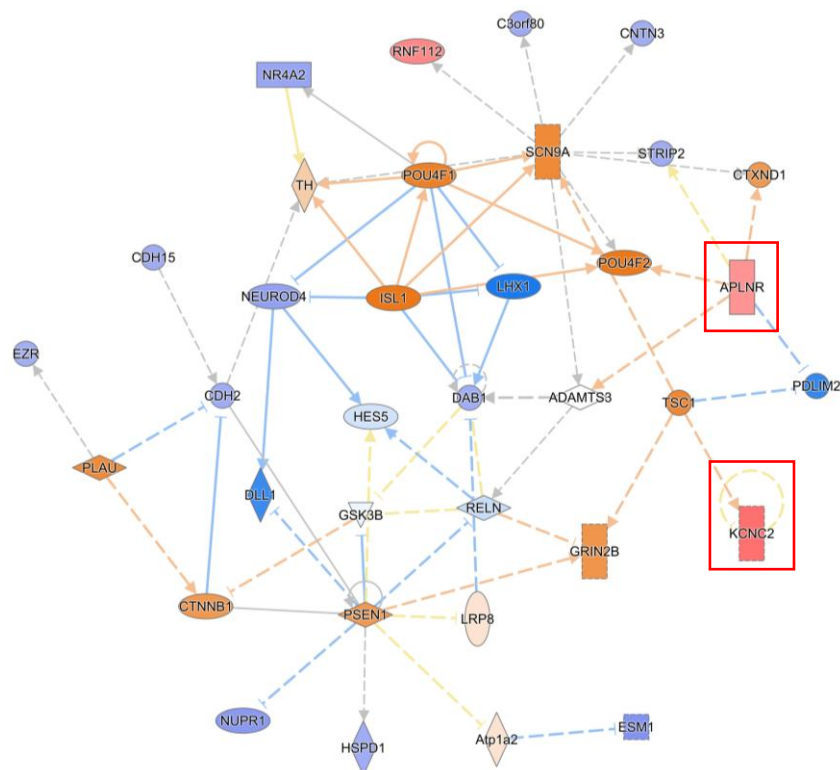
**IPA Network: Nervous system development and function,
Tissue development, Cellular development**



Supplemental Figure 7. IPA network: Nervous system development and function, tissue development, and cellular development

Representative molecular network influenced by miR-150-5p inhibition in whole PAE cortex; the network was associated with nervous system development and function, tissue development, and cellular development. Black boxes denote molecules altered in our gene expression data. Red boxes denote molecules that are also potential miR-150 targets. The legend to the right defines which colors indicate increased/decreased measurement or predicted activation/inhibition for the molecules as well as predicted relationships for the lines.

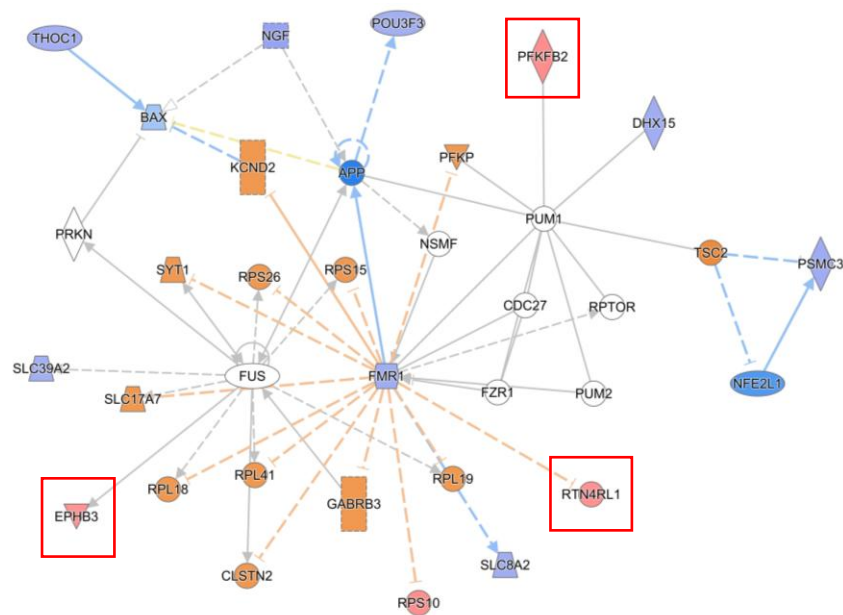
**IPA Network: Nervous system development and function,
Embryonic development, Organ development**



Supplemental Figure 8. IPA network: Nervous system development and function, embryonic development, and organ development

Representative molecular network influenced by miR-150-5p inhibition in whole PAE cortex; the network was associated with nervous system development and function, embryonic development, and organ development. Red boxes denote molecules that were altered in our gene expression data and that are also potential miR-150 targets.

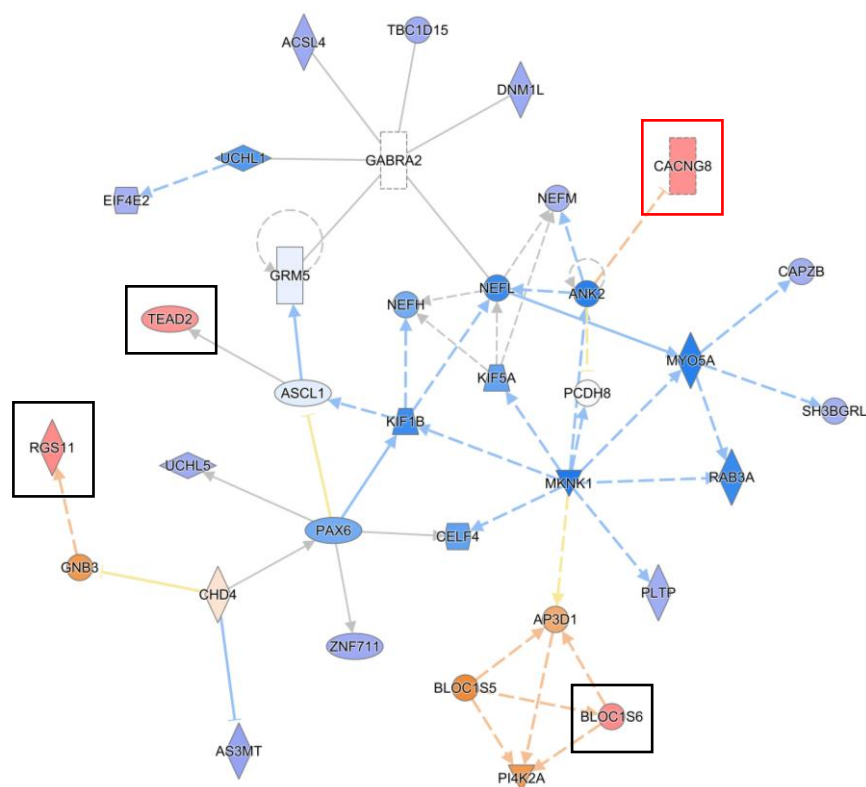
**IPA Network: Nervous system development and function,
Cellular function and maintenance, Behavior**



Supplemental Figure 9. IPA network: Nervous system development and function, cellular function and maintenance, and behavior

Representative molecular network influenced by miR-150-5p inhibition in whole PAE cortex; the network was associated with nervous system development and function, cellular function and maintenance, and behavior. Red boxes denote molecules that were altered in our gene expression data and that are also potential miR-150 targets.

IPA Network: Cellular function and maintenance, Cellular Assembly and Maintenance, Cellular Movement



Supplemental Figure 10. IPA network: Cellular function and maintenance, cellular assembly and maintenance, and cellular movement

Representative molecular network influenced by miR-150-5p inhibition in whole PAE cortex; the network was associated with cellular function and maintenance, cellular assembly and maintenance, and cellular movement. Black boxes denote molecules altered in our gene expression data. Red boxes denote molecules that are also potential miR-150 targets.