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President's Message:

June already! Where has the year gone? Before you know it we'll all be picking out Christmas trees and wrapping gifts to set beneath it. I shudder to think…….. I hope you're all enjoying summer to the fullest while it's here.

Keeping in mind that time is passing fast, it won't be much longer and the annual IABPA Conference will be upon us. Are you planning to attend? If so, drop Norman Reeves a quick e-mail and let him know of your intentions. Better yet, tell him you plan on presenting an interesting case study or research project. Norm would love to hear from you.

During our last business meeting in Odessa, Texas several motions were made from the floor. One, dealt with a revision of the current by-laws in an attempt to resolve potential conflicts of interest in relation to the Legal Representative's position and voting on Executive Board matters. The second, dealt with the creation of a 6th VP position. This position would cover Australia, New Zealand, and all other East Asian Countries. While revising the by-laws to incorporate these modifications it was noted that other house keeping issues needed to be addressed. Within this issue of the IABPA News you will find both the current wording and proposed wording for the changes. Please take the time to read through these, as they will be brought forward at the 2004 business meeting for ratification by you, the membership.

While on the topic of the business meeting, I'm calling for agenda items now. If you have a topic for discussion or wish to bring anything forward please send Norm or me a quick e-mail. I will call again for agenda items at the commencement of our business meeting and then accept a motion on the business agenda. I have been advised that we will have limited space and time in which to proceed. Only those items on the agenda will be addressed. Please send us an e-mail with your agenda items.

Members are also reminded that advancement from a *provisional* member to *full* member is not automatic. One must apply for promotion. Forms can be found on our website. Only those applications received sixty (60) days prior to our business meeting will be considered. All other applicants will have to wait until the following year.

Speaking of websites, check us out at www.iabpa.org. Joe Slemko has made some great changes to the site. If you haven't visited the site in awhile log on and take a look. Conference information, back issues of the News, IABPA related articles, Executive Board e-mail addresses, and a lot more can all be found here. Thanks Joe, for your efforts.

Have a great summer. I look forward to seeing you Arizona.

Take care of yourselves and be good to one another.

William (Bill) Basso

Research Article

The ABAcard® HemaTrace® - A Confirmatory Identification of Human Blood Located at Crime Scenes

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ABSTRACT:

The forensic identification of human blood is one of the most important serological tests performed. Disadvantages for the crime scene examiner at the crime scene, are that current identification methods can prove to be unreliable or non-specific with confirmatory results only available following laboratory testing. Through the examination of blood samples on differing substrates and of variable stain age, cross reactivity mixtures and subject to chemical and environmental insults, this paper examines the sensitivity and specificity of Abacus Diagnostic's ABAcard® HemaTrace® "species of origin" test for blood.

Results, using replicated crime scene samples, indicate that the HemaTrace® "species of origin" test for blood is sensitive and specific to human (higher primate) hemoglobin. Simple to perform and requiring a minimum of equipment, the HemaTrace® can easily be implemented by the crime scene examiner at the crime scene, as a reliable confirmatory test for the detection of human blood.

INTRODUCTION

The timely "confirmatory" identification of blood, in association with species determination, can be of significant investigative importance. Current methods available to the crime scene examiner for the forensic identification of blood, at the crime scene, are generally limited to visual or presumptive chemical means.

The ABAcard® HemaTrace® is an immuno-chromatographic assay for the forensic identification of human hemoglobin (Hb). The testing procedure allows for a questioned sample to be added to the test kit following hemolysis with buffer solution. If human Hb is present within the questioned bloodstain, it will react with a mobile monoclonal antihuman antibody impregnated in the absorbent test strip (stationary phase) forming a mobile antibody-antigen complex. This mobile antibody-antigen complex then migrates (mobile phase) through the test strip to a test window where a polyclonal antihuman Hb antibody is immobilized.

This immobilized antibody captures the mobile antibody-antigen complex so that an antibody-antigen-antibody sandwich is formed. When the human Hb concentration in the sample exceeds 0.05µg/ml (minimum detection level), this immobilized antibody captures the antigen-antibody complex and a pink precipitin line is formed as a result of the conjugated pink dye antigen-antibody complex being concentrated in this test region [(1)]. As an internal control, human Hb antibody-dye conjugates cannot bind to the antibody in the positive result test area.
The antigen-antibody complex continues to migrate further along the strip and is captured by a second set of immobilized polyclonal anti-immunoglobulin antibodies, thus forming a second pink precipitin line (internal control line) [(1)]. To interpret results, the presence of two colored bands, one in the test area ('T') and one in the control area ('C'), indicates a positive result while the visualization of only one band in the control area, would indicated a negative result (provided no "High Dose Hook" effect) [(2)].

Figures 1 to 3, below, show the HemaTrace® in operation with the solution front migrating along the test strip towards the test indication band areas (Figure 2) and a "two band" positive result (Figure 3).

Figure 1

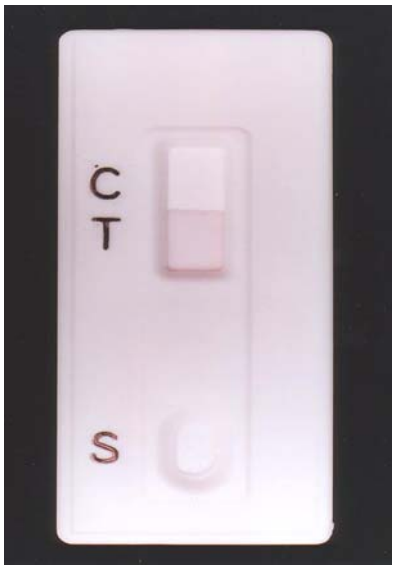

Figure 2

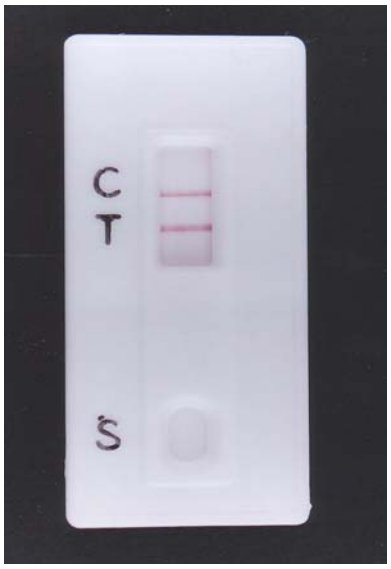

Figure 3

High Dose Hook Effect

The High Dose Hook Effect occurs when the human hemoglobin concentration is too high for the test; it is therefore possible to obtain a false negative result from samples containing very high concentrations of hemoglobin [(3)]. Where the High Dose Hook Effect is suspected, the questioned sample should be diluted and re-tested [(1)].

EXPERIMENTAL MATERIALS AND METHODS

The HemaTrace® test kit, along with a pipette, comes contained within a plastic satchel. The buffer solution is also supplied in a screw cap plastic tube separately. The HemaTrace® testing unit is a small sized plastic component measuring approximately 6.5cm in length by 2.5cm in width (see Figure 4).

One hundred (100) HemaTrace® tests were completed using an array of blood samples on various substrates exposed to a variety of environmental conditions and chemical insults. Cross reactivity was also examined using various blood and fluid types. All test solution samples were extracted using Hematrace® extraction buffer.

Figure 4 : HemaTrace® Test components

Blood Sample Volume

While the sensitivity of the HemaTrace® was not critically examined in this study, care was taken regarding maintenance of a bloodstain sample volumetric standard of 0.5ml.

Sample Collection Method

Samples on semi or non-porous substrates (all stain ages) were collected by COPAN cotton swab and de-ionized water. For fresh and aged stains on cloth substrate, sample collection was by both, swabbing and excising a $5mm^2$ swatch. For both collection methods (swab or swatch), the swab head or cloth swatches were immersed completely in the extraction

buffer solution for a period of time (dependent on stain age) ensuring the adequate hemolysis of any hemoglobin contained in the questioned sample.

Sample Test Method

The testing procedure involves adding 150µl (4 drops) of the suspect sample into the sample well marked **'S'** on the testing unit and allowing it to soak in. The solution front then migrates along the absorbent test strip until a band visualizes at the control area marked **'C'**. Positive results were indicated by band visualization at the testing area marked **'T'**. If no band was visualized at the control area marked **'C'**, the test was ruled invalid and repeated. A positive or negative result is read within 10 minutes. For obvious bloodstains, results were often obtained in under 2 minutes.

RESULTS

Environmental Insult / Variable Substrate Study

Testing of bloodstains on differing substrates exposed to a variety of conditions was carried out in order to simulate crime scene variability. Human blood was deposited on cloth, concrete paving, asbestos and wooden fences and several metal implements. The samples were subjected to a range of environmental conditions such as exposure to rain, sunlight and variable daily temperatures. Positive results were obtained for all obvious bloodstains with a demonstrated need to extend buffer hemolysis time due to decreasing Hb solubility, as stain age increased. The porosity of the substrate in association with sample dilution due to rain appeared to be the major factors influencing results [(4)].

Miscellaneous and Chemical Insult Study

Human blood was subject to a range of mechanical (substrate washing) and chemical insults prior to being sampled and tested. Neat blood was also placed directly into the test sample well. This testing was completed in order to examine the possibility of inducing invalid results (Hook Effect) or "false negatives". The Hook Effect was not observed and positive results from cloth, following machine washing, were obtained. Chemical insult by a number of strong household cleaning agents on sample stains provided negative results, probably through the denaturing of the Hb.

Cross Reactivity Study (Animal Hb)

The HemaTrace® is specific for human hemoglobin and hemoglobin derived from higher primate [(2, 5)]. No cross reactivity to hemoglobin from Canine (dog), Porcine (pig), Equine (horse) or Feline (cat) species was detected. Importantly, Human Hb, in combination, with variant animal Hb was detected [(4)].

Cross Reactivity Study (Human body fluids other than blood)

Due to the sensitivity of the test, trace levels of hemoglobin can be detected in "other than blood" body fluid samples. Representative samples of various human body fluids were analyzed to assess the presence of hemoglobin. Hemoglobin was detected in neat male and female saliva and in neat male urine [(4)].

PRACTICAL "CASE WORK" APPLICATIONS

Case I

Prior to the identification of this testing method, the author assisted in the forensic investigation of an apparent homicide. Obvious projected bloodstains were observed within the scene and a bloodstained hammer was located adjacent to the bloodstains (see Figure 5). The event was not witnessed, and the victim was removed alive from the scene but died soon afterwards from severe burns. Following the expenditure of considerable investigative resources over a period of several hours, the relevance of a deceased cat located within the scene was acknowledged. Had the HemaTrace® test been available and utilized, the murder (feline) / suicide (human) may have been recognized earlier.

Figure 5: Feline murder / human suicide scene

Case II

The author assisted in the forensic investigation of a homicide scene where the offenders had partially cleaned the residence, including removal of the deceased, and then allegedly contaminated the scene using animal (sheep) blood. A partial component of the forensic

investigation included an analysis and interpretation of bloodstains and bloodstain patterns within the residence (see Figure 6). The HemaTrace® test was used to separate animal and human bloodstains (general perspective) and to validate human stain selection as part of the overall BPA examination. Further, forensic investigators were able to detail preliminary examination results, in real time, with a high level of confidence.

Figure 6: Projected bloodstain over possible "cleanup" rivulet

Case III

The author recently attended a rural road scene where pooled blood, items of clothing and vehicle safety glass were located. The HemaTrace® test confirmed the blood to be of human origin. Inquiries by detectives, strengthened by the timely HemaTrace® findings, resulted in the incinerated remains of a homicide victim being located on a farm 20 kilometers from the scene where the blood was located.

Case IV

In a recent homicide investigation, the author attended a domestic residence and as a partial component of the forensic investigation, conducted an analysis and interpretation of bloodstains present in the residence. Large portions of fresh meat and associated blood from a butchered animal were also present within various areas of the premises. Historical bloodstains of unknown origin and not associated with the incident, were also observed. Using the HemaTrace® test the author was able to distinguish animal, co-mingled (human/animal) bloodstains and identify fresh and historical human bloodstains. Subsequent laboratory DNA examination of scene samples confirmed the HemaTrace® findings at the scene.

CONCLUSIONS

This evaluation study indicates that the ABAcard® HemaTrace® test is a sensitive, reliable and timely "species of origin" testing process suitable for the confirmatory identification of human blood at the crime scene. Simple to use and requiring a minimum amount of equipment, it produces results that require little specialist training to interpret.

Evaluation of sample collection methods, test preparation and operation requirements and the subsequent result interpretation demonstrates that the ABAcard® HemaTrace® test is suitable for operation and interpretation by persons with limited serological knowledge. Importantly, the integration of this assay for the forensic identification of human blood at the crime scene, can be achieved without excessive procedural change or exhaustive training of personnel.

REFERENCES

1. ABAcard® HemaTrace® test kit – Technical Information Sheet (rev. 01/2001). Abacus Diagnostics Inc. USA
2. Swander, C.J., & Stiles, JG., (1998). Evaluation of the ABAcard HemaTrace™ for the Forensic Identification of Human Blood. Paper submitted to the Michigan Association of Forensic Science Annual Meeting, Michigan USA.
3. Fernando, G.S., & Wilson, G.S. (1992). Studies of the "hook" effect in the one-step sandwich immunoassay. Journal of Immunological Methods.
4. Reynolds, M (2001). An evaluation of the One Step ABAcard Hematrace test for the qualitative detection of human blood at crime scenes. Unpublished undergraduate research project, Canberra Institute of Technology, Canberra, ACT.
5. Kristaly, A., & Smith, D.A.S., (1999). Validation of the OneStep ABAcard HemaTrace™ for the rapid Forensic Identification of Human Blood. Unpublished Paper. Forensic Biology Section, Crime Laboratory Bureau, Miami-Dade Police Department, Miami, Florida USA.

2004 INTERNATIONAL ASSOCIATION OF BLOODSTAIN PATTERN ANALYSTS ANNUAL TRAINING CONFERENCE
OCTOBER 6-7-8 2004
WEDNESDAY-THURSDAY-FRIDAY

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*CONFERENCE CONTENT

UNRESOLVED CASES AND ISSUES
BLOODSTAIN PATTERN PHOTOGRAPHY
COURTROOM PRESENTATIONS
COURTROOM AND LEGAL ISSUES
FORENSIC NEUROPATHOLOGY
CASE PRESENTATIONS
SWIGSTAIN UPDATE
IABPA ISSUES
MEET WITH THE IABPA BOARD MEMBERS
ANNUAL MEMBERSHIP MEETING

This is a great opportunity for you to bring your open and closed cases to be reviewed and discussed by fellow and experienced members of the IABPA in a relaxed and semi-private setting - not formal presentations.

Add a presentation to your Curriculum Vitae!

Share your experiences with the other analysts!

Time slots are limited and you should contact Norman *now* to ensure an opportunity to make your presentation.

Presentations will be one hour or less so more may participate.

TENTATIVE CONFERENCE SCHEDULE

TUESDAY - OCTOBER 5

3:00PM Registration - Hospitality

WEDNESDAY - OCTOBER 6
Dr. Diane Karluk -Traumatic brain injuries and subsequent effects of the movement or non movement of the victim
Richard Dobrzanski - Bloodstain photography- Court presentations-PowerPoint vs. ACDC-
Joe Slemko - Bloodstains on fabrics
Peter Lamb – The use of BPA modeling in investigations
Business Meeting

THURSDAY – OCTOBER 7
Toby Wolson - Visualization of latent prints by interaction with blood
Joe Slemko - Innovative applications
Charlene Marie - Case presentation and 2005 conference presentation
Norman Reeves - Suicide or Murder
Scott Lamont - TBA

Tanque Verde Ranch Banquet

FRIDAY - OCTOBER 8
SWIGSTAIN Update

SATURDAY – OCTOBER 2 AND SATURDAY 9 - OPEN HOUSE AT NORMS

PLEASE RSVP REGARDING THE OPEN HOUSE

NORMAN REEVES
520-760-6620
FAX 520-760-5590
norman@bloody1.com

*Known as of this publication date and subject to change prior to the conference in October 2004.

CONSTITUTION AND BY-LAWS OF THE INTERNATIONAL ASSOCIATION OF BLOODSTAIN PATTERN ANALYSTS

[*proposed changes - revised May 2004*]

CHAPTER I – MEMBERSHIP

Section 4 - Application for Membership

New

All applications received less that than sixty (60) days prior to a conference will be processed the following year.

CHAPTER III – MEETINGS

Section 1 - Annual Meetings

Current

All bids, proposals and/or contracts approved shall be signed by the Legal Advisor with approval as to financial obligations by the Secretary/Treasurer.

Proposed

All bids, proposals and/or contracts approved may be signed by the Legal Advisor, or approval given to the conference coordinator to sign, with approval as to financial obligations by the Secretary/Treasurer.

CHAPTER IV - OFFICERS AND THE BOARD

Section 1 – Officers

Current

The officers of the Association shall consist of a President, Immediate Past President, five (5) Regional Vice Presidents, Secretary, Treasurer, Legal Representative, Historian and Sergeant-At-Arms.

Proposed

The officers of the Association shall consist of a President, Immediate Past President, six (6) Regional Vice Presidents, Secretary, Treasurer, Legal Representative, Historian and Sergeant-At-Arms.

Section 2 - Executive Board

Current

Vote - Any order or action of the Executive Board requires a majority vote of the Executive Board members present, unless otherwise provided for in these by-laws. Each officer shall have one vote on the Executive Board.

Proposed

Vote - Any order or action of the Executive Board requires a majority vote of the Executive Board members present, unless otherwise provided for in these by-laws. Each officer of the Executive Board shall have one vote, with exception of the Legal Representative. The Legal

Representative shall not be entitled to vote on Board related matters. Section 5 - Duties of the Regional Vice Presidents

Current
There will be four (4) Vice Presidents, one from each of the four time zones which cover the United States and Canada: Region #1 represents Pacific time zone and areas outside of the North American Continent, Region #2 represents Mountain time zone, Region #3 represents the Central time zone and Region #4 represents Eastern time zone and the Maritime Region of Canada.

Proposed
There will be six (6) Vice Presidents, one from each of the four time zones which cover the United States and Canada, Europe, and ASEAN countries: Region #1 represents Pacific time zone and areas outside of the North American Continent, Region #2 represents Mountain time zone, Region #3 represents the Central time zone, Region #4 represents Eastern time zone and the Maritime Region of Canada, Region #5 represents Europe, and Region #6 would represent all Australia, New Zealand, and East Asian regions.

Section 8 - Duties of the Legal Representative
Current
The legal Representative will supply legal representation for the counsel to the Association in all legal matters concerning IABPA.

Proposed
The legal Representative will supply legal representation for the counsel to the Association in all legal matters concerning IABPA. Although the Legal Representative is to be considered a member of the Executive Board he/she is not entitled to vote on Board matters / issues.

Section 11 - Vacancy in Office
Current
In the event of a vacancy in the office of the President, the Immediate Past President will serve as President for the unexpired portion of the term.

Proposed
In the event of a vacancy in the office of the President, the Immediate Past President will serve as President for the unexpired portion of the term. If the Immediate Past President is unable to fulfil these duties for whatever reason, a member of the Executive Board shall be appointed to fill the position.

Organizational Notices

Moving Soon?

All changes of mailing address need to be supplied to our Secretary Norman Reeves. Each quarter Norman forwards completed address labels for those who are members. Do not send change of address information to the Newsletter Editor. Simply Email your new address to Norman Reeves at:

norman@bloody1.com

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Fax: 520-760-5590

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Membership Applications / Request for Promotion

Applications for membership as well as for promotion are available on the IABPA website:
I.A.B.P.A. Website: http://www.iabpa.org

Training Opportunities

June 14-18, 2004
Math and Physics for Bloodstain Pattern Analysts
Dr. Fred Carter and Dr. Brian Yamashita
Ontario Police College
Aylmer, Ontario
Canada

♦

Pat Laturnus
E-mail: pat.laturnus@jus.gov.on.ca

September 20-24, 2004
Bloodstain Evidence Institute
Professor Herbert Leon MacDonell
and T. Paulette Sutton
Corning, New York

♦

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Bloodstain Evidence Institute
Post Office Box 1111
Corning, New York 14830
607-962-6581
Fax: 607-936-6936
E-mail: forensiclab@stny.rr.com

October 5-8, 2004
IABPA Annual Conference
Tucson, Arizona

♦

Norman Reeves
Tel: 520-760-6620
Fax: 520-760-5590
E-mail: Norman@Bloody1.com

October 25-30, 2004
Math and Physics as it Pertains to Bloodstain Pattern Analysis
Dr. Fred Carter and Dr. Brian Yamashita
Edmonton, Alberta

♦

Bruce MacLean
780-451-7472
Fax: 780-495-4505
E-mail: bruce.maclean@rcmp-grc.gc.ca

November 1-5, 2004
Basic Bloodstain Pattern Analysis
Tom Bevel
Norman, Oklahoma

♦

Tom Bevel
2115 Westwood Dr.
Norman, OK 73069
405-447-4469
Fax: 405-447-4481
E-mail: tbevel1@cox.net

November 29-December 3, 2004
Bloodstain Pattern Analysis Workshop
Toby Wolson
Miami, Florida

♦

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Crime Laboratory Bureau
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Fax: 305-471-3350
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Training Announcements for the September 2004 Newsletter must be received before August 15, 2004.

Editor's Corner

On behalf of the entire membership of IABPA I am pleased to take this opportunity to congratulate our founding member and current historian of this organization, Herbert Leon MacDonell upon receiving the honorary degree of Doctor of Science at the 118th Graduate Commencement Ceremony at the University of Rhode Island on May 23rd 2004. The University of Rhode Island conveyed this highest honor on Professor MacDonell in recognition of his contributions to the field of Forensic Science, contributions that have received world-wide recognition. As a charter member of this organization and having witnessed its growth during the past 21 years, I feel that we can all be proud of his accomplishments not only in the discipline of bloodstain pattern analysis but also in the areas of forensic chemistry, firearms identification, ballistics and fingerprint identification.

Stuart H. James
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Past Presidents of the IABPA

V. Thomas Bevel	1983-1984
Charles Edel	1985-1987
Warren R. Darby	1988
Rod D. Englert	1989-1990
Edward Podworny	1991-1992
Tom J. Griffin	1993-1994
Toby L. Wolson, M.S.	1995-1996
Daniel V. Christman	1997-1998
Phyllis T. Rollan	1999-2000
Daniel Rahn	2001-2002

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Fons Chafe
L. Allyn DiMeo
Barton P. Epstein
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Jon J. Nordby
Joseph Slemko
Robert P. Spalding
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