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14 February 1989

Dear Colleague

I have enclosed a synopsis of the recent meeting in Munster and I am sure that you would wish to join me in thanking Prof. Brinkmann and Mr Rand for their work in providing the venue for the meeting and also making the social arrangements.

The synopsis includes the details of the research exercise to determine standard deviations of bands usng Hinf I and YNH 24.

There appears to have been general agreement that the meeting was a great success and on behalf of the CRSE and Metropolitan Police Laboratory we thank you sincerely for your co-operation in this attempt to bring the Europeans closer together.

Very best wishes

P.D. Martin

Peter D Martin
Deputy Director

Enc

DNA Profiling - European Integration
Munster - 4th February 1989

Chairman: Prof B Brinkmann

A list of participants is appended.

Synopsis of the proceedings

Prof Brinkmann opened the meeting by welcoming all of the participants to the second gathering of this group. He outlined a case which had been examined in Germany and involved the rape and murder of an English woman by an English man. The DNA grouping of the semen showed a frequency of 1 in 60 million, and the British Army SIB felt that the suspect may have been responsible for other such crimes in the UK. This illustrates the value of inter-European databases.

Dr Sheard reflected on the Sunbury meeting and suggested that the most important thing to emerge was agreement that standardisation was necessary. He offered the view that unless we made decisions at this meeting there was a danger that we would never do so. While pointing out the necessity not to think in a parochial way he asked the meeting whether anybody had come to the meeting with instructions which limited their ability to reach agreements. No-one reported any constraint. Mr Lochtenberg said that it would be necessary to consult respective directors before finalising any decisions. At the date of writing these notes (10 February 1989) no-one has yet reported any difficulty.

In the general discussion which followed it was agreed to attempt to obtain minimum standards, and that the research effort should be shared. If change is necessary it should be as small as possible. Quality Assurance and Quality Control must be adhered to and, where possible, standard methods should be used, so that realistic comparisons can be made.

It became apparent that there are at least 3 other groups in Europe who are interested in the subject:-

G. de Lange Group (initiated at Liege meeting)
DNA Commission
West German/East German/Hungary/Netherlands Group

There was some feeling that we should all get together.

Dr Werrett gave the Secretaries' Resume:-

He said that the secretaries had been unable to get together since the last meeting but gave an update on the international situation.

In the USA there is no common theme with Lifecodes, Cellmark and the FBI all using different enzymes.

CRSE have started a survey of Hinf I, Hae III, and Alu I and it is apparent that with adverse conditions all three enzymes will present problems.

They are also studying the following probes:

YNH24
pMLJ14
3'HVR
MS43

At present they will use only Hinf I as they have operational familiarity with this enzyme. The study will include 600 blood samples from Whites, Asians and Blacks.

It was considered that non-alignment of bands using multi-locus probing was not a serious problem because of overall pattern comparison. It is more serious with the single-locus approach. He described the use of "sliding molecular fit" to be sure that all bands would be collected to give 100%. However this was not to be the final method. The method of "binning" was considered dangerous because the arbitrary cut-off could create a false appearance of new alleles. He also described the use of a ^{35}S labelled moelcular weight ladder which is marketed by Amersham.

Bruce Budowle (FBI) is investigating small alleles for PCR and also discrete alleles because of the problem of formulating band-sharing statistics. If this is successful and PCR is the choice for the future the subject of the use of enzymes would disappear.

There are difficulties with PCR/Dot blotting at present especially as dilution will increase the danger of losing alleles.

Small alleles are amplified preferentially over the larger ones. Contamination is still the biggest problem.

In the discussion which followed members were reminded that Cetus hold the patent for PCR and that each laboratory would have to be licensed separately.

A limited amount of research on PCR has been carried out at CRSE. It was thought that the use of PCR for routine casework is still some way into the future.

It was agreed that we should all concentrate on one enzyme and after some discussion of the merits of Hinf I and Alu I it was agreed unanimously that the former would be the enzyme of choice.

Brinkmann asked Werrett to recommend some probes and the following list was put forward:-

YNH24 (Jenmark)
D2544 (Lifecodes)
pMLJ14 (Genmark)
3'HVR (D Werrett)
ICI single locus probes

Brinkmann suggested that we all use one probe, one enzyme and the same samples, preferrably from the same source. Emerson suggested, and it was agreed, that each lab should prepare a bulk sample of DNA and distribute 50µg to each lab represented.

Research Exercise

Each lab will buy its own enzyme (Hinf I) and record the supplier and batch number.

CRSE will distribute the probes for the research exercise.

Birthe Eriksson was asked to apologise on behalf of this group to the Norwegians (Prof Olaisen) for not including them in our meetings, and to invite them to future meetings and also to participate in the forthcoming exercise.

Details of this are given at the end of this report.

Dr Lincoln then addressed the meeting on the views of an independent analyst.

For a variety of reasons, all of which were agreed by the meeting, an independent analyst must have access to reagents to repeat investigations. Lincoln reported that at present the ICI probes are not available to his laboratory. He felt that ICI could not easily act for the defence as they have a vested interest in selling products to laboratories which work for the prosecution.

The meeting considered that if Lincoln could not obtain ICI probes, that would pose a serious problem.

Sheard said that he would discuss the problem with Lincoln and attempt to act as intermediary between him and ICI.

Dr Schneider made a presentation concerning allele size definition. By using the distance between the origin and a 2.3kb marker he is able to present the band positions as a percentage of the toal distance:-

$$\frac{\text{Band position (mm)}}{\text{2.3kb band (mm)}} \times 100 = \text{RBP\%}$$

This is achieved by the use of transparency marked in mm. It has a number of advantages. As long as there are reference points it is not necessary to have the same run conditions. The samples do not have to be run side by side and the system is neutral in that no molecular sizes are given. In the exercise everyone can make the measurements with reference to the Amersham markers.

Mr Rand made a presentation to the meeting in which he pointed out the necessity for control at every step of the operation to prepare DNA profiles. He expressed concern that some labs could obtain the necessary reagents and present results without being aware of the problems involved. He discussed the use of dob-blot methods and the doubts held by some scientists and yet these results were being given in US courts.

The meeting generally agreed that scientists' statements should be clear and written for the layman but an appendix should contain details of the method.

Mr Lochtenberg discussed the legal aspects of comparing databases. (I left the meeting at this point and, unfortunately missed the presentation. My apologies to Mr Lochtenberg.)

Sheard suggested that we could now go further and start to make preparations so that at our next meeting we could identify a core package of probes. It was therefore decided that although the exercise was sufficient for the present, any information regarding a core-package for the future should be sent to Dr Werrett with the names of the probes and any experience in their use.

The conditions of the exercise were then presented to the meeting.

Each of the 12 labs will prepare enough DNA for a least 50µg to be sent to each of the participants.
The DNA should be in TE buffer and the concentration stated.
Samples should be distributed by 15 March 1989.
Werrett will supply each lab with YNH24 and ask Amersham to distribute ^{35}S markers by 15 March 1989.
Each lab should check their DNA preparation for high m.wt concentration.
The source and batch number of Hinf I should be stated.

The length of the gel should be stated and should be greater than 20 cm.
Each sample should be run ten times.
The concentration and volume added to each track should be stated.
Measurements of bands (as per Schneider) should be made, and those together with autoradiographs (or good copies) sent to Prof Rittner and Dr Werrett.
Results should be despatched by 31 July 1989.
(If a laboratory has not completed the whole exercise, whatever results are available should be sent by 31 July 1989.)

Each laboratory has been assigned a number (see list) which should be the number of their sample.
As each sample will be run ten times, each run should be given a number. Therefore Dr Bar, when examining a sample from Dr Schmitter on the fourth run, will label this 9.3.4. This will make it possible to compile a table of all the results.

The meeting agreed that this report should be available to all interested parties.

Mr Kloosterman and Mr Lochtenberg agreed to host the next meeting in The Hague on 6 October 1989.

Prof Brinkmann thanked all present and after a concensus wished the participants to be known as the European DNA Profiling Group, he closed the meeting.

LIST OF PARTICIPANTS

Denmark	1.	Dr. Birthe Eriksen	Institute of Forensic Genetics Frederik den Femtes Vej 11 2100 Copenhagen
Germany	2.	Prof. B. Brinkmann Mr. S. Rand	Institut fur Rechtsmedizin Universitat Munster von Esmarch - Str. 86 4400 Munster
	3.	Dr. H. Schmitter	Bundeskriminalamt Thaer Str. 11 6200 Wiesbaden
	4.	Prof. Ch. Rittner Dr. P. Schneider	Institut fur Rechtsmedizin AM Pulveratum 3 D 6500 Mainz, W. Germany
Italy	5.	Prof. U. Rossi	Servizio Ematologia e Centro Transfus Ospedale Legnano 20122 Milan
	6.	Prof. V. Pascali	Universita Catholica Del Sacro Cavore Facolta Medicinia e Chirurgia Instituto di Medicina Legale Roma
Netherlands	7.	Dr. A.D. Kloosterman Dr. H. Lochtenberg	Gerechtelyk Laboratorium Volmerlaan 17 2288 GD Ryswyk
Norway	8.	Prof. B Olaisen Dr. B. Mevag	Institute for Forensic Medicine Rickshospitalet N-0027 Oslo 1
Switzerland	9.	Dr. W. Bar	Ger. - Med. Inst. d. Univ. Zurich Zurichberg Str. 8 8028 Zurich
UK	10.	Dr. D. Werrett Mr. V. Emerson	Central Research and Support Establishment Home Office Forensic Science Service Aldermaston Reading, Berks. RG7 4PN
	11.	Mr. B.H. Parkin Mr. P.D. Martin Dr. B. Sheard	Metropolitan Police Forensic Science Laboratory 109 Lambeth Rd. London SE1 7LP
	12.	Dr. P. Lincoln	London Hospital Medical College Turner Street London, E1 2AD

DNA Profiling - European Integration

Munster - 4th February 1989

PROGRAMME

9.30	Welcome	Brinkmann
9.45	Introduction and summary on Sunbury meeting	Sheard
10.00	Secretaries' resumees	Brinkmann Werrett Kloosterman
11.00	Coffee	
11.15	View of an independent	Lincoln
11.30	Quality Assurance	Rand
11.45	Legal Aspects	Lochtenberg
12.00	Allele size definition	Rittner / Schneider
12.15	Presentations from the floor	
1.00	Lunch	
2.30	Discussion	Brinkmann
4.30	Agreements and decisions reached at this meeting	Sheard
5.00	Chairman's closing remarks	Brinkmann