Tehran University of Medical Sciences

Medical Genetic Services as a Health Tourism Attraction

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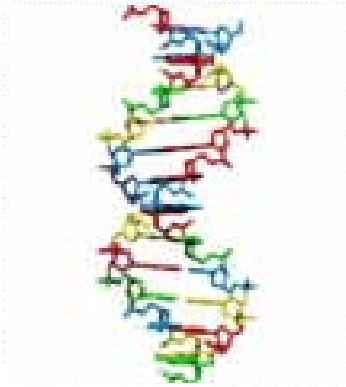


ربنا هب لنا من ازواجنا و ذريتنا قره اعين و جعلنا للمتقين اماما

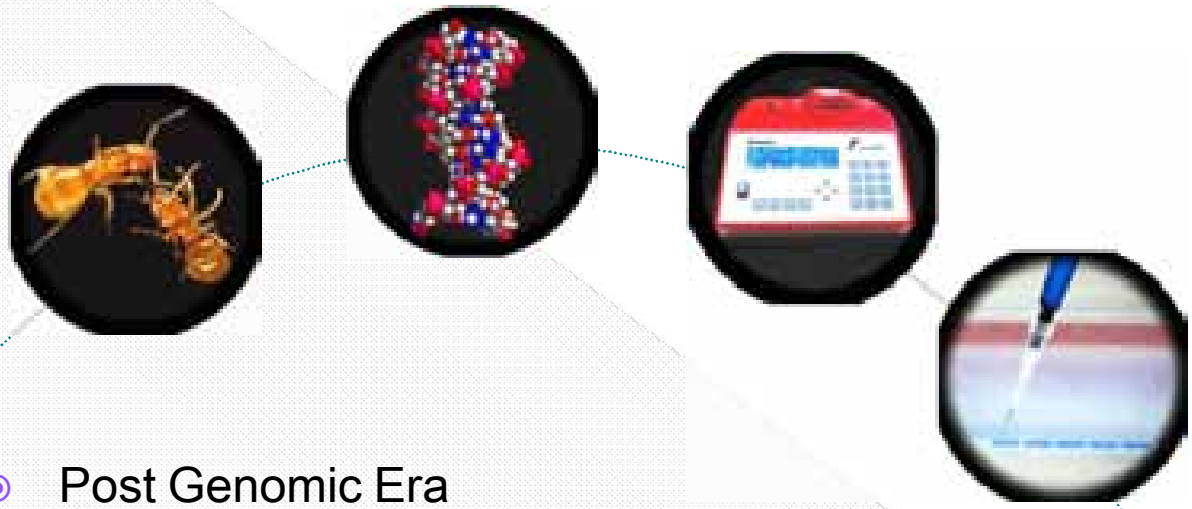
IRAN HEALTH TOURISM GUIDE
Your Health We care

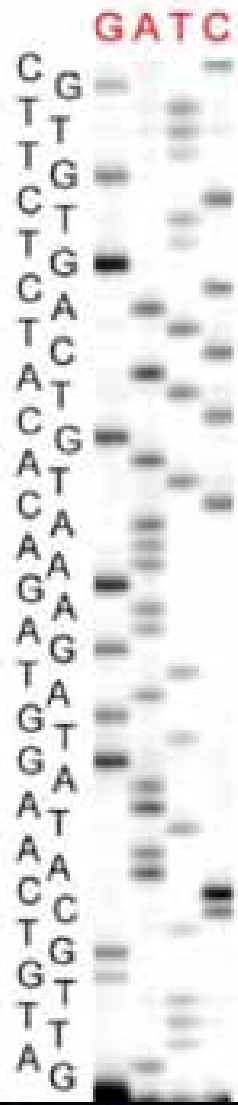
➢Iran Health Tourism Attractions

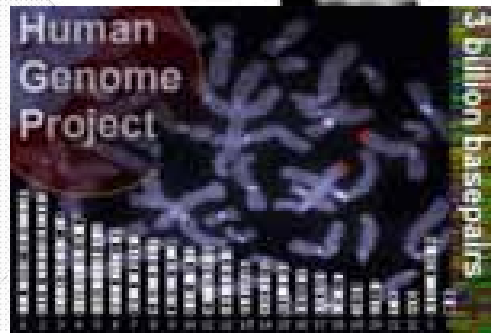
different fields;

- **Cardiac surgery**
- **Plastic surgery**
- **Ophthalmology**
- **Infertility**
- **Organ transplantation**
- **Medical Genetics**
- **…**

The DNA revolution



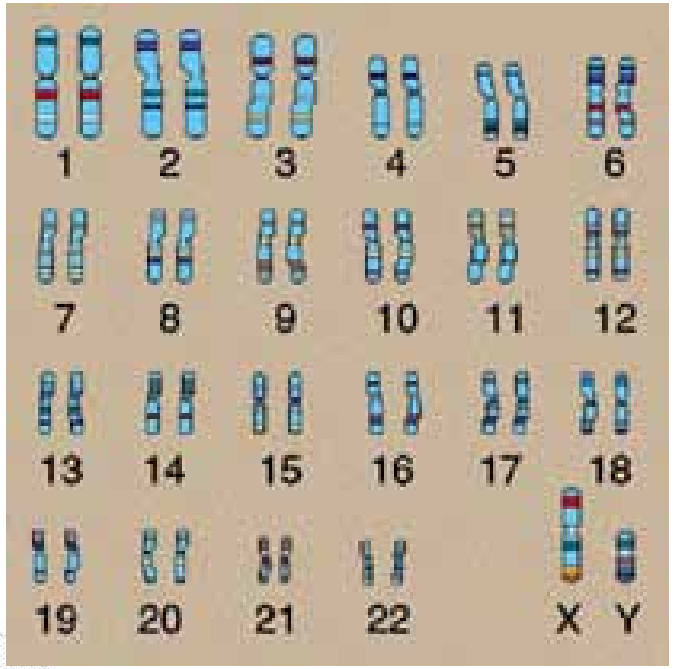




- Post Genomic Era
- Only recently detailed molecular study become possible
- Amplification of DNA up to detectable levels has become possible using PCR techniques
- Cloning and sequencing of various genes allows molecular studies, ...

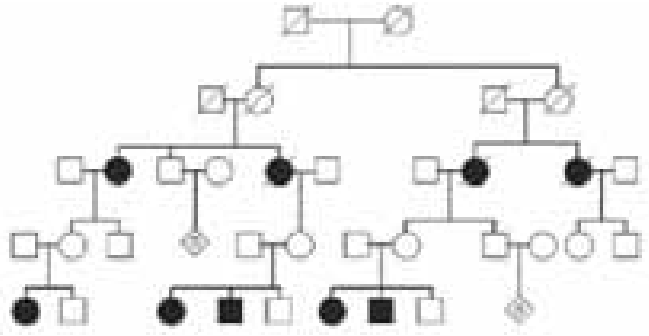
Genetic Determinants of Disease

- **Chromosomal abnormalities**
  - Loss or gain of chromosomes
  - Loss or gain of chromosomal regions
  - Chromosomal translocation



- **Single gene disorders**
  - Coding regions – loss, gain, or alteration of protein function
  - Regulatory regions – increased, decreased or inappropriate expression

- **Multifactorial disorders**
  - Gene-Environment interactions

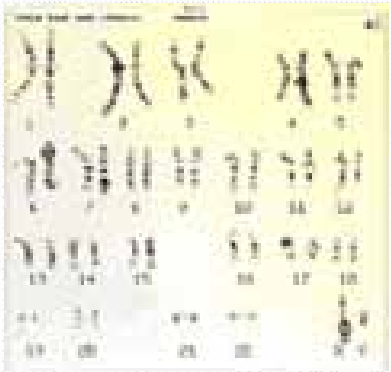


مشاوره ژنتیک دقیق و مشروح، آزمایشات کروموزومی و مولکولی

ابزارهای رویکرد ژنتیک در بیماری ها

Detailed Genetic Counseling, Molecular and cytogenetic studies

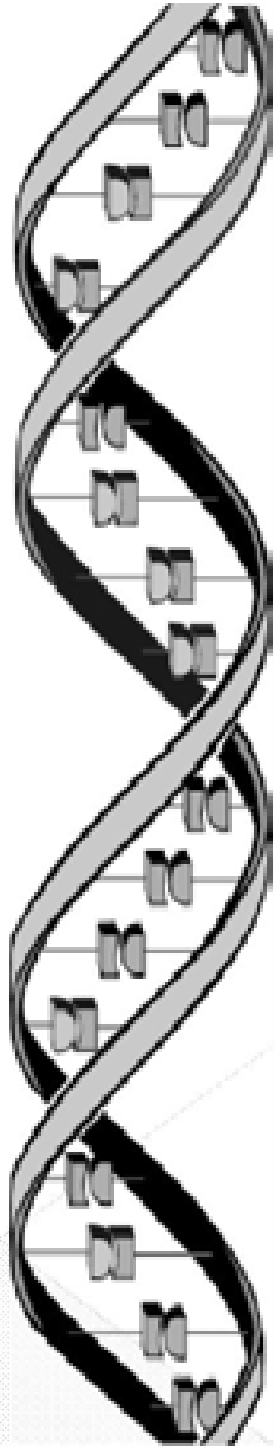
Tools for medical genetic approach



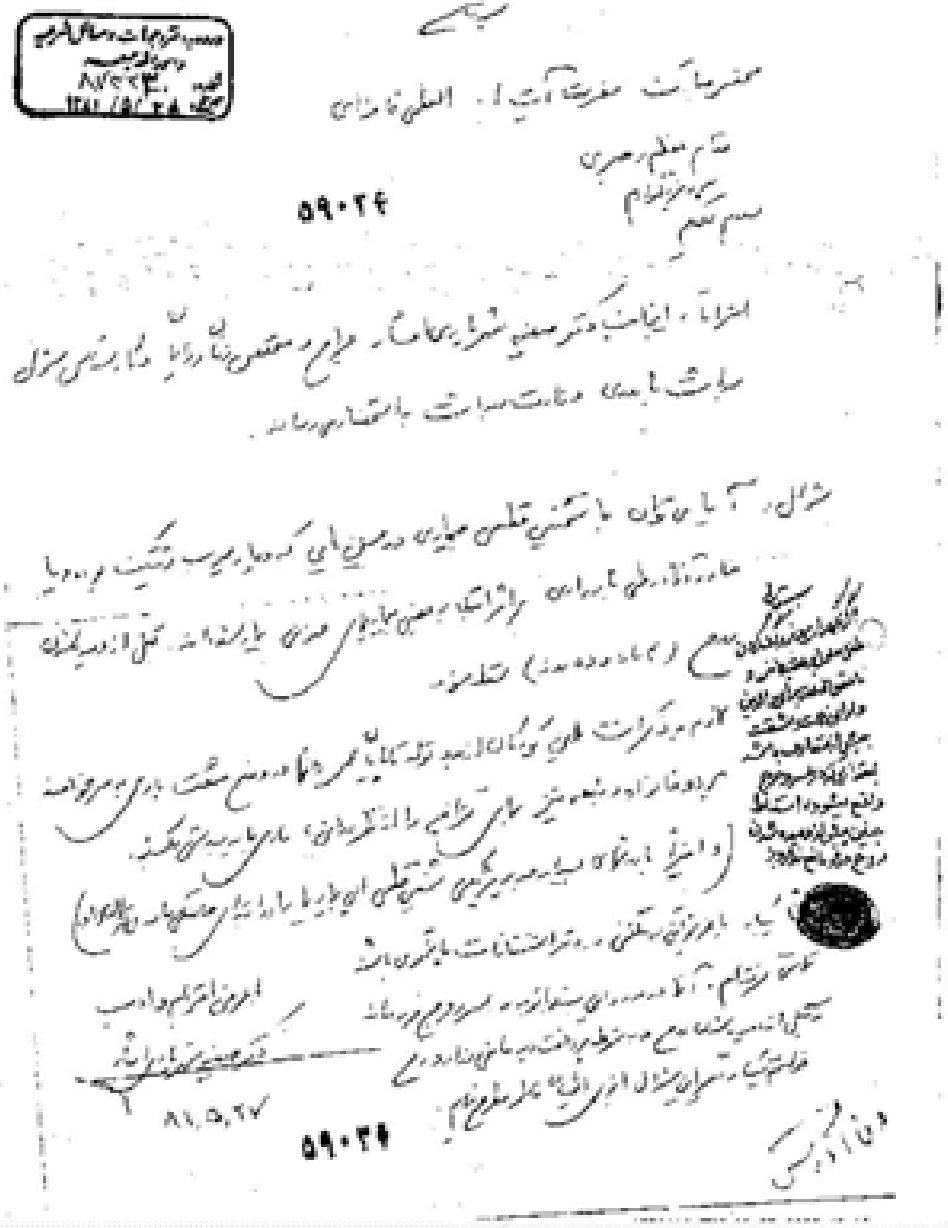
Case detail;
Genetic Counseling

Cytogenetic study; Karyotyping
Molecular study;
SSCP, PCR/ RFLP, paternity test

PND, PGD



Fatwa



act of “Therapeutic Abortion”

Approved in 2005
by Parliament and Guardian Council;

“TA is permissible with definite diagnosis of 3 specialist clinicians and approval of legal medicine due to fetus disorders which is a big problem for mother based on retardation or anomaly and or mother disorders threatening her life before ensoulment (4 months of gestation) with consent of mother and there is no penalty for physician performing such service.
Violators of this act would be punished based on Islamic punishment law”.

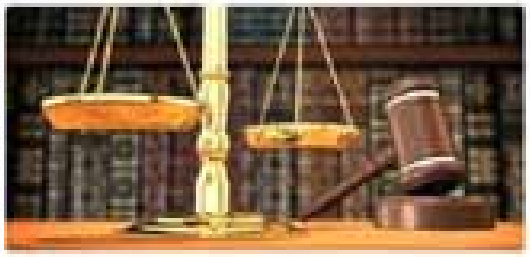
قانون سقط درمانی

ماده واحده – سقط درمانی با تشخیص قطعی سه پزشک متخصص و تایید پزشکی قانونی مبنی بر بیماری جنین که به علت عقب افتادگی یا ناقص الخلقه بودن موجب حرج مادر است و یا بیماری مادر که با تهدید جانی مادر توام باشد قبل از ولوج روح (چهار ماه) با رضایت زن مجاز می باشد و مجازات و مسئولیتی متوجه پزشک مباشر نخواهد بود.

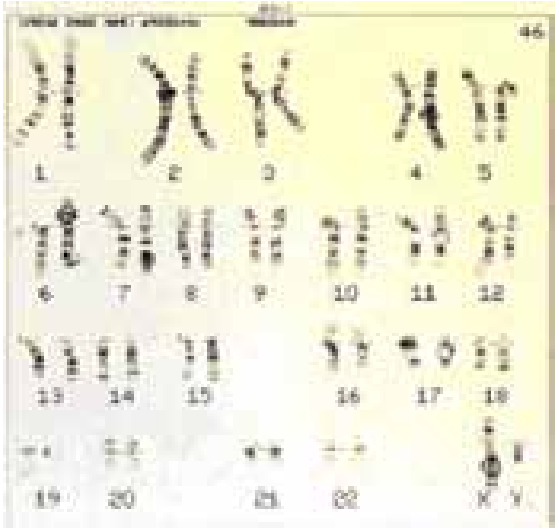
متخلفین از اجرای مفاد این قانون به مجازات های مقرر در قانون مجازات اسلامی محکوم خواهند شد .

قانون مصوب مجلس شورای اسلامی ۱۳۸۴/۳/۱۰

تایید شورای نگهبان ۱۳۸۴/۳/۲۵



Populations at Risk for Chromosome Errors



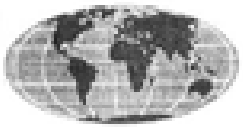
- spontaneous recurrent abortion
- sexually ambiguous
- infertile males or females
- newborns with multiple congenital anomalies
- Growth, development or mentally retarded

Indications for Prenatal diagnosis (PND)

- Advanced maternal age
- Child with chromosomal abnormality
- Either partner is carrier of chromosomal aberration
- History of known hereditary disorder for which detection is possible and has been established in family
- Unusual maternal screening markers
- Exposure to teratogen agent

Prenatal Diagnosis Techniques

- Visualization: Sonography
  Radiology
- Fetal Samples: Amniocentesis (13-20 wk.)
  Chorionic villi sampling (10-12 wk.)
- Fetal Screening:
  3M: αFP, β hcG, estriol 15-20 Wks
  1st trimester: NT, PAPP, β hcG



continent

cell nucleus

country

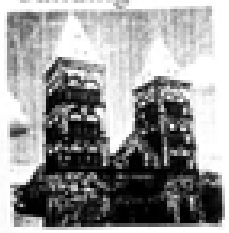
chromosome

city

chromosome band

building

gene



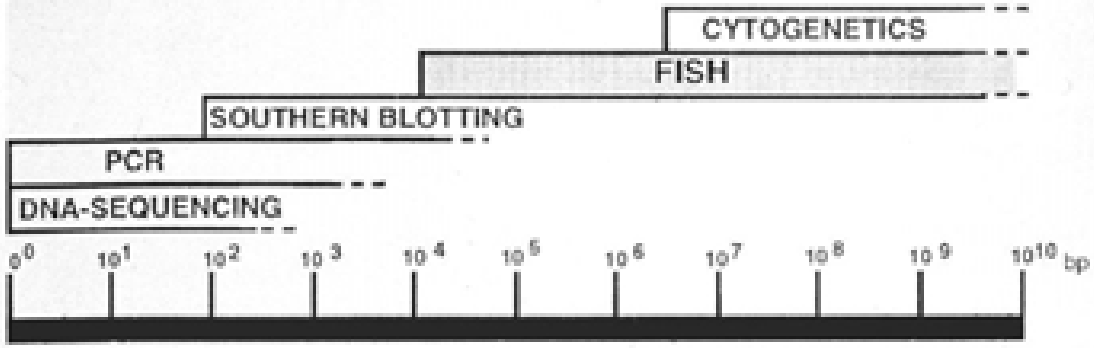
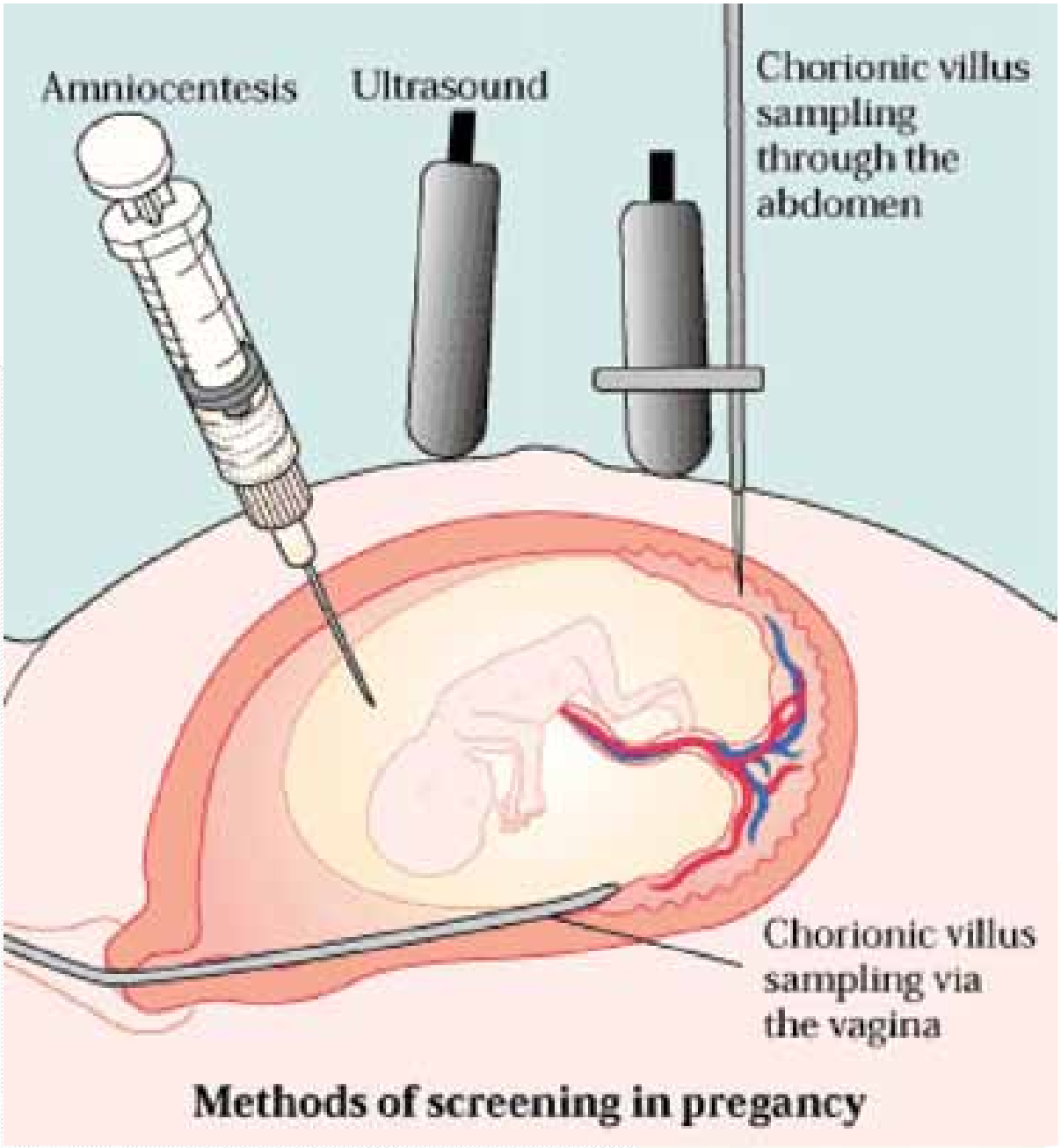
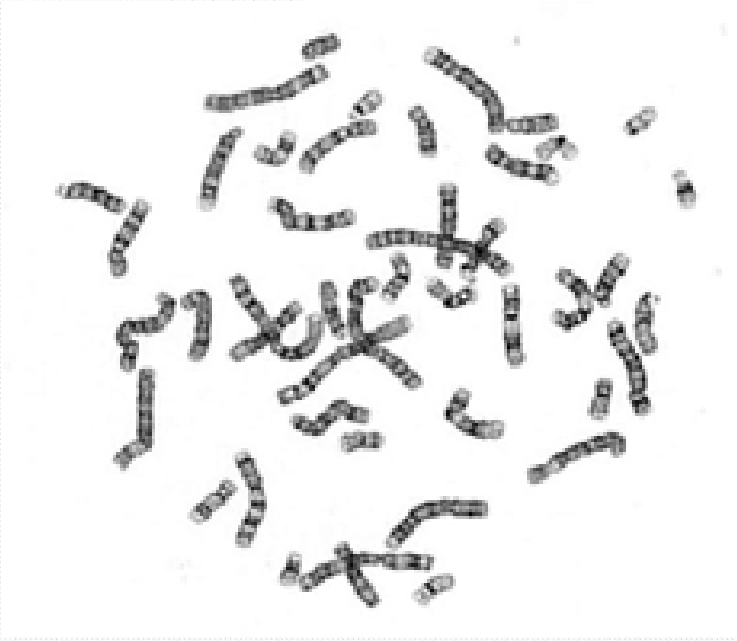


Fig. 6. The power of resolution using standard genetic techniques for detection of mutations.

Prenatal diagnosis (PND)

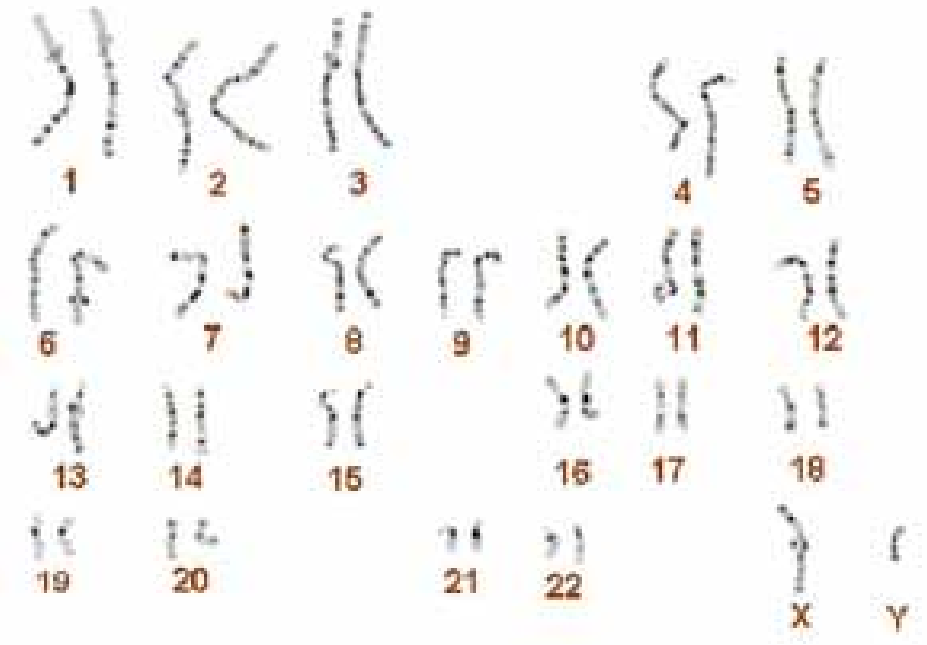


Examining chromosomes

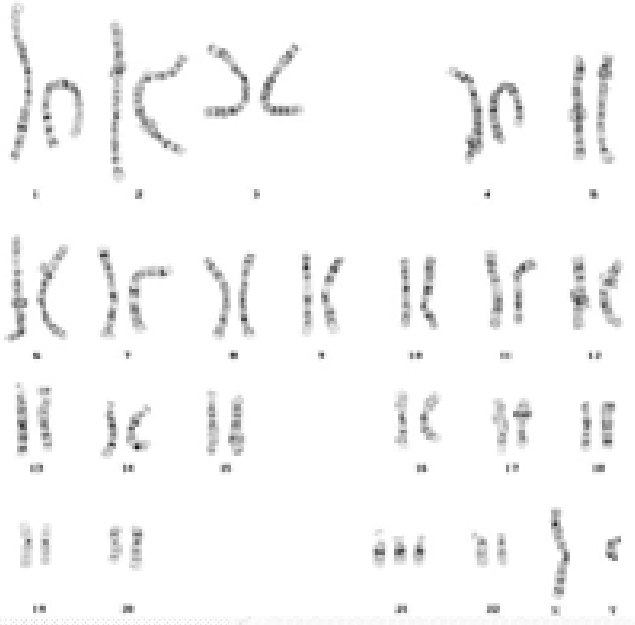


Metaphase spread

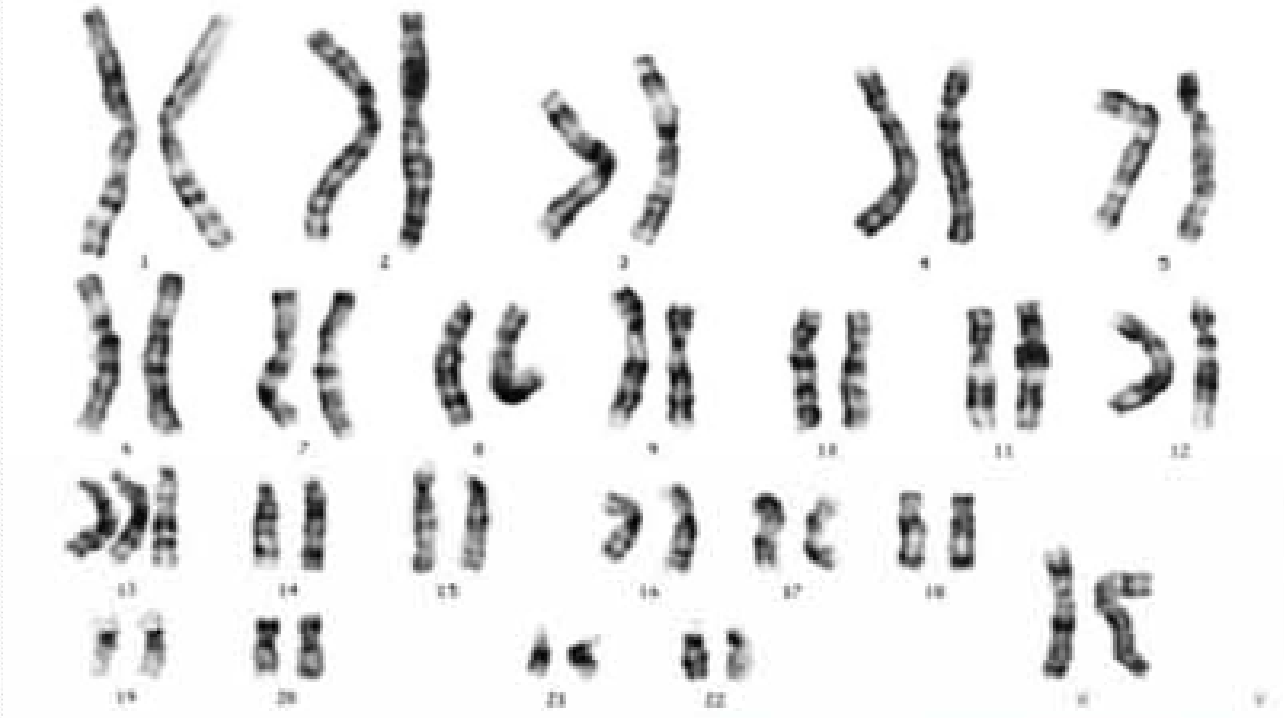
karyotype



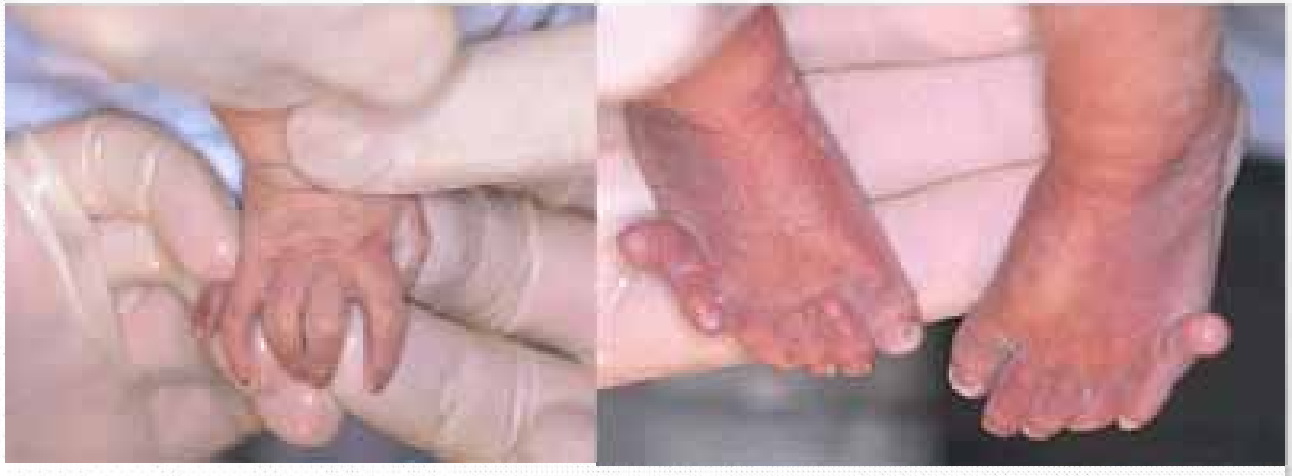
Trisomy 21 (Down syndrom)

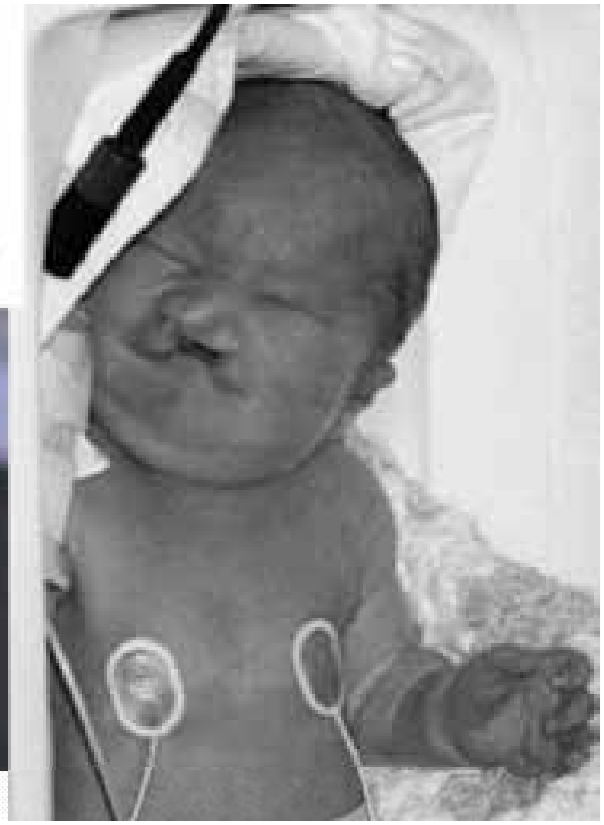


Trisomy 13

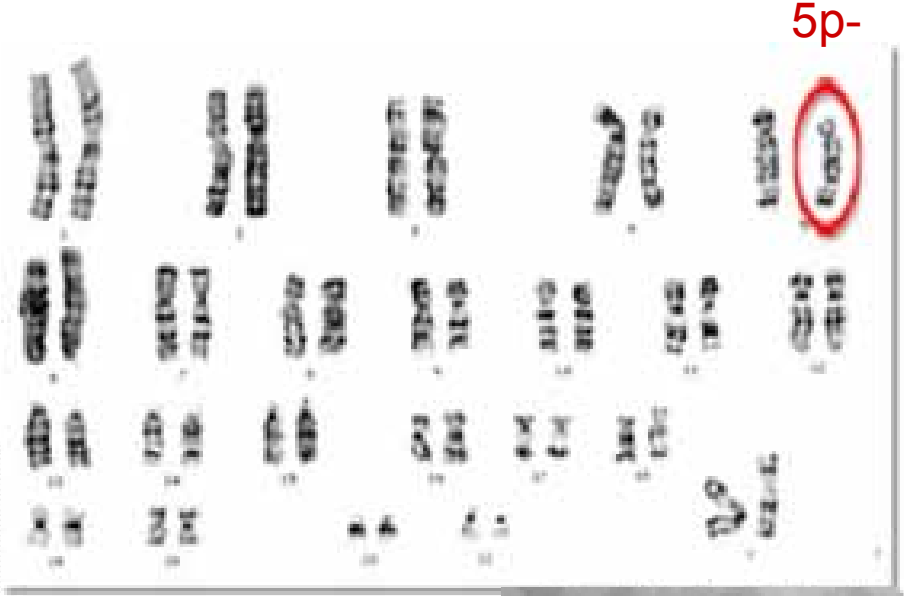


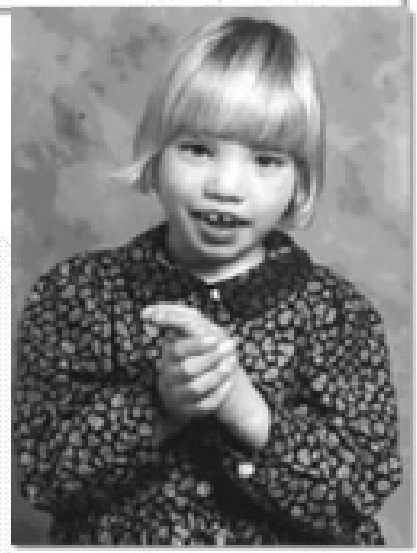
- Cleft lip/palate
- Polydactyly (postaxial)
- Microcephaly
- Omphalocele
- Scalp defect





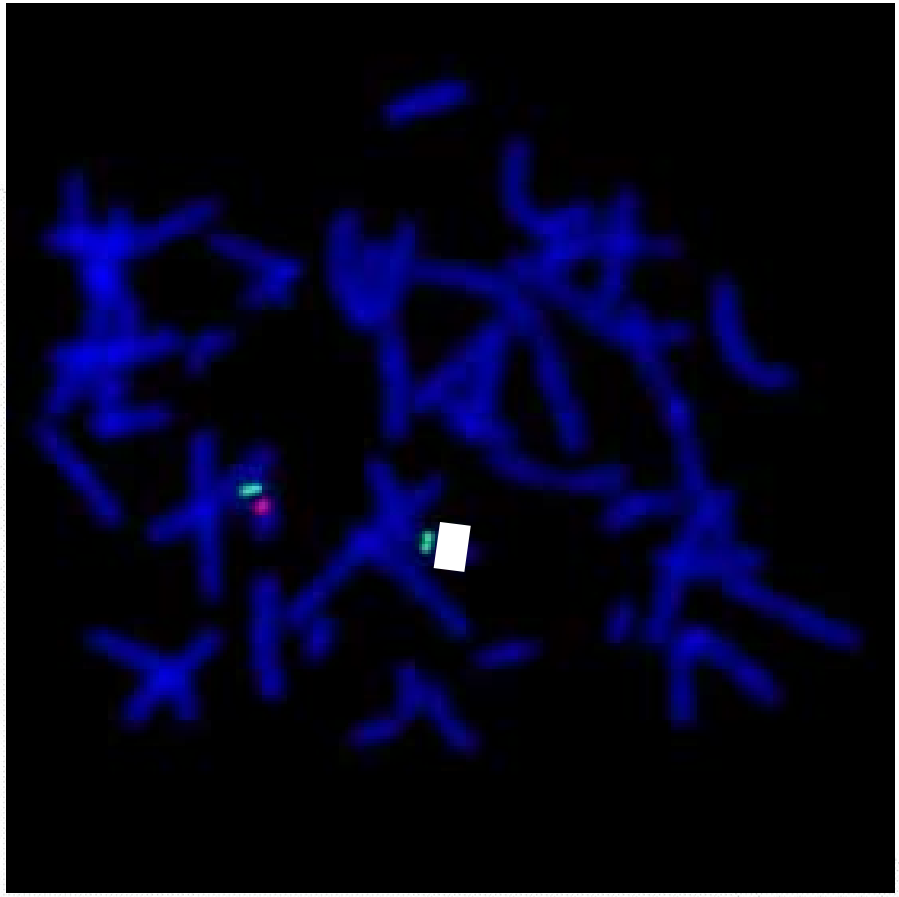
Cri du chat syndrome





Cat cry, hypertelorism, epicantus, mental retardation

DiGeorge syndrome



C: cardiac
A: anomaly
T: thymus
C: cleft lip
H: hypocalcemi

CATCH 22

Emerging Technologies
Preimplantation Genetic Diagnosis (PGD)

- Use of molecular or cytogenetic techniques during in vitro fertilization (IVF) to select embryos free of a specific genetic condition for transfer to the uterus.
- This technology was developed to offer an option to couples at significant risk for a specific genetic disorder but who are opposed to abortion
- is performed on a single cell from a 6-8 cell blastomere or on a polar body after IVF .

PGD

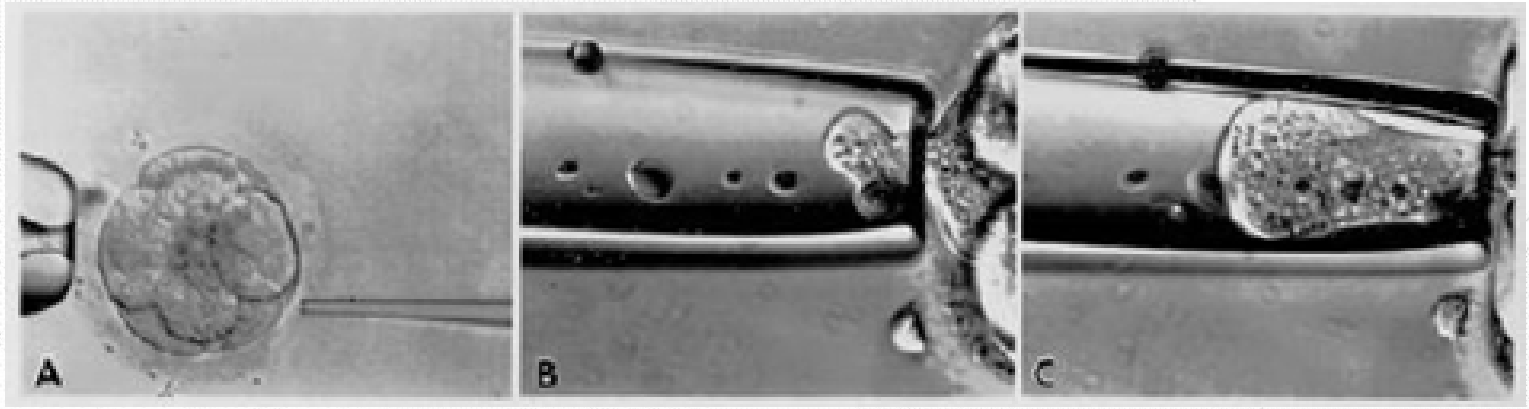
Timeframe: 3 days post-insemination

embryos obtained through in vitro fertilization

one or two cells are removed from the 6-10 cell blastomere

cells are analysed by FISH (for chromosomal abnormalities) or PCR (for mutation analysis)

selected embryos are transferred at the end of day 3



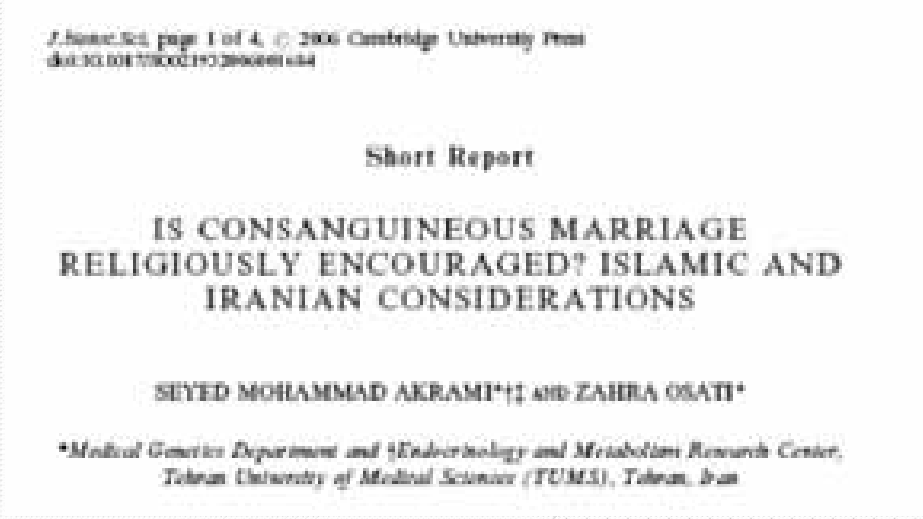
different aspects of consanguinity

1) Problem?

AR disorders
Congenital anomaly

2) Preferred?

a) Strengths
b) Keep the wealth within family
c) Support women from men family side & vice versa



J. Biosoc. Sci. page 1 of 4. © 2006 Cambridge University Press

Short Report

IS CONSANGUINEOUS MARRIAGE RELIGIOUSLY ENCOURAGED? ISLAMIC AND IRANIAN CONSIDERATIONS

SEYED MOHAMMAD AKRAMI*†‡ AND ZAHRA OSATI*

*Medical Genetics Department and †Endocrinology and Metabolism Research Center, Tehran University of Medical Sciences (TUMS), Tehran, Iran

Future of genetic disorders in our region?

J Genet Couns (2009) 18:52–60
DOI 10.1007/s10897-008-9181-y

ORIGINAL RESEARCH

Is There a Significant Trend in Prevalence of Consanguineous Marriage in Tehran? A Review of Three Generations

Seyed Mohammad Akrami · Vahideh Mostajeri · Somaieh Rashid Shomali · Ramin Ebrahimi · Bagher Larijani

Journal of Pediatric Genetics 1 (2012) 205–210
DOI 10.3233/PGE-12014
IOS Press

Review Article

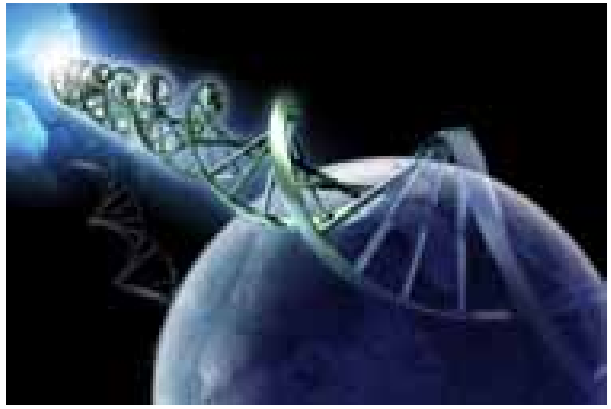
Genetics of consanguineous marriage: Impact and importance of counseling

Seyed Mohammad Akrami*
Department of Medical Genetics, Tehran University of Medical Sciences, Tehran, Iran

Table 1
cousin marriage in some of Middle East countries

Countries	Percentages	Reference no
Iraq	29	15
Kuwait	39	16
Saudi Arabia	26	17
Oman	24	18
Jordan	32	19
Turkey	22	20
Afghanistan	46	27
Syria	35	28

PhD in Medical Genetics in 3 universities



Tehran University of Medical Sciences

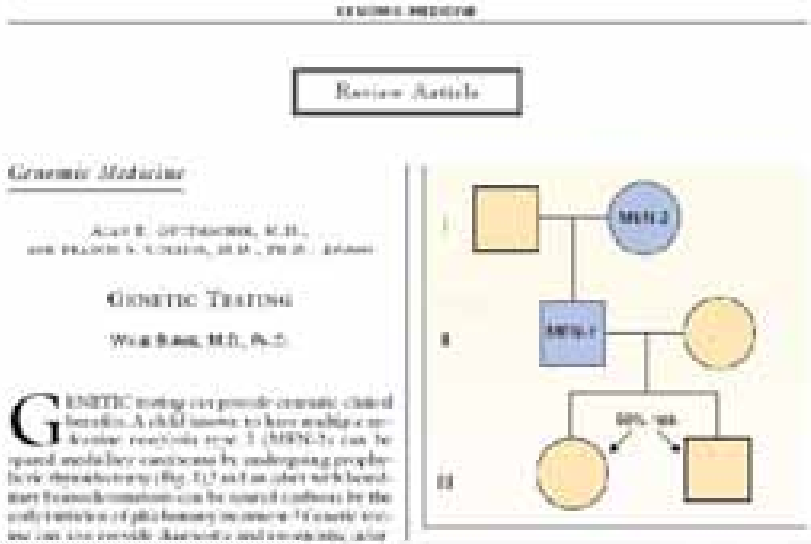
Shahid Beheshti University of Medical Sciences

University of Social Welfare And Rehabilitation Sciences

MSc in Human Genetics in 13 universities

Further reading

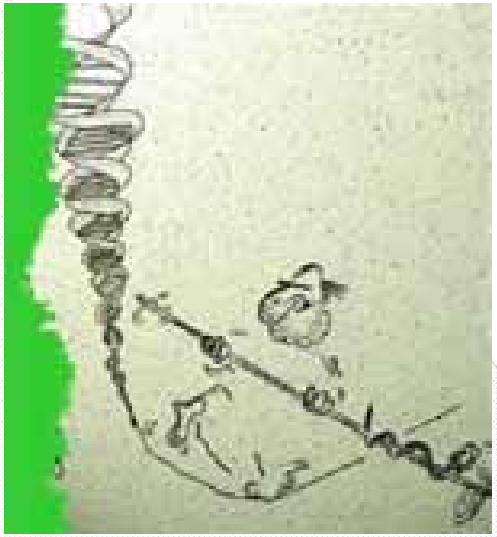
N Engl J Med. 347(23)
DEC 2002



Review Article

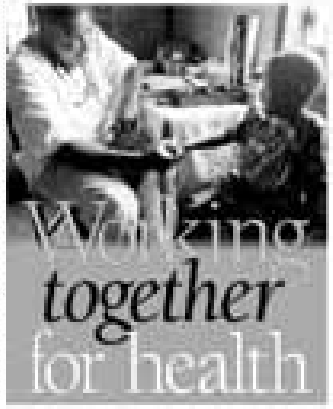
Genomic Medicine

GENETIC TESTING



Thank you for your kind attention

با تشکر از بذل توجه شما



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