Investigation and Root Causes of PGT Discrepancies

Laboratory and Clinic Collaboration

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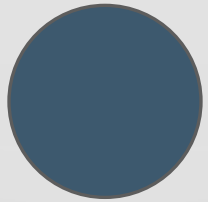
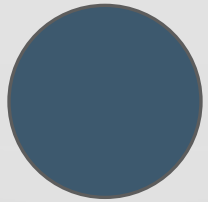
DISCLOSURE

I am a full-time employee of
Igenomix, part of Vitrolife Group,
A PGT-A testing laboratory



LEARNING OBJECTIVES

1) Review that PGT-A is a screening test, with biological, technical, procedural sources of error.
2) Describe PGT laboratory processes for discrepancy investigation.
3) List common root causes of discrepancies between the PGT result and prenatal/postnatal findings.

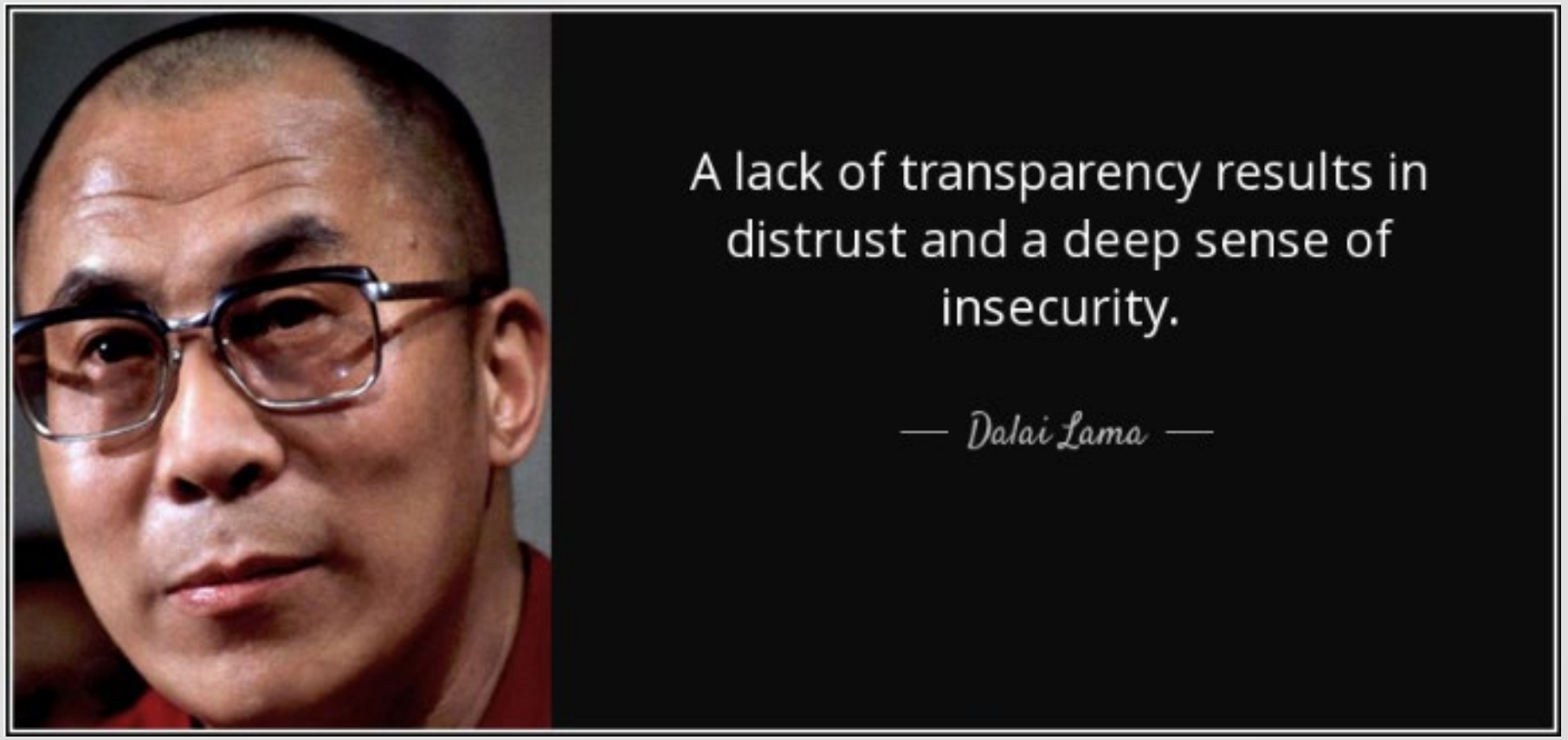


DISCREPANCY:

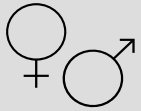
Any doubt regarding the validity of a PGT result, especially if a baby or pregnancy was found to have a genetic abnormality

NOTHING IN LIFE IS TO BE FEARED. IT IS ONLY TO BE UNDERSTOOD.

Marie Curie


A lack of transparency results in distrust and a deep sense of insecurity.
— Dalai Lama —

TYPES OF DISCREPANCIES



Sex discrepancy

The sex of the pregnancy is found to be different than that reported on PGT

Screening

A screening tests suggests that the pregnancy is at increased risk of having aneuploidy. Such screening results can be a false positive.

Diagnostic - Autosomal

A diagnostic test, such as POC or amniocentesis, confirms aneuploidy is present in the pregnancy

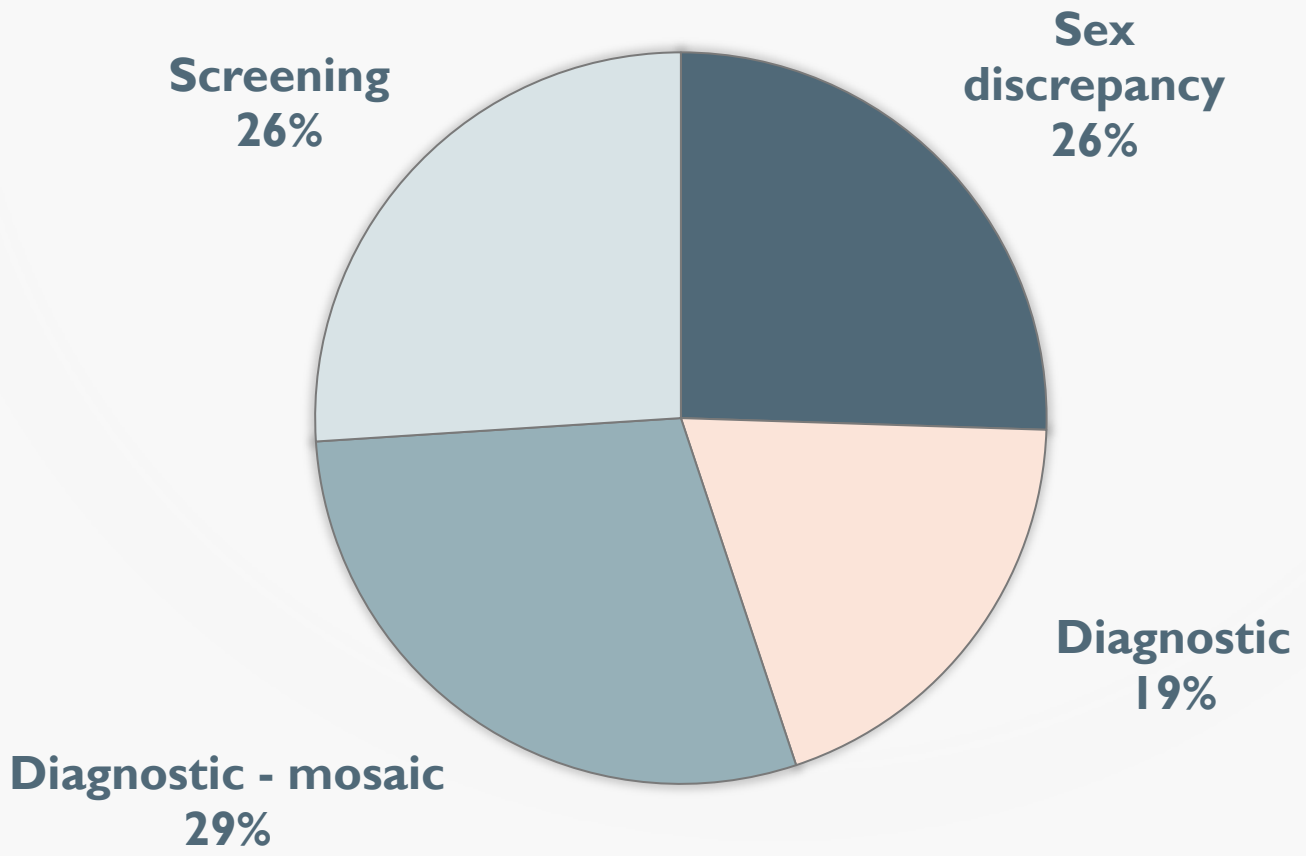
Limitations

A pregnancy or child is affected with a genetic abnormality not expected to have been detected through PGT, e.g., triploidy or microdeletions/duplications

Diagnostic - Mosaic

A diagnostic test reports the presence of mosaicism

TYPES OF DISCREPANCY CASES



N = ~200 Discrepancies
Internal Data

PERCENTAGE OF PGT-A CASES RESULTING IN DISCREPANCY

Estimate: ~200 discrepancies over a 3-year period

1/3000	1/650
Embryos Tested	Tests Performed

Percentage of discrepant/misdiagnosed PGT-A cases cannot be accurately determined

- Not all embryos are transferred
- There is a lag between reporting and embryo transfer
- Euploid embryos misdiagnosed as aneuploid are rarely transferred
- Not all aneuploid embryos misdiagnosed as euploid will result in pregnancies

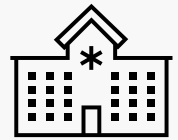
POTENTIAL RESOLUTIONS

False alarm

The baby is healthy, and a screening result was a false positive

Spontaneous conception

Some cases remain unresolved, for example, if fingerprinting is declined, not possible, or non-informative.



Clinic error

Human error resulted in a different embryo transfer or other labelling issue

Limitations

PGT would not have been expected to pick up the genetic abnormality

Cumulus cell contamination

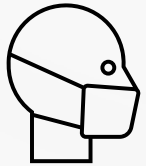
Cumulus cells in the sample analyzed resulted in a euploid female result

Laboratory error

A diagnostic or other human error in the laboratory caused a misdiagnosis

Mosaicism

PGT-A relies on an embryo biopsy and is therefore subject to sampling error



External contamination

Dermal cells from a person in the sample resulted in a euploid male or female result

Unresolved

An embryo implanted other than the transferred PGT-A tested embryo

CLINIC REVIEW PROTOCOL

1

Notification

Patient notifies the clinic of a concern with their pregnancy

2

PGT Review

Clinical team reviews embryo transferred and PGT reports

3

Embryology Review

Chain of custody, including straws and biopsy and tubing records

4

Transfer Cycle Review

Type of cycle, record of ovulation, patient recollection of intercourse

5

Collaborate

Request laboratory discrepancy review

6

Resolve

Determine the cause of the discrepancy

CLINIC REVIEW PROTOCOL

1

Notification

Patient or clinic notifies the PGT laboratory of a concern after euploid transfer

2

Evaluation

Clinical team (e.g. genetic counselors) assess the discrepancy

3

Laboratory Review

Laboratory performs an internal review of process, profiles, and final diagnoses

4

Collaborate

Brainstorm with clinic on potential explanations

5

Fingerprinting

Genetic analysis comparing the fetal DNA to the embryo

6

Resolve

Determine the cause of the discrepancy

LABORATORY REVIEW

CHAIN OF CUSTODY

1

Samples Received

Samples are received in tubes labelled by the embryologist

2

Arrangement of Processing Plate

Samples are transferred in original tubes to a processing plate

3

Barcoding and Amplification

Samples are barcoded and DNA is amplified in their original tubes

4

Pooling

Samples are pooled (mixed) together into a single tube

5

Next Generation Sequencing

Pooled samples are sequenced in parallel


RUN 1
RUN 1

ASSIGNMENT OF BARCODES ACCORDING TO POSITION

Patient Name	Label Tube	External Code Tube	Position	Biopsy day	LabCode	MRN	Code Gr Samples	Deadline	Service Description	Bar Code
	AN1	1N20-010865	0	D6	PGS-20S1609	PAT-000156686	SM000165939	29/09/2020	PGT-A per embryo FET	000000569482
	AN2	2N20-010864	0	D6	PGS-20S1609	PAT-000156686	SM000165939	29/09/2020	PGT-A per embryo FET	000000569483
	AN3	3N20-010863	0	D6	PGS-20S1609	PAT-000156686	SM000165939	29/09/2020	PGT-A per embryo FET	000000569484
	AHAH1	AH1	0	D6	PGS-20S1556		SM000153988	29/09/2020	PGT-A up to 8 embryos FET in	000000569163
	AHAH2	AH2	0	D6	PGS-20S1556		SM000153988	29/09/2020	PGT-A up to 8 embryos FET in	000000569164
	RW1	1	0	D5	PGS-20S1553	KUMC-22929	SM000163778	29/09/2020	PGT-A up to 8 embryos FET in	000000569146
	RW2	2	0	D6	PGS-20S1553	KUMC-22929	SM000163778	29/09/2020	PGT-A up to 8 embryos FET in	000000569147
	RW3	3	0	D6	PGS-20S1553	KUMC-22929	SM000163778	29/09/2020	PGT-A up to 8 embryos FET in	000000569148
	DVDV1	DV1	0	D5	PGS-20S1565	KUMC-21168	SM000164372	29/09/2020	PGT-A up to 8 embryos FET in	000000569208
	DVDV2	DV2	0	D5	PGS-20S1565	KUMC-21168	SM000164372	29/09/2020	PGT-A up to 8 embryos FET in	000000569209
	DVDV3	DV3	0	D5	PGS-20S1565	KUMC-21168	SM000164372	29/09/2020	PGT-A up to 8 embryos FET in	000000569210
	DVDV4	DV4	0	D5	PGS-20S1565	KUMC-21168	SM000164372	29/09/2020	PGT-A up to 8 embryos FET in	000000569211
	DVDV5	DV5	0	D6	PGS-20S1565	KUMC-21168	SM000164372	29/09/2020	PGT-A up to 8 embryos FET in	000000569212
	DVDV6	DV6	0	D6	PGS-20S1565	KUMC-21168	SM000164372	29/09/2020	PGT-A up to 8 embryos FET in	000000569213
	DVDV7	DV7	0	D6	PGS-20S1565	KUMC-21168	SM000164372	29/09/2020	PGT-A up to 8 embryos FET in	000000569214
	DVDV8	DV8	0	D6	PGS-20S1565	KUMC-21168	SM000164372	29/09/2020	PGT-A up to 8 embryos FET in	000000569215
	DVDV9	DV9	0	D6	PGS-20S1565	KUMC-21168	SM000164372	29/09/2020	PGT-A up to 8 embryos FET in	000000569216
	RT1	1	0	D6	PGS-20S1559	KUMC-1045	SM000164406	29/09/2020	PGT-A up to 8 embryos FET in	000000569177
	RT2	2	0	D6	PGS-20S1559	KUMC-1045	SM000164406	29/09/2020	PGT-A up to 8 embryos FET in	000000569178
	RT3	3	0	D6	PGS-20S1559	KUMC-1045	SM000164406	29/09/2020	PGT-A up to 8 embryos FET in	000000569179
	EDED1	ED1	0	D5	PGS-20S1547	KUMC-23607	SM000169471	29/09/2020	PGT-A up to 8 embryos FET in	000000569101
	EDED2	ED2	0	D5	PGS-20S1547	KUMC-23607	SM000169471	29/09/2020	PGT-A up to 8 embryos FET in	000000569102
	EDED3	ED3	0	D5	PGS-20S1547	KUMC-23607	SM000169471	29/09/2020	PGT-A up to 8 embryos FET in	000000569103
	EDED4	ED4	0	D5	PGS-20S1547	KUMC-23607	SM000169471	29/09/2020	PGT-A up to 8 embryos FET in	000000569104
	EDED5	ED5	0	D5	PGS-20S1547	KUMC-23607	SM000169471	29/09/2020	PGT-A up to 8 embryos FET in	000000569105
	EDED6	ED6	0	D6	PGS-20S1547	KUMC-23607	SM000169471	29/09/2020	PGT-A up to 8 embryos FET in	000000569106
	MT1	1	0	D5	PGS-20S1622	PAT-000147453	SM000157274	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569569
	MT3	3	0	D7	PGS-20S1622	PAT-000147453	SM000157274	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569570
	JW1	1	0	D6	PGS-20S1623	PAT-000155396	SM000164682	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569572
	JW6	6	0	D6	PGS-20S1623	PAT-000155396	SM000164682	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569573
	JW7	7	0	D6	PGS-20S1623	PAT-000155396	SM000164682	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569574

	JW3	3	0	D7	PGS-20S1623	PAT-000155396	SM000164682	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569575
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	CCN4	4	0	D6	PGS-20S1625	PAT-000130345	SM000140891	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569581
	LA5	5	0	D6	PGS-20S1626	PAT-000160980	SM000169979	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569583
	LA6	6	0	D6	PGS-20S1626	PAT-000160980	SM000169979	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569584
	LA8	8	0	D6	PGS-20S1626	PAT-000160980	SM000169979	29/09/2020	PGT-A NGS Single Embryo 4 Co	000000569585
	EB1	1N20-004331	0	D5	PGS-20S1629	PAT-000159462	SM000168572	29/09/2020	PGT-A per embryo FET	000000569594
	EB2	2N20-004330	0	D5	PGS-20S1629	PAT-000159462	SM000168572	29/09/2020	PGT-A per embryo FET	000000569595
	EB3	3N20-007635	0	D6	PGS-20S1629	PAT-000159462	SM000168572	29/09/2020	PGT-A per embryo FET	000000569596
	LFLF11	LF11	0	D5	PGS-20S1669	PAT-000161322	SM000170306	29/09/2020	PGT-A per embryo FET	000000569855
	LFLF4	LF4	0	D7	PGS-20S1669	PAT-000161322	SM000170306	29/09/2020	PGT-A per embryo FET	000000569856
	NYCNTRL-13	CNTRL-13	0	D5	PGS-20S1000	PAT-000105741	SM000117252	21/09/2020	PGT-A Flat Fee FET CONTROL	000000561702
	HNKHNK4	HNK4	0	D6	PGS-20S1667	PAT-000157417	SM000166636	29/09/2020	PGT-A per embryo FET	000000569849
	LB1LB	1LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569511
	LB2LB	2LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569512
	LB3LB	3LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569513
	LB4LB	4LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569514
	LB5LB	5LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569515
	LB6LB	6LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569516
	LB7LB	7LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569517
	LB8LB	8LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569518
	LB9LB	9LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569519
	LB10LB	10LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569520
	LB11LB	11LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569521
	LB12LB	12LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569522
	LB13LB	13LB	0	D5	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569523
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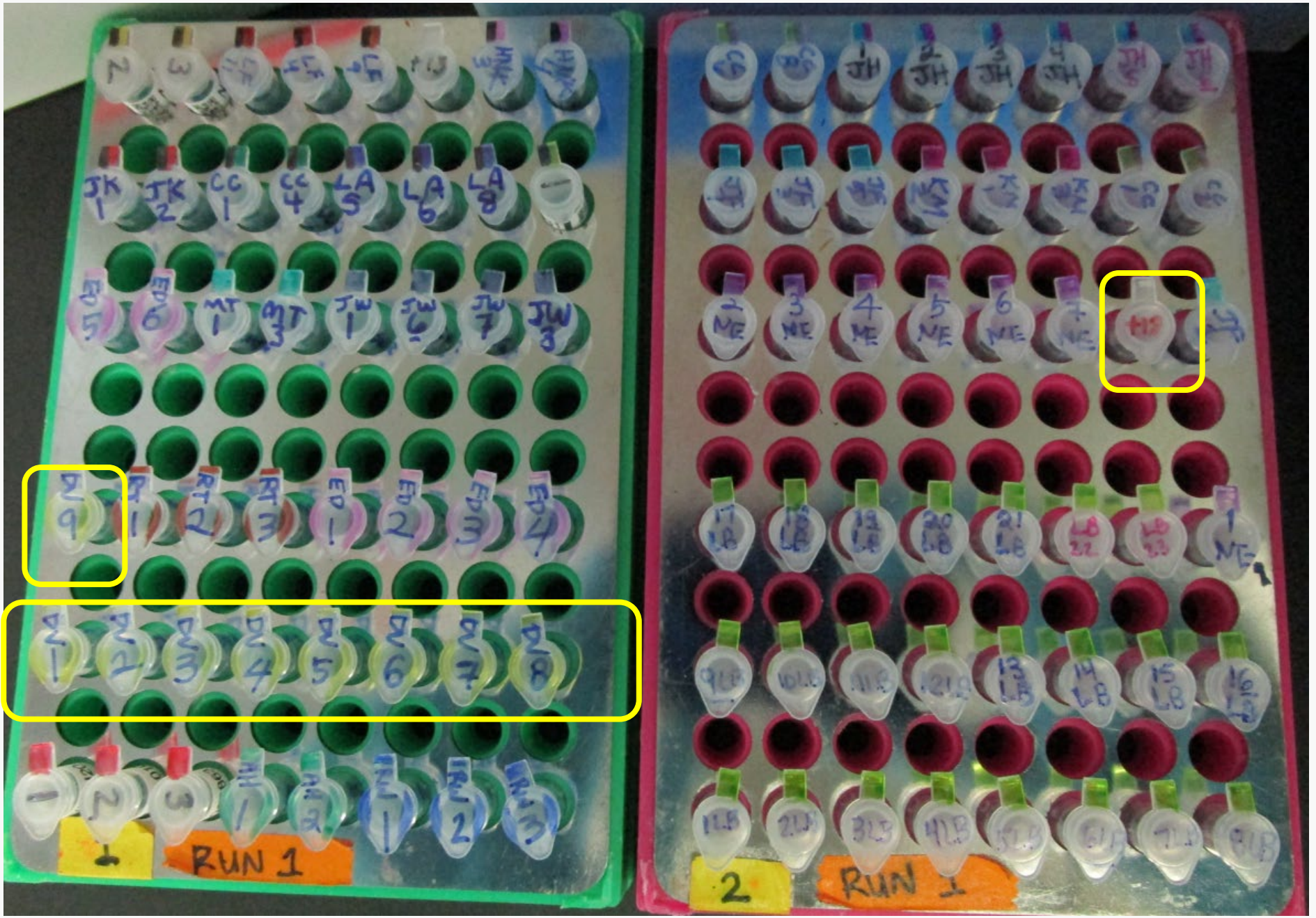
	LB15LB	15LB	0	D6	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569525
	LB16LB	16LB	0	D6	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569526
	LB17LB	17LB	0	D6	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569527
	LB18LB	18LB	0	D6	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569528
	LB19LB	19LB	0	D6	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569529
	LB20LB	20LB	0	D6	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569530
	LB21LB	21LB	0	D6	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569531
	LB22LB	22LB	0	D7	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569532
	LB23LB	23LB	0	D7	PGS-20S1614	6162771	SM000164408	29/09/2020	PGT-A up to 8 embryos FET in	000000569533
	NE1NE	1NE	0	D5	PGS-20S1631		SM000172333	29/09/2020	PGT-A up to 8 embryos FET in	000000569609

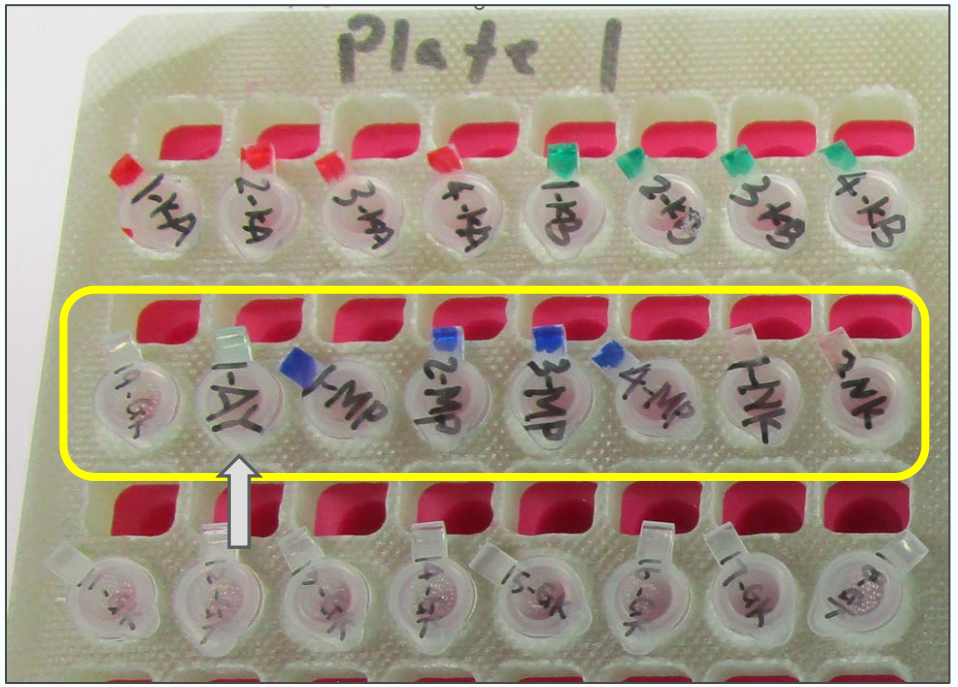
1. Position relative to other samples
2. Position on the plate


RUN 1
RUN 1

RULING OUT SAMPLE SWAPPING

1. Sample processing and barcoding takes place in the original tubes received from the clinic
2. The first manual step is the placement of tubes into the processing plate
3. A plate image is taken at this step to document chain of custody

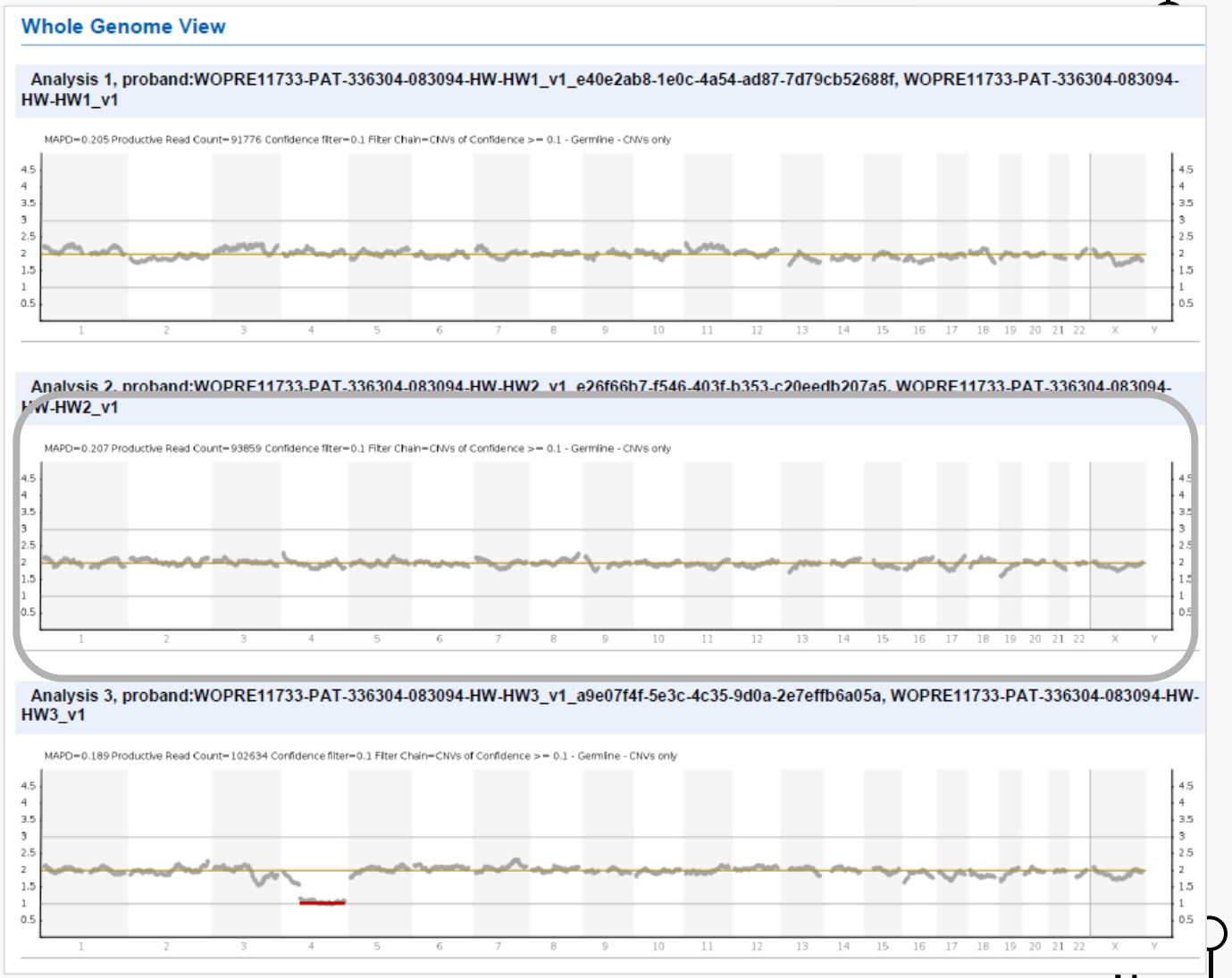
KG16-GK	16-GK	A	30	96	D6	PSE-22Y0147
KG17-GK	17-GK	A	31	96	D6	PSE-22Y0147
KG18-GK	18-GK	A	32	96	D6	PSE-22Y0147
KG19-GK	19-GK	A	33	96	D6	PSE-22Y0147
PM1-MP	1-MP	A	34	96	D5	PSE-22Y0194
PM2-MP	2-MP	A	35	96	D5	PSE-22Y0194
PM3-MP	3-MP	A	36	96	D5	PSE-22Y0194
PM4-MP	4-MP	A	37	96	D5	PSE-22Y0194
YA1-AY	1-AY	A	38	96	D6	PSE-22Y0195
KN1-NK	1-NK	A	39	96	D5	PSE-22Y0193
KN2-NK	2-NK	A	40	96	D6	PSE-22Y0193
KA1-KA	1-KA	A	41	96	D5	PSE-22Y0220
KA2-KA	2-KA	A	42	96	D6	PSE-22Y0220
KA3-KA	3-KA	A	43	96	D6	PSE-22Y0220
KA4-KA	4-KA	A	44	96	D6	PSE-22Y0220
KB1-KB	1-KB	A	45	96	D5	PSE-22Y0226
KB2-KB	2-KB	A	46	96	D5	PSE-22Y0226



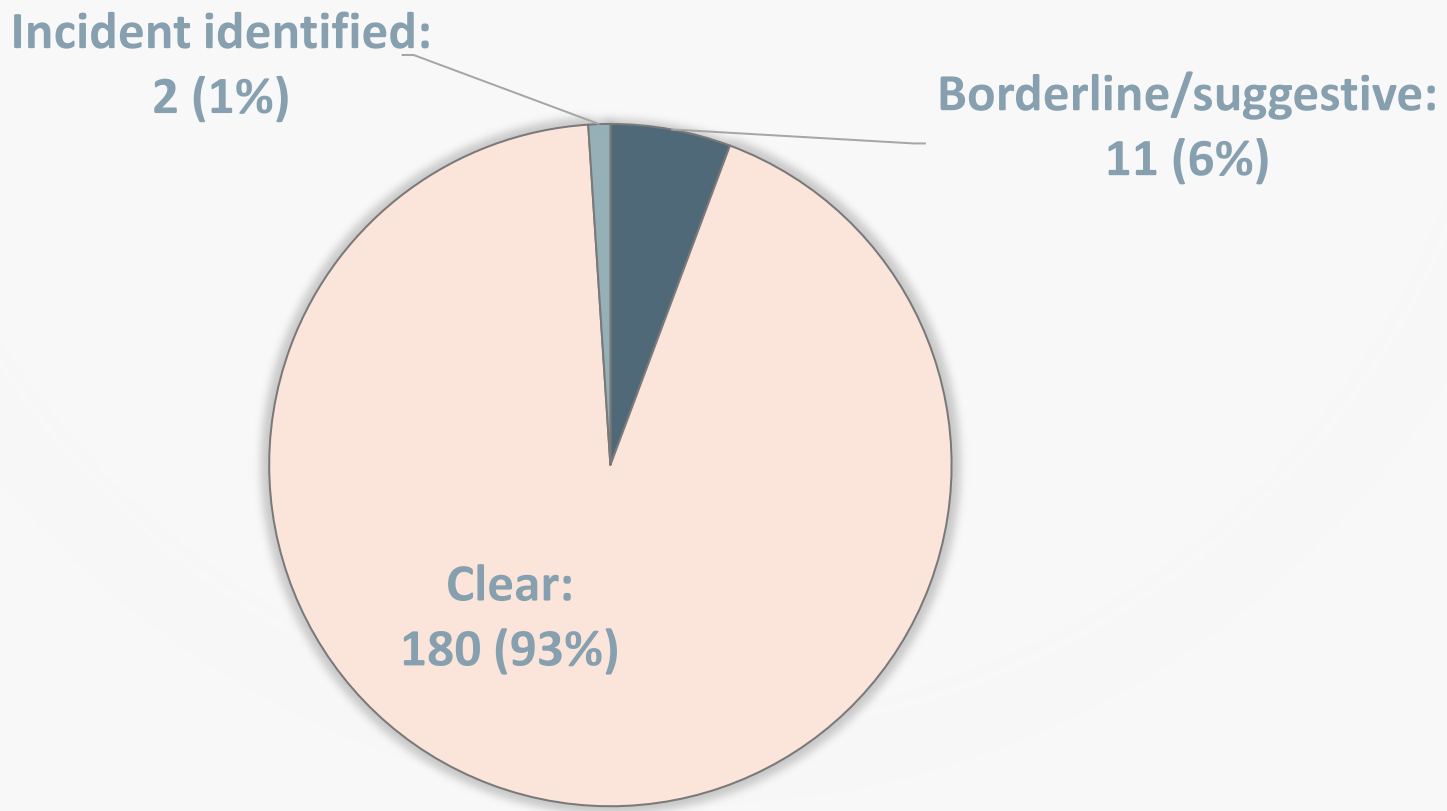
PROFILES AND DIAGNOSTICS

TEST RESULTS

Embryo No.	Cycle	Sample Type (Biopsy day)	Embryo results	Sex
HW1	2998255	Trophectoderm (D5)	**Euploid**	**Female**
HW2	2998255	Trophectoderm (D5)	**Euploid**	**Female**
HW3	2998255	Trophectoderm (D5)	Aneuploid: Partial monosomy 4q11q35.2 (138Mb)	Female



INTERNAL REVIEW



FINGERPRINTING ANALYSIS

Eligibility

Confirmed diagnostic or sex discrepancies where a prenatal or postnatal sample is available

Purpose

- Allow the laboratory and clinic to evaluating the efficacy of the PGT-A process
- Provide explanations to patients
- Limit the possibility of future related or reciprocal errors
- Not commercial testing

FINGERPRINTING ANALYSIS

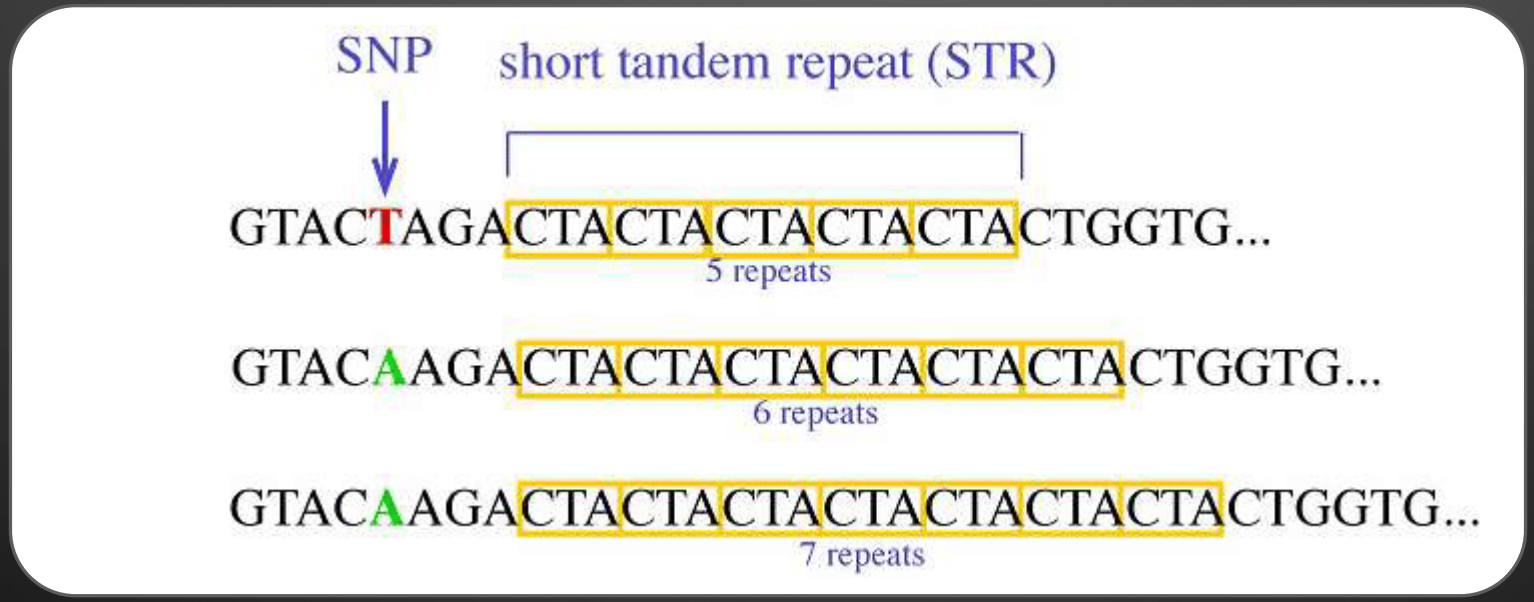
Requirements

- Surplus DNA from the PGT-A testing (aka “embryo DNA”)
- DNA samples from the egg and sperm sources, and gestational carrier if applicable
- Fetal or postnatal DNA sample

Process

- Embryo DNA is compared to the fetal DNA
- Embryo and fetal DNAs are compared to the egg source and sperm source
- Fetal DNA is compared to other PGT-A samples when applicable

STR ANALYSIS



WHAT CAN FINGERPRINTING TELL US

Maternity/Paternity

The prenatal sample shows the expected maternal and paternal STR alleles

Cumulus cell contamination

The PGT-A sample is a 100% match to the egg source

Spontaneous conception

The pregnancy is a 50% match to the transferred embryo.

It is not an identical match to any other embryo in the cohort.

Unintended embryo transfer

The prenatal sample is a 100% match to another embryo in the cohort

External contamination

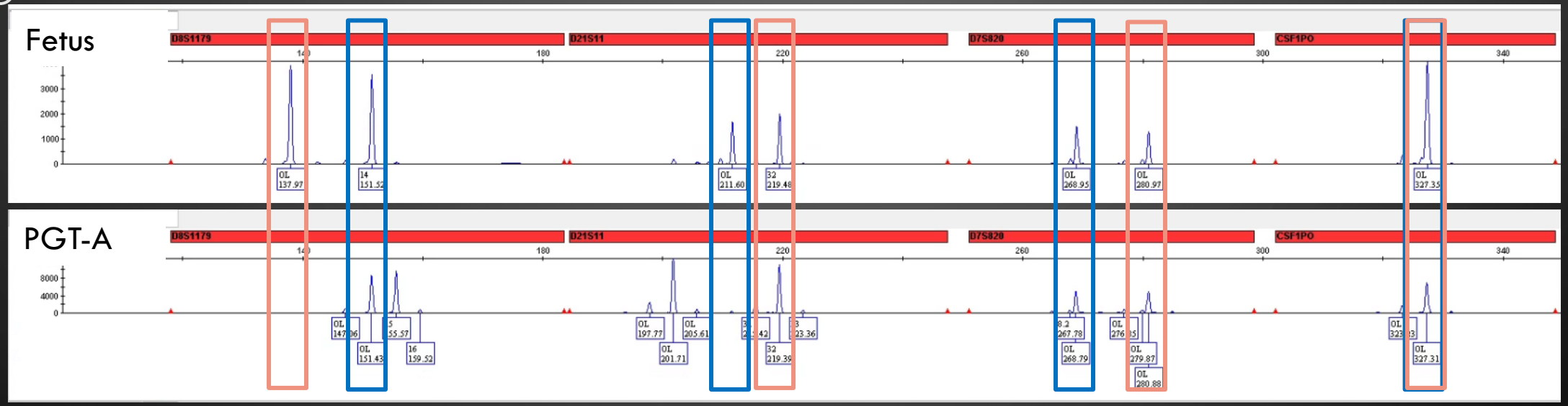
The PGT-A sample does not show the expected maternal and paternal markers nor match the pregnancy

Mosaicism

The pregnancy is a genetic match to the transferred embryo

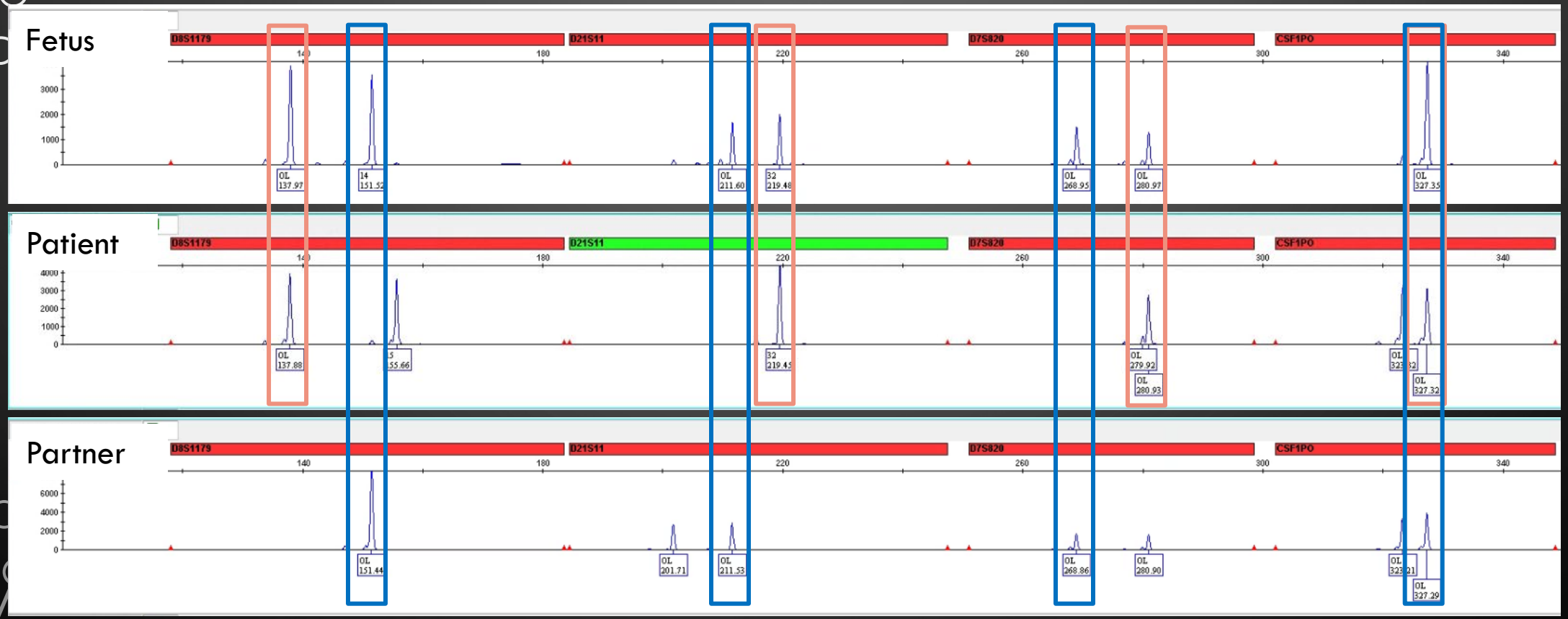
COMPARING THE FETUS AND THE EMBRYO

Variable length STR



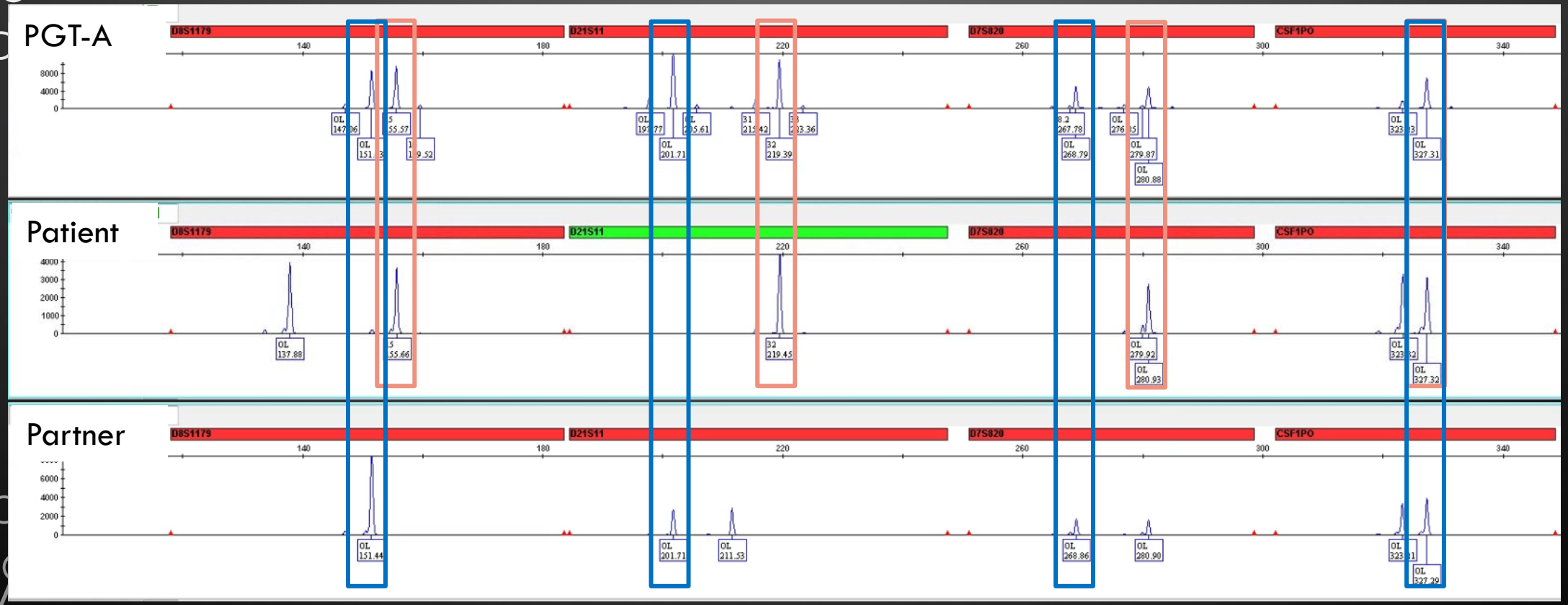
Fetus and embryo do not match

COMPARING THE FETUS, PATIENT, AND PARTNER



Maternity and paternity are consistent

COMPARING THE EMBRYO, PATIENT, AND PARTNER



Maternity and paternity are consistent

COMPARING PATIENT, PARTNER, FETUS, AND EMBRYO

Ruled out

Mosaicism

Contamination, external and maternal

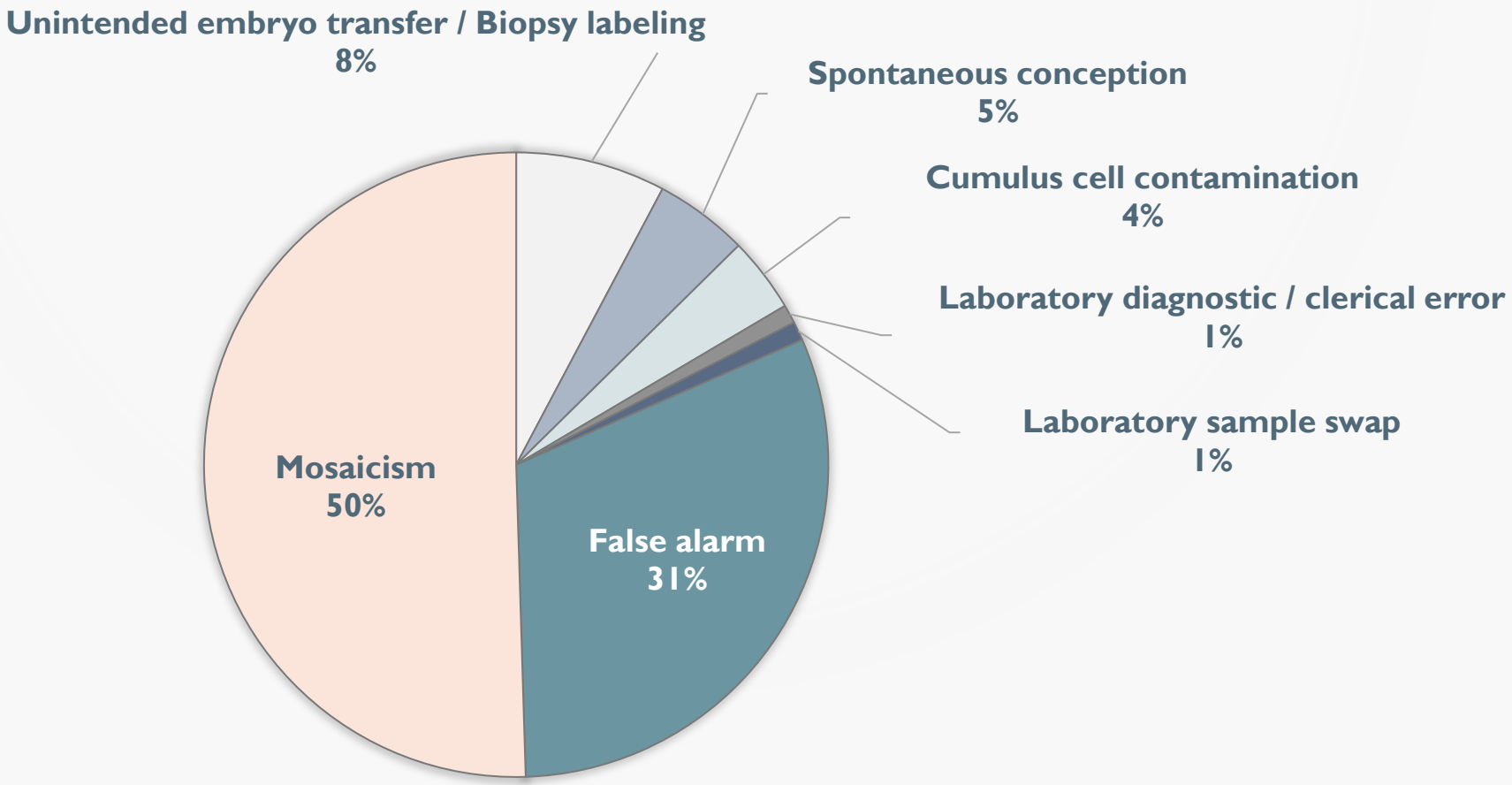
Transfer of an embryo belonging to another patient

Remaining possibilities

Spontaneous conception

Transfer of another embryo belonging to the patient

RESOLUTION - ALL DISCREPANCIES



CASE EXAMPLES

...

SEX DISCREPANCY

The case

Patient had PGT-A testing of a single embryo

Embryo No.	Cycle	Sample Type (Biopsy day)	Embryo results	Sex
HM-1	-	Trophectoderm (D6)	**Euploid**	**Male**

She then underwent transfer of her euploid male embryo and became pregnant

She had IUFD at 9 weeks and underwent POC testing. The results were consistent with trisomy 21, FEMALE.

POSSIBILITIES

~~False alarm~~

~~Mosaicism~~

~~Cumulus cell contamination~~

Unintended embryo transfer

Sample mix up in the laboratory

Misdiagnosis in the laboratory

Spontaneous conception

External contamination

SEX DISCREPANCY

Clinic review

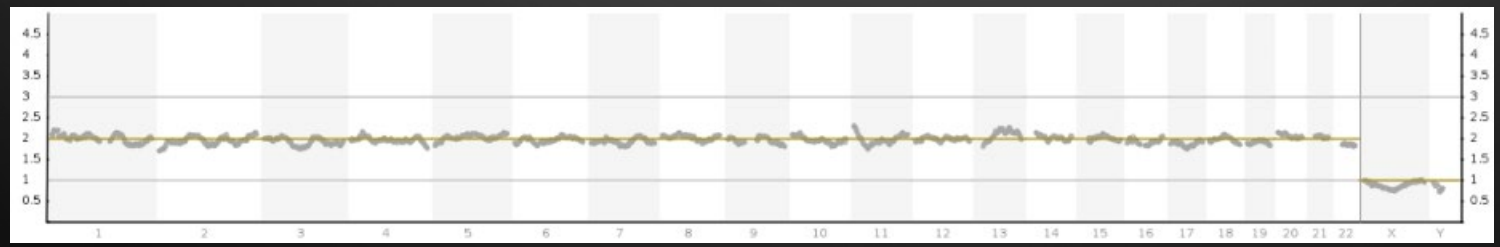
Single embryo in the cohort; no other embryos remaining in storage

POC utilized SNP technology; maternity consistent

Laboratory review

Chain of custody reviewed and confirmed

Diagnostics reviewed and confirmed



POSSIBILITIES

~~False alarm~~

~~Mosaicism~~

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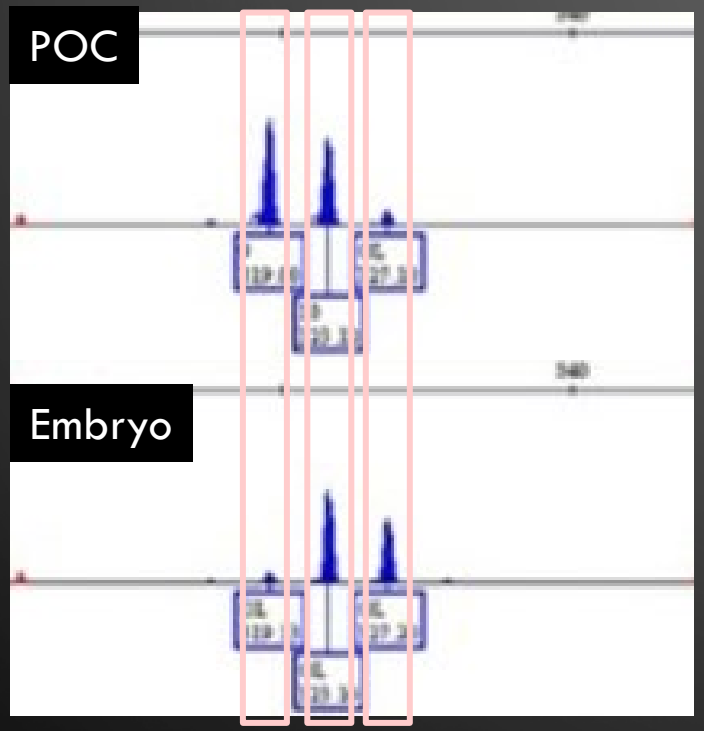
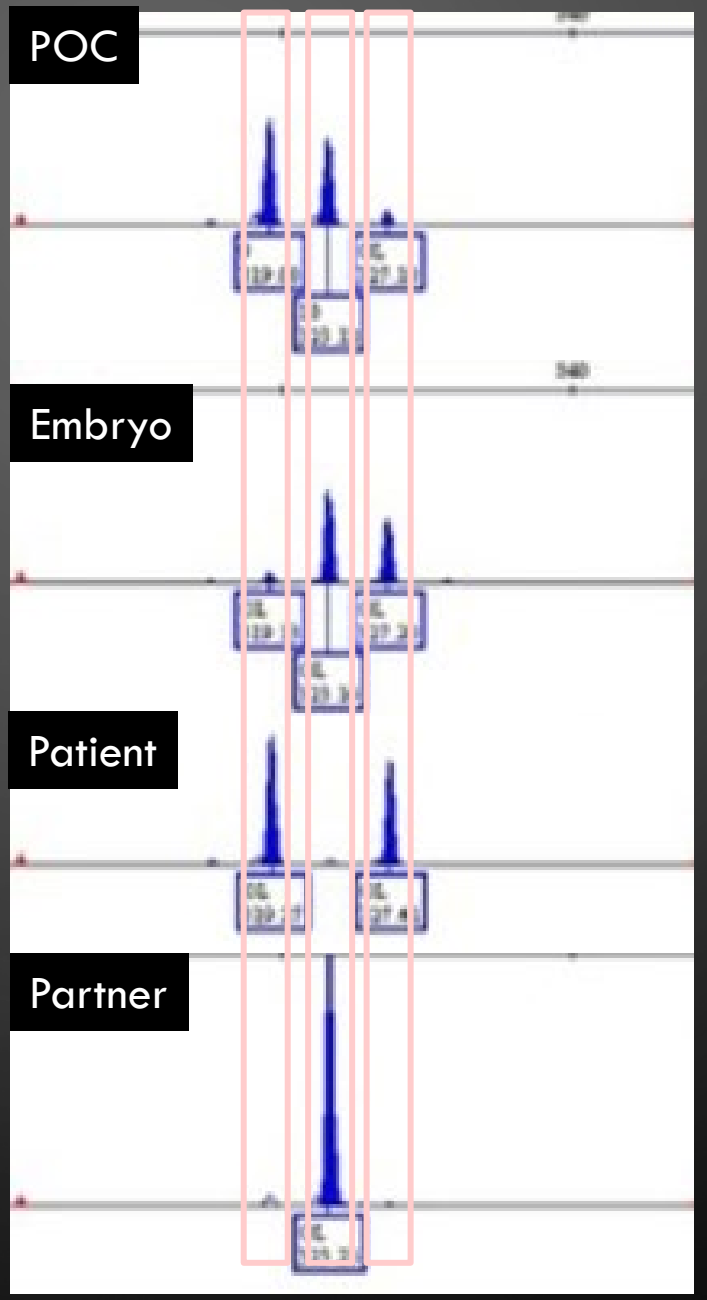
Spontaneous conception

External contamination

FINGERPRINTING





POSSIBILITIES

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~~Sample mix up in the laboratory~~

~~Misdiagnosis in the laboratory~~

Spontaneous conception

~~External contamination~~

SPONTANEOUS CONCEPTION

Key Points

Spontaneous conception can lead to a PGT-A misdiagnosis

Counseling patients about abstinence around the time of embryo transfer is crucial

More commonly seen with patients who have natural cycles

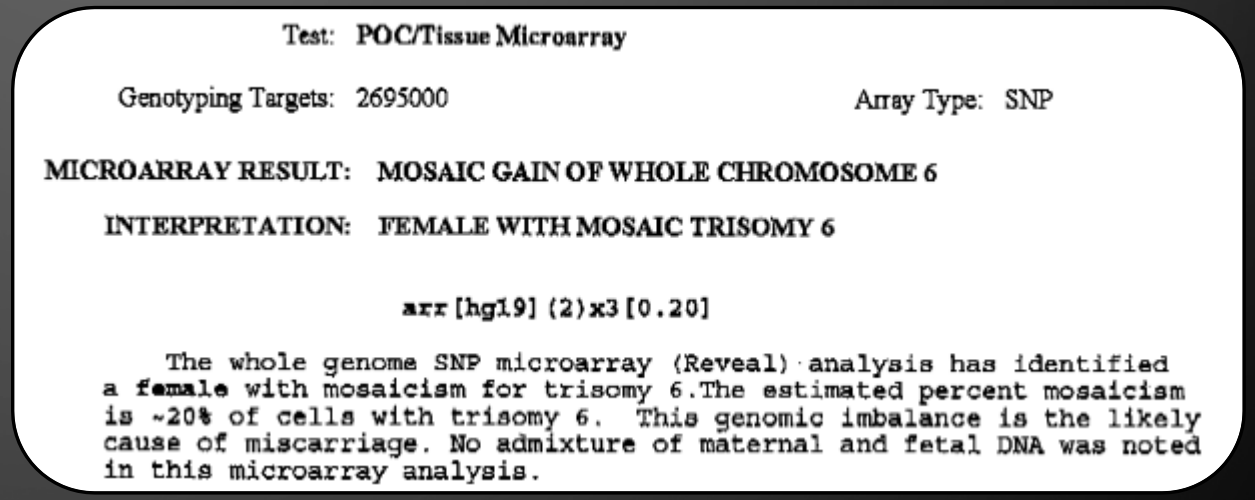
Sperm can last in the body for several days

Patients may not always be able to accurately recall when they had intercourse

DIAGNOSTIC - MOSAIC

The case

Patient JM transferred a euploid female embryo, which resulted in a miscarriage. The POC microarray showed a 20% mosaic gain of chromosome 6.



Test: **POC/Tissue Microarray**

Genotyping Targets: 2695000 Array Type: SNP

MICROARRAY RESULT: MOSAIC GAIN OF WHOLE CHROMOSOME 6

INTERPRETATION: FEMALE WITH MOSAIC TRISOMY 6

arr [hg19] (2)x3 [0.20]

The whole genome SNP microarray (Reveal) analysis has identified a **female** with mosaicism for trisomy 6.The estimated percent mosaicism is ~20% of cells with trisomy 6. This genomic imbalance is the likely cause of miscarriage. No admixture of maternal and fetal DNA was noted in this microarray analysis.

Resolution: Mosaicism

Fingerprinting was completed, confirming a genetic match between the POC sample and the remaining PGT-A sample.

POSSIBILITIES

~~False alarm~~

Mosaicism

Cumulus cell contamination

Unintended embryo transfer

Sample mix up in the laboratory

Misdiagnosis in the laboratory

Spontaneous conception

External contamination

MOSAICISM

Key Points

Mosaicism is a known limitation of PGT-A testing.

When the prenatal report describes the finding of mosaicism, fingerprinting is not strictly necessary but can be offered for completeness.

Most patients will elect not to have fingerprinting done when their pregnancy was reported to be mosaic.

SEX DISCREPANCY

The case

Patient had two consecutive male pregnancy losses associated with cystic hygroma and other congenital anomalies.

Karyotypes were normal, and whole exome sequencing was ordered.

An X-linked VUS was identified in both pregnancies and carried by the patient.

Patient decided to pursue PGT-M testing for the X-linked VUS.

SEX DISCREPANCY

The case

Patient had 4 embryos tested, including two female embryos with non-informative PGT-M results.

Embryo No.	PGT-M Results c.107dup, NONO	PGT-A Results Aneuploidy screening	Sex	Recommended for Transfer
JH1	Non-informative	Normal	Female	NO
JH2	Carrier	Abnormal	Female	NO
JH3	Normal	Abnormal	Male	NO
JH4	Non-informative	Normal	Female	NO

PGT-A for embryo #4 was a clear euploid female.

PGT-M for embryo #4 was non-informative due to a small chrY signal and an unexpected STR allele. The variant *was not detected*.

Embryo #4 was transferred, and the patient became pregnant.

She underwent NIPT testing, which revealed a MALE fetus.

SEX DISCREPANCY

The workup

Ultrasound findings were normal, and the patient declined amniocentesis.

The pregnancy was carried to term and an apparently healthy baby boy was born.

The genetic status of the baby remains unknown.

Chain of custody was confirmed at the clinic and in the laboratory.

Fingerprinting of the PGT-A samples was performed (comparison to the baby was not possible).

Additional peaks *not* consistent with patient and partner were observed in the PGT sample.

POSSIBILITIES

~~False alarm~~

~~Mosaicism~~

~~Cumulus cell contamination~~

~~Unintended embryo transfer~~

~~Sample mix up in the laboratory~~

~~Misdiagnosis in the laboratory~~

Spontaneous conception

External contamination

SEX DISCREPANCY

The case

Patient had 4 embryos tested, including two female embryos with non-informative PGT-M results.

Embryo No.	PGT-M Results c.107dup, NONO	PGT-A Results Aneuploidy screening	Sex	Recommended for Transfer
JH1	Non-informative	Normal	Female	NO
JH2	Carrier	Abnormal	Female	NO
JH3	Normal	Abnormal	Male	NO
JH4	Non-informative	Normal	Female	NO

PGT-A for embryo #1 was a clear euploid female.

PGT-M for embryo #1 was non-informative due allele drop out.

Embryo #1 was rebiopsied and re-tested, resulting in a low-risk *ANEUPLOID* embryo.

This could be explained by embryonic mosaicism or contamination on the first sample.

EXTERNAL CONTAMINATION

Key Points

External contamination can lead to a PGT-A misdiagnosis.

PGT-M for sex-linked conditions is essential.

Standard PGT-A by NGS cannot detect contamination. Some newer PGT-A technologies can detect contamination.

WHY INVESTIGATE

We owe it to our patients!

A single error can impact multiple embryos

Identifying the cause can inform proper counseling about recurrence risks what next steps

Identifying the errors can direct process improvements to mitigate the chance of future errors

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