



DNA Analysis Specialist Group (DNASG)

Minutes of the 25th meeting held on 15th May 2017, at 5, St Philip's Place,
Colmore Row, Birmingham

1. Welcome and apologies

1.1 The Chair welcomed all to the meeting. A full list of attendees is available at Annex A.

1.2 The Chair welcomed visitors Julie-Ann Cornelius, who was attending on behalf of Shazia Khan (Metropolitan Police Service – MPS) and Lorraine Hall-Ramsay, who was attending on behalf of Annette Boniface (Forensic Information Database Services – FINDS).

2. Minutes of the last meeting

2.1 The minutes of the last meeting were agreed as an accurate reflection of the discussions held and were approved for publication on the Regulator's website.

3. Actions and matters arising

3.1 The following actions from the previous meeting were outstanding:

3.2 *Action 7: The CPS representative to raise the issue within the CPS of forensic scientists being asked to attend court and give evidence when they had not been asked to write a full statement for court purposes.*

3.3 The Forensic Science Regulator ('the Regulator') informed the group that she would pursue this action with the Crown Prosecution Service (CPS).

3.4 *Action 10: June Guinness to update the Regulator's Code of Practice and Conduct – Allele frequency databases and reporting guidance for DNA (Short Tandem Repeat) profiling – FSR-G-213, to make it clear that when a person of interest is EA5, the FSP need to calculate the match probability rather than use the figure 1 in a billion.*

3.5 June Guinness informed the group that this action was in progress as part of a number of updates.

3.6 The remaining actions were either complete or were agenda items for the current meeting.

4. Mixture interpretation guidelines (FSR-G-222)

4.1 The Regulator presented an updated version of a draft guidance document for interpreting mixed DNA samples (FSR-G-222). The guidelines were discussed in turn and members were asked to provide feedback.

4.2 In relation to a guideline requiring the scientist to provide a preliminary assessment of whether a simple exclusion of a person(s) of interest can occur, it was cautioned that most exclusions are not simple and further guidance on more complex situations would be helpful. The Regulator clarified that a full mixture evaluation was required when a simple exclusion could not be made, and agreed to add this information to the guideline.

4.3 It was highlighted that the example given to explain a guideline on defence propositions involving a situation with two unknown persons of interest each being considered separately should specify that the two people are unrelated to each other for each propositions in the series.

4.4 The group considered a guideline advising scientists to provide an investigative rather than evaluative report in situations where several pairs of propositions were required (e.g. there were multiple persons of interest). It was highlighted that police often assume that an investigative report can be used in court, which is not the case. The Regulator agreed this was concerning and that it should be recorded in writing that such reports are purely for intelligence use. The Regulator agreed for a paragraph to be added to the guidance document elaborating on this point.

4.5 The group debated a guideline on presenting courts with a range of propositions when the number of contributors to a sample was unclear. Members highlighted that there could be confusion in court if multiple propositions were presented, and that this may give the impression that none of the propositions could be fully relied upon. It was discussed that some Forensic Science Providers (FSPs) were presenting only the most likely proposition to the court to avoid giving multiple options. It was also emphasised that time and resource pressures made the analysis of additional propositions challenging. The Regulator cautioned that courts needed to become more comfortable with the concept of scientific uncertainty and that if resources were not provided to analyse all appropriate propositions then FSPs should decline to conduct the work. It was noted that some FSPs conduct an initial analysis to agree the number of propositions with the defence and prosecution before a full analysis was performed, although this also required increased resources. As a potential solution, probability distributions were suggested as a mechanism to help explain statistical uncertainty. The Regulator stated probability distributions were already included in the guidance document, but agreed this information could be expanded. It was also agreed that more education was required in the courts and amongst the police concerning scientific uncertainty.

4.6 A guideline on quantitative evaluations referred to the use of a relevant DNA database. The precise meaning of this point was queried. The Chair confirmed this was a general requirement and there would not always be an appropriate population database available (e.g. if the ethnic origin of a contributor was unknown). Members asked for more clarification on this and the Regulator agreed to consider adding further guidance on this issue.

4.7 The Regulator highlighted a set of guidelines on qualitative evaluations which advised that such evaluations were acceptable as an initial investigative option, but should not be offered as an evaluative report in court.

4.8 The Regulator drew the group's attention to a guideline on consulting statistical specialists. She highlighted that this guideline was worded carefully to prevent FSPs from being mandated to employ an in-house statistician.

4.9 It was recommended that referring to a specific section of the Criminal Procedure Rules (CPR) in one of the guidelines would become problematic if the rules were modified in the future. The group agreed that the solution was to refer to the CPR in general terms without naming a specific section.

4.10 In relation to a guideline on transferring DNA results between organisations, it was questioned as to what the protocol was for legacy cases. It was suggested that the Forensic Science Regulation Unit (FSRU) would seek appropriate guidance on legacy cases.

4.11 The remaining guidelines were all accepted without further modification.

4.12 The Regulator invited general comments from members on the document. Members informed the Regulator that some organisations were using verbal scales (e.g. 'very likely') in court to explain their evaluation of propositions, instead of reporting likelihood ratios (LR)¹. Indeed, members were aware of some cases where this was mandated by the judge. The Regulator was of the opinion that the likelihood ratio should always be reported, but verbal scales could be used in addition to help with interpreting the meaning of LRs.

4.13 The Regulator informed members that once the modifications suggested by the group had been made to the document, the guidance would be put out for public consultation after the general election period.

Action 1: The Regulator and June Guinness to update the mixtures interpretation guidelines (FSR-G-222) based on the comments of the DNASG members.

¹ Likelihood ratio: a measure of the probability that the two DNA profiles came from the same source (person).

5. DNA mixtures software validation guidance (FSR-G-223)

5.1 The FSRU representative presented an updated draft guidance document on the validation of software for interpreting DNA mixtures (FSR-G-223) and invited the group to provide general comments.

5.2 Members were informed that definitions were required for some terms used in the document relating to statistical data, including 'qualitative', 'quantitative', 'binary' and 'continuous'. The representative from Royal Statistical Society offered to provide a brief note on these definitions to be added to the guidance.

Action 2: Roberto Puch-Solis to provide June Guinness with a note on statistical definitions for the DNA mixtures software validation guidance (FSR-G-223).

5.3 The group was also presented with a document outlining the feedback received by the FSRU during a stakeholder consultation on the draft software validation guidance. One point raised by this consultation was related to a passage in the document on demonstrating the performance of software models in cases where the true state is known. The wording suggested in the feedback used terminology that the group felt was confusing to the reader and this will be reworded before inclusion.

5.4 Members highlighted an inconsistency between the software document (FSR-G-223) and the mixtures interpretation document (FSR-G-222) concerning the minimum number of person mixtures a piece of software should be able to analyse. It was agreed that FSR-G-223 should be updated to refer to the minimum number of person mixtures as three not four.

5.5 It was clarified that section 6.12.7, referring to a Criminal Justice System (CJS) primer, was inappropriate and should be replaced by a reference to a statement of validation.

5.6 Members queried whether it was possible for the software guidance to be organised in terms of guidelines, similar to the mixtures interpretation guidance (FSR-G-222). This would make it more accessible to legal professionals. The Regulator confirmed she would enquire with the author as to whether the document could be formatted in this way.

Action 3: The Regulator to ask Kevin Sullivan if it is feasible to add guidelines to the DNA mixtures software validation guidance (FSR-G-223).

5.7 The representative from the Royal Statistical Society had also made some changes to the document since the previous meeting. The Regulator asked that this document be sent to her, and that she would add the modifications suggested in the current meeting to this document.

Action 4: Roberto Puch-Solis to provide the Regulator with his updated version of the DNA mixtures software validation guidance (FSR-G-223).

5.8 It was queried how this guidance aligned with the President's Council of Advisors on Science and Technology (PCAST) report on forensic practises in the USA. The Regulator confirmed that the Codes of Practice and Conduct (the 'Codes') in operation in the UK were not based on the same definitions as those used in PCAST and as such the approach taken to validation in the two documents was different. The Regulator reminded members that the Codes set out how validation was conducted and achieved in the UK.

5.9 Section 6.3, concerning validating statistical models was discussed and it was agreed the wording of this section required additional clarification.

5.10 Members were invited to submit any further comments on the software validation document to the FSRU by the end of May 2017.

Action 5: DNASG Members to submit further comments on the DNA mixtures software validation guidance to June Guinness by the end of May 2017.

Action 6: The Regulator and June Guinness to update the DNA mixtures software validation guidance based on the comments of the DNASG members.

6. Work plan

6.1 The FSRU presented an updated version of the DNASG's work plan – a document outlining the strategic aims of the group and the work planned for the next 12 months. The FSRU representative clarified that the main priorities for the group would be Y-STR analysis and relatedness testing.

6.2 The Regulator enquired whether it would be possible to align this work with that of the Association of Forensic Science Providers (AFSP) DNA working group.

7. Relatedness Testing

7.1 The Chair provided an update on the work of the relatedness testing subgroup, previously titled the kinship subgroup. Members were presented with the draft minutes of the last subgroup meeting. It had been agreed that there was sufficient work for the subgroup, and a terms of reference had been established. The next priority would be to produce a work plan.

Action 7: DNASG Members interested in participating in the relatedness testing subgroup to agree a work plan via email before the December 2017 meeting.

7.2 The Regulator confirmed that the chair of the relatedness testing subgroup was not decided, and welcomed applications from DNASG members who would like to chair this subgroup.

Action 8: DNASG Members interested in chairing the relatedness testing subgroup to contact the Regulator.

Action 9: The Secretariat to organise a meeting of the DNASG relatedness testing subgroup to precede the main DNASG meeting in December 2017.

8. Home Office Biometrics (HOB) Programme

8.1 Members were provided with a verbal update on the HOB programme. The group was informed that stage 1 of the replacement for the National DNA database (NDNAD) had been delayed by 14 months. The new anticipated delivery date for stage 1 was now May 2019.

8.2 Members were informed that the current DNA matching algorithm would be replaced by a new matcher that would require accreditation according to the Regulator's standards of practice.

8.3 Stage 3 of the project, in which enhanced capabilities beyond that currently capable with the NDNAD would be introduced, was also delayed by 14 months as a result of the stage 1 delay. The Regulator expressed regret at the delay, given the significance of the enhancements planned under stage 3.

8.4 The Regulator informed members that extensive stakeholder input would be required in order to successfully deliver stage 3 of the NDNAD replacement.

9. DNA Mixtures Expert Network

9.1 The Regulator informed members that she would not change her position of not providing estimated LR's for profiles derived from mixtures on SFR1 reports, since this has been shown to be misleading in the past, until she was presented with further scientific evidence.

9.2 Members were informed of a pilot study performed by Key Forensic Services and Norfolk Constabulary aimed at providing rapid statistical evaluation of complex DNA mixtures to the force. Mixed profiles that failed to meet the usual standards for loading onto the NDNAD (based on traditional mixture evaluation techniques) or where a clear complete major profile had not been obtained, were used in this pilot.

9.3 Norfolk Constabulary was very positive about with the results, with the technique typically able to produce a match statistic within an hour.

9.4 Members discussed the scalability of the pilot. The Regulator emphasised that decisions relating to taking the pilot forward were a matter for the FINDS Strategy Board.

10. Emerging Technologies

Y-STRs

10.1 The group was presented with a copy of the draft minutes of the last Y-STR subgroup meeting held on the 22nd September 2016. All actions were complete or would be taken forward at the next Y-STR meeting. The Regulator advised members that at the beginning of July there would be a cross-CJS forum, which would include senior judges and lawyers. The Regulator would attend this forum and speak with CJS colleagues about issues surrounding Y-STR analysis, including potential avenues of funding.

Action 10: The Secretariat to produce a one-page summary on Y-STR analysis for the Regulator to discuss with the cross-CJS forum in July.

10.2 Members were also presented with a draft copy of a quality assurance standard for the use of elimination databases in Y-STR profiling. Members were invited to provide comments on this draft.

Action 11: DNASG Members to provide feedback on the draft quality assurance standard for the use of elimination databases in Y-STR profiling before the next Y-STR subgroup meeting.

Action 12: The Secretariat to organise a meeting of the DNASG Y-STR working group in June or July 2017.

10.3 The group was given sight of a briefing note from the NDNAD Strategy Board on a pilot Y-STR database within the Metropolitan Police Service (MPS). The Strategy Board had given its approval for the pilot to continue.

11. Professional and Scientific Updates

AFSP Body Fluid Forum

11.1 The group was presented with a written summary of the forum's work, prepared by the chair Karen Alexander. Within the report was a business plan update on projects that currently involved the Body Fluid Forum, including projects on penile swabs and underpants, hand swabs, and semen depositions. Members were informed that the Secretariat would forward any enquiries about the work of the forum to the relevant parties.

AFSP DNA Working Group

11.2 Members were informed the DNA working group had met in March and planned to work with the AFSP quality assurance working group to run a collaborative exercise on DNA mixtures. This workshop would use data

obtained from the previous Regulator's mixture collaborative study . Three scientists per FSP would be invited to attend.

11.3 Over 3000 new volunteer samples from the UK and Ireland would be added to the Y-STR Haplotype Reference Database (YHRD), a searchable worldwide database of Y-STR Haplotypes.

11.4 DNA working group members had offered to provide feedback to the Forensic Science UK Innovation Database, an online collection of challenges and research interests relevant to various forensic disciplines. It was agreed the database had potential but the information currently uploaded suffered from repetition and a lack of scientific scrutiny.

11.5 An ongoing issue in relation to the legality of the resampling of individuals for Y-STR genotyping was discussed. The issue was to be further discussed within the Y-STR and AFSP working groups, the previous biometrics commissioner had provided comments on specific clauses in PoFA on this matter and could aid these discussions.

Action 13: June Guinness to forward an email from the previous biometrics commissioner to the aid discussions on the legality of Y-STR resampling with the AFSP.

11.6 The working group had completed a draft of a review on DNA transfer and persistence, and intended to publish this on the AFSP website.

International Society for Forensic Genetics (ISFG)/ European Virtual Centre of Forensic Genetic Research (EuroForGen)

11.7 Funding for EuroForGen had finished, and going forward it would become a working group of the ISFG providing education and training across Europe, including an MSc course in Forensic Genetics. The EuroForGen website would also continue to offer online training. In addition, technical experiments would be available through the VISAGE (visible attributes approached through genomic means) project, a pan-European initiative aimed at developing tools that use DNA traces to predict appearance, age and ancestry.

11.8 The ISFG's main conference had been held in South Korea, with over 500 abstracts submitted. The next meeting would be held in Prague in two years time.

11.9 The Society had been provided with a commission to improve the quality of STR frequency databases worldwide. This would be achieved through use of STRidER - STRs for identity ENFSI Reference database – in order to quality control STR data.

European Network of Forensic Science Institutes (ENFSI)

11.10 June Guinness attended the latest ENFSI DNA working group on behalf of the FSR and provided a verbal update on the meeting to the group. The quality assurance task group had reviewed several ENSFI documents that needed updating, and finalised a document on contamination. The ENSFI contamination guidance covered much of that contained in the Regulator's guidance. The majority of UK delegates attended a workshop on automation, which focused on rapid DNA and next generation sequencing (NGS). In addition, there had been various supplier updates and a plenary talk concerning DNA on clothing. June Guinness offered to circulate her notes from the meeting to DNASG members.

Action 14: June Guinness to circulate her notes from the ENFSI workshop to DNASG members.

11.11 Members were informed that the ENSFI website was now hosted by Europol and allowed experts to access and share information. Anyone wanting to register with the website was encouraged to email the webmaster.

12. AOB

Data for STRidER

12.1 The representative from the International Society for Forensic Genetics had accumulated data for submission to STRidER and enquired to whom this data should be sent. It was confirmed that the NDNAD Delivery Unit would take these data forward.

Action 15: Denise Syndercombe-Court to send Lorraine Hall-Ramsay accumulated STR data.

Minutes and Papers

12.2 The Regulator asked members to respond to the minutes and papers provided to the group, in order to collect maximum feedback.

Blog on Streamlined Forensic Reports (SFR)

12.3 The Regulator had been made aware of a blog written by a former MP and a practising barrister detailing apparent misconduct concerning a SFR. The Regulator had not been made aware of this issue and intended to investigate further. Members were encouraged to forward any information related to this case to the Regulator.

Action 16: DNASG members to forward any information related to the SFR issue highlighted in the blog post to the Regulator.

Personal Protective Equipment (PPE)

12.4 The Regulator had received a query on best practice concerning PPE during forensic medical examinations. Members were invited to provide advice on the matter.

Action 17: The secretariat to forward a query on PPE during forensic medical examinations to members and collate responses.

Annex A

Members:

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| Sue Pope (Chair) | Principal Forensic Services |
| Lesley Ann Beck | Forensic Service of Northern Ireland |
| Susan Hales | Metropolitan Police |
| Des Van Hinsbergh | Key Forensic Services |
| Fiona McMahon | Scottish Police Authority |
| Roberto Puch-Solis | Royal Statistical Society |
| Dorothy Ramsbottom | Forensic Science Ireland |
| Shirley Marshall | Chartered Society of Forensic Sciences |
| Denise Syndercombe-Court | International Society for Forensic Genetics |
| Jim Thomson | LGC Forensics |
| Huw Turk | Orchid Cellmark |
| Ben Malinder | Scottish Police Authority |

In attendance:

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| Gill Tully | Forensic Science Regulator |
| Emma Burton-Graham | Home Office, Science Secretariat |
| Thomas Vincent | Home Office, Science Secretariat |
| June Guinness | HOSSI Forensic Science Regulation Unit |
| Julie Ann Cornelius | Metropolitan Police Service |
| Surryia Jagatiya | UK Accreditation Service |
| Lorraine Hall-Ramsay | National DNA Database Delivery Unit |

Apologies:

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| Kirsty Faulkner | National DNA Database Delivery Unit |
| Mark Bishop | Crown Prosecution Service |
| Susan Hales | Metropolitan Police |
| Fiona McMahon | Scottish Police Authority |
| Annette Boniface | National DNA Database Delivery Unit |