“Unto the woman he said, I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children…”

Genesis 3:16 (KJV)
Physiological systems usually function with extraordinary precision decade after decade.
Why are there so many complications for mother and fetus during the brief nine months of pregnancy?
What is ‘best’ for the fetus is not always ‘best’ for the mother.
Therefore, natural selection fails to achieve stable physiological coordination between the generations.
Maternal-fetal relations lack important feedback controls because signals are not evolutionarily credible.
Evolutionary theory distinguishes between cooperative communication and attempts at persuasion.
When the interests of sender and receiver are identical large amounts of information can be exchanged at low cost.
Attempts at persuasion are costly, repetitive, and do not convey trustworthy information.
placental hormones

chorionic gonadotropin
placental lactogen
placental GH
CRH
urocortin
leptin
resistin
progesterone
estradiol
estriol
etc.
Placental hormones are produced by offspring but act on receptors of mothers.
Placental hormones evolve as attempts to manipulate maternal physiology for fetal benefit
Maternal physiology comes under contested control during pregnancy
Hormonal systems may pass from maternal to fetal control.
transfer of control

maternal production

placental production
Placental production of a hormone is predicted to result in silencing of the corresponding hormone in the mother.
anterior pituitary

luteinizing hormone

corpus luteum

progesterone

uterus
Placental expression of a hormone can destabilize highly conserved endocrine mechanisms of the non-pregnant body
GH gene cluster 17q22—q24

GH-N  CS-L  CS-A  GH-V  CS-B
5'  ------------------  3'

pituitary  placenta  placenta  placenta  placenta

GHR  +  --  --  --  +  --
PRLR  +  --  +  --  +

hGH  ?  hPL  hPGH  hPL
loris GH

FPAMPLSSLFLFANAVLRAQHLHQ

GLRFLLQISWGLGPVQLSRLSF

ADGVSGDELMLAQAQIG

QVRPSGDELSRVF

EDSLVTVNSL

TDKERAYIPS
pituitary GH

# amino acid substitutions
dog
pig
cow
rabbit
mouse
loris
marmoset
macaque
human
hemochorial placenta
chorionic gonadotropin
placental growth hormone
placental lactogen
All GH in maternal serum at term is produced by the placenta (hGH-V).

The maternal pituitary (hGH-N) is silent.
Human placental lactogen is produced in greater quantities than any other hormone but is dispensible.
“Implantation requires an active dialog between the maternal cells and the blastocyst. The process demands exquisite synchrony in the development of the uterus and the blastocyst.”
Embryos can implant and develop at many sites in the maternal body.