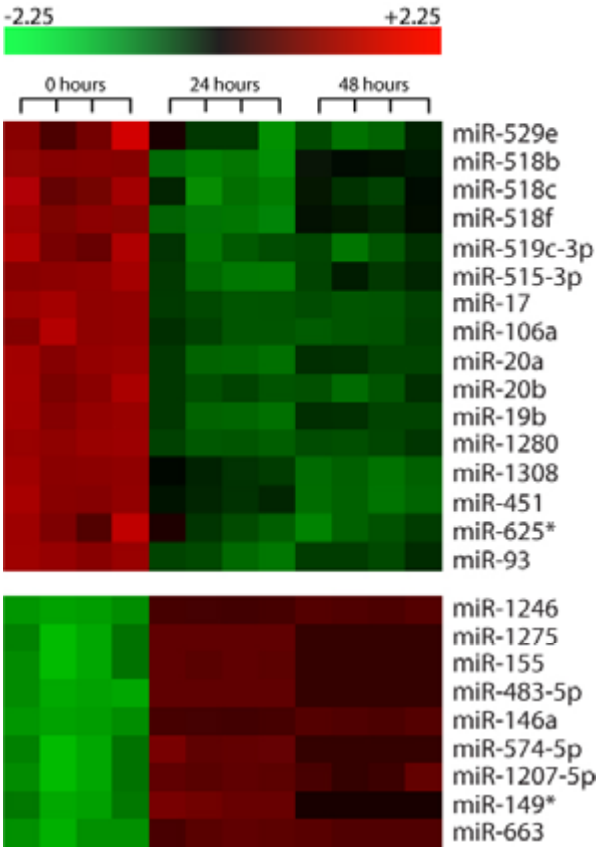
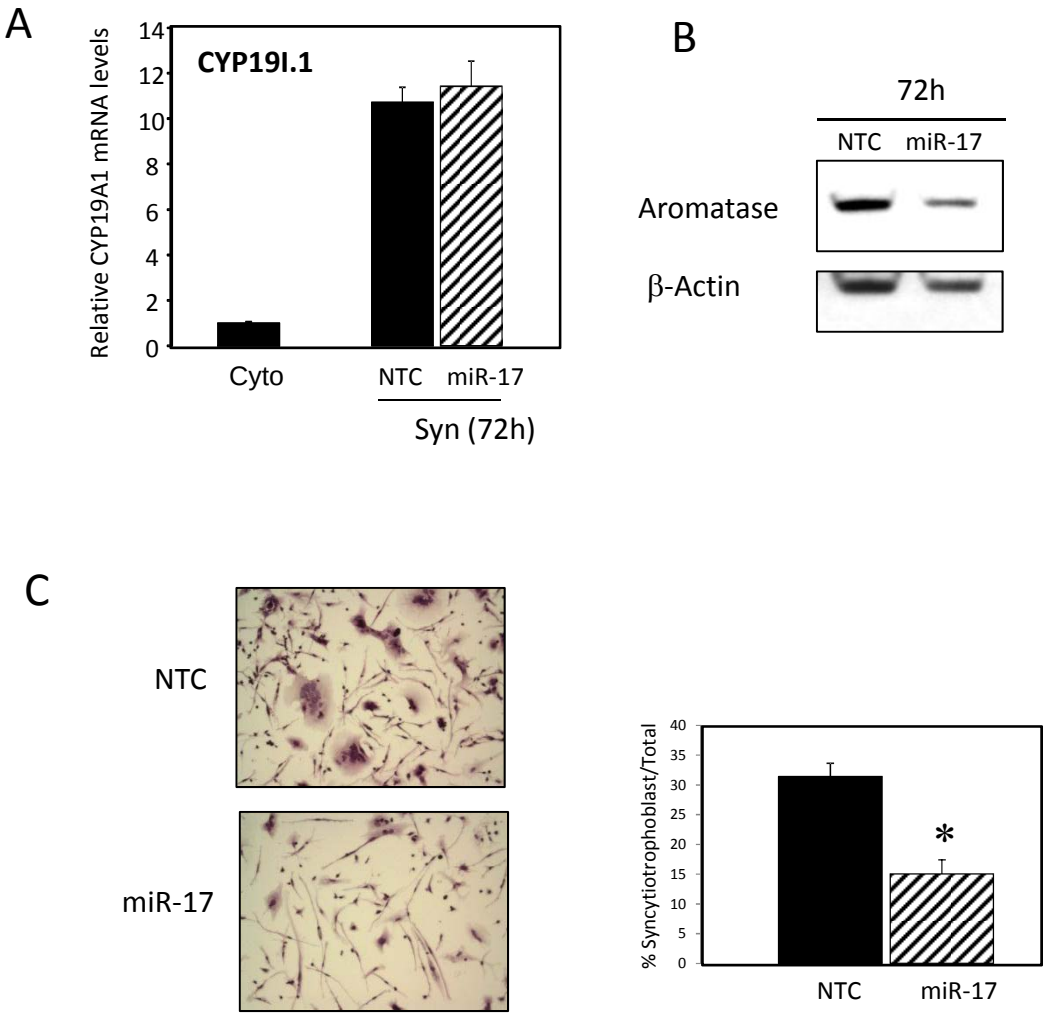
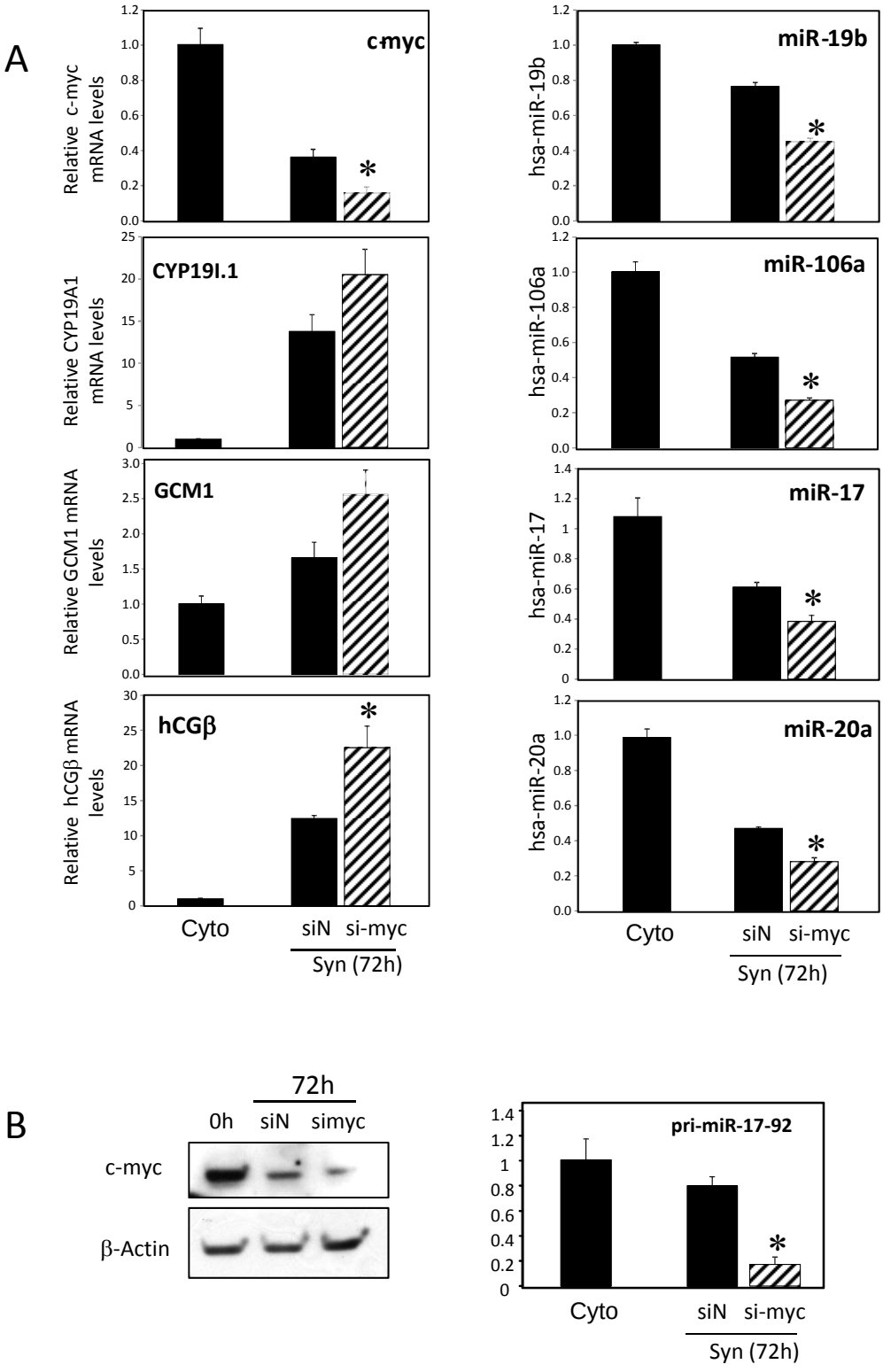


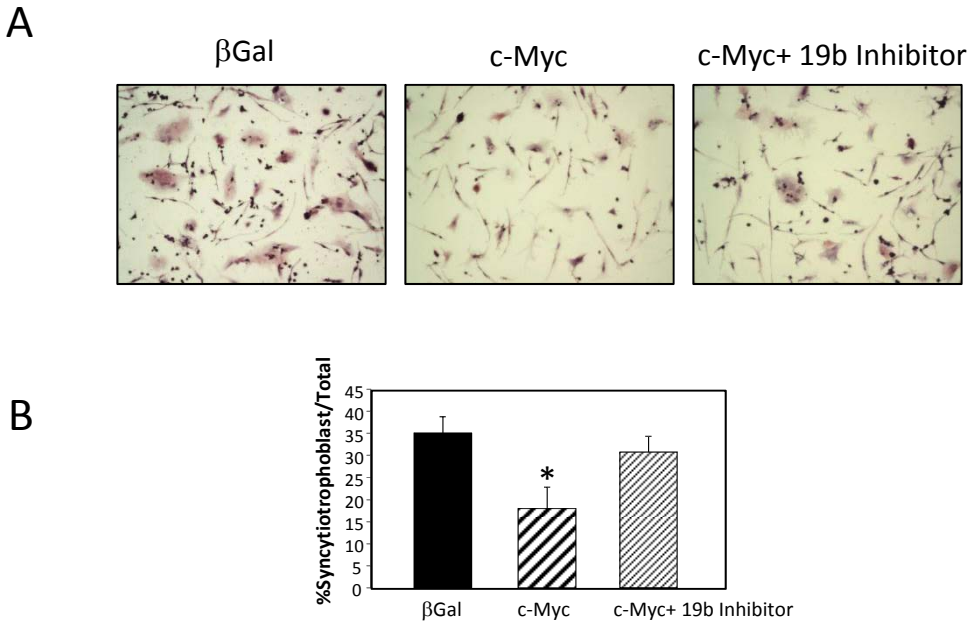
SUPPLEMENTARY FIGURE 1. **Differential expression of miRNAs in human trophoblasts before and after differentiation.** Shown in the heat map are 16 miRs that were downregulated and 9 miRs that were upregulated > 2-fold at both 24 and 48h, as compared to 0h.



SUPPLEMENTARY FIGURE 2. **miR-17 negatively regulates hCYP19 expression during trophoblast differentiation. Panels A and B:** Non-targeting control (NTC) or miRNA mimics of miR-17 were transfected into freshly isolated placental trophoblasts. After culture for 72 h, the cells were analyzed for the expression of hCYP19I.1 mRNA (**A**) and for aromatase protein by immunoblot analysis (**B**). Non-targeting control (NTC) or miRNA mimics of miR-17 were transfected into freshly isolated placental trophoblasts. After 72h of culture, the cells were stained with hematoxylin and eosin and viewed by light microscopy to assess syncytiotrophoblast formation. **(C, left panel)**. Image J was used to quantify the percent of syncytiotrophoblasts relative to total cell number in eight different fields performed in duplicate **(C, right panel).**

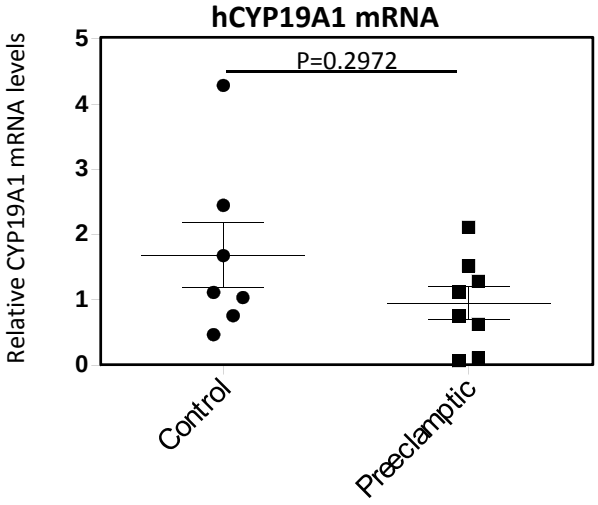


SUPPLEMENTARY FIGURE 3. **Knockdown of endogenous c-Myc in human trophoblast cells decreases expression of the miR-17~92 cluster.** RNA and protein isolated from freshly isolated cytotrophoblasts (Cyto) and after 72 h of culture (syncytiotrophoblast) were analyzed for c-Myc, hCYP19I.1, GCM1 and hCGβ mRNA expression by SYBR Green qRT-PCR **(A, Left panel)**, and expression of mature miRNAs in the miR-17~92 and miR-106a-363 clusters were analyzed by Taqman-based qPCR **(A, right panel)** U6 RNA was used as a reference . C-myc protein was analyzed by immunoblot analysis **(B, left panel),** and pri-miR-17~92 transcripts were analyzed by Taqman-based qPCR **(B, right panel)**.

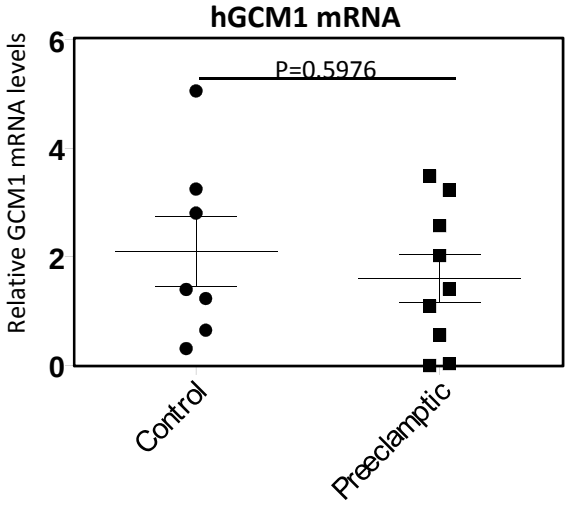


Supplementary Figure 4. **miR-19b inhibitor reverses c-Myc inhibition of GCM1 expression and trophoblast differentiation.** Non-targeting control (NTC) or miR-19b inhibitor along with either β-Gal or c-Myc adenovirus were transfected into freshly isolated placental trophoblasts. After 72h of culture, the cells were stained with hematoxylin and eosin and viewed by light microscopy to assess syncytiotrophoblast formation. **(A)**. Image J was used to quantify the percent of syncytiotrophoblasts relative to total cell number in 10 different fields from 2 independent experiments in duplicate **(B).** *, significantly (P<0.05) from cells transfected with NTC. GCM1 protein expression was analyzed by Immunoblot analysis (C).

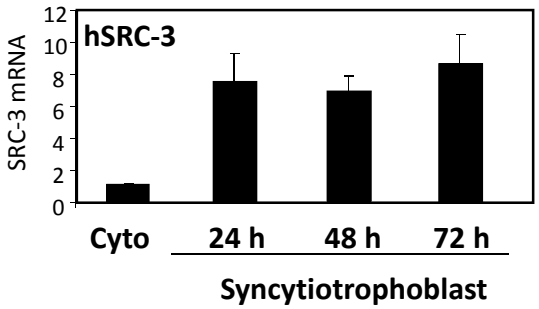
A



B



SUPPLEMENTARY FIGURE 5. **CYP19 and GCM1 mRNA expression in placentas from preeclamptic and gestation-matched normotensive women.** RNA was isolated from placentas of 8 preeclamptic and 8 term gestation-matched normotensive women, and measured for mRNA expression by Taqman-based PCR for hCYP19A1 **(A)** and GCM1 expression **(B).**



SUPPLEMENTARY FIGURE 6: SRC-3 Expression during trophoblast differentiation. RNA isolated from freshly isolated cytotrophoblasts before (Cyto) and after 24, 48 and 72 h of culture (syncytiotrophoblast) were analyzed for hSRC-3 mRNA expression by SYBR Green qRT-PCR.