Convergence Conference II

Converging on Biospecimen Standards for Proteomics

Convened by the
National Biomarker Development Alliance

Montelucia Resort, Scottsdale, AZ
Meeting Room: Alhambra

December 10-11, 2014

Agenda

Meeting Co-Chairs:

Carolyn Compton, MD, PhD
NBDA, Arizona State University and Mayo Clinic

Anna D. Barker, PhD, NBDA and Arizona State University

Michael Gillette, MD, PhD, Massachusetts General Hospital; Dana-Farber Cancer Institute, Harvard Medical School, Broad Institute

Conference Objective

To develop a strategy and action plan to mitigate and, if possible, eliminate major causes of quality compromise in tissue and blood biospecimens for use in basic/clinical research and clinical medicine where proteins are the targeted analyte measured via mass spectrometry

Outcomes

- Identify and reach agreement on a small but meaningful set of *quality-compromising pre-analytic variables* in the collection and processing of tissue and blood biospecimens for use in proteomic analysis.

- Identify and reach agreement on the *target performance measures* of those that would result in control of the quality-compromising pre-analytic variables defined above and the *documentation standards of actual performance* in biospecimen collection and processing referable to the target performance measures of biospecimen collection and processing.

- Identify and reach agreement on individual and collective strategies for implementing as widely as possible the recommended and mutually agreed upon target performance measures and documentation standards.

Agenda

Wednesday, December 10

7:30 – 8:30 AM **Breakfast available – Alhambra Foyer**

8:30 – 9:00 AM **Welcome**
Carolyn Compton, MD, PhD,
Michael Gillette, MD, PhD,
Ken Bloom, MD,
Anna Barker, PhD

- Introduction to the NBDA and the Convergence Conferences rationale
- Meeting description
- Summary of Recommendations from the Genomics Convergence Conference immediately preceding this meeting

9:00 – 9:40 AM **Introductions and Opening Round Table**

- Participant self-introduction and personal perspective on the main issue The next day and a half will be spent systematically defining specific processes (perhaps to the level of SOPs in some cases) to improve the collection and processing of tissue and blood biospecimens for proteomic analysis. Jumping straight to the answer, from your unique perspective, recommend ONE change you would make to the collection and processing of biospecimens for proteomic analysis that, if implemented would MOST improve the reliability of the subsequent analysis of proteins.

9:40 – 10:10 AM **Biospecimens, Pre-analytical Variables and Proteomics—What are the real issues?**
Carolyn Compton, MD, PhD

10:10 – 10:30 AM **Break**

10:30 – 11:00 AM **Proteomic Analysis Technologies—Requirements for accurately measuring and quantifying the analytes vs. limitations of the technology**
Michael Gillette, MD, PhD
Why are we doing proteomics and why is it essential to precision medicine? How does the technology work? How has mass spec analysis moved into clinical practice? Why is sample quality such an issue for these technologies?

11:00 AM -12:00 PM **The <u>Practical Realities</u> of Specimen Acquisition and Handling for Samples Destined for Proteomics Analysis**
Roundtable Discussion:

- **Jim Robb, MD**
- **Richard Friedberg, MD, PhD**
- **Eric Walk, MD**
- **Robert Penny, MD, PhD**
- **Kevin Groch, PhD**

A roundtable and large group discussion on the personnel, clinical practices and logistics that contribute to the life cycle of the biospecimen during the pre-analytical phase (preceding specimen analysis). The focus will evolve based on the perspective of potential variation introduced by each "reality" and its potential impact on the molecular quality and/or composition of the biospecimen. What happens in the biospecimen lifecycle? What range of variation occurs? What standards are in place to control, monitor or record variation? Who is responsible for specimen custodianship? What are the gaps? How do the logistics, workflows, and systems in patient care institutions contribute to the variation? Among these practical realities contributing to pre-analytical variation, which contribute most to compromising quality for protein analysis?

12:00 – 1:00 PM **Lunch – Alhambra Patio**

1:00 – 2:00 PM **The Impact of <u>Collection and Handling Variation</u> on Analytic Results**
Roundtable Discussion:

- **Hartmut Juhl, MD**
- **Dan Chelsky, PhD**
- **Jon Jacobs, PhD**
- **Kurt Schalper, MD, PhD**

Roundtable and large group discussion: What types/classes of proteins are most affected by the variations in practice described in the previous session? What are the impacts on the proteome vs. post-translational modifications of the proteome? What are the specific effects of specific types of pre-analytical variation on degradation/changes in the samples (tissue and blood)? To what extent can the analysis results be adjusted for known effects/variation(s)? How do the variables interact – if so how? (Do we currently accept that the variables are not independent?)

2:00 – 2:45 PM **Brainstorm: Quality-Compromising Pre-Analytic Variables**
Table Discussions:
From the prior discussions and professional experience, each table will identify its top three choices of the most important quality-compromising pre-analytic variables for tissue and for blood. (20 min table talk)
Report-outs. Each table reports its choices. Round-robin format: first for tissue, then for blood. (20 min)

2:45 – 3:00 PM **Break**

3:00 – 4;00 PM **Lessons Learned—Re-examining the "Realities" through Experience from the Field**
Roundtable Discussion:

- **Andreas Jeromin, PhD – Diagnostics Industry**
- **Lynn Rainen, PhD – Devices and Technology Industry**
- **Yun-Fu Hu, PhD - FDA**
- **Cary Austin, MD, PhD – Pharmaceuticals Industry**
- **Chris Kinsinger, PhD – NCI**
- **Ken Buetow, PhD – NCI/CBIIT**

Roundtable and large group discussion: Given what you've experienced from your particular vantage point, which of the variables mentioned in the last session (or otherwise to this point) have the greatest impact on the quality of samples that drive the results of mass spec analysis?

4:00 – 5:15 PM **Prioritization of Quality-Compromising Pre-Analytic Variables**
Group discussion:

- Among the quality-compromising pre-analytical variables identified to this point, which are the most "important", meaning that they have an impact on the widest and most significant set of analytes?
    - What are quality "deal breaker" variables that would render a specimen unfit for analysis?
- Which of the above variables are the most "manageable", meaning that they could be most easily or practicably controlled and documented according to target performance measures in real-world clinical settings?
    - In the biospecimen life cycle of tissue and of blood, what systems/individuals would be involved in the overall implementation of control/documentation of these variables?

5:15 – 5:30 PM **Preview of Day Two**

5:30 PM **Adjourn for the Day**

6:00 PM **Reception – Cortijo Plaza**

6:30 PM **Dinner - Castillo Lucena**

Agenda
Thursday, December 11

7:30 AM	**Breakfast available – Alhambra Foyer**
8:00 AM	**Recap and Recalibrate** **Carolyn Compton, MD, PhD**
8:30 – 8:45 AM	**Framing the Working Sessions** **Each of four working groups has 90 minutes (including a break) to complete its work and complete a graphical template.** • Tissue performance measures • Tissue implementation issues • Blood performance measures • Blood implementation issues **Performance measure groups**—for each high-priority pre-analytic variable, what is the recommended performance measure? Why? What is the recommended approach to documenting performance? What other annotation is required? **Implementation issues groups**—what will it take to achieve compliance and reimbursement? Who's involved and what are their roles in the solution? What are their priorities? Consider government researchers, regulators, industry, medicine/surgery, pathology, payers, research funders, journal editors, others.
8:45 – 10:15 AM	**Working Sessions Convene** Groups go to their breakout areas. Preparing the Report-Out: DO NOT do a typical report-out from your group. Instead, prepare your best persuasive, college-debate-team position to be able to tell us in 7 minutes: - Very briefly, what are your recommendations? - Why is it essential for us to pay attention to your recommendations—how will the world be different and better if your recommendations are followed? - What, specifically, are you going to do to further these recommendations?
10:15 – 11:45 AM	**Persuasion Session Convenes** Each group has 7 minutes to give its persuasive pitch on why pay attention, what they recommend, and what we can do. A 13-minute discussion follows.
11:45 – 12:20 PM	**Closing Session—Next Steps** **Large group discussion**
12:20 PM	**Wrap-Up**
12:30 PM	**Lunch – Alhambra Patio**
1:00 PM	**Adjourn**