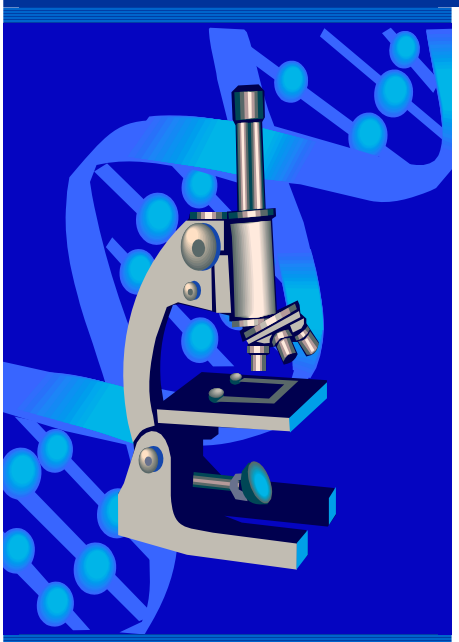
aaBB Accreditation

Relationship Testing News

January 2007 Volume 2, Number 1



In This Issue

Highlights from the 2006 AABB Annual Meeting

2006 ANNUAL MEETING SESSION RE-CAP

Live Learning Center - Education Within Your Reach

Convenient and accessible anytime, the AABB Live Learning Center offers quick access to essential Annual Meeting and audio conference content through audio synched-to-slide presentations for purchase. Download educational content and feel like you are present in an Annual Meeting session. Each slide presentation is accompanied by real audio from the actual session or event you missed. This now valuable benefit of AABB educational events and professional development are just a click away.

Listed below are sessions from the 2006 Annual meeting that may be of interest to you.

Session: **New Developments in Forensic Sciences**
Date: **Sunday, October 22, 2006 8:30 am – 10:00 am**

Available at the AABB Live Learning Center within the 2006 Annual Meeting
Program Code 5113-TC

NEW DEVELOPMENTS IN FORENSIC SCIENCES

During the 2006 AABB Annual Meeting in Miami, Florida, Dr. Robert W. Allen organized a program on New Developments in Forensic Science. Dr. Sudhir Sinha gave an overview of the field. He included information about the latest trends in forensic science and how they may impact the field. Information about Y-chromosome analysis, mitochondrial typing, and new approaches for performing testing and analysis were presented.

Dr. Anthony Carter presented information about the use of Alu repeats for identification and relationship testing. There are human specific Alu repeats in the genome that can be used for identification due to changes at the DNA level. Examples were presented about how this system could be used for testing.

Lastly, Dr. Robert W. Allen presented the results of his studies about the ability to obtain DNA from the fingers or hands touching items. He showed that such touch evidence yielded a DNA profile useful for identification in many cases. However, there was variation in the amount of DNA obtained presumably due to the number of skin cells present. Such new tools using DNA obtained from evidence are important for law enforcement.

Annual Meeting

IF YOU MISSED THE MEETING IN MIAMI YOU CAN ORDER HANDOUTS OR STREAMING AUDIO WITH POWERPOINT SLIDES

OF

THE 2006 SIGs

VISIT

THE

AABB LIVE LEARNING CENTER

JUST CLICK:

http://www.softconference.com/aabb/

Session: **Relationship Testing SIG I**
Date: **Saturday, October 21, 2006 10:30 am – 12:00 pm**

Available at the AABB Live Learning Center within the 2006 Annual Meeting
Program Code 5007-TC

IMMIGRATION TESTING

The problem laboratories are seeing with immigration testing was an issue discussed during the meeting of the Relationship Testing Special Interest Group (SIG). All of the laboratories believe the use of relationship testing provides a method for obtaining, strong reliable evidence of a biological relationship. The testing is thus a powerful tool for use by authorities seeking to establish a familial relationship as part of the immigration process. However, like any tool, it can be misused or misinterpreted.

At the annual meeting, a common question asked by immigration services, is given a husband and wife, are they related? This question was asked of the laboratories present to obtain the sentiments of the scientific community on how this question should be answered. The unanimous answer is, laboratories cannot answer this question.

When testing relationship cases, a specific question need to be asked (a specific hypothesis for testing). Asking 'Are the husband and wife really full siblings as opposed to unrelated?' is a legitimate question that may be answered by the testing laboratory. Likewise, 'Are they uncle – niece?' as opposed to unrelated. Just asking 'are they related?' is not appropriate and laboratories should discourage immigration services from asking these vague questions.

One particular social issue that can be problematic is in some cultures it is not unusual for first or second cousins to be married (and in the United States first and second cousin marriages may be legal, depending on the State). If the husband and wife are cousins, the vague 'are they related?' may result in a false indication they are more closely related than their real degree of relationship.

Thus immigration services should be encouraged to ask for evaluation of specific relationship questions, based on immigration services' assessment of social evidence.

AVAILABLE SOON

The 2005 AABB Annual Report Summary

To obtain a FREE copy

JUST CLICK:

http://www.aabb.org/Content/Accreditation/Parentage_Testing_Accreditation_Program/ptprog.htm

Featured Publication

Accreditation information Manual (AIM), 6th Edition

Complimentary copies of the new 6th edition AIM were mailed to all accredited facilities and assessors during the month of November. If you did not receive your copy or would like to order a copy please contact AABB customer service at (301) 215.6489

AABB ACCREDITATION STATS AND CAP SURVEY RESULTS FOR 2005-2006

Mary Mount, as Chair of the Relationship Testing Accreditation Program Unit (RTAPU), gave a presentation discussing AABB Accreditation and CAP Survey Results for 2005-2006.

It was noted that:

- ✓ There are 27 approved RT volunteer assessors and 2 trainee assessors.
- ✓ There are now 47 accredited labs.
- ✓ 22 labs were successfully accredited: 18 renewals, 3 new domestic and 1 new international.
- ✓ No labs were subjected to reassessment.
- ✓ There are 4 new labs with applications still pending.
- ✓ There are 5 labs that either closed or terminated their application.
- ✓ Most of the accredited labs tested 5,000 cases or less per year.
- ✓ The number of labs doing RFLP continues to drop.

RT assessors issued 26 non-conformances to laboratories assessed using the 7th Edition of the Standards for Relationship Testing Laboratories between January and September 2006. Of the non-conformances issues, 11 were cited in Process Control (Std. Ch. 5.0), 5 in Organization (Std. Ch. 1.0), 4 in Resources (Std. Ch. 2.0), 2 in Equipment (Std. Ch. 3.0), 2 in Documents (Std. Ch. 6.0), 1 in Supplier and Customer Issues (Std. Ch. 4.0), and 1 in Process Improvement Through Corrective and Preventative Action (Std. Ch. 9.0).

The CAP survey has had great participation. The number of labs performing STRs, both A-STRs and Y-STRs has nearly replaced all other testing. The number of labs participating in the 3 surveys reviewed in this presentation ranged from a low of 88 to a high of 106. The most common errors seen (6-7% of labs) in the surveys were the reporting of genotype instead of phenotype. The overall outcome of the 3 surveys can be found in the tables below.

PARF-C 2005

	Included AF	Excluded AF
Correct Results	100%	100%

PARF-A 2006

	Included AF	Excluded AF
Correct Results	93.2%	97.8%
Indeterminate Results	4.6%	1.1%
Single Exclusion	1.1%	
Not Tested	1.1%	1.1%

PARF-B 2006

	PAR-07 AF Excluded	PAR-08 AF Excluded
Correct Results	99%	98.1%
Not Tested	0.9%	1.9%

TO ORDER A COPY OF THE

7th Edition Standards for Relationship Testing

OR

7th Edition of Guidance for Standards for Relationship Testing Laboratories

JUST CLICK:
https://portal.aabb.org/apps/marketplace/category.aspx?cat=Standards%20and%20Quality&subcat=Standards

Session: **Relationship Testing SIG II - Relationship Testing for Identification of Victims after a Mass Disaster**
Date: **Saturday, October 21, 2006 2:00 pm – 5:30 pm**

Available at the AABB Live Learning Center within the 2006 Annual Meeting
Program Code: 5023-TC

TESTING WITHOUT THE MOTHER

During the meeting of the Relationship Testing Special Interest Group (SIG), as with the 2005 meeting, many laboratories were represented. Once again these laboratories voiced a strong concern about the apparent increase in the number of clients submitting disputed paternity cases without the mother. These laboratories are very concerned about other laboratories that appear to promote testing without the mother.

Testing without the mother presents a number of problems. First, the relationship index is, on average, cut in half for each locus tested. This is particularly problematic in cases where the father is also not tested (reconstruction case).

In addition, not testing the mother greatly reduces the ability to detect a falsely accused man. This was substantiated during one presentation where an evaluation of approximately 17,000 cases, initially tested with the mother and then re-evaluated without the mother, showed false inclusions did occur. Some with likelihood ratios greater than 100.

Other cases where the mother should be tested are incest cases, which can easily produce false inclusions. When an apparent inconsistency (mutation) is present, it may not be possible to render an opinion of paternity without obtaining a sample from the mother.

The mother is also an important QC step. If the mother is excluded it may indicate a problem in the testing. The testing of the mother may also allow for the detection of fraud, such as welfare fraud on the part of the mother or cases where the alleged father brings a child he knows is his, but is not the child of the mother.

Thus, the testing of the mother, even if maternity is not disputed, is important in evaluating the questioned relationship, it improves the chance of obtaining clear results and is a quality control check for both the scientific and legal community. The laboratories represented strongly felt that testing without the mother should only be done when the mother's location is unknown or she is deceased. Every effort should be made to test the mother. Laboratories should not promote testing without the mother.

IDENTIFICATION PROBLEMS WHEN THERE ARE RELATED VICTIMS

Charles Brenner, Ph.D.
Consultant, DNA-View program

Relatives among the dead and missing are a recurrent and important theme in mass identification projects, particularly including Bosnian war dead, Hurricane Katrina victims, tsunami victims in the Indian Ocean, and airplane crashes.

When several bodies are found and believed to be relatives, their relatedness is an advantage for obtaining identification. However, the right way to leverage the presence of related victims is not serial but simultaneous. That is, the superficially obvious serial process wherein A is identified from available reference relatives, then A is added to the set of references for the purpose of identifying B, is both inefficient and illogical. The right approach is instead to compute and compare likelihoods for all of the reasonable compound hypotheses consisting of assigning identities to A and B together. In this way, the DNA relationship between the bodies reinforces the identification of each of them.

Dr. Brenner pointed out that in identification of victims of mass disaster complications abound: What if some victims are dead but not reported missing? What if some victim is reported missing with a different pedigree claimed relationship to references than is the biological truth? What of bodies that are found together?

There is no end in sight to new questions. The persistent lesson in mass identification projects, the only consistent rule, is that all are different. Every one presents novel problems and upsets the ordered conclusions of past experience.

EXAMPLES OF UNUSUAL RELATIONSHIP CALCULATIONS

Chantal Harrison, MD
University of Texas Health Science Center at San Antonio, TX

Obtaining genetic profiles in unusual relationship cases is the easy part. The most difficult part is the calculation aspect of these complex relationship cases. Reconstruction cases require a clear understanding of both genetics and probability. This presentation uses several cases as an illustration of the principle of listing all the possible genetic possibilities in a complex case and the subsequent calculation of absolute and relative frequencies for each possibility. From this basic analysis each system index can be derived and the overall relationship index calculated.

Do you have an interesting case or question you would like to share? Email us at nikkib@aabb.org

RESPONSE TO HURRICANE KATRINA USING LESSONS LEARNED

Amanda Sozer, Ph.D.
DNA Technology Consulting Services

Using DNA to identify individuals in mass fatalities was a relatively new concept a few years ago and now is standard procedure. Only in the past few years has the United States come to know the meaning of mass fatalities as this overwhelming occurrence is most typically associated with genocide which takes place in foreign, war-torn nations and not here at home. This presentation details the creation and effectiveness of the Katrina DNA processing system that was built and what it took to create, fund and operate in order to take on this monumental task, which was expensive monetarily and scientifically. Issues in this presentation cover project funding, computational system set-up, DNA unit organization, the importance of outside organizations being involved and the need for genetic counselors in such an event. Lessons learned during the creation of the Katrina DNA Identification effort will benefit other laboratories in their pursuits in resolving mass fatalities.

CONSIDERATIONS FOR THE INTERPRETATION OF STR RESULTS IN CASES OF QUESTIONED HALF SIBSHIP

Robert W. Allen, Ph.D.
Center for Health Sciences, Oklahoma State University

Likelihood ratios (LRs) were calculated for a cohort of 50 pairs of true full sibs (full sib index) and 60 pairs of true half sibs (half sib index) and compared with LR values calculated for equal numbers of unrelated, paired children. Full sib pairs were obtained from parentage case involving two children in which the mother and alleged father were both shown with high probability to be the parents of the children. The half sib groups were obtained from 60 archived cases involving a true mother, two children, and an alleged father were tested and in which the alleged father was excluded as the father of only one of the two children. For both groups, STR results obtained with the Identifiler multiplex was used for the calculations. The distribution of LR values among true full sibs did not overlap with LR values for random pairs. The lowest LR for a true sib pair was 5 and the highest LR among unrelated children was about 0.1. Therefore, a LR of 10 could be considered strong evidence in favor of an allegation of full sibship. In contrast, LR values among half sibs overlapped considerably with values from random pairs with a maximal value of 42, and LRs greater than 2 were produced in 8 instances among random pairs. Overall, results suggest that half-sib indices of 30 or greater are fairly characteristic of individuals who are related as half sibs. In contrast, half-sib indices of 0.1 or less are fairly characteristic of unrelated individuals who claim to be half sibs. LRs falling between 0.1 and 10.0 are uninformative, as this region represents the overlap in the LR distributions produced from the true and false half sib groups when the Identifiler multiplex kit is used for testing.

Do you have an interesting case or question you would like to share? Email us at nikkib@aabb.org

THE APPLICATION OF REDUCED-SIZE STR PRIMER SETS IN THE ANALYSIS OF HUMAN DNA FROM DEGRADED AND COMPROMISED SAMPLES

Bruce R. McCord, Ph.D.
International Forensic Research Institute, Florida International University

DNA degradation of sample evidence is a natural occurrence and is a factor that can ultimately affect the integrity of the genetic profile. Processing degraded samples subsequently results in low signal levels, peak imbalance, elevated stutter and/or allele dropout. Many of these problems are the result of increasing fragmentation of the DNA template and are difficult to overcome because they result from loss of primer binding sites. This presentation explores the technique of moving currently utilized STR primers in closer to the target location where the variation lies, thereby minimizing the amount of DNA flanking the target site needed and resulting in shorter amplicon fragments. Reducing the length of the genetic region needed for amplification is beneficial in that the probability of having the genomic material needed for amplification becomes greater. Also, shorter fragments can mean higher amplification efficiency and fewer lost alleles. This concept of a "Miniplex" approach is shown, in this presentation, to be highly successful compared to the current STR multiplex systems that are used. Multiple tests using degraded samples and qPCR show that this method of amplification has real promise in human identity processing.

TRIOS VS. DUOS:

Michelle Beckwith
PTC Laboratories

Ensuring that one has the correct result is of utmost importance to the DNA testing community. There has been much speculation as to the reliability of motherless testing due to the fact that half of the genetic information of the child is not accounted for and if the tested man matches the biological mother at many loci, a false positive could result if a low number of genetic systems are used. This presentation examines a study of a number of cases where the mother has been hypothetically deleted in order to get an idea as to the occurrence of wrong results in motherless test cases. In cases where there were, indeed false inclusions, there appeared to be no relationship between mother and alleged father. This presentation stresses the importance of having the mother's genetic profile in order to be more comfortable with the ultimate result.

Annual Meeting

IF YOU MISSED THE MEETING IN MIAMI YOU CAN ORDER HANDOUTS OR STREAMING AUDIO WITH POWERPOINT SLIDES

OF

THE 2006 SIGs

VISIT

THE

AABB LIVE LEARNING CENTER

JUST CLICK:

http://www.softconference.com/aabb/

DISASTER PLANNING FOR DNA TESTING LABORATORIES: STRATEGIES AND LESSONS

Sudhir Sinha, Ph.D.
Reliagene Technologies, Inc.

Only three weeks after Hurricane Katrina hit New Orleans, ReliaGene Technologies, Inc. became fully operational again. In addition, all samples that were in transit at the time of the disaster were recovered and processed. If it had not been for a number of contingency plans in place, almost assuredly the company would not have survived. This ReliaGene presentation is an insight into what type of emergency management systems were in place and which of those systems had the largest impact in recovery, both during and in the weeks following the disaster. Having a basic plan for concepts of operations and creating administrative guidelines in order to implement emergency planning is the fundamental message of this presentation. Other issues discussed are basic steps of plan implementation, securing evidence, securing laboratory equipment and preparation and protecting the company staff. The concepts visited in this presentation are general enough so as to be applicable to any laboratory that resides in an area where Mother Nature may pose a threat.

Session: **What's new in HLA Typing, Antibody Identification and Engraftment Monitoring**
Date: **Sunday, October 22, 2006 2:00 pm – 5:30 pm**

Available at the AABB Live Learning Center within the 2006 Annual Meeting
Program Code 5133-TC

WHAT'S NEW IN HLA TYPING, ANTIBODY IDENTIFICATION AND ENGRAFTMENT MONITORING

- Developed in conjunction with the American Society of Histocompatability and Immunogenetics

Experienced speakers discussed the latest findings in the areas of HLA antigen and antibody testing as they relate to donor/recipient matching. In this session the audience learned how histocompatibility antigens are used as targets for Immunohematology and their role in allogeneic stem cell transplantation.

They also took a look at the way current HLA typing and antibody identification procedures are used to assist in organ allocation and to study transplantation outcomes. They discovered how testing for polymorphisms in other genetic systems are used for disease risk assessment, identification, and relationship analysis.

Did you know?

- ✓ **Questions encountered during an onsite assessment can be addressed immediately by calling 301.215.6492.**
- ✓ **Additional questions or uncertainties regarding any standard can be submitted to the Relationship Testing Accreditation Program Unit for review as a topic for the newsletter and/or educational topic at the National AABB Meeting. Forward topic suggestions to nikkib@aabb.org**

PLEASE NOTE

AABB Assessor Continuing Education

It's that time again!!! All approved assessors with odd numbered membership IDs must submit continuing education credit hours by March 30, 2007. Forms to submit your CE hours can be found on the AABB website

New AABB Policies Established in 2006

Three new policies were instituted by the AABB National Office in 2006 and they are as follows:

- **Staffing Changes** – AABB must be notified in writing of all initial appointments or staffing changes for the Laboratory Director, Laboratory Director Designee and Laboratory Supervisor within 30 days of the appointment. A current CV plus evidence of qualifications must accompany the notification.

- **Validation Assessment** – The purpose of this assessment is to verify that the assessment process is working as designed and that assessors are citing appropriate non-conformances. The validation assessment will involve a follow-up visit to 1% of the facilities assessed in a calendar year. This assessment will be conducted by either a technical specialist from the AABB national office or an AABB lead assessor along with an assessor from Relationship Testing and should take no longer than 1 day. The facility will be notified of the validation assessment within 30 days of the accreditation assessment. Additional non-conformances found will require submission of a corrective action plan.

- **Unannounced Assessments** – Beginning January 1, 2007, the AABB will conduct unannounced assessments. The unannounced assessments will take place in the quarter you have been assigned. For instance, if your last assessment was scheduled during the 3rd quarter of 2005, your next assessment will occur during the 3rd quarter of 2007. You will still be able to accept or decline the assigned assessor. You will also be able to black out 5 days. If the Laboratory Director is not at the lab for the assessment, he/she must be available by phone and designate a person to assist the assessor(s).

2006-2007 RTAPU Members:

Mary Mount, MT(ASCP)
Chair
Amarjit Chahal, PhD
Karen S. Miller, MT(ASCP)
Sudhir K. Sinha, PhD
Vicki Yarnell, MT(ASCP), CHS(ABHI)
Michael L. Baird, PhD
George Maha, JD, PhD

Board Representative:
Kathleen Houston, MT(ASCP)SBB

2006-2007 RTSPU Members:

George Maha, JD, PhD
Chair
Jane Pritchard, BS, MT(ASCP), CLSp(MB)
Susan Greenspoon, PhD
Marilyn S. Pollack, PhD
Bruce Wilder, MD, JD
Neils Morling, MD, DSc
Michael L. Baird, PhD
David Gjertson, PhD
Mary Mount, MT(ASCP)
James Mason, PhD

Board Representative:
Joy L. Fridey, MD, MBA

WANTED

Assessors

Have you ever considered becoming an assessor? The AABB Relationship Testing Program is looking for assessors. Please consider becoming one.
The requirements for an assessor are as follows:

- Must hold a minimum of a bachelor's degree.
- Must be an active AABB individual member.
- Must possess the appropriate experience and training.
- Must agree to the defined commitments.
- Must possess defined attributes.
- Must agree to the defined continuing education and competence requirements.

New assessor training is held at the AABB Annual Meeting and at Regional Workshops offered during the year. For a complete workshop schedule and details on the requirements/qualifications contact Kim Charity at kcharity@aabb.org or visit http://www.aabb.org/Content/Accreditation/Become_an_Assessor/becomeassess.htm

RTAPU or RTSPU Member

Are you currently an assessor? Would you like to be involved in planning the AABB Assessor Day Relationship Testing breakout session? Would you like to review corrective action plans for process non-conformances? Would you like to be involved in the newsletter? If these issues are of interest to you, the Relationship Testing Accreditation Program Unit would like to have you as a member.

Are you currently an AABB Member? Would you like to be involved in creating and revising the Relationship Testing Standards? Would you like to review the requests for variance from the Standards? Would you like to be involved in creating and revising the Guidance for the Standards? If these issues are of interest to you, the Relationship Testing Standards Program Unit would like to have you as a member.

Please contact Pam Lubel at the AABB National Office at plubel@aabb.org.