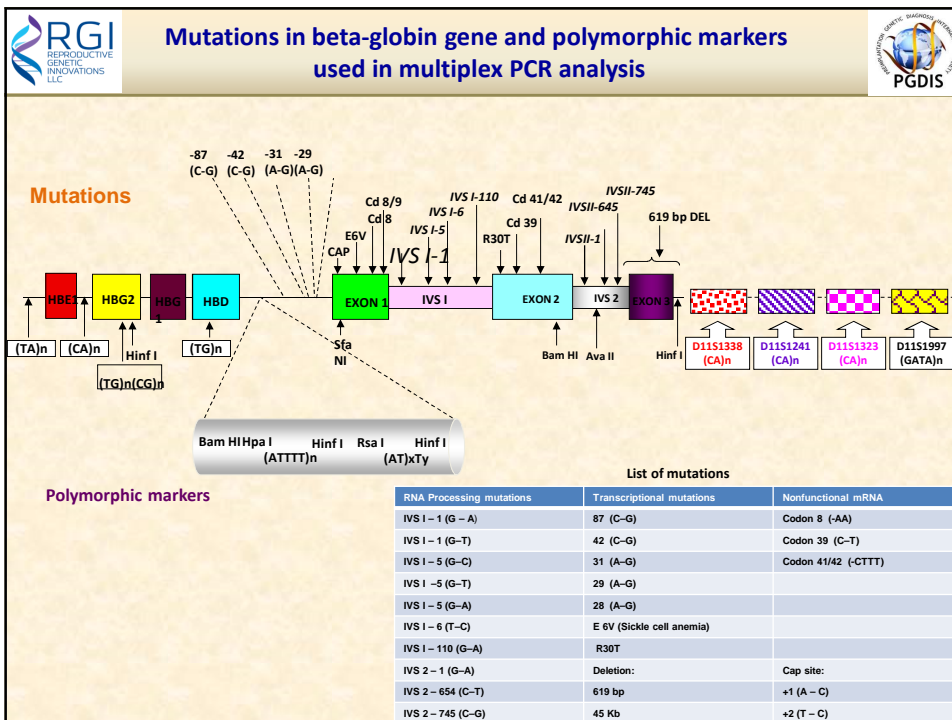
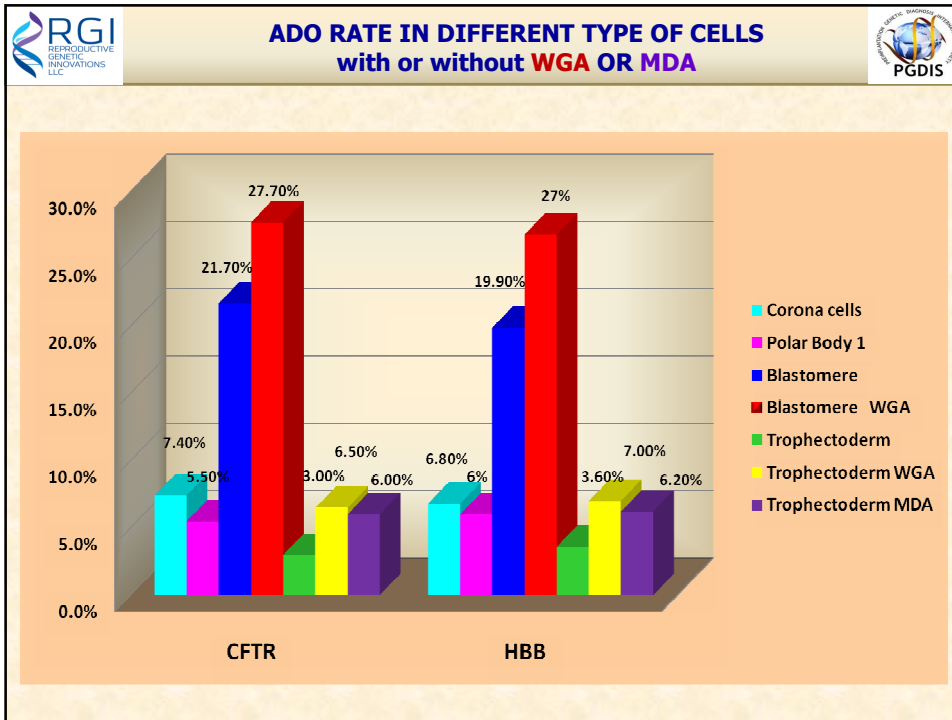


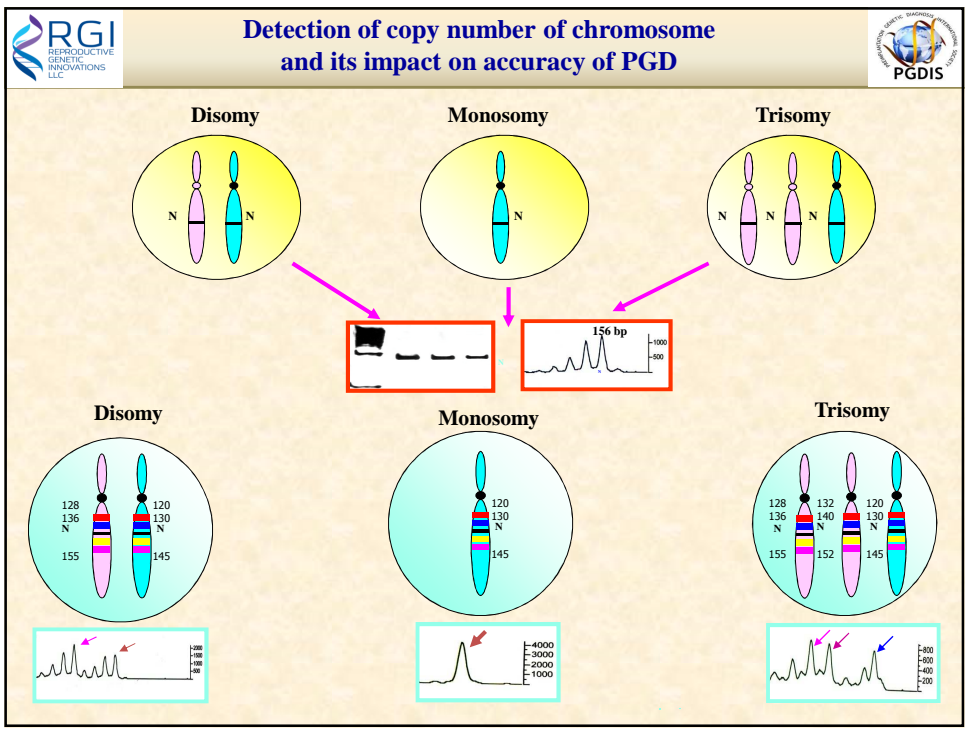
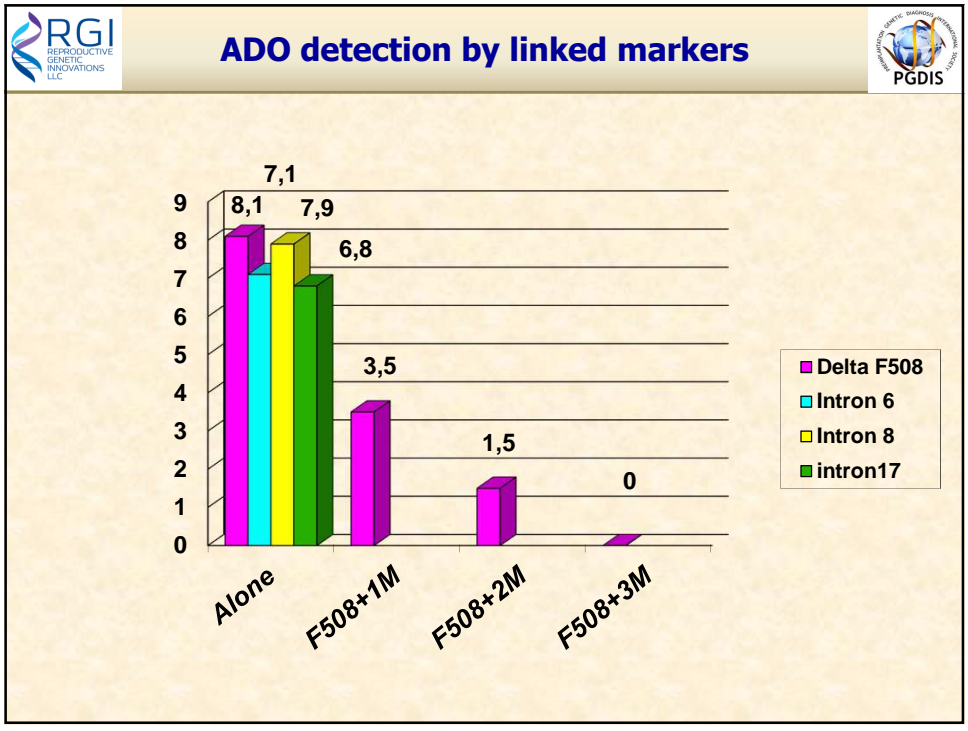
**RGI**  
REPRODUCTIVE  
GENETIC  
INNOVATIONS  
LLC

## Expected problems in PGD for single gene disorders

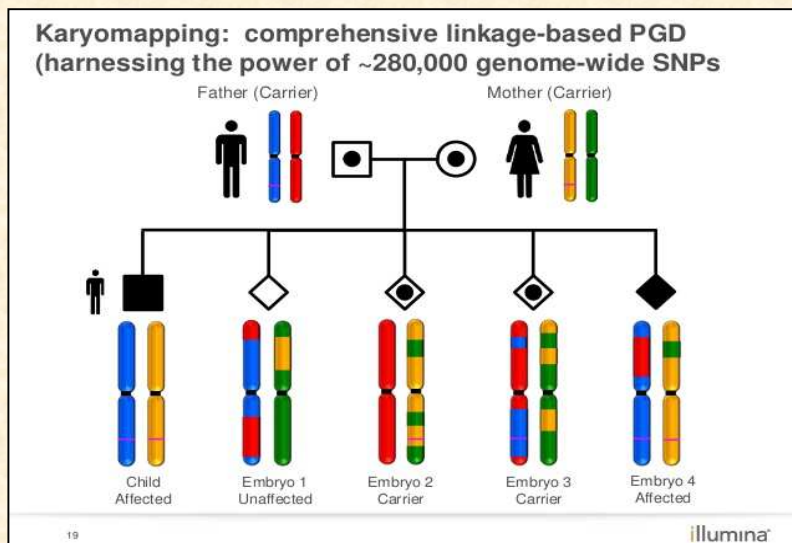
**PGDIS**

- **Preferential amplification**
- **Allele drop-out (ADO)**
- **Contamination**
- **Recombination**
- **Aneuploidy**
- **Uniparental disomy**
- **Mosaicism**
- **De novo mutations**





- **Detection of:**
  - Preferential amplification
  - Allele drop-out (ADO)
  - Recombination
  - Contamination
  - Aneuploidy
  - Uniparental disomy
- **Embryo identification**



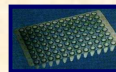
Test type	Total # families	Relatives were Not available for haplotype prediction	Same mutation (including offspring)	De novo mutations	Recombinant baby
SGD	2460	354 12.73%	41 1.7%	179 7.2%	8 0.3%
HLA Typing	320	NA	NA	NA	17 5.3%
<b>TOTAL</b>	<b>2780</b>	<b>354 (12.73)</b>	<b>41 (1.7%)</b>	<b>179 (7.2%)</b>	<b>25 (0.89%)</b>

**Total : 22.52%**

A single cell is placed in lysis buffer and spanned

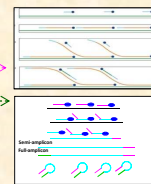
Mutation & Linkage (Haplotyping):  
PCR Mix with multiple outside primers,

Second Round started as a separate PCR reaction for each locus



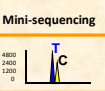
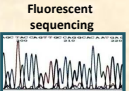
Combined testing: SGD+AT-24

WGA:  
aCGH+Mutation --: PEP,DOP  
Karyomapping : MDA ----->  
NGS: DOP,MDA or MALBAC ----->

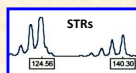
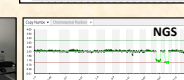
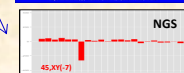
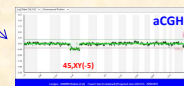


**Single Gene Analysis:**

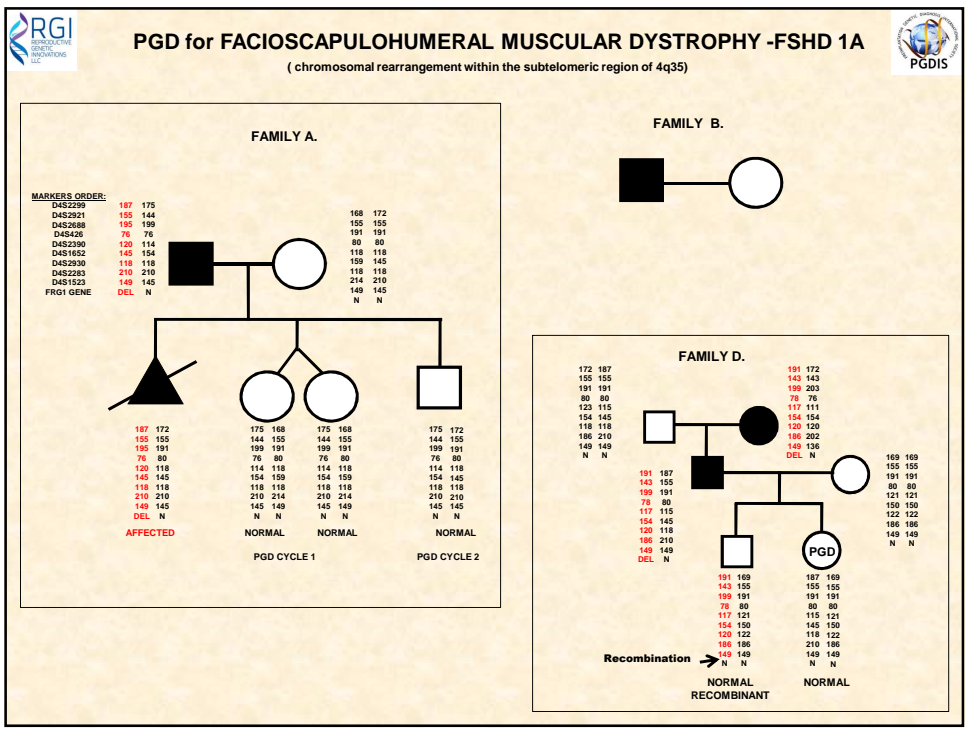
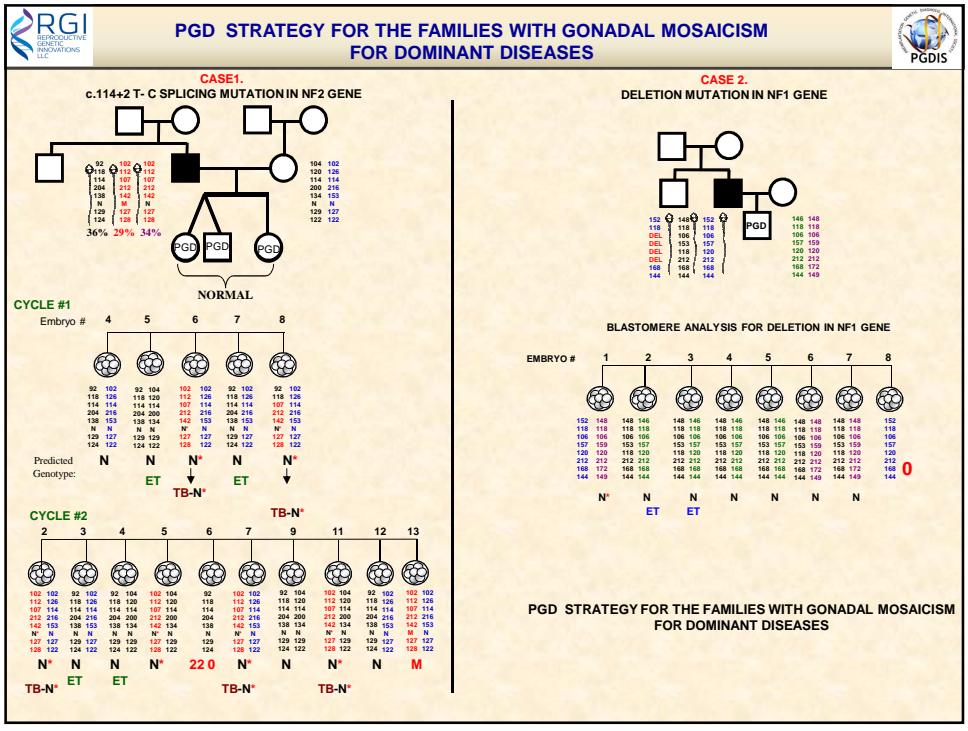
**Aneuploidy testing**

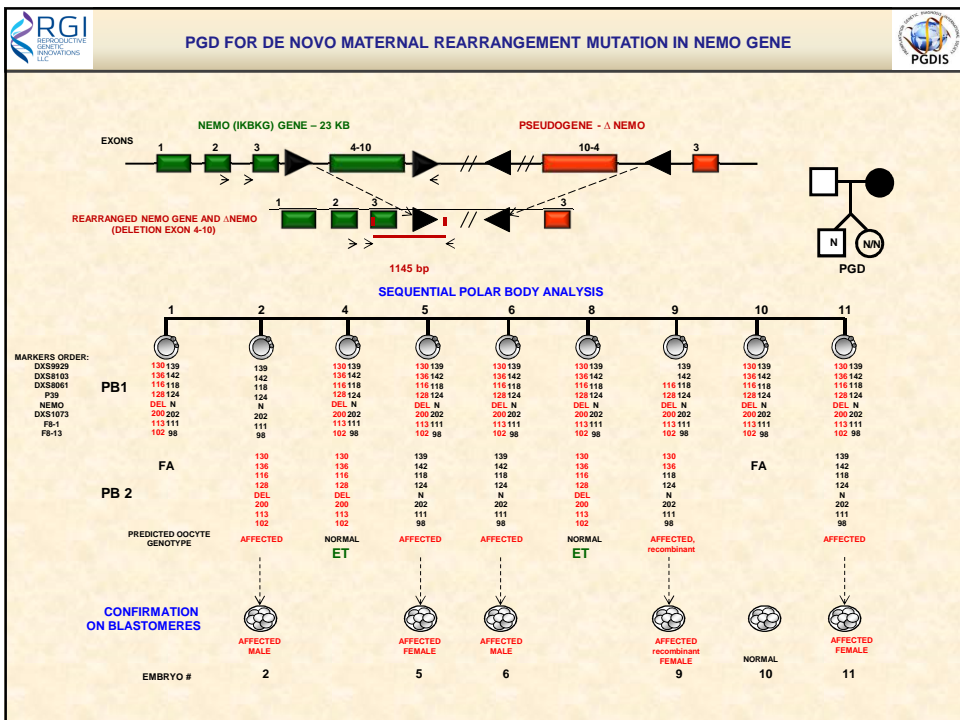
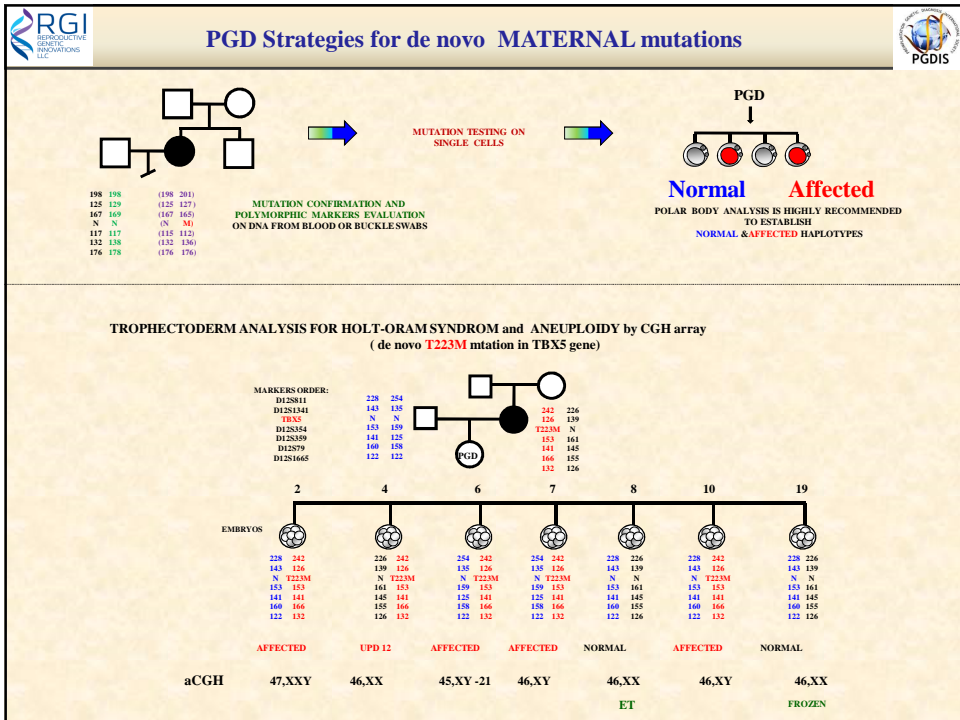


NGS  
CGATTGCCCC  
CGATTGCCCC  
CGATTGCCCC

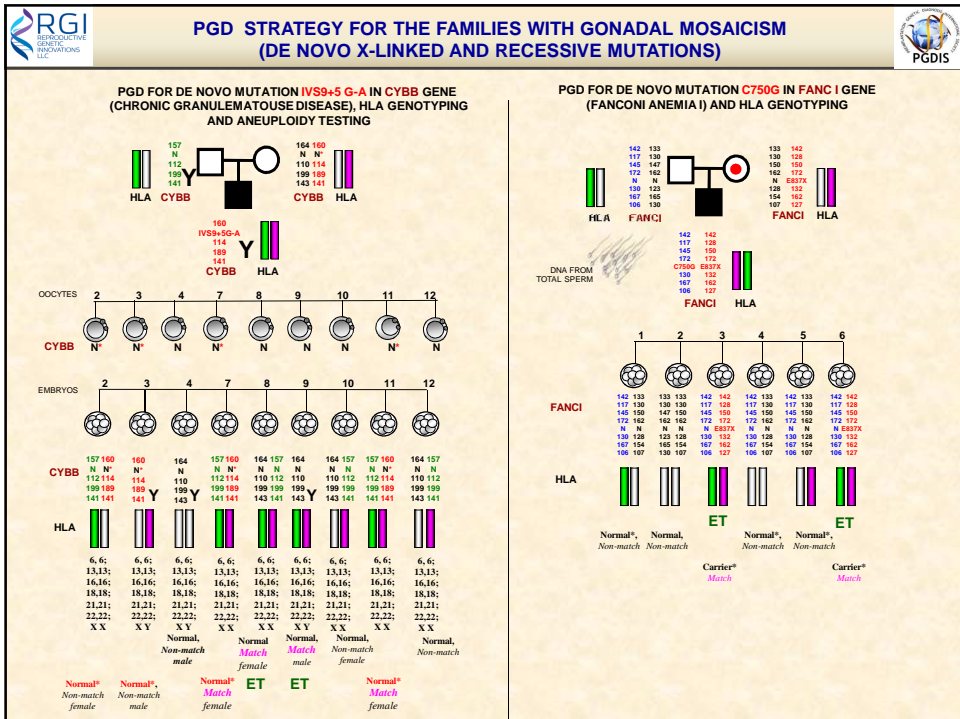
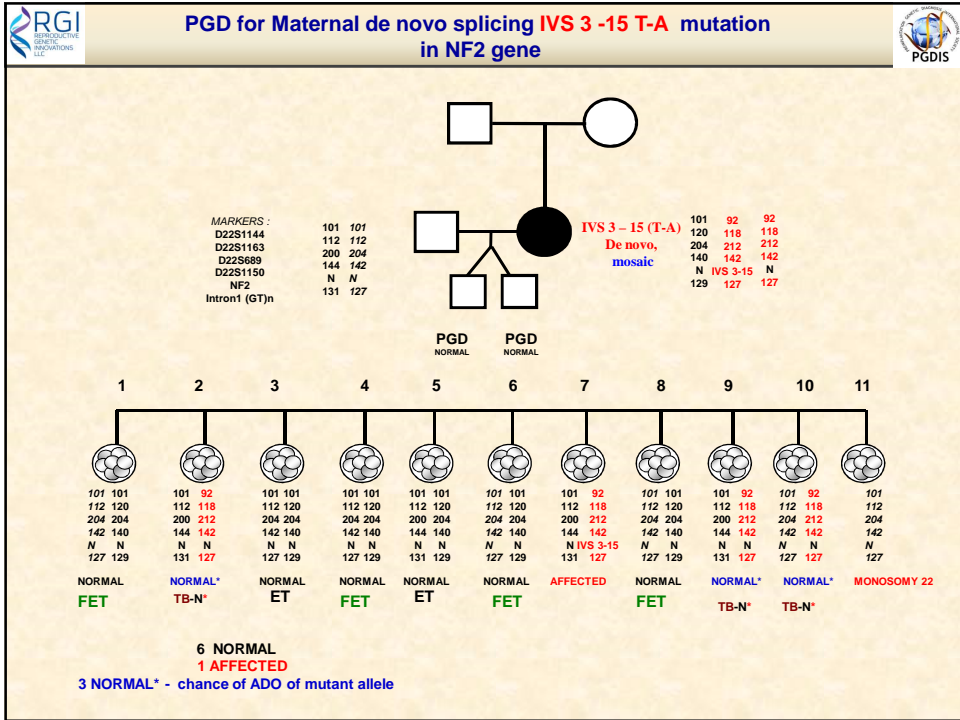


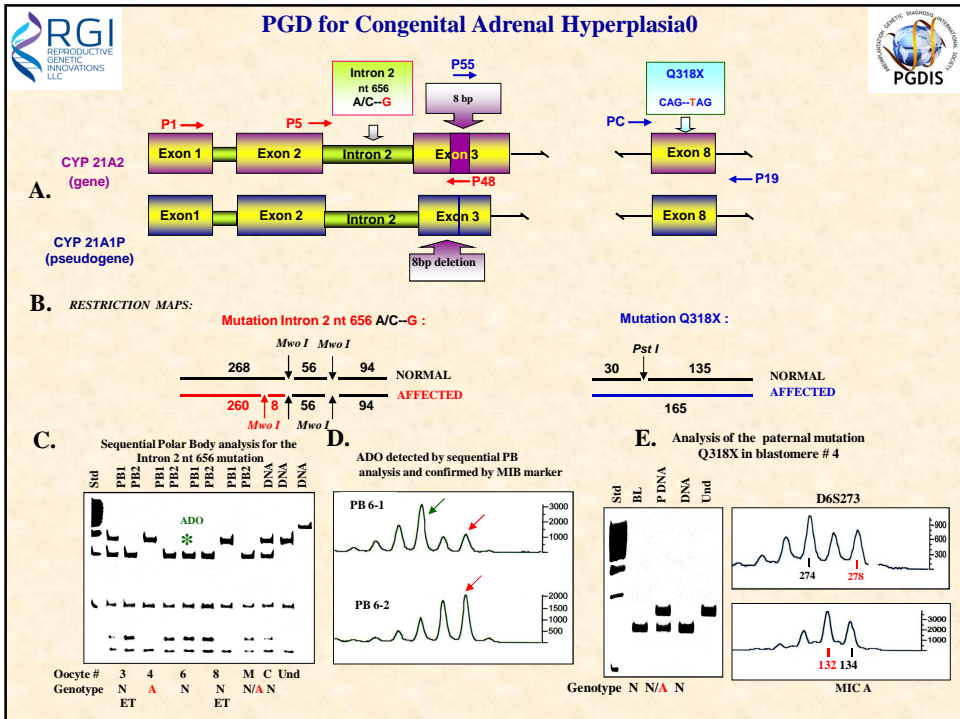
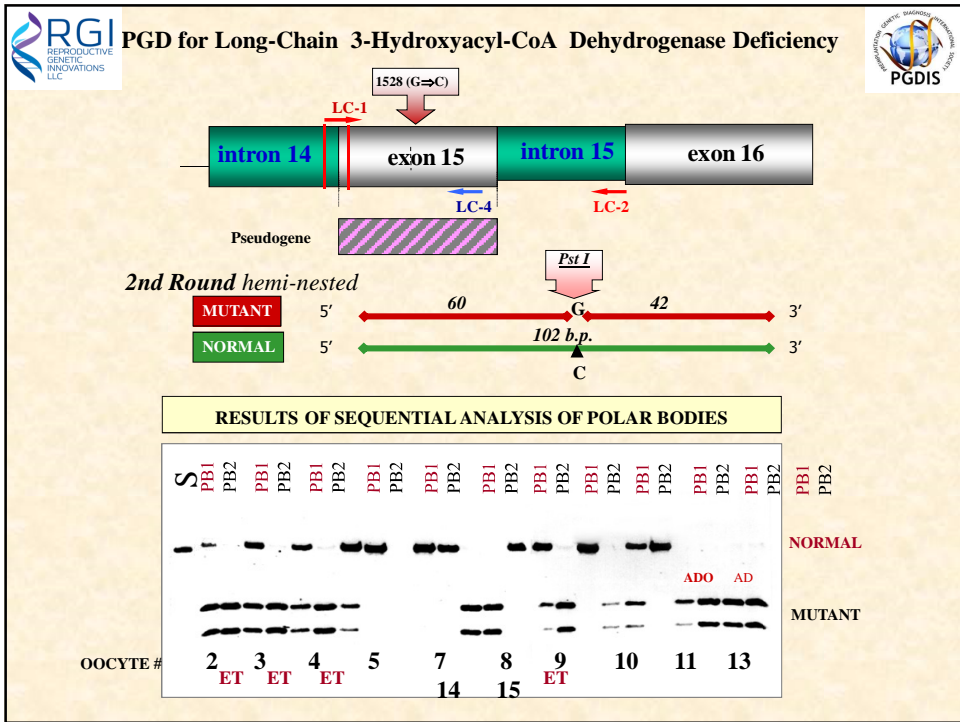


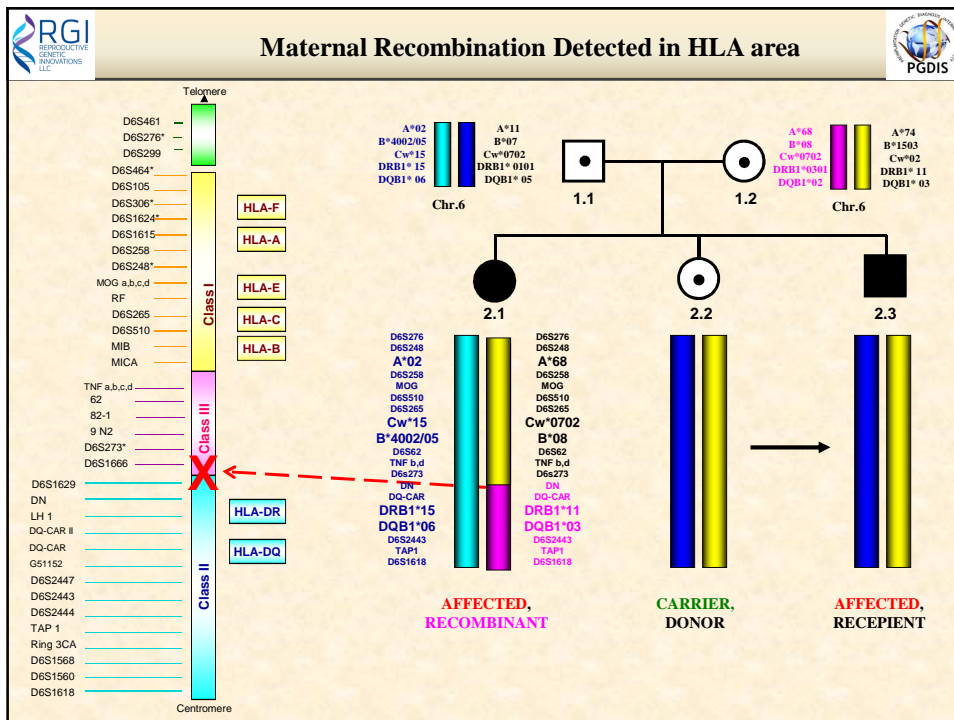
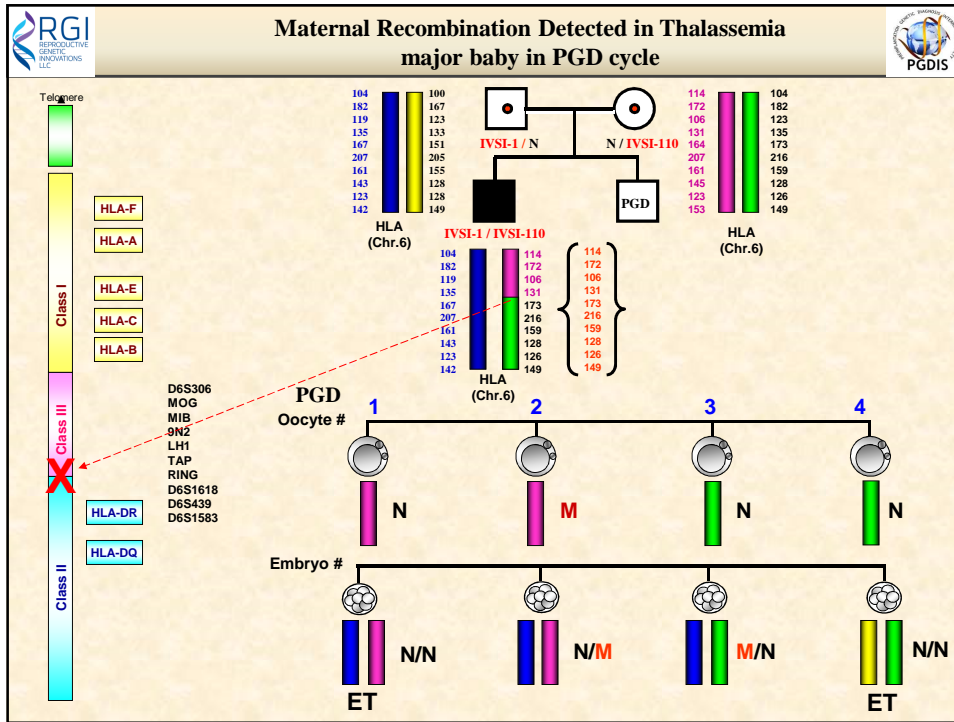


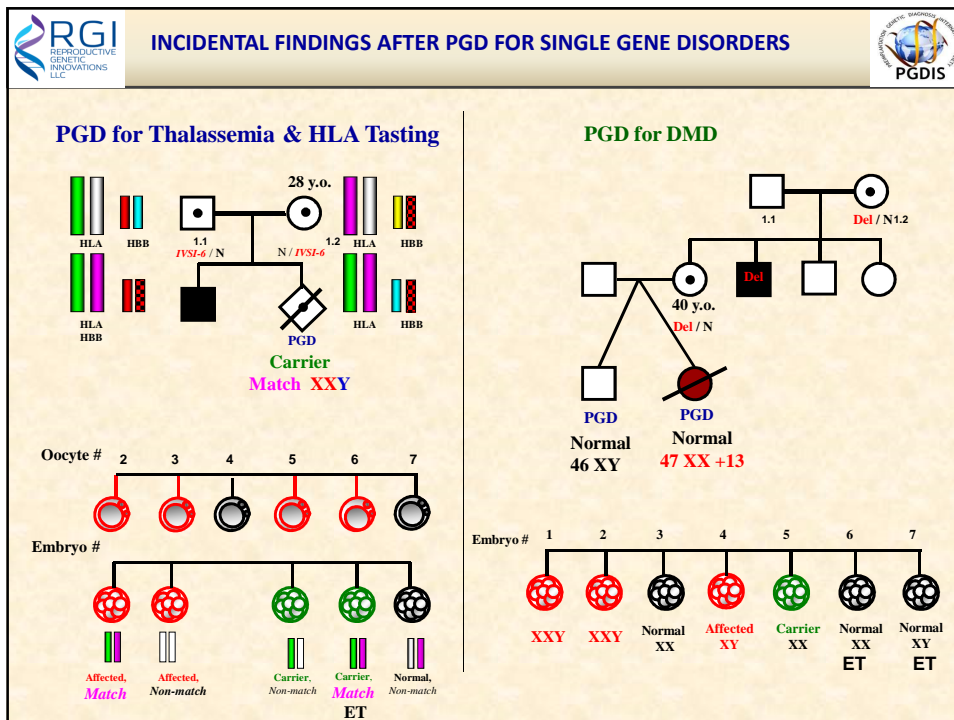
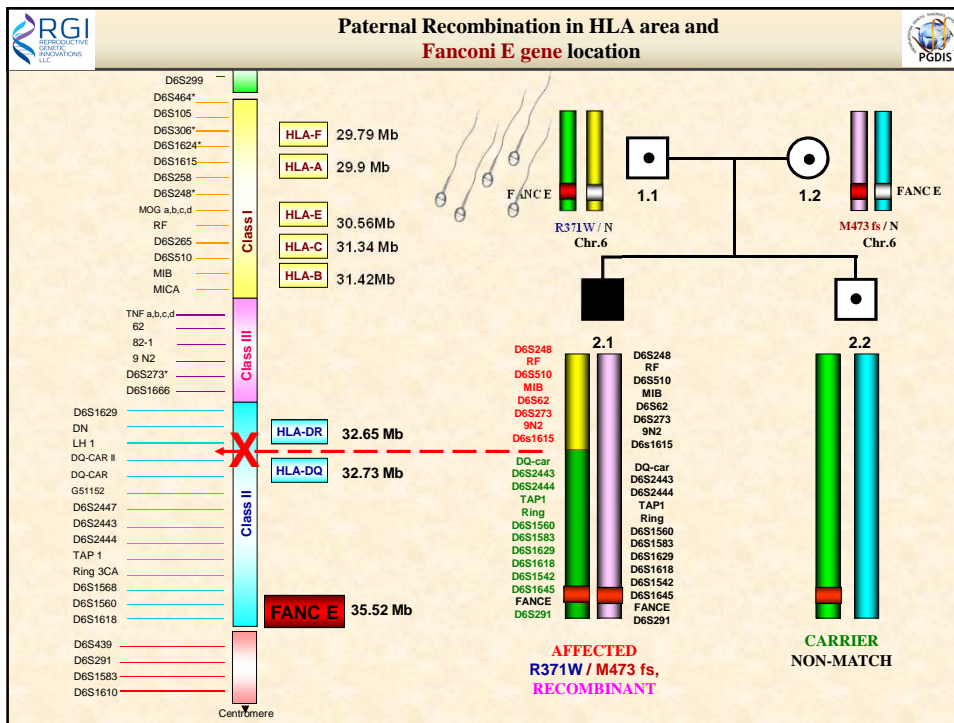


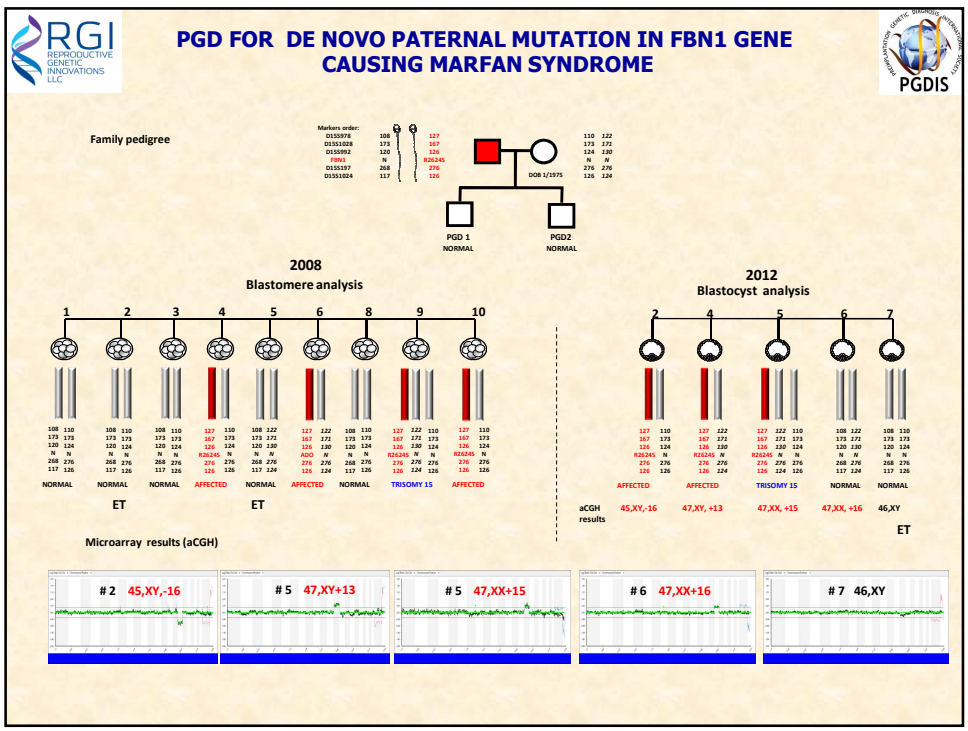
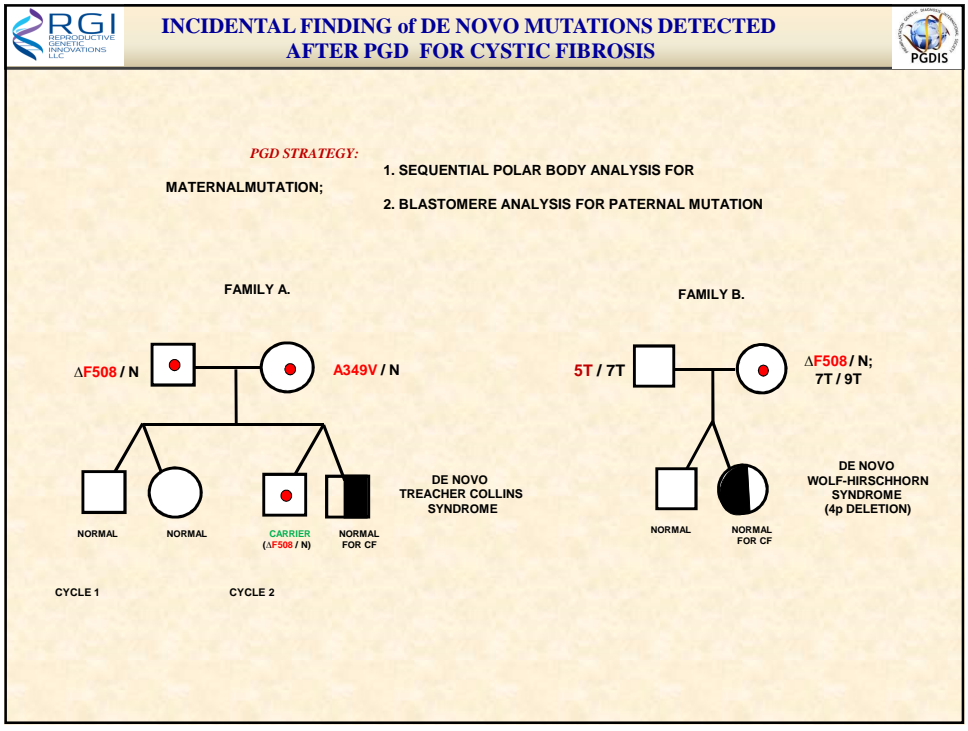
















 <b>Overall Results and outcome of PGD for Single Gene Disorders, HLA &amp; Aneuploidy Testing</b> 							
Testing	Patient/ Cycle	# ET	# Embryos	Pregnancy	SAB	Delivery	# Babies
SGD (INCLUDING HLA)	2241 /3739	2851	5091 1.79	1424 49.9%	211 14.8%	1213 85.2%	1507
SGD+24 For 122 conditions (INCLUDING HLA)	485 /762	533*	616 1.15	376 70.5%	29 7.7%	347 92.3%	382
<b>TOTAL</b>	<b>2726/4501</b>	<b>3384</b>	<b>5707</b>	<b>1800</b>	<b>240</b>	<b>1560</b>	<b>1889</b>

 <b>CONCLUSIONS:</b> 	
<ul style="list-style-type: none"> <li>- <b>Trophectoderm Biopsy (Day 5&amp;6)</b> has improved amplification efficiency (fewer inconclusive samples) and provide more embryos suitable for transfer</li> <li>- <b>WGA</b> allowed multiple conditions testing on the same sample and embryo identification</li> <li>• <b>Adding aneuploidy testing by aCGH or NGS</b> <ul style="list-style-type: none"> <li>- Increased pregnancy rates</li> <li>- Reduced chance of miscarriage</li> <li>- Predicted accuracy is 98%</li> </ul> </li> </ul>	

**Behind every diagnosis there is a Life**

**RGI** REPRODUCTIVE GENETIC INNOVATIONS LLC

**PGDIS**

**RFLP**

**Real Time PCR with TaqMan probe**

**Fluorescent sequencing**

**Mini-sequencing**

Anver **Kuliev** • Svetlana **Rechitsky** • Oleg **Verlinsky**

**ATLAS OF PREIMPLANTATION GENETIC DIAGNOSIS**

THIRD EDITION

**Practical Preimplantation Genetic Diagnosis**

Anver Kuliev

Second Edition

Springer



# RGI TEAM



## PREIMPLANTATION MOLECULAR GENETICS

Svetlana Rechitsky, Ph.D.  
 Oleg Verlinsky, M.A.  
 Tatiana Pakhalchuk B.S  
 Adam Goodman, B.S  
 Geraldine San Ramon ,M.S  
 Maria Prokhorovich, PhD  
 Rita Gershman, B.S  
 Michael Ducor, M.S  
 Lukas Machaj, B.S.

## CLINICAL GENETICS

JL Simpson, M.D., FACMG  
 Lee Shulman, MD., FACMG  
 Dyvia Shah, M.S.  
 Agness Machaj, B.S., M.S.  
 Savanie Maithripala, B.S., M.S.

## PREIMPLANTATION CYTOGENETICS

Anver Kuliev ,MD, PhD  
 Yuri Ilkevitch, PhD  
 Zev Zlatopolsky M.S.

## ASSISTED REPRODUCTION TECHNOLOGY AND MICROMANIPULATION

Svetlana Lerner M.S., Natalie Ilkevitch M.S.  
 Yury Ilkevich, PhD; Nathan Katz, PhD





### PGD FOR TALASSEMIS MUTATIONS K17X & HBE COMBINED WITH HLA GENOTYPING AND ANEUPLOIDY TESTING by aCGH

