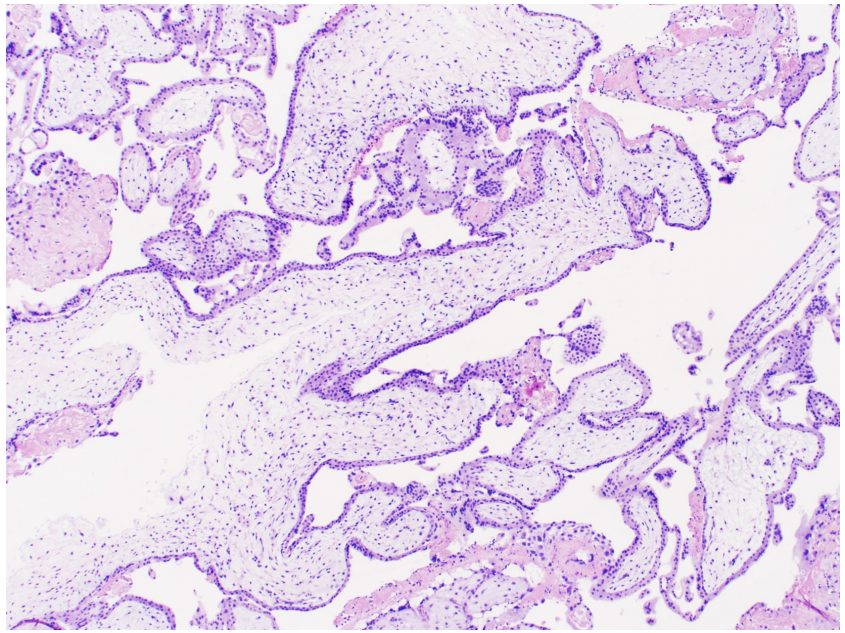
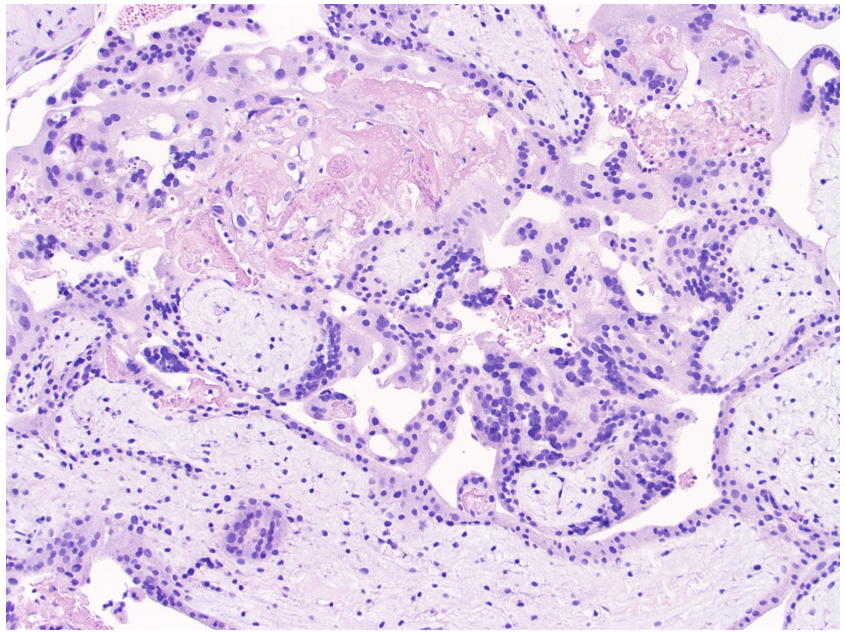
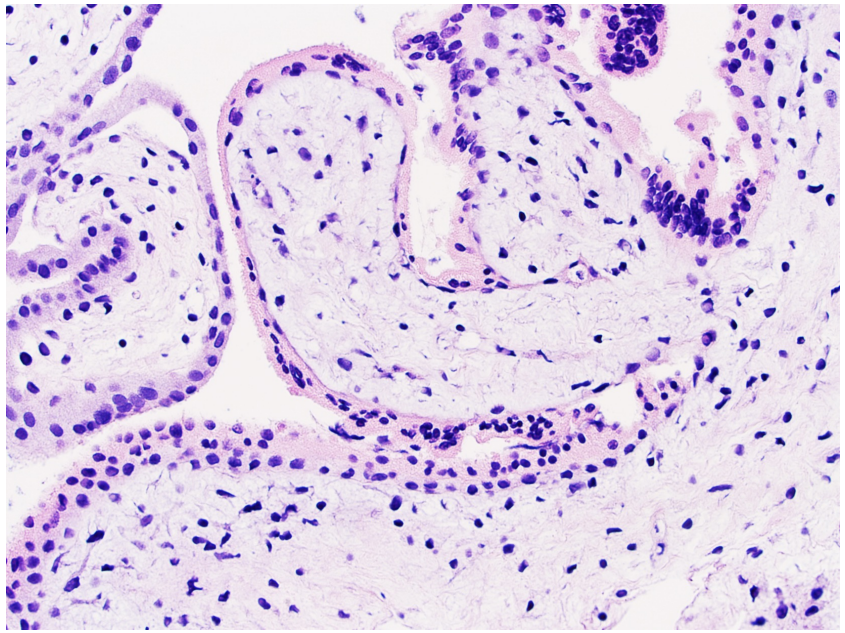
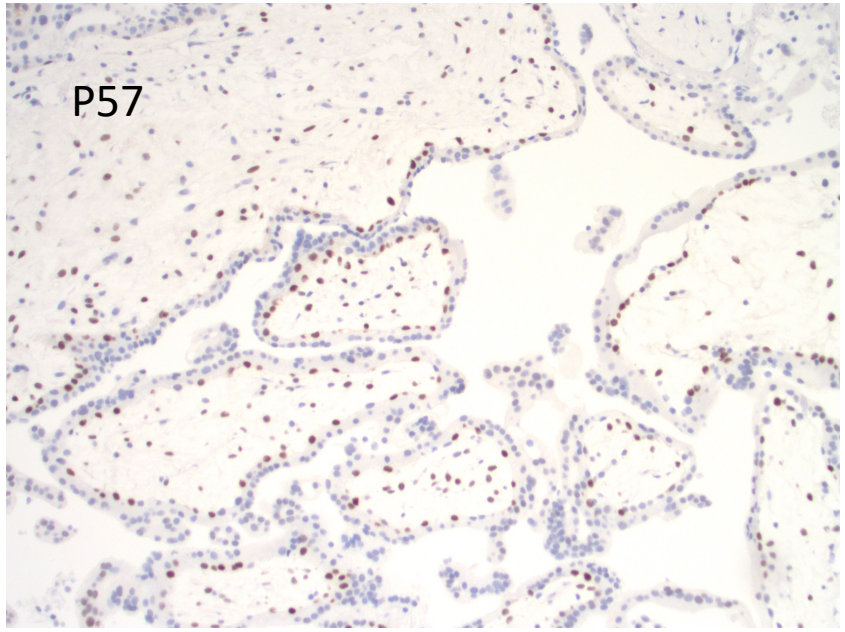
Where Knowledge is Created and Shared
Yale Pathology

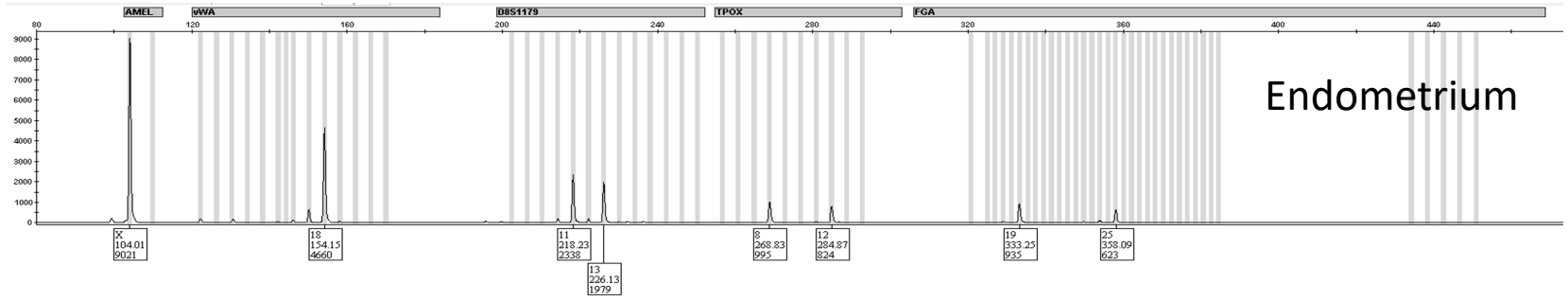
39-year-old woman had a failed pregnancy with an empty gestational sac upon imaging study.

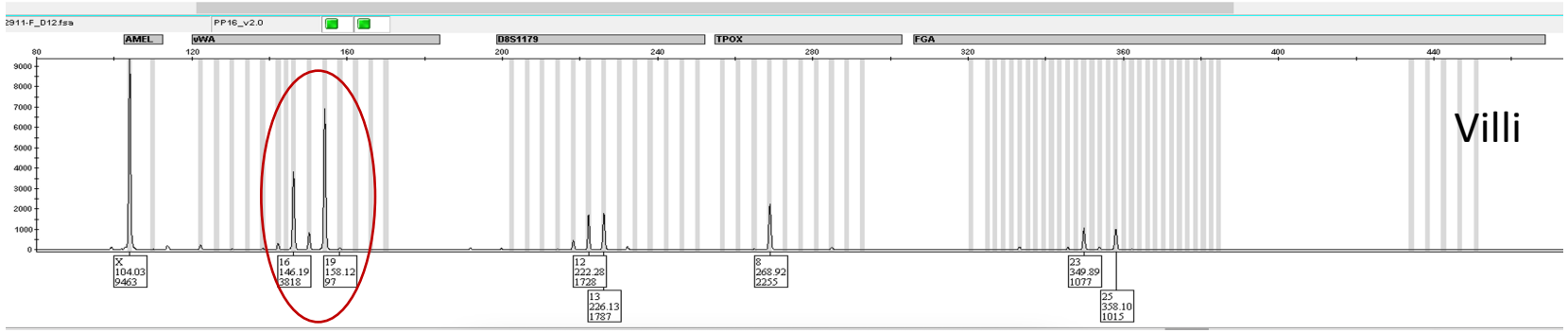







P57


AMEL
vWA
D8S1179
TPOX
FGA
X 104.01 9021
18 154.15 4660
11 218.23 2338
13 226.13 1979
8 268.83 995
12 284.87 824
19 333.25 935
25 358.09 623
Endometrium


AMEL
vWA
D8S1179
TPOX
FGA
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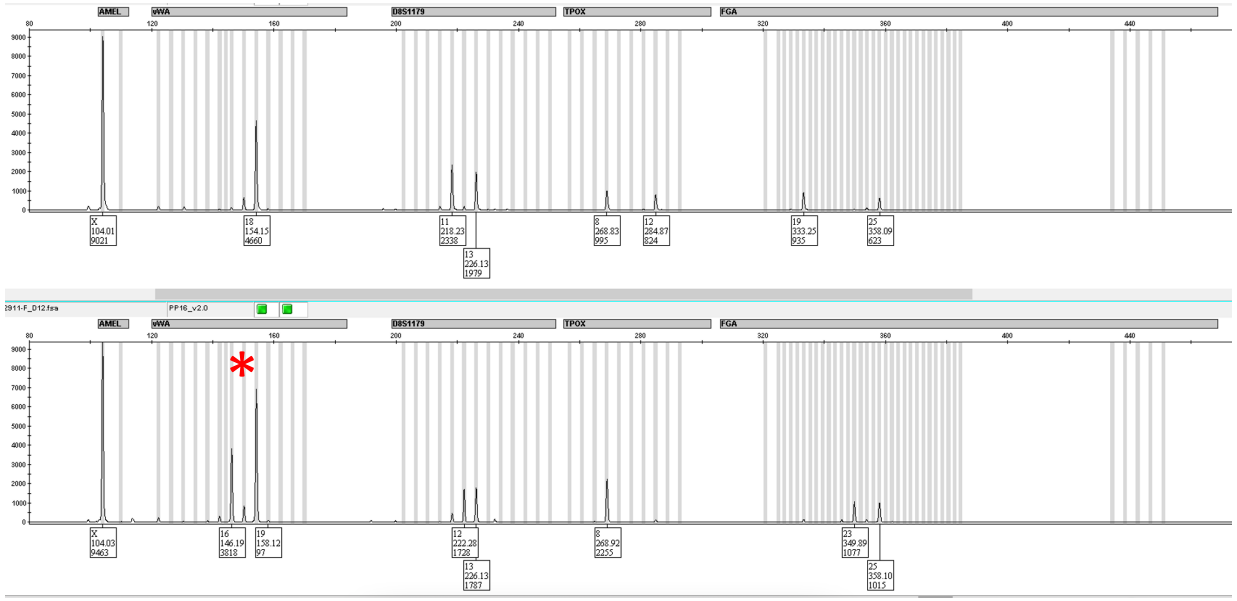
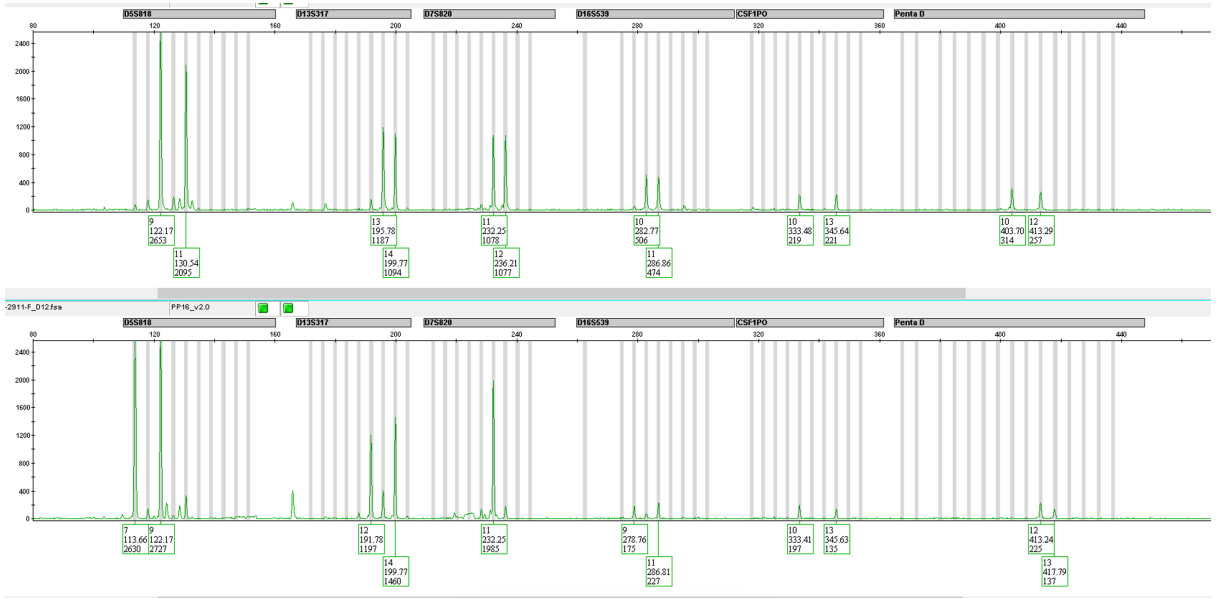
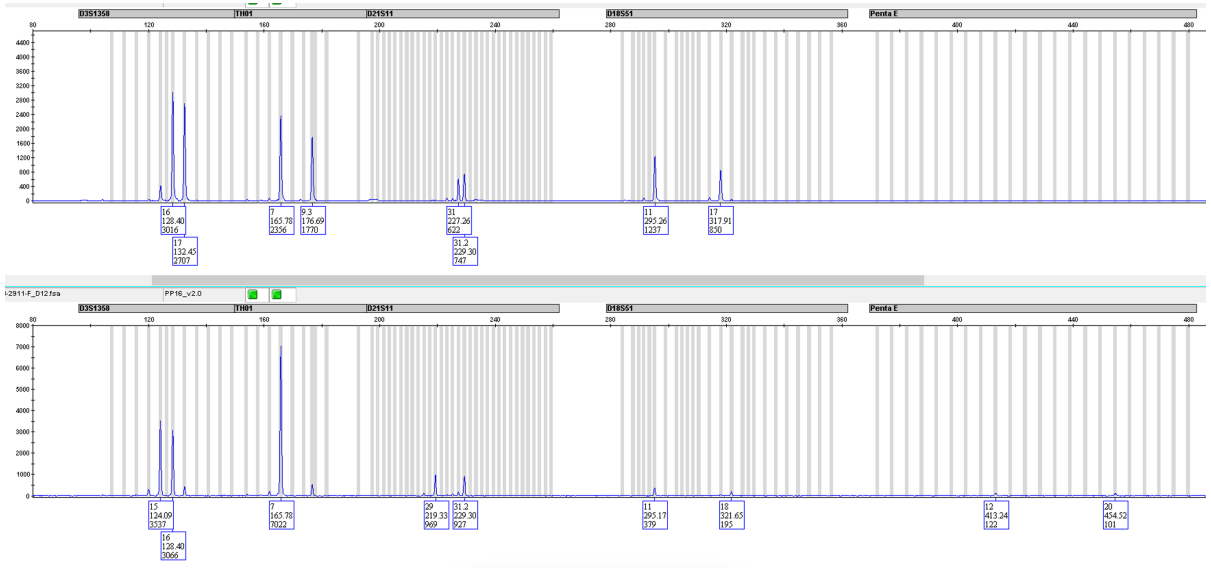
16 146.19 3818
19 158.12 97
12 222.28 1728
13 226.13 1787
8 268.92 2255
23 349.89 1077
25 358.10 1015
Villi

Diagnostic Options

A: Dispermic partial mole
B: Monospermic partial mole
C: Non-molar trisomy 12 gestation
D. Dispermic complete mole

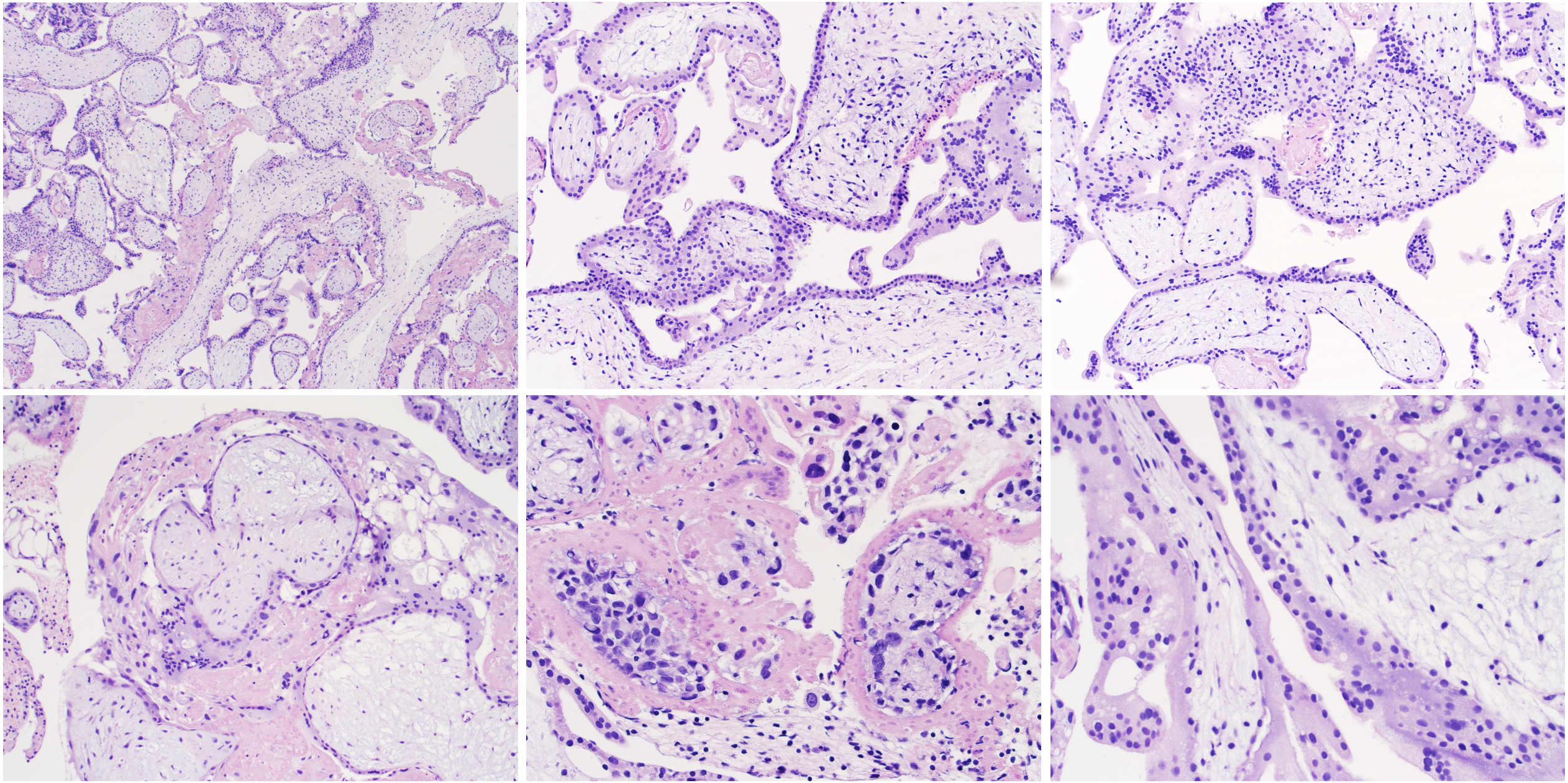






Full genotyping panels: The allelic pattern of the chorionic villi shows a balanced biparental profile at most STR loci except the presence of three allelic copies (* 2 copies of allele 19 and 1 copy of allele 16) at vWA locus on chromosome 12 .

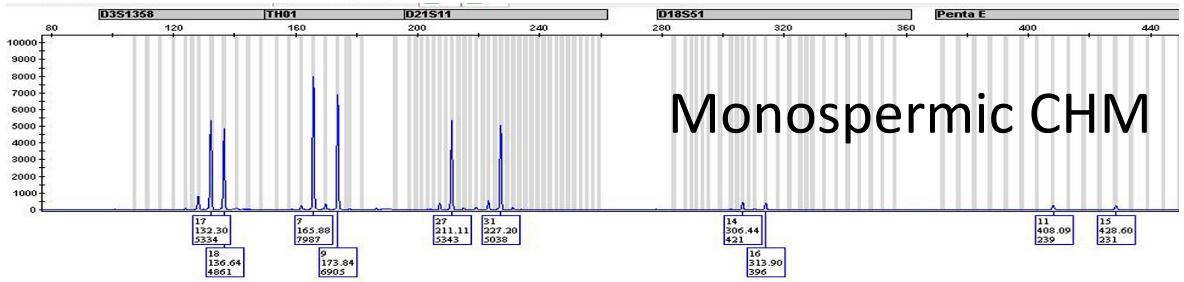
Additional histological images



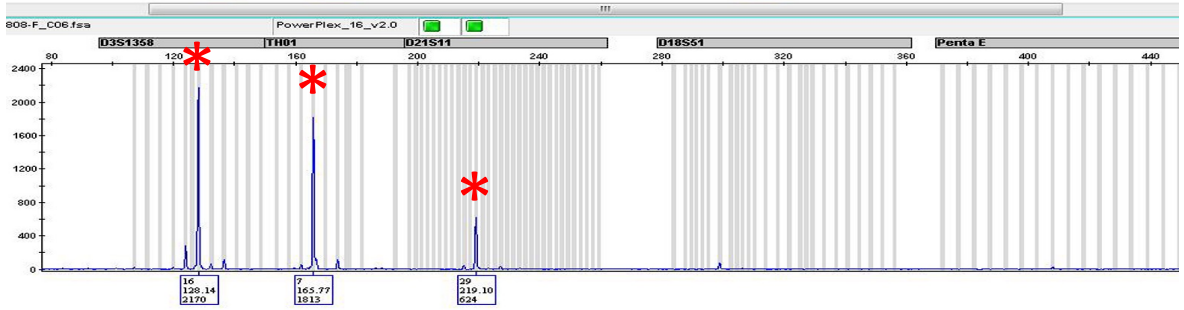
Principles of STR Genotyping Diagnosis

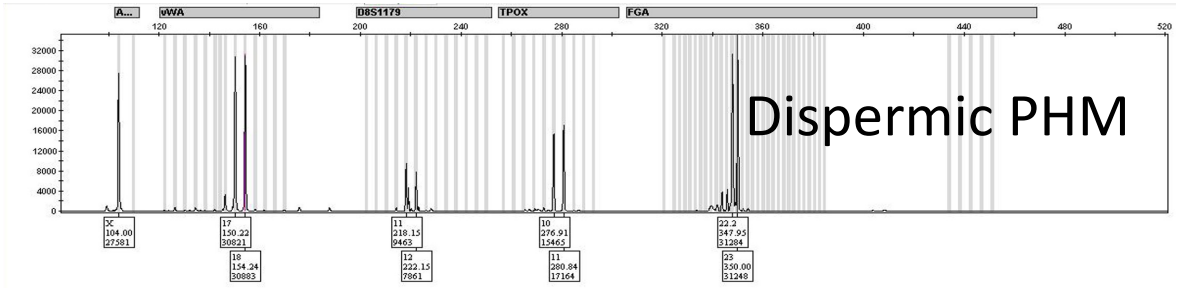
Genotyping provides a measurement of the genetic variation between members of a species and therefore, can be used to identify parental source of genomic haploid set(s) in a hydatidiform mole. Short tandem repeats (STR) polymorphism denotes that different alleles at a STR locus differ in the number of short tandem repeats and therefore produce different-sized PCR products. By identification of the parental source and copy number of the alleles, STR genotyping analysis of the gestational tissue in comparison with the corresponding maternal tissue offers a determination of the parental genomic contribution and therefore can diagnose and subclassify hydatidiform moles and identify certain non-molar chromosomal abnormalities, including trisomies.

Common Abnormal STR Genotypes of POC (see next slide for brief interpretation)

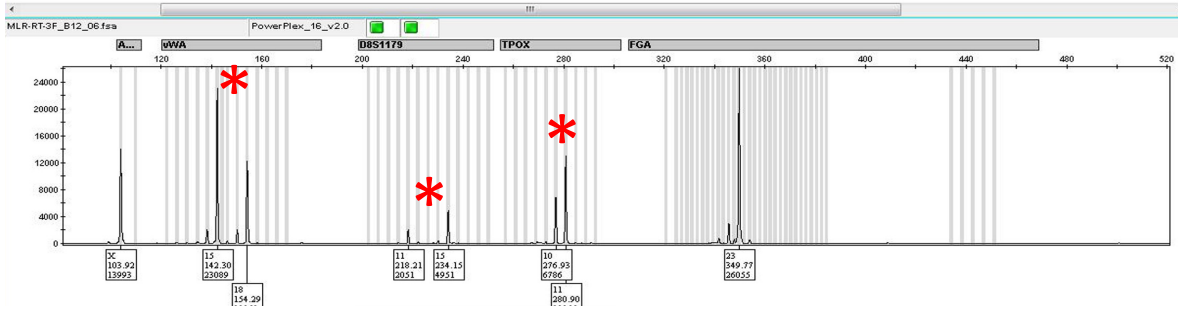


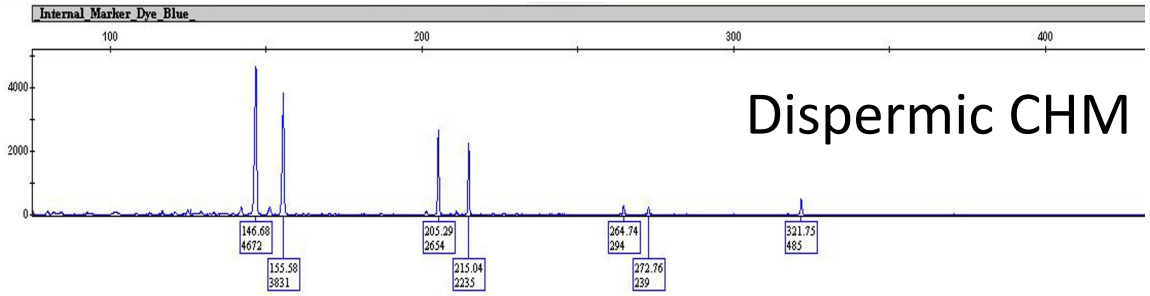
Monospermic CHM



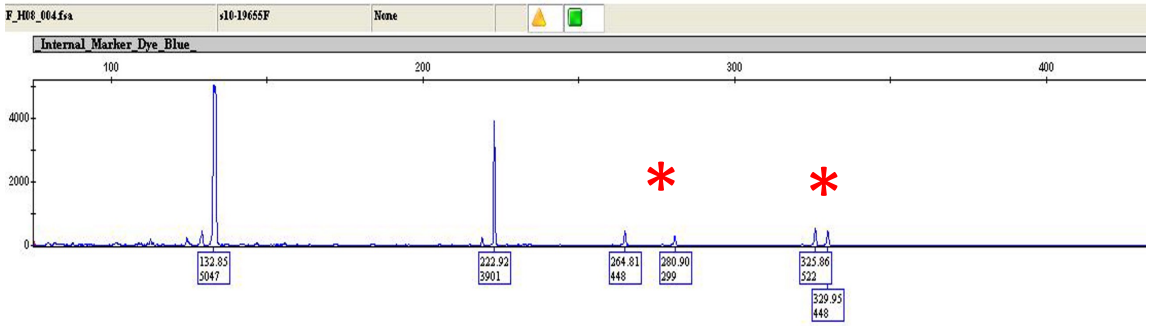


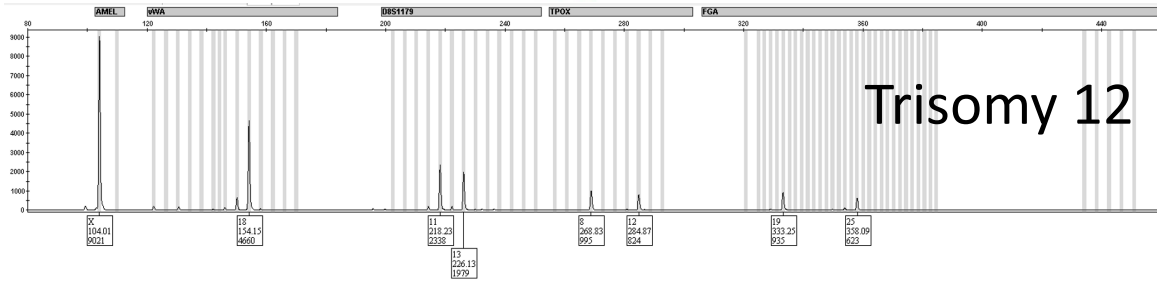
Dispermic PHM



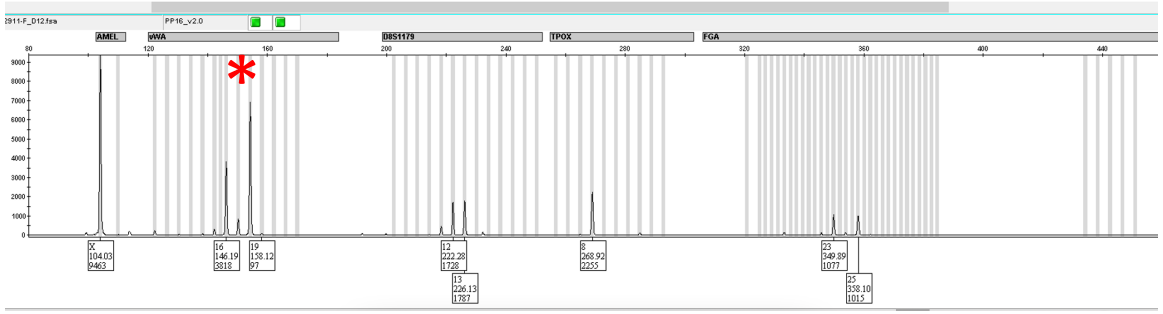


Dispermic CHM





Trisomy 12



Four common abnormal STR genotypes of POC

- Upper left: Homozygous complete mole shows homozygous paternal-only alleles at all STR loci (*)
- Upper right: Heterozygous complete mole shows discernible dispermic/heterozygous paternal alleles at several STR loci (*)
- Lower left: Dispermic/heterozygous partial mole shows two paternal alleles in addition to one maternal allele at several discernible STR loci (*)
- Lower right: Trisomy 12 shows an isolated allelic copy gain at vWA locus (*) and a balanced biparental profile at all other STR loci

Upper panels: paired maternal gestational endometrium with a balanced biparental STR profile at all STR loci.

Case Summary

Chorionic villi show abnormal polypoid shapes, cellular and myxoid stroma, and focal abnormal trophoblastic proliferation, mimicking an early complete mole. However, P57 is normally expressed in the cytotrophoblast and villous stromal cells. STR genotyping demonstrates an isolated allelic copy gain at vWA locus on chromosome 12.

Final Diagnosis: Trisomy 12 Gestation