



Availability of Control Materials for Genetic Testing in Europe

David Gancberg

*Institute for Reference Materials and Measurements (IRMM)
Geel, Belgium*

<http://www.irmm.jrc.be>
<http://www.jrc.cec.eu.int>



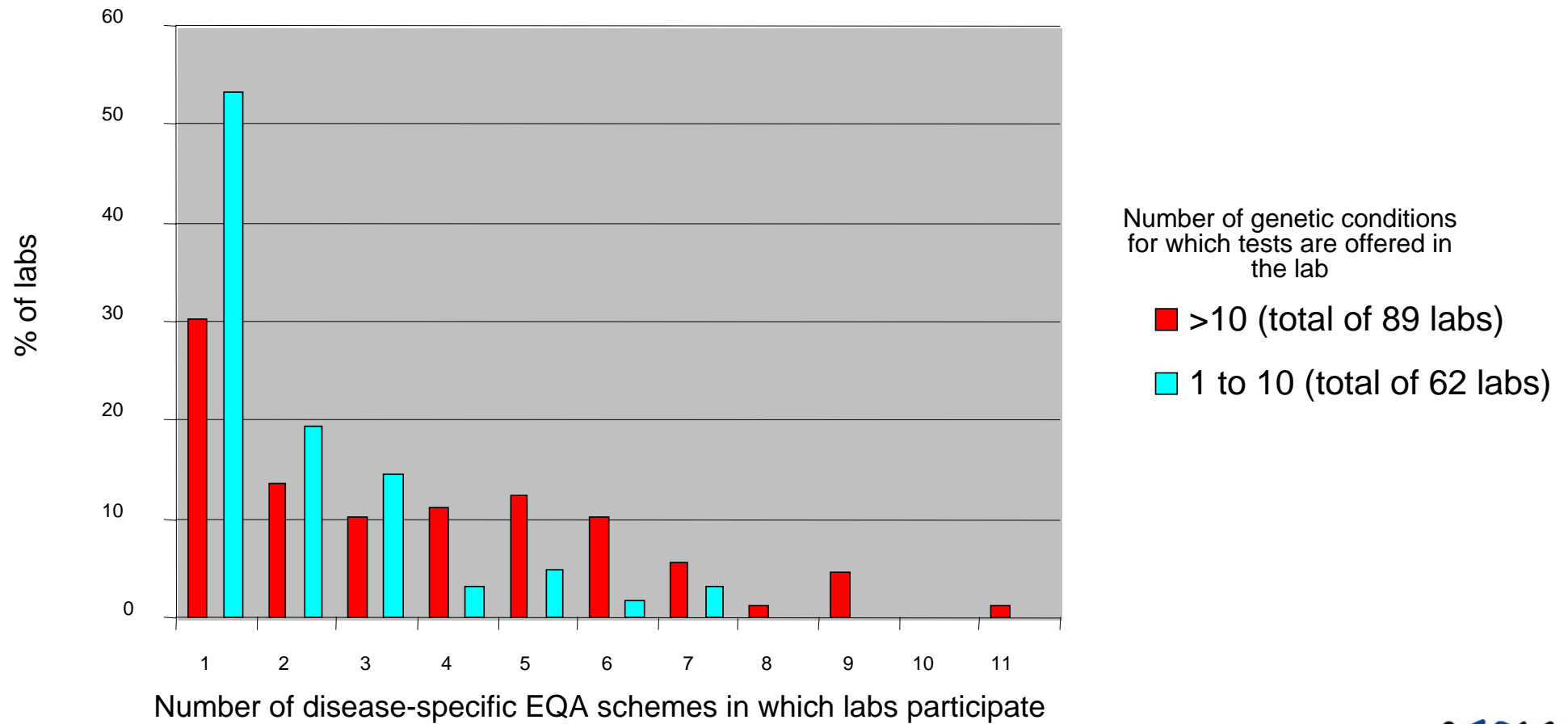


Current Weaknesses identified

1. Lack of **quality assurance**
2. Need for **networking**
3. Lack of **certified reference materials**
4. Need for normative and **regulatory framework** application
5. Impact of **patents**

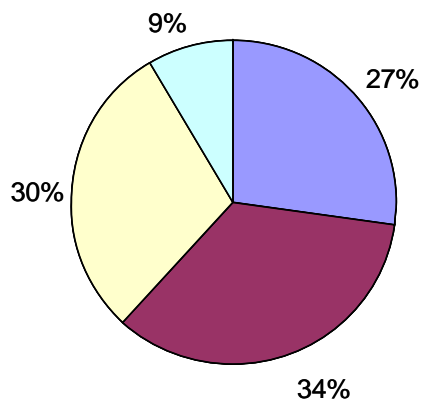
1. Lack of quality assurance

Participation in EQA schemes of different diseases during the years 1998-2003



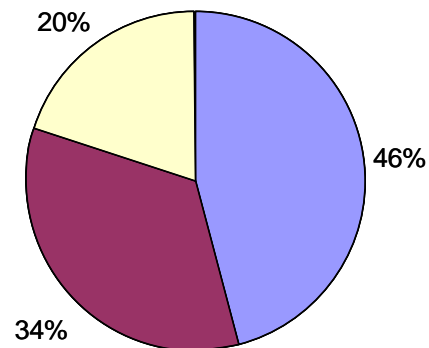
1. Lack of quality assurance

QA implementation



- no QA system
- national standard
- international standard
- standard not specified

Lab inspection



- no official inspection related to QA
- inspected by national body
- inspected by internationally recognised body

Need for harmonisation of EQA schemes bringing together existing schemes and for reinforced accreditation (according to ISO 17025/ ISO15189)



2. Networking/Collaboration

- **CRMGEN project**
- **EU Network of Excellence EUROAGENTEST**
(Unit 1: Quality Management and Accreditation/certification of genetic testing)
- **IFCC, WHO**

3. Lack of Certified Reference Materials

NIST

- SRM 2390 - DNA profiling
- SRM 2391a - PCR-based DNA profiling
- SRM 2392 - PCR and sequencing of mtDNA
- SRM 2394 - Heteroplasmic mitochondrial DNA
- SRM 2395 - Human Y DNA profiling
- SRM 2399 - Fragile X triplet repeat

JRC-IRMM

IRMM/IFCC-490, IRMM/IFCC-491, IRMM/IFCC-492 for G20210A Factor II mutation under final characterisation

WHO

- Factor V Leiden R506Q (Nov 2004)
- Factor II G20210A mutation
- Fragile X syndrome (CGG triplet expansion)

DNA-based candidate RMs evaluation (CRMGEN)

<u>Disorder/gene</u>	<u>RMs to be developed</u>
Cystic Fibrosis/CFTR	ΔF508, G542X, G551D, N1303K
Haemochromatosis/ HFE	C282Y, H63D
Fragile X syndrome/FMR1	Normal, premutation, expansion
Sickle cell anaemia, HBB	HbS
Beta thalassaemia, HBB	Codon 39 (C->T), IVSI-110 (G->A)
Factor V Defect/FV	R506Q, Factor V "Leiden"
Huntington Disease/HD	CAG Expansion
Hereditary non-polyposis colon cancer/ HMLH1-2	Representative nonsense mutations
Spinocerebellar ataxias/SCA1-7	CAG Expansions
Duchenne Musc.Dystr. /DMD	Deletions, duplications

Ethical issues in sourcing raw materials from human donors

Issue related to the choice and coverage of target populations





4. Need for normative and regulatory framework application

- Lack of accreditation (ISO 17025/ ISO15189)
- Laboratory practice harmonisation (methods validation)
- Application/Interpretation of the IVD directive

The IVD Directive of the EC (98/79/EC) (12/2003), requires that “ The traceability of values assigned to calibrators and/or control materials must be assured through available reference measurement procedures and/or available reference materials of a higher order” (Annex I A.3).

5. Impact of patents

- On development of control materials
- On development of home-brew methods
- Kit control materials