



Annual Report for the Year 2010

Cytogenetic European Quality Assessment

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Contents

Scheme Report	Page Number
1. Introduction to the Scheme	3
2. CEQA Structure	3
3. Changes to the Scheme in 2010	4
4. EQAs offered and Scheme Participation	5
5. EQA Submissions	5
6. Assessment	5
7. Performance	6
8. Appeals	7
9. Changes to the Scheme for 2011	8
10. Scheme Finances	8
11. Participants' Meeting	8
Appendix	
CEQA Scheme Personnel	9
CEQA Steering Committee	9
ESHG Quality Committee	9
CEQA assessors	10

1. Introduction

Cytogenetic European Quality Assessment (CEQA) was set up in 2005 by a Forum of European EQA Providers as part of the Eurogentest Network of Excellence to address the lack of a pan European EQA Scheme and to help harmonise existing national schemes.

CEQA operates through a password-protected website containing clinical cytogenetic cases for analysis. Participating laboratories are provided with clinical information, technical details, metaphase and/or FISH images as well as DNA samples (Microarray/ArrayCGH pilot EQA) from selected diagnostic cases to analyse and report. Results can be submitted in eleven European languages. Participants receive an individual laboratory report and summary letter for each EQA. The summary letter includes a summary of scores to allow the laboratory to benchmark their performance against the other participants.

In the past 5 years the Scheme has grown from offering a Constitutional pilot EQA (one prenatal and one postnatal case) to a limited number of laboratories into an internationally recognised scheme offering four full EQAs as well as three pilot EQAs (for a full list of EQAs offered in 2010 see Section 3)

In 2010 Laboratory registrations rose by 20% to 243 laboratories from 40 countries with a considerable number of laboratories taking part from Spain, Italy, France, Germany, the Czech Republic and the Netherlands. CEQA is now the largest Cytogenetic EQA Scheme in Europe.

Registration Increase 2006 - 2010

	2006	2007	2008	2009	2010
New labs	19	38	71	75	42
Total Registered labs	19	57	128	203	243
Countries	18	23	28	36	40

2. CEQA Structure

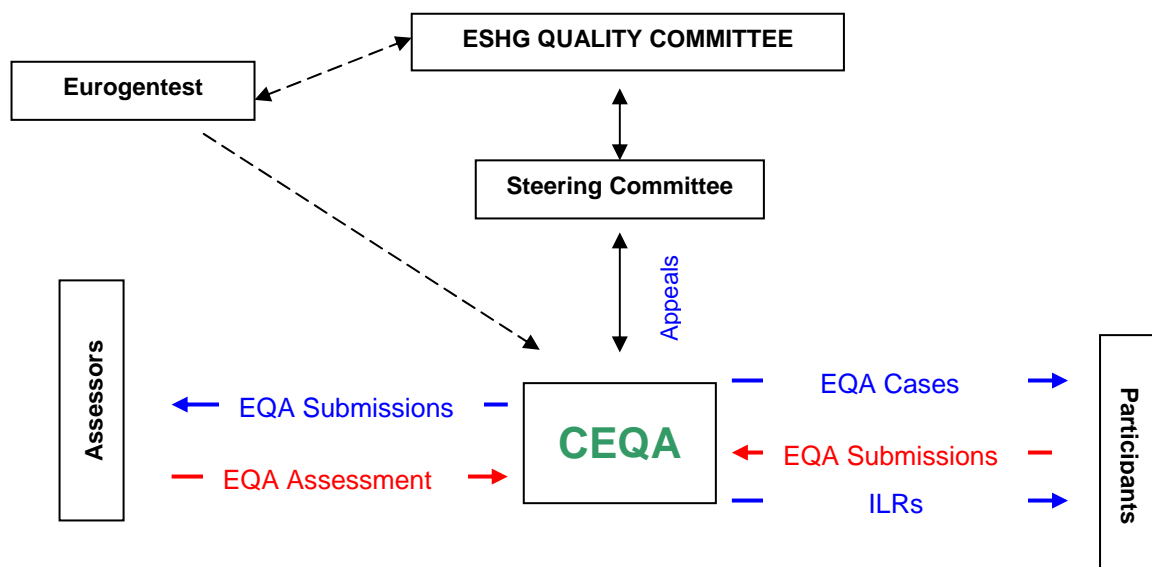
The CEQA Scheme Office is based at the John Radcliffe Hospital in Oxford, UK. A Scheme Co-ordinator and a Quality Manager oversee the day to day running of the Scheme.

The Scheme Co-ordinator reports to a Steering Committee consisting of European EQA Scheme Organisers (see Appendix A) and other selected experts in the field. The Steering Committee has set the poor performance criteria and deals with any appeals made by participants. Steering Committee appointments are for four years but can be extended for a further four years.

The European Society of Human Genetics (ESHG) Quality Committee (see Appendix A) provides a governance structure for pan European EQA Schemes to report to. The committee reviews the annual management reports of the EQA schemes and will also advise on persistent poor performance.

Assessment of the participants' returns was undertaken by a panel of cytogeneticists or, for Preimplantation Genetic Diagnosis (PGD) only, PGD scientists with a wide range of experience (see Appendix A). A specialist group of assessors was assigned to each EQA. The Microarray/ArrayCGH EQA pilot EQA is run in collaboration with the European Molecular Genetics Quality Network (EMQN). The full panel of assessors was only consulted in cases where particular problems required additional scrutiny.

CEQA Organisational Structure



3. Changes to the Scheme in 2010

Late in 2009 CEQA consulted its' participants regarding expanding the EQA repertoire. As a result of the feedback received, the Scheme introduced a CVS pilot online EQA in 2010. Interest in this pilot EQA was considerable with 33 laboratories participating.

4. EQAs offered and Scheme Participation

In 2010, CEQA offered the following EQA schemes.

- Amniotic Fluid
- Postnatal Blood
- Preimplantation Genetic Diagnosis (PGD) - Blastomere
- Haematology-Oncology (AML and LPD)
- Microarray/ArrayCGH (limited participation pilot EQA in collaboration with EMQN)
- CVS pilot EQA
- Preimplantation Genetic Diagnosis (PGD) – Polar Body pilot EQA

Each full EQA consists of two cases. pilot EQAs usually consist of one case.

Participation in the 2010 Haematology-Oncology EQA has risen by 41% over last year, with participation in the other EQAs remaining more or less static.

Participation Increase 2006 - 2010

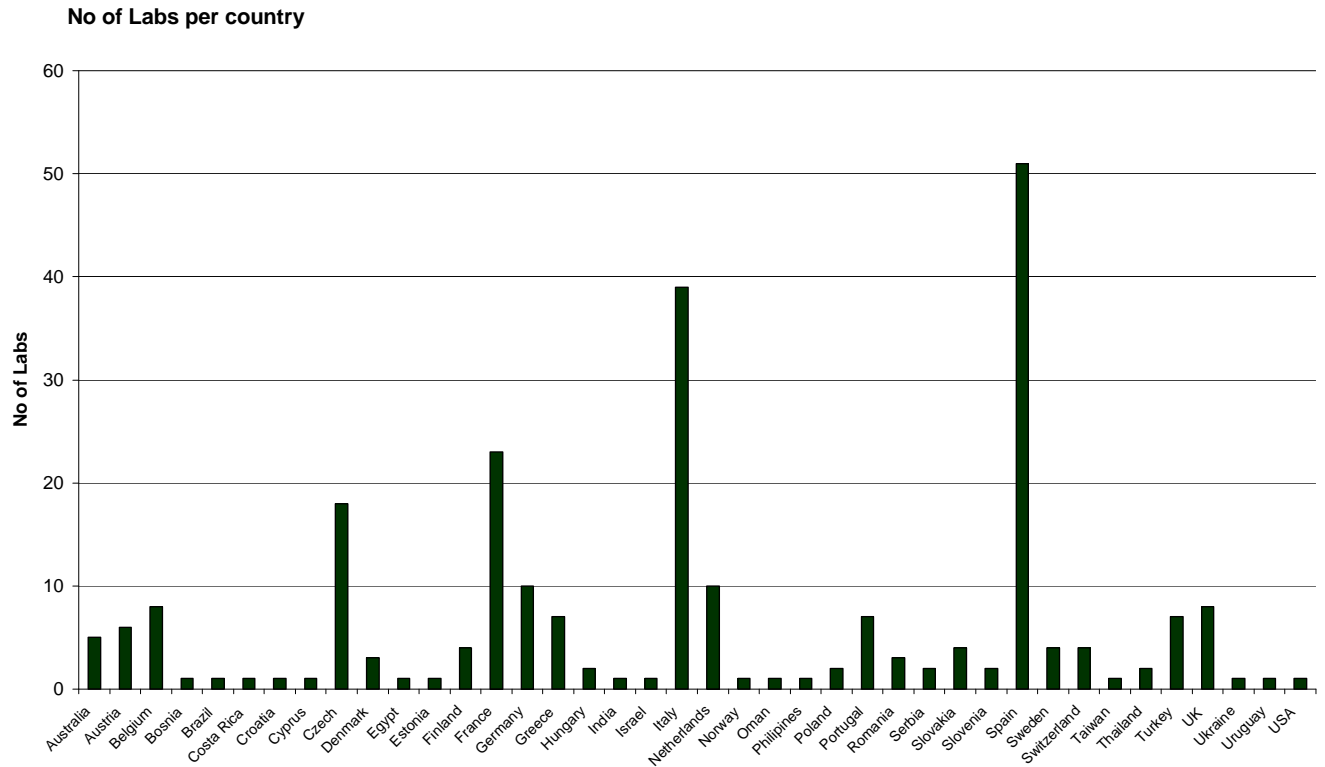
Participation	2006	2007	2008	2009	2010
Participations Total	16	51	187	248	317
Participations AF	16*	51*	54	77	72
Participations Blood	16*	51*	57	77	78
Participations Haematology- Oncology	na	na	48	46	64
Participations Blastomere	na	na	28	33	29
Participations Microarray/Array CGH	na	na	Na	15**	34
Participation PGD Polar Body pilot	na	na	Na	na	7
Participation CVS pilot	na	na	Na	na	33

Key: * = Constitutional EQA consisting of one AF case and Postnatal Blood case
 ** -= refers to CEQA participation only (not EMQN)
 na = not applicable

4. EQA Submissions

In 2010 over 97% of all laboratories enrolled in the EQAs submitted results. Participants submit their reports online. For the PGD EQA there are two parts to the EQA with a “work-up” submission and a PGD report submission.

EQA is considered an ongoing process and therefore continuous participation is important as an external validation of the quality of the diagnostic service offered to the patient.



5. Scheme Compliance

It is an important aspect of EQA that all reports/documents are anonymised and do not include

- Laboratory name, address or telephone number
- Clinician’s/cytogeneticist’s name/details

The importance of this is stressed in the Participants’ Manual and in the EQA instructions. The number of submissions not anonymised has declined noticeably in 2010 compared to previous years.

Scheme	Amniotic Fluid	Postnatal Blood	PGD Blastomere	Haematology-oncology	CVS pilot	PGD PB pilot	Array CGH pilot
Not anonymised	1	5	0	2	3	0	2

6. Assessment

CEQA sets out to examine the overall service provided to the patient, not just the analytical ability of the laboratory. If the laboratory itself does not routinely offer interpretive reports, it is expected that the Clinical Geneticist, or Clinical Haematologist making the final interpretation is involved in the EQA submission. The following points were considered when marking the returns:

- The accuracy of the analysis;
- Whether appropriate cytogenetic tests were undertaken, including any additional studies necessary to make a thorough interpretation of the findings;
- The interpretation of the significance of the result in relation to the clinical summary given on the request card (in the case of PGD, whether or not the embryo should be transferred);
- The accuracy, clarity and clinical relevance of the report issued to the referring clinician, with reference to the European Cytogenetic Guidelines (www.biologia.uniba.it/eca/) and the European Society of Human Reproduction of Embryology (ESHRE) guidelines.

Scoring System for 2010

Each case has a maximum of 9 points available. Points or half points are deducted where the assessors identify omissions or inaccuracies. Detailed scoring criteria are published in the summary letters.

Cost of analysis

The CEQA website is able to calculate a cost based on the number of tests selected/viewed. Therefore, it is possible to draw attention to inappropriate testing and inefficient use of laboratory time. This cost analysis is not applicable to PGD and array EQAs.

Cost allocation

Sample/technique	Website Cost	Comments
Blood Analysis	10	
Amniotic Fluid Analysis	13	
CVS Analysis	14	
CVS +direct Analysis	21	
Solid Tissue Analysis	14	
Haematology Analysis	25	
Oncology Analysis	30	
Simple FISH	7	Microdeletion, wcp
Intermediate FISH	30	Octochrome
Complex FISH	50	Telomere screening, M-FISH
Aneuploidy screening (FISH)	11	
Breakage syndromes	15	
MLPA for telomeres	50	
QF-PCR/MLPA (aneuploidy)	13	

Participants are encouraged to assess their laboratory's efficiency by comparison of their own usage of tests against the data histograms provided in the EQA summary letters.

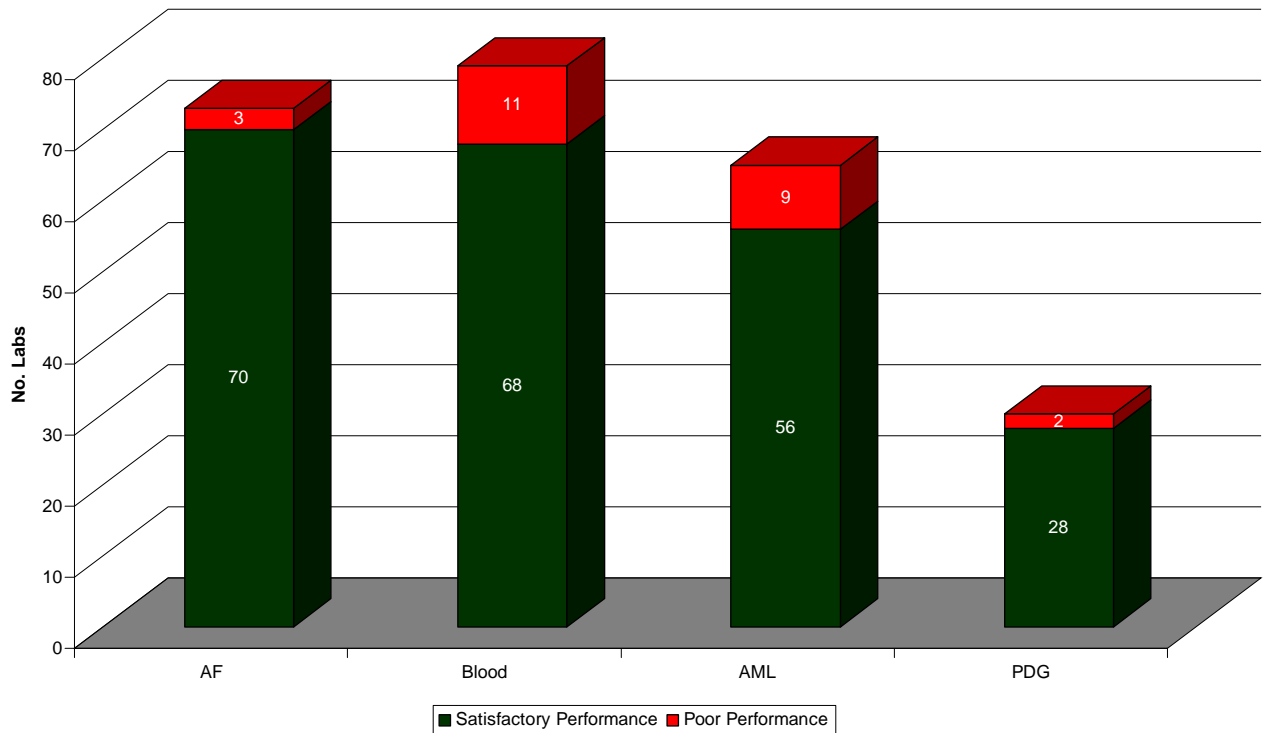
7. Performance

There are only two categories of performance in any EQA: **satisfactory** and **poor**. Satisfactory performance is defined as the standard which should be achieved by all laboratories. The assessors and Steering Committee were pleased to see the majority of participants demonstrating a competent approach to the EQAs, and many laboratories achieved high marks in their submissions (see figure below).

A **critical error**, defined as an error or omission that would have significant disadvantageous clinical consequences for the patient, automatically incurs a poor performance. Any critical error is given a zero score in the relevant category in which the error occurred, and in some instances leads to zero or low scores in other categories: for example, it is not possible to give a score for interpretive accuracy if the abnormality was not detected in the first place.

Registration, participation and performance certificates can be downloaded from the CEQA website for 2010. (Refer to the CEQA User Manual).

2010 EQA Participation split by Performance



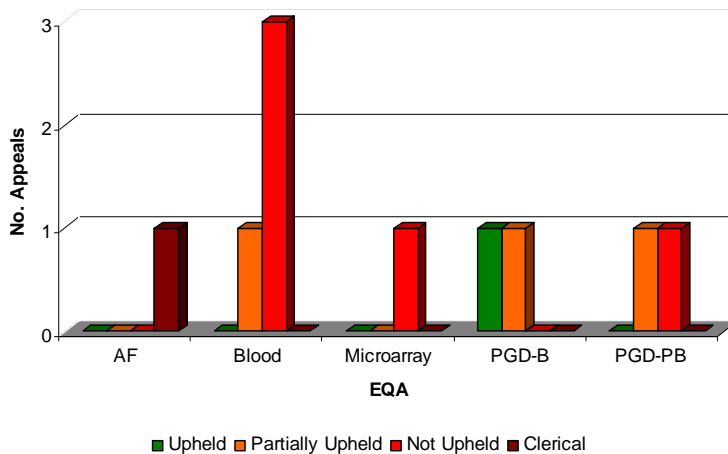
Note: No performance scores are given for pilot EQAs (CVS, PGD Polar Body, ArrayCGH)

8. Appeals

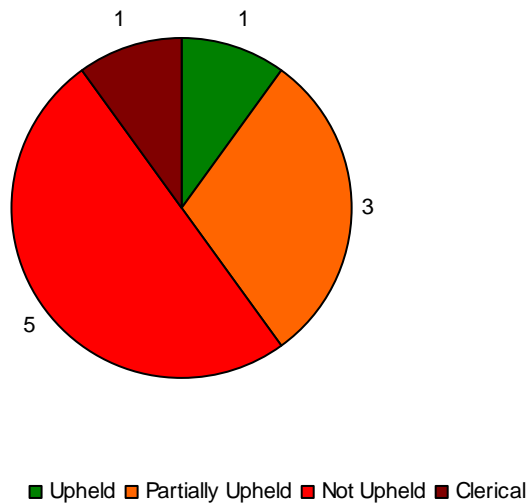
In some case a participant may disagree with the EQA assessment and the laboratory can appeal against any penalties or comment by the CEQA assessors. All appeals are reviewed by the Steering Committee.

For the 2010 EQAs, a total of 10 appeals were received; one for Amniotic Fluid, four for Postnatal Blood, two for PGD Blastomere, one for the Microarray pilot EQA and two for the PGD Polar Body pilot EQA. Of these appeals one was upheld, three were partially upheld and five were not upheld. One appeal was due to a clerical error (see also Appendix B).

CEQA 2010 EQA Appeal Outcomes by EQA



CEQA 2010 Appeals by outcome



9. Changes to the Scheme for 2011

CVS and Microarray will become full EQAs in 2011 with PGD Polar Body continuing as a pilot for another year. The Haematology-Oncology EQA will be split into Mature B and T cell Neoplasms (incorporating LPD/CLL/MM) and Myeloid disorders and acute Leukaemias (incorporating AML/CML/ALL/MDS). FISH Rapid Aneuploidy testing will be offered as a pilot EQA for the first time in 2011.

The Scheme is applying for accreditation against ISO 17043 with the United Kingdom Accreditation Service (UKAS).

10. Scheme Finances

CEQA is a not for profit organization and therefore the fee structure agreed for 2011 is set to cover costs of running the Scheme.

11. Participants meeting at ECA

The Participants' Meeting for 2011 will be held during the ECA Conference in Porto, Portugal, in July this year. Details of time and venue will be communicated to participants shortly. There will be a review of the EQA cases from 2010, feedback on changes to website implemented in 2011, a review of participants' feedback and an opportunity to discuss any issues you may have.

Appendix

CEQA Scheme Office

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CEQA Steering Committee 2010

Assessor	Location	Role
Nicole Dastugue	Toulouse	Haematology-Oncology Expert
Brigitte Faas	Nijmegen	Constitutional Expert
Joyce Harper	London	Preimplantation Genetic Diagnosis Expert
Ros Hastings	Oxford	CEQA Scheme Co-ordinator
Karsten Held	Hamburg	Constitutional Expert
Rod Howell	Oxford	Constitutional Expert
Marta Rodriguez de Alba	Madrid	CEQA Deputy Scheme Co-ordinator
Bettina Quellhorst-Pawley	Oxford	Secretary
Kalle Simola	Tampere	Clinical Geneticist
Francesc Sole Ristol	Barcelona	Haematology-Oncology Expert
Joris Vermeesch	Leuven	Microarray Expert
Zuzana Zemanova	Prague	Haematology-Oncology Expert

ESHG Quality Committee 2010

Name	Location	Representing
David Barton	Dublin, IRL	EMQN
Mirelle Clausters	Montpellier, FR	Diagnostic Laboratory
Els Dequeker	Leuven, BE	CF Network
Brian Fowler	Basel, CH	ERNDIM
Claude Giroud	Brussels, BE	EDMA
Ros Hastings (Chair)	Oxford, UK	CEQA
Viktor Kozich	Prague, CZ	SSIEM and ERNDIM
Konstantin Miller	Hannover, D	ECA
Cor Oosterwijk	Soestdijk, NL	EGAN
Borut Peterlin	Ljubljana, SL	ESHG Board
Conny van Ravenwaaij-Arts	Groningen, NL	Clinical Geneticist
Orsetta Zuffardi	Pavia, IT	Genetic Research Community

CEQA Assessors 2010

Surname	First Name	Country	EQA	Surname	First Name	Country	EQA
Doco	Martine	France	AF	Barton	David	Ireland	Microarray
Faas	Brigitte	Holland	AF	Gabriel	Heinz	Germany	Microarray
Giardino	Daniela	Italy	AF	Vermeesch	Joris	Belgium	Microarray
Held	Karsten	Germany	AF	Dastugue	Nicole	France	Haem
Novelli	Antonio	Italy	AF	Howell	Rod	UK	Haem
Ramos	Carmen	Spain	AF	Porter	Sarah	Switzerland	Haem
Bartsch	Oliver	Germany	Blood	Radford Weis	Isabelle	France	Haem
Florida	Giovanna	Italy	Blood	Siebert	Reiner	Germany	Haem
Howell	Rod	UK	Blood	Sole	Francesc	Spain	Haem
Rodriguez de Alba	Marta	Spain	Blood	van den Berg-de Ruiten	Eva	Netherlands	Haem
Simola	Kalle	Finland	Blood	Zemanova	Zuzana	Czech Rep	Haem
Slunga-Tallberg	Anna	Finland	Blood	Bucholz	Tina	Germany	PGD PB
Gueneri	Silvana	Italy	CVS	Abreu Gomes de Carvalho	Filipa	Portugal	PGD PB
Molina Gomes	Denise	France	CVS	Coonen	Edith	Holland	PGD Blast
Stioui	Sabine	Italy	CVS	Scriven	Paul	UK	PGD Blast

The Scheme Co-ordinator is involved in all the assessments.