Biology (BIO) Specialist Group (SG)

Note of the hybrid meeting held on 20 February 2024

1. Welcome, and Introduction

1.1. The Forensic Science Regulator (henceforth 'the Regulator') welcomed all to the first meeting of the biology specialist group (BIO SG) and thanked the membership for their time and contributions.

1.2. Individuals introduced themselves and their backgrounds to the group. A list of organisations represented can be found in annex A.

2. Introduction to new remit and update from the Forensic Science Regulator

2.1. The Regulator reflected on their recent priorities which had been preparing the for the publication of the first statutory forensic science code of practice (henceforth 'the Code') and preparations for the enactment of the Forensic Science Act 2021.

2.2. The Regulator commented that following the publication of the code, priorities had changed and there was desire to review the various forensic science regulator's specialist groups and reinvigorate them, reviewing their role in providing specialist and expert contributions and advice to inform the Regulator in the development of statutory guidance and future iterations of the Code.

2.3. The Regulator commented on how in reviewing the specialist groups, the Chair and the Regulator agreed that the role of the previous DNA Specialist Group needed to be expanded to cover a broader remit, thus the BIO SG was established (with an expanded membership than the DNA SG).

2.4. The Regulator reflected to the group that they regulated Forensic Science Activities (FSAs) of which there were many listed within the Code which had not yet been fully defined. The Regulator commented that the ambition was for these to be regulated in the future and the BIO SG to be involved in the development and defining of the FSAs and FSA specific requirements by providing expert advice to the Regulator. The Regulator shared with the group that there was a need to signal changes within the community prior to requirements being set and enforced to prevent non-compliance as a result of immediate regulation.

2.5. The Regulator noted that the Code and statutory guidance would be applicable only to England and Wales and the Scotland and Northern Ireland were excluded, however, the Regulator did reflect on the ambition to work closely together and thanked representatives from Scotland and Northern Ireland for attending and participating as members of the BIO SG.

2.6. The Regulator highlighted to the group the key FSAs of currently relevance to the BIO SG. The first was regulation of sexual assault referral centres (SARCs)(FSA BIO 100), a matter which would also be considered by the Medical Forensics Specialist Group (alongside FSA BIO 101, Custody). The Regulator reflected to the group the importance of the BIO SG maintaining links with other specialist groups of the Regulator.

2.7. Another FSA the Regulator referenced to was body fluid distribution. The Regulator informed the BIO SG of the direction to remove the accreditation requirement to make improvements and to allow re-development of guidance and FSA specific requirements.

2.8. The Regulator informed the group for awareness of current pressures facing the Regulator with regard to case review including cold case review, independent examinations for defence and post-conviction criminal case review. The Regulator noted they were working with the Chartered Society of Forensic Science (CSFS) on this matter. The Regulator encouraged members to engage with the CSFS.

2.8.1. The representative from the International Society for Forensic Genetics queried whether CFSF has it within their remit to review cost implications for

independent case review. The Regulator confirmed that the cost implications had been raised the Ministry of Justice Policy team who acknowledged this. The Regulator informed members that CSFS had it within their remit to review both requirements set within the FSA and impact.

3. Update from the Chair

3.1. The Chair of the BIO SG provided the members with an overview of their background, including noting to members they had been working with the Regulator and their office since 2012 as the Chair of the BIO SG (previously the DNA SG).

3.2. The Chair shared with members a brief history of the DNA SG, which was being reformatted into the BIO SG.

3.3. The Chair shared that the DNA was originally set up in response to a report on low copy number. The remit was to provide the Regulator and the Forensic Science Advisory Council advice on all matters related to quality standards and matters that were applicable to the analysis of DNA this would cover end to end process from collection of evidence to presentation of results in court.

3.4. The Chair noted that, as described by the Regulator, the remit of the group had evolved and was being expanded, alongside an expansion and refresh of the membership (new members had been invited to join this first meeting of the BIO SG).

3.5. The aim was for BIO SG meetings to have representatives for each BIO FSA. The BIO SG would be the overarching group covering overarching or strategic matters, as well as acting as a final deciding point for matters of interest/decision before presentation of advice to the Regulator. Underneath the umbrella of the BIO SG would be specific sub-groups, whose chairs would sit on the BIO SG.

3.6. Initial considerations for specific subgroups would be non-human vertebrates, SARCs, DNA, body fluid distribution, and kinship (criminal only). It was noted that SARCs would continue to be considered by the Medical Forensics Specialist Group (MFSG) which would continue to meet as it had done in the past however, representation from MFSG would be present on the BIO SG.

3.7. It was suggested that certain subgroups may have specific technical working groups within them giving kinship as an example.

3.8. A member question where non-human DNA and e-DNA would be covered. A representative from the Office of the Forensic Science Regulator (OFSR) suggested that e-DNA could span a number of different areas.

3.9. The group were informed that the Regulator had a specific subgroup which was supporting the Regulator in developing guidance on the Interpretation of Forensic Science. The group had representatives from each of the Forensic Science Regulators Specialist Groups, including the BIO SG and the MFSG, and the wider network. The aim of the group was to reduce risk by increasing consistency in the interpretation of Forensic Science between different FSAs. There was ambition to develop an overarching guidance document and more detailed, specific guidance for subject areas that would be considered by the specialist groups.

4. Presentations on new workstreams

Non-human: Vertebrates

4.1. The representative from the wildlife DNA forensic unit at the Science & Advice for Scottish Agriculture (SASA) presented to the group on their subject area. The main points were:

4.1.1. The unit had had over 350 cases to date which were mostly wildlife crime falling into six priority areas: badger bating, bat persecution, trade of endangered species, freshwater pearl mussels, poaching and coursing and raptor persecution.

4.1.2. The representative shared some of the techniques used, with the most common question being “what animal is it from?” It was noted that some techniques are infrequently used and therefore would be challenging to be accredited for.

4.1.3. Other challenges were noted as development of standards and crime scene sampling (particularly noting the challenge of getting police crime scene investigators to attend).

Non-human: Forensic Ecology

4.2. An independent consultant for forensic botany presented to the group on their specialist area. The individual noted to the group, as it was considered important with a view on accreditation, that they were a botanist not an accredited ecologist.

4.3. It was noted that forensic ecology and environmental forensics differ. Environmental forensics was a broader term, often applied to pollutants for example.

4.4. The representative shared a series of example cases to provide background.

4.5. The representative shared that there is limited awareness of plant forensics across the country sharing that they work on roughly 30 cases per year but suspected the 'need' would be higher with more awareness.

4.6. The representative shared that they key barriers in the field were lack of awareness, gaining insurance and vetting policy on sole traders, limited handling knowledge, lack of standards and limited integration into investigatory strategy.

Non-human: microbes

4.7. A representative from the UK Health Security Agency (UKHSA) presented to the group on the area of 'medicolegal/legal' or 'formal' microbiology sampling. The key points were:

4.7.1. While the specialist laboratories held various accreditation, there was no regulatory or statutory requirement to comply with the Code.

4.7.2. The UKHSA has a number of specialist laboratories with varied testing capabilities, there are specific standard operating procedures however, there are no specialist individuals for these procedures, rather they are conducted by trained and competent individuals.

4.7.3. Production of witness statements is not a common activity (18 produced since 2011).

4.7.4. The Forensic botany specialist raised a point regarding building maintenance and fungi on walls and testing of, noting increasing concern around cot death.

Non-human: invertebrates

4.8. A representative from the national history museum, who sat on the forensic ecology group at the FCN, shared an overview of forensic entomology. The key points were:

4.9. There were limited practitioners in forensic entomology as there was typically insufficient casework for a full-time role. The presenter shared that they viewed professionals in the field as those who regularly engaged with the wider community reflecting concerns that pest control specialists sometimes took on this work. It was shared that forensic ethologists were typically experts or specialists in ecology with potentially limited forensic training.

4.10. Entomology was often used to narrow down the time since death to focus investigations and as such was infrequently used in courts.

4.11. It was shared that Cellmark forensics and Alecto were the main sources of referral for work, referrals rarely came from policing and awareness within policing was limited.

4.12. A key problem was referrals for an entomologist were often too late and there were often budgetary constraints. Additionally, training and funding for research was limited.

4.13. A final reflection was that training for collection of entomological exhibits was often by anthropologists and archaeologists which could and often did result in difficulties, in particular where this is an infrequently used method.

Body fluid distribution (including blood pattern analysis (BPA))

4.14. A specialist in BPA spoke to the group about the specialist subgroup which had been developed to provide the Regulator advice regarding the body fluid distribution FSA.

4.15. It was noted that the FSA was broader than BPA only and could include many body fluids such as semen, saliva, urine, faecal matter, and potential cellular matter. As such the scope of the body fluid distribution subgroup could be quite large. It would need to be determined what body fluids were in scope for the FSA.

4.16. The representative shared that the Regulator had taken the decision to remove the requirement for accreditation within the second version of the code in order to review the necessary requirements.

4.17. As a conservative estimate the specialist shared that they completed roughly 20 cases a year but noted these were often large cases. They shared that cases often come from policing, the National Crime Agency (NCA) or by defence instruction. The representative shared that they are often asked to advice on strategy and work often with the Criminal Case Review Commission (CCRC) on review. It was shared that evidence was given in practically all of the BPA cases they were instructed in which would often result in appearing in court once a month.

4.18. The representative shared that insurance was not typically an issue.

Medical Forensics

4.19. A representative with specialist expertise in medical forensics verbally presented to the group. The representative introduced themselves as a doctor and forensic physician with specialist knowledge of gynaecology and obstetrics, the president of the Faculty of Forensic and Legal Medicine, and the Chair of the Regulators specialist group for medical forensics since 2019.

4.20. The representative shared that the individuals which they support are typically very vulnerable. The representative shared that each police constabulary would typically have a sexual assault referral centre (SARC) but that these were often not evenly distributed within a constituency which was challenging.

4.21. The representative shared that many individuals do not seek criminal charges but for those that do, there should be specialist training. There was a need to be patient centred and trauma informed while minimising the risks of contamination. The representative shared that there is a need to follow up samples where there is a therapeutic need, this also required specific training.

4.22. The representative shared that one challenge for consideration was that the code did not apply to forensic samples taken in police custody.

4.23. The representative shared that across SARCs there were often more nurses and midwives carrying out sexual assault work than doctors, the same was true

for custody where sexual assault work would typically be conducted by nurses and paramedics.

4.24. The representative shared that a limited number of professionals were using streamlined forensic reports (SFRs) as there was typically nuanced information which would be desirable to include. The representative informed attendees that appearing in court was not common in the practice of medical forensics.

4.25. With regard to insurance, the representative shared that as an NHS doctor they had NHS indemnity but most of those working in SARCs would have their own and it was considered preferable to have personal insurance.

5. Stakeholder updates

Association of Forensic Science Providers (AFSP)

AFSP DNA

5.1. The update was provided by the representative of the AFSP DNA working group, who represented commercial organisations that provide analytical DNA services in the UK and Northern Ireland.

5.2. The working group was continuing to organise collaborative exercises, including probabilistic DNA typing and mixture evaluation. The intention was to continue to run these annually.

5.3. The working group was also focusing on experiments to generate data on DNA degradation, including extracted DNA samples.

5.4. The members had also contributed significantly to the review of the Regulator's guidance on allele frequency databases and reporting for DNA profiling to reflect the move from N+2 to the more usually adopted method of N+1.

AFSP Body Fluid Forum

5.5. The body fluid forum was now a group within the AFSP.

5.6. The forum has been undertaking a number of research studies and a large amount of time had been taken up getting these published. The work had produced some very useful findings and in future the BFF would run a smaller number of studies to allow for quicker publication of results. These studies

would be focussed on providing data to support consideration of typical defence scenarios.

5.7. The BFF was also collating data to support review of the guidance from the Faculty of Forensic and Legal Medicine on sampling, for example whether a longer timeframe for the recovery of penile swabs should be recommended.

United Kingdom Accreditation Service

5.8. The SG was informed that UKAS was continuing work on updating master schedules and aligning wording with the FSR Code, LAB-32 had been re-issued which is about accreditation for suppliers to the National DNA Database.

5.9. Work on accrediting SARCs continued to develop with two pre-assessment undertaken. UKAS had identified 55 SARCs across the UK and of these about half had applied for accreditation. UKAS were running monthly drop in sessions for organisations working towards accreditation and these were working well. Changes to facilities was the main cause of slow progress towards meeting accreditation requirements.

5.10. For the coming year UKAS from a biology perspective, UKAS would be focusing on reporting body fluids as semen in the absence of sperm heads, and validation studies for the use of alternative light sources as these had been identified by technical assessors as areas of variability between organisations. They were also looking at how FSP communicate changes in their environmental monitoring programme to those recovering DNA samples so any impact of something like increased sensitivity on interpretation of findings can be considered, as well as competency in environmental monitoring.

5.11. The UKAS representative noted that it would be useful to link in with the work of the BFF as UKAS were only accrediting organisations for BPA and linking up may assist with expanding into distribution of other body fluids.

Forensic Information Database Service (FINDS)

5.12. The FINDS representative referred to the written update which included the following:

- Proficiency testing (PT) for mixtures – in line with the expertise within FINDS the PT had been amended to report on the correct detection of

profiles/alleles within the test samples, rather than whether the mixture was interpretable.

- FINDS had designed a PT for forensic examination of sexual offence complaints and planned to pilot this with 11 participants in collaboration with the Forensic Capability Network.
- The Y-STR reference database project was in phase one – the collection of approximately 10,000 samples. The proposal for phase 2, the proposal for the statistical method for evaluating Y-STR profiles, was in progress and FINDS were looking for the most appropriate FSR specialist group to review this.
- The volunteer kinship consent form for the missing persons DNA database had been updated to allow consent to search i-Familia (the global kinship matching database for identifying missing persons).
- The vulnerable persons DNA database was enhanced to make it searchable against unidentified body DNA profiles. The older dataset would be searchable using a speculative search function.
- FINDS and the UK Missing persons unit were working with the International Commission on Missing Persons to assist those based in the UK who had family missing in Ukraine (for more information see - Ukraine - International Commission on Missing Persons (icmp.int)).
- An enhancement to the National DNA database (NDNAD) was planned for March 2024 to generate n-2 checks in near match reports as well as n-1 checks. FINDS had also commissioned research to understand the baseline on the NDNAD for near matches.

6. Terms of Reference and Workplan

6.1. The members were asked whether, to reflect the broader biology remit of the group, any additional stakeholders should be included to provide updates. It was noted that there was a European entomology group and the representative for non-human invertebrate biology could provide an update from this group. Updates from the Organisation for Scientific Area Committee for BPA were

discussed and the representative for body fluid distribution would look into membership to provide updates for the group.

6.2. It was agreed that the sub-groups of the BIOSG should be defined in the Terms of Reference. This would be added and the ToR circulated for comment.

Action 1: Update ToR and circulate to members for comment

6.3. The group also considered the structure of the main BIOSG and its' groups in terms of membership. As the remit of the BIOSG had been changed to reflect all BIO FSAs rather than DNA, members of the previous DNASG may now form a DNA sub-specialist group with representation on the main BIOSG.

6.4. The representative from the Royal Statistical Society would liaise with colleagues to identify representatives for other areas of the BIO FSA portfolio.

6.5. Each group of the BIOSG would need a ToR and this would be taken as a first action for each of the groups once established.

6.6. One of the BIO FSA, Taggants, was discussed in terms of which group would cover this activity. This was a small area of forensic science with one accredited organisation and evidence was rarely presented at court, however the activity did produce evidence for the CJS. It was agreed that this activity would fall under the remit of the DNA sub-specialist group.

6.7. There were a number of non-human biology FSAs, the group discussed whether these should each have their own group or whether there should be one group for non-human DNA as the processes and challenges were similar. The activities had been specified as separate FSAs in the Code of Practice because, in terms of demonstrating compliance with the Code, accreditation was deemed to be a viable future option for vertebrate DNA but not for non-vertebrate DNA.

6.8. The group discussed the overlooked benefits of non-human DNA in criminal investigations, particularly plant material which was cheaper to profile that human DNA.

6.9. The following three sub specialist groups were agreed:

- Human DNA and kinship

- Non-human Biology
- Human body fluid distribution

6.10. The representative for human body fluid distribution noted that FSA needed a clearer definition of distribution and clarification as the body fluids to which the FSA applied. It was agreed to consider semen, saliva and blood as body fluids under the body fluid distribution FSA initially but that this would be reviewed by the sub-specialist group.

6.11. The representative for Forensic Ecology queried whether the Regulator's guidance for sexual assault referral centres included reference to non-human biological material. As there was no reference to this in the guidance it was suggested that an action for the non-human DNA WG could be to review the guidance document and add guidance on recovery of non-human biological material.

6.12. It was also noted that there was no FFLM guidance on recovery of soil or plant material and the faculty could be contacted to ask whether guidance on this should be developed.

6.13. Another member noted that there was also no guidance recovery of such material using early evidence kits.

6.14. Members of the BIOSG that were also on FFLM would raise the issue of guidance on recovery of non-human biological material.

7. Feedback on version 2 of the Forensic Science Code of Practice

7.1. The group were informed that version 2 of the Code of Practice was open for consultation and this would close on the 10th of March. The Regulator would welcome comments from the members on any aspect of the Code, not just the biology aspects.

8. Stakeholder updates

Chartered Society of Forensic Science

8.1. The CSFS representative informed the SG members of the return of in person conferences, which has been received well by the community. They also highlighted that the CSFS has been commissioned by the Regulator to look at case review and that they would be meeting that week.

8.2. A representative of the OFSR asked the representative when the next conference would be as it would be beneficial to increase engagement within the non-human biology community. The CSFS representative answered this and informed that the next conference would be held in Leeds on the 18th October and provided the members information regarding who to contact.

ISFG and ENSFI

8.3. The representative for ISFG and ENSFI provided the following updates, which were as follows:

- The updated publication of the ENSFI best practice manual which focuses on forensic biology.
- ENSFI React project which will focus on the transfer and persistence of low level DNA, it was noted that currently funding is not available for the UK which meant that the FSPs have to pay for themselves which is a problem as it stops them from joining.
- It was noted that further ENSFI meetings would be held in October 2024 in Spain further meetings to be held in Luxembourg and Dublin in 2025.
- In memorial of Peter Schneider whom was a long standing member of the ISFG a fellowship has been set up in his name.
- ISFG offer short term fellowship visits which included a haploid markers group in Budapest and English speaking working group last year.
- The next ISFG meeting would be held September 2024 in Santiago de Compostela, the group was also informed that the close for abstract submissions would be at the end of March.
- The new ISO 21043 standard due to be published in 2025. It was highlighted that it is the final commenting round of the analysis, interpretation and reporting parts of the standard and then part 2 of the

standard which focuses on evidence recovery at crime scenes with inclusion of laboratory recovery and examination would be reviewed this month.

9. Any other business

9.1. It was decided that the next meeting of the Bio SG would be based around feedback from the other Biology Groups. It was also discussed that a doodle poll would be sent to the members to plan for the next meetings to be held in June 2024 and December 2024.

9.2. No other business was raised by the members.

9.3. The chair thanked the members and closed the meeting.

Annex A

Organisational Representation present:

In person

Principal Forensic Services
Forensic Science Regulator ***(left at 11.30)***
Office of the Forensic Science Regulator
Home Office Science Secretariat
United Kingdom Accreditation Service (UKAS)
Cellmark Forensic Services
Forensic Science Northen Ireland
Metropolitan Police Service (MPS)
Eurofins and the Association of Forensic Service Providers DNA working group
Defence Science and Technology Laboratory (Dstl)
International Society for Forensic Genetics
Independent Forensic Botanist
Scottish Police Authority Forensic Services
Royal Statistical Society

Online

Wildlife DNA SASA
Charted Society of Forensic Science
Forensic Information Database Service (FINDS)
Scottish Police Forensic Services and Chair of Body Fluids Forum *(left at 14.00)*

Body Fluid Distribution subgroup chair
UK Health Security Agency, Microbes
Key Forensic Services
Chair of Medical Forensics Specialist Group ***(joined at 12.00 and left at 13.00)***
Forensic Capability Network, Forensic Ecology Group ***(joined at 12.00 and left at 13.00)***

Apologies

Crown Prosecution Service