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Message from the Chair Stanley J. Naides, M.D.

Dear colleagues,

As 2015 draws to a close and the promise of 2016 looms bright, we have much for which we can be thankful. We have a strong organization that has responded to our changing times. We have worked diligently to increase our membership rosters. We expect that this effort will be aided by changes in the structure of our national meeting, making it more attractive to attendees. More educational content will come free with the base registration. Attending the national meeting will be more affordable, and more continuing educational units will be available at a reduced overall cost. The Artery, our new Web-based social media platform, will allow members to communicate and build a professional community. We continue to have good colleagues and important work to do together.



While we have much for which we are thankful, there is much for which we have concern. 2016 promises to continue to be a lean year for medical and scientific research funding. Not only does this stifle innovation for this generation of investigators, it leads to deterioration of research infrastructure and learning environments, which are the incubators for the next generation of innovators. It limits the opportunities for future leaders in clinical chemistry and related fields to find nurturing programs in which to develop. Concomitantly, while the number of insured consumers is growing with the Affordable Care Act and demand on laboratory services increase, the supply of clinical laboratory scientists and technicians has not grown apace. Discussion around government regulatory rules and oversight of clinical laboratories has introduced a level of uncertainty that has made planning by providers of laboratory services more challenging. Downward pressure on laboratory test reimbursement continues to make provision of services more challenging.

Despite all this, those of us living in the United States live and work in a more stable environment than our colleagues in parts of the world disrupted by civil war, conflict, poverty, or economic collapse. We are reminded that our organization is an international one, serving as a beacon to colleagues around the world. Many of the early pioneers in clinical chemistry and related fields were immigrants to the United States. Certainly, this is important to recall as we as a nation debate opening our doors to today's refugees.

AACC 2015 Immunology Poster Walk

The Clinical and Diagnostic Immunology Division conducted a poster walk on Tuesday, July 28, 2015 at 12:30pm and was led by Dr. Melissa Snyder. This guided poster walk highlighted several posters from various areas of clinical and laboratory immunology. It was a unique opportunity to bring the CDID members closer to the authors and to discuss the work accomplished by the presenters in their posters.

Some of the abstracts discussed were:

Alternatives to Oligoclonal Banding Electrophoresis in CSF: Method Comparison with Quantitative Free Light Chains and Accurate Molecular Mass Measurement of Immunoglobulins

B. D. Andreguetto, D. R. Barnidge, D. L. Murray, K. K. Hickey, J. A. Katzmann, M. A. Willrich. Mayo Clinic, Rochester, MN

Combining Nanobody Immunoenrichment and MALDI-TOF Mass Spectrometry to Detect and Isotype Monoclonal Immunoglobulins

J. R. Mills, M. C. Kohlhagen, D. R. Barnidge, M. R. Snyder, J. Katzmann, M. A. V. Willrich, D. L. Murray. Mayo Clinic, Rochester, MN

Diagnosis and Prognosis of Sepsis in the Emergency Department - Usefulness of the Point-of Care Test PATHFAST Presepsin

R. Carpio Guzman¹, E. Spanuth², J. Zapata³, R. Thomae⁴, G. Hess⁵.

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2015 CDID Mixer Report

The CDID mixer was held this year on Tuesday, July 28, 2015 at 5:30pm at the Atlanta Marriott Marquis, and was followed by the business meeting at 6:30pm. This event is a networking event in which CDID members can mingle and network with peers and friends. The CDID mixer is also the place where individuals are recognized for their contribution in their field, and this includes the Carl R. Jolliff Award for Lifetime Achievement in Clinical and Diagnostic Immunology and the CDID Best Abstract Award.

1. 2015 Carl. R. Jolliff Award for Lifetime Achievement in Clinical or Diagnostic Immunology

The Carl R. Jolliff Award for Lifetime Achievement in Clinical and Diagnostic Immunology was instituted in 2006 by the Clinical and Diagnostic Immunology Division (CDID) of AACC in memory of Carl R. Jolliff. Carl had an exemplary career in both clinical service and education and this award recognizes a member of the AACC with an outstanding achievement in either of those areas.

The 2015 Carl Jollif Award was given to **Dr. Jerry Katzmann, PhD**. Dr. Katzmann is the Laboratory Director of the Immunology Laboratory in the Department of Laboratory Medicine & Pathology at Mayo Clinic. Dr. Katzmann received an undergraduate degree in mathematics and a PhD in biology from Rensselaer Polytechnic Institute in Troy NY. He spent 3 years in an Immunology post-doctoral fellowship at the University of Illinois Medical Center in Chicago IL studying immune suppression in myeloma. Dr. Katzmann joined the Mayo Clinic Division of Hematology Research in 1976 and established the clinical flow cytometry laboratory in 1981. He has had an interest in multiple myeloma and its related diseases for his entire professional career and has focused on laboratory detection of monoclonal gammopathies and the relationship between premalignant and malignant plasma proliferative disorders. Dr. Katzmann is an Associate Professor of Laboratory Medicine & Pathology at Mayo Clinic.

As Dr. Katzmann could not attend the CDID mixer to receive his award, he sent the CDID a few words of appreciation:

"I regret that I cannot be with you at this year's Clinical & Diagnostic Immunology Division dinner. I am, however, grateful to be receiving the 2015 Carl Jolliff award. I have studied myeloma for most of my career, and Dr. Jolliff's work in electrophoresis had been known to me almost as soon as I joined Mayo Clinic 40 years ago. Thank you for this honor.

The Jolliff award is awarded to an individual, but it is also recognition of the remarkable advances that have occurred in the field of monoclonal gammopathies over the last

few decades. When I began studying myeloma, the 50% survival was 2 ½ - 3 years. Today it is 7-8 years. Treatments have progressed. In addition, the clinical laboratory has clearly progressed. When I joined the lab we were performing cellulose acetate electrophoresis and immuno-electrophoresis. Over time we moved to agarose gel electrophoresis and immunofixation electrophoresis and gained sensitivity and speed. We have seen the application of capillary electrophoresis, free light chain quantitation, flow cytometry for minimal residual disease detection, mass spectrometry for amyloid typing, and now we see mass spectrometry moving to potentially replace electrophoresis-- where Dr. Jolliff began.

The clinical immunology lab is the hub of diagnosis, monitoring, and prognosis for patients with monoclonal gammopathies. Being in the clinical laboratory and being a part of these changes has been exciting for me. As clinical laboratory scientists we bridge the basic scientist and the physician, and are in position to develop and evaluate new technologies and define how they should be used for patient care. I have felt blessed to be in this field, at a great institution, and to have had the remarkable colleagues that have made my career so productive and so enjoyable. Again... thank you for the 2015 Carl Jolliff award.

Have a great conference."

Jerry Katzmann

2. CDID Best Abstract Award

Every year, the CDID is requested to review immunology related abstracts submitted to the AACC annual meeting. This year, the CDID board reviewed 53 abstracts and selected the best abstract based on its merit and contribution to the clinical and diagnostic immunology. The CDID presented the Annual Abstract Award for outstanding research in clinical and diagnostic immunology to Dr. Bruna Andreguetto. Dr. Andreguetto recently graduated from Clinical Pathology Residency at the University of Campinas, Sao Paulo, Brazil. During the last few months of her residency, Dr. Andreguetto did an elective rotation at Mayo Clinic, Rochester, MN, where she had the opportunity to work with the Immunology and Proteomics Laboratories and presented her work at the AACC 2015 Annual Meeting. Dr. Andreguetto gave an oral presentation of her abstract at the CDID mixer meeting.



Dr. Andreguetto receiving the CDID Best Abstract Award from Dr. Stanley Nades, CDID Division Chair.



Dr. Andreguetto presenting her work at the CDID mixer meeting.

Dr. Bruna Andreguetto's abstract:

Alternatives to Oligoclonal Banding Electrophoresis in CSF: Method Comparison with Quantitative Free Light Chains and Accurate Molecular Mass Measurement of Immunoglobulins

B. D. Andreguetto, D. R. Barnidge, D. L. Murray, K. K. Hickey, J. A. Katzmann, M. A. Willrich. Mayo Clinic, Rochester, MN

Background: Isoelectric focusing coupled with IgG specific immunoblotting (IgG-IEF) is routinely used to identify immunoglobulins specific to the CNS compartment as part of the diagnostic criteria for multiple sclerosis (MS); i.e. oligoclonal banding (OCB). However, it is a labor-intensive technique with subjective interpretation of IgG bands from paired cerebrospinal fluid (CSF) and serum. Measurement of the concentration of free light chains (FLC) in CSF by nephelometry has been reported as an alternative measurement to support the diagnosis of MS. In addition, microLC-ESI-Q-TOF mass spectrometry can be used to identify both monoclonal and polyclonal immunoglobulins using accurate molecular mass. We compared the diagnostic performance of the IgG-IEF reference method with FLC by nephelometry and microLC-ESI-Q-TOF mass spectrometry to identify immunoglobulins in CSF.

Methods: Forty-four residual paired CSF/serum samples previously analyzed as positive OCB (OCB⁺, N= 25) and negative (OCB^{neg}, N=19) by IgG-IEF (Helena SPIFE 3000) were used for this study. FLC kappa and lambda were measured by nephelometry (The Binding Site) in serum and CSF. Serum immunoglobulins were purified using Melon Gel (Thermo Fischer). Samples were reduced with dithiothreitol then analyzed by microLC-ESI-Q-TOF MS on an AB SCIEX Triple TOF 5600 mass spectrometer. Clones unique to CSF and serum were identified using accurate molecular mass (monoclonal immunoglobulin Rapid Accurate Mass Measurement (miRAMM)). Readers were blinded to OCB results.

Results: The mean \pm SD number of IgG bands observed by IEF was 9.2 ± 3.6 for OCB⁺ samples, whereas in the OCB^{neg} cohort it was 0.2 ± 0.4 . Concentrations of kappa and lambda were ~12-fold and ~6-fold higher in OCB⁺, respectively ($p < 0.0001$). Receiver Operating Characteristic (ROC) curve analysis showed an AUC of 0.976 for kappa FLC concentration in CSF, and a cut-off ≥ 0.0623 mg/dL provides a sensitivity of 100% with specificity of 83% in comparison to IEF. Analysis of the sum of FLC in CSF provided similar results (AUC 0.970) when a cut-off ≥ 0.1200 mg/dL is applied. Concentrations of FLC in serum did not correlate with OCB results ($p > 0.05$). MicroLC-ESI-Q-TOF oligoclonal profiles were in 100% agreement with IEF. In the OCB^{neg} cohort, CSF did not contain any light chain clones in 16 samples (84%). 3 samples had clones whose accurate mass (m/z ratio) matched in both serum and CSF and therefore were interpreted as negatives. For OCB⁺, paired CSF/serum analysis

showed that 4 samples had unique clones in CSF, none detected in serum. 21 CSF samples had clones in both serum and CSF, however in CSF there were additional unique clones whose accurate masses were not identified in serum, and reported as positives.

Conclusion: FLC measurement in CSF by nephelometry shows excellent correlation with IEF with the benefit of potentially eliminating the need of a paired serum for interpretation. MicroLC-ESI-Q-TOF had equivalent performance to IEF to measure immunoglobulins light chains in CSF, with the advantage of being automated and allowing for unambiguous identification of the accurate mass of the clones produced intrathecally.

Afternoon Short course

The Clinical and Diagnostic Immunology Division (CDID) sponsored a short course for the AACC 2015 annual meeting.

Session 73219: Clinical and Laboratory Aspects of Monoclonal Antibody Therapeutics (July 28, 2015, 2:30PM-5:00PM EDT).

This short course provided participants with information relevant to the utility of monoclonal antibodies therapeutics and their clinical implications in oncology, gastroenterology and rheumatology. This course also described the methods available for the measurement of monoclonal antibody therapeutics and assessment of anti-drug antibodies. In addition, this course discussed how results from monoclonal therapeutic antibody and anti-drug antibody testing can impact patient management.

Listed below are the titles of the three presentations and names of the speakers who presented in this short course:

1-Introduction to Monoclonal antibodies as Therapeutic Agents

Daniel Mytych, PhD, Amgen, Inc., Thousand Oaks, CA

2-Assessment of Monoclonal Antibodies Therapeutics and Anti-Drug Antibodies in the Clinical Laboratory

Julio Delgado, MD, MS, ARUP Laboratories, Salt Lake City, UT

3-Clinical Applications of Monoclonal Antibody Therapeutics

Melissa Snyder, PhD, Mayo Foundation, Rochester, MN

What is AACC Artery?



AACC Artery is an online community of laboratory medicine professionals accessible only to AACC members (<http://community.aacc.org/>).

AACC Artery offers the following:

- 1- A membership directory complete with biographies, photo profiles and contact information.
- 2- An ability to communicate with fellow members, ask questions, share knowledge and refine ideas.
- 3- Threaded discussion forums that enable participants to tap into AACC members' collective experience and knowledge of laboratory medicine.
- 4- Complete, searchable archives of discussions.
- 5- Event calendars for Divisions and Local Sections.

As of November 2015, the AACC Artery has 9 divisions, 29 sub-groups, 1500 Members, 28 Open Forum Digest Subscribers and 41 Moderators.

Of the divisions, the Clinical and Diagnostic Immunology Division (CDID) provides members with a forum discussion and industry information to improve the quality of clinical and diagnostic immunology tests overseen by laboratory medicine professionals.

Examples of immunology related threads can be accessed through the links below:

- [ANA screening with ELISA*](#)
- [Atypical ANCA determination*](#)
- [Capillary Zone electrophoresis-abnormalities in the gamma region*](#)
- [Validation of IgD and IgE antisera for immunofixation*](#)

**In order to access these links, please login to the AACC Artery.*