



Student Working Group News

American Medical Informatics Association

<http://www.amia.org/mbrcenter/wg/st/>

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From The Chair

July marked the half-way point for the current Executive Committee. To date we have made great strides. For the first time ever the Student Working Group (ST-WG) has worked to have a presence at all AMIA national meetings, not just the Annual Symposium. We coordinated student lunches at both the Summit on Translational Bioinformatics and Spring Symposium.

In addition to increasing our visibility at these national AMIA meetings, we are preparing for the Annual Symposium, to be held in San Francisco CA from November 14-18. Hopefully you are all making arrangements to attend. Our panel this year is entitled Careers in Medical Informatics: Perspectives from Recent Job Searches and features 6 outstanding panelists from diverse informatics background, who have all gone through job transitions in the last several years.

As we have worked on these activities, the Executive Committee has also been working internally on two initiatives. First of all, we have created two committees - the Communications Committee, headed by Faisal Vali, and the National Meetings Committee, headed by Paulina Sockolow. The Communications Committee is responsible for all communications of the ST-WG including this newsletter, revising our website, and developing our Wiki, among other activities. The National Meetings Committee is responsible for coordinating ST-WG activities at all AMIA national meetings. We are looking for additional volunteer for each committee. Please email me (david.kaelber@case.edu) if you are interested or have questions about either of these committees.

Secondly, we are restructuring the Executive Committee some, to enable more people to participate and assist with leadership transitions. You should hear more about this in conjunction with the upcoming AMIA ST-WG elections.

As we move into the second half of the year, I am very excited about what we have accomplished to date and look forward to doing more and seeing everyone at the Annual Symposium in the second half of 2009.

Please let me know if you have any questions, comments, or suggestions regarding the ST-WG or AMIA in general.

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Awareness for Testicular Cancer

A juggling performance company founded by a Vanderbilt University graduate student has partnered with the Vanderbilt-Ingram Cancer Center on a social media project to raise awareness about testicular cancer. Catch It Early, an outreach initiative of Playing by Air Productions, founded by Jacob Weiss, takes a humorous and somewhat irreverent approach to cancer prevention with a new You Tube video aimed at men ages 15-34, who are most at risk for developing testicular cancer. Catch It Early uses juggling and circus arts to entertain and educate the community about cancer and self-exams. Launched in April 2009 for Testicular Cancer Awareness and Young Adult Cancer Awareness Week, Catch It Early seeks to promote dialogue and cancer awareness, prevention, and support through creative multimedia campaigns. Activities include online videos, cancer education, juggling in public spaces, performing at sporting events, and juggling workshops for cancer support groups.

To watch the video and to learn more about this social media and public health effort (created by AMIA student member Jacob Weiss), visit www.catchitearly.org <http://www.mc.vanderbilt.edu/reporter/index.html?ID=7159>

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(Photo credit: Joe Howell/Vanderbilt)



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Announcements

2009 AMIA Annual Symposium

San Francisco, CA

The AMIA 2009 Annual Symposium will be held at the Hilton in San Francisco, California. Congratulations to everyone who had their papers accepted to AMIA - let the editors know if you've had something accepted and we will be sure to include it in the next newsletter! We also hope to get a chance to meet everyone this November and continue the strong collaboration among Student Working Group members.

Contributions

Translational Bioinformatics: Coming of Age

Translational Medicine is the transformation of over 5 decades of biomedical research into knowledge which can be rendered into clinical gains. Translational Bioinformatics is the development and usage of information systems for this transformation to be effective. To achieve the full impact of Translational Medicine, the role and scope of bioinformatics needs to be expanded just as much as clinical informatics. With AMIA adding Translational Bioinformatics as its third major informatics domain, this is an excellent time for studying the field. Following are eight reasons for doing so, five of which are related to improvements made in this scientific discipline:

1. **Availability of affordable advanced molecular tools** - Today, the tools exist for large scale and inexpensive assessment of molecular states. These high throughput assays can measure

many molecules at a time. For example, gene expression micro arrays can measure gene expression (RNA) levels across nearly all known genes in human genome, for as low as \$300. The micro array technology continues to further evolve to make faster and more accurate measurements.

2. **Public availability of molecular measurement data** – A bioinformatician can access and download more than quarter of a million micro array samples which are now increasingly available for public worldwide use at websites like GenBank, Gene Expression Omnibus (GEO), NCBI Database of Genotype and Phenotype, European Bioinformatics Institute's Array Express and proteomics database – PRIDE. This is more data than can be made available by any individual biologist and can lead to results with a potentially enormous impact on translational medicine.

3. **Translational Bioinformatics can now ask primary questions** – The traditional role of the bioinformatician has been an assistant to biologist, to analyze, store, and retrieve high-throughput data. Today, however, this role is set to change to a question asker. This has been due the increasing public availability of high-throughput molecular data which has made more samples available to a bioinformatician than any individual biologist studying a certain disease alone might create. For example, Dr. English used 49 publicly available obesity related high-throughput experiments to create an integrative model, which outperformed

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<http://www.amia.org/mbrcenter/wg/st>

Chair.....David Kaelber
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Member at LargePaulina Sockolow
Member at LargePaul Avillach
Students' Representative to AMIA Board of Directors
Catherine Craven
Co-Chief Editor Kevin Chang
Co-Chief EditorTia Gao

each of the independent experiments in rediscovering known obesity-associated genes and predicting novel ones.

4. **Culture of sharing molecular data and tools** - The public availability of molecular data is required by top-tier journals and by funding agencies like Wellcome Trust and NIH. Besides these requirements there is also a growing culture of sharing tools, data, findings, and publications among bioinformaticians. Tools like Significance Analysis of Microarrays (SAM) and TM4 Multiple Expression Viewer are available for free. There is also inter-community sharing, where one community learns from the standardization efforts of another community.
5. **Clinicians are expected to interpret bioinformatics methodologies** - A growing number of articles in top-tier medical journals include a discussion on bioinformatics methods. Clinicians more than ever before are expected to understand how these translational processes are relevant to healthcare, even if they do not know how to use or implement them.
6. **Calls for applicability of translational medicine** - Since NIH doubled its budget for Translational Bioinformatics in the late 1990s, there is increasing interest in applicability of translational medicine by patients and the public, the pharmaceutical industry, clinical researchers, basic science investigators, funding agencies, and NIH itself.
7. **Increasing research funding for Translational Bioinformatics** – Realizing the impact of translational medicine, there has been an increased call for greater financial support for translational bioinformatics. In 2002 the NIH's Roadmap to modernize medical research, translational bioinformatics placed it as a major player. The NIH will be funding approximately 60 institutions (medical schools and research hospitals), which

are committed to reinvent how they perform and teach clinical and translational research, with about \$30 million each.

8. **Paucity of investigators in Translational Bioinformatics** –Trained Bioinformatics with a clinical background are required to utilize available resources and develop this field further. Currently the premier mechanism of bioinformatics training is the combination of advanced health professional degrees with doctoral level studies in bioinformatics, offered by the National Library of Medicine (NLM) University-based Biomedical Informatics Research Training Programs. For the future development of Translational Bioinformatics more practitioners are needed and they will have to enter the discipline from more diverse backgrounds.

In light of the demonstrated need, funding, resources, and roles of Translational Bioinformatics, this field looks promising. The greatest challenge for further development of this field is in education and its awareness among clinicians, researchers and computer scientists. Despite these challenges now is the perfect time to begin the exponential growth phase of this new scientific discipline.

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Discussing the Subspecialty of Clinical Informatics: Editor's Take

changes associated with introduction/adoption of clinical information systems.

In a recent March/April 2009 issue of JAMIA, there were two articles specifically addressing the Core Content of Clinical Informatics and Clinical Informatics fellowship program requirements. This historical occurrence warrants mention in the AMIA student newsletter as it both directly and indirectly affects those already working or thinking of working in the field of informatics. A distilled summary of these documents follows.

The first article, "Core Content for the Subspecialty of Clinical Informatics" defines the scope of Clinical Informatics (CI) while providing the program requirements for fellowship education in this field. The document emphasizes the idea that training in CI is targeted towards physicians, with the intent of eventual board-certification upon reaching the objectives set forth. The overarching goal is to train physicians to understand, evaluate, and improve clinical information systems with a strong emphasis on effective inter-professional communication between other healthcare workers and information technology professionals. The aim is to "promote patient care that is safe, efficient, effective, timely, patient-centered, and equitable." The Core Content of CI is broken down into 4 areas of mastery:

1. Fundamentals – knowledge, vocabularies, and understanding of work environment.
2. Clinical Decision Making and Care Process Improvement – knowledge and skills which allow implementation of effective clinical decision making systems and clinical process improvement.
3. Health Information Systems – knowledge and skills to participate in all steps of implementation of a health information system including its selection, implementation, ongoing operations, and evaluation, providing clinician support through each phase.
4. Leadership – knowledge and skills that allow for leading and managing the

The second article, "Program Requirements for Fellowship Education in the Subspecialty of Clinical Informatics" defines the knowledge and skills that physicians must master during fellowship training to achieve certification in CI, and the article also defines accreditation requirements for training programs. The Program Requirements section outlines each component of expected objectives in order to meet ACGME accreditation, which appears quite similar to other fellowship/residency program requirements but with provisions specifically for Clinical Informatics.

As a physician training in medical informatics I am excited about the prospect of the possibility of board certifications in CI. At the same time I have heard some resistance to this endeavor, primarily from those coming from non-medical backgrounds. After reading through these articles and trying to understand the objectives of this subspecialty, it appears that the goal of physician certification in CI is to prepare for roles such as the Chief Medical Information Officer (CMIO). At the risk of sounding redundant, I would reiterate my stance that ultimately informatics is too complex to be done by one professional discipline, and that we must coordinate our efforts between both IT and medical specialists alike.

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Student WG Member Accomplishments

The following is a continuation of the "Student Member Accomplishments" that we started compiling last year. Due to the large number of contributions received, we published a compilation of members' "2007 publications" last year and are presenting the remaining contributions below.

Member Accomplishments - until 2006

Journal papers

Vocabulary standards and data integration

- Kukafka R, **Bales ME**, Burkhardt A, Friedman C. Human and automated coding of rehabilitation discharge summaries according to the International Classification of Functioning, Disability, and Health. Journal of the American Medical Informatics Association 2006;13:508-515; Available from URL: <http://dx.doi.org/10.1197/jamia.M2107>
- Jonas S. Almeida, Chuming Chen, Robert Gorlitsky, Romesh Stanislaus, Marta Aires-de- Sousa, Pedro Eleutério, João Carriço, António Marezek, Andreas Bohn, Allen Chang, Fan Zhang, Rahul Mitra, Gordon B. Mills, Xiaoshu Wang and **Helena F. Deus**. Data Integration gets "Sloppy". Nat Biotech. 2006; 24(9):6-7.
- **Bales ME**, Johnson SB. Graph theoretic modeling of large-scale semantic networks. Journal of Biomedical Informatics 2006;39(4):451-64. Available from URL: <http://dx.doi.org/10.1016/j.jbi.2005.10.007> (reached #1 in the Journal of Biomedical Informatics, ScienceDirect top 25 hottest articles)
- **Bales ME**, Kukafka R, Burkhardt A, Friedman C. Qualitative assessment of the International Classification of Functioning, Disability, and Health with respect to the desiderata for controlled medical vocabularies. International Journal of Medical Informatics 2005;75(5):384-

95. Available from URL: <http://dx.doi.org/10.1016/j.ijmedinf.2005.07.026>.

Public Health Informatics

- Ashford DA, Kaiser RM, **Bales ME**, Shutt K, Patrawalla A, McShan A, et al. Planning against biological terrorism: lessons from outbreak investigations. Emerging Infectious Diseases [serial online] 2003 May;5. Available from URL: <http://www.cdc.gov/ncidod/EID/vol9no5/02-0388.htm>
- **Bales ME**, Dannenberg AL, Brachman PS, Kaufmann AF, Klatsky PC, Ashford DA. Epidemiologic response to anthrax outbreaks: field investigations, 1950-2001. Emerging Infectious Diseases [serial online] 2002 Oct;8. Available from URL: <http://www.cdc.gov/ncidod/eid/vol8no10/02-0223.htm>

Clinical informatics

- Hu, P., Xiao, Y., **Ho, D.**, Mackenzie, C.F., Hu, H., Voigt, R., Martz, D. "Advanced Visualization Platform for Surgical Operating Room Coordination: Distributed Video Board System". Surgical Innovation, 13(2):129-135. 2006.
- Xiao, Y., Hu, P., Hu, H., **Ho, D.**, Dexter, F., Mackenzie, C.F., Seagull, F.J., Dutton, D. "An Algorithm For Processing Vital Sign Monitoring Data to Remotely Identify Operating Room Occupancy in Real-Time". Anesthesia & Analgesia, (101)3:823-829. 2005.

Conference Presentations and Posters

GIS

- **Bales ME**, Dannenberg AL. Use of geographic information systems in epidemiologic field investigations. Am J Epidemiol. 153 (11): S262-S262 979 Suppl. S, Jun 1 2001.

Vocabulary standards

- **Bales ME**, Kukafka R, Burkhardt A, Friedman C. Human and automated coding of rehabilitation discharge summaries according to the International Classification of Functioning, Disability, and Health. 11th Annual North American Collaborating Center (NACC) Conference on the International Classification of Functioning, Disability and Health (ICF). Rochester MN, June 21-24, 2005.
- **Bales ME**, Kukafka R, Burkhardt A, Friedman C. Extending a medical language processing system to the functional status domain. American Medical Informatics Association Annual Symposium, Oct. 22-26, 2005, Washington DC.
- Savova G, Friedman C, Kukafka R, **Bales M**, Burkhardt A, Harris M, Chute C. Autocoding against five ICF codes. 10th North American Collaborating Center Conference on International Classification of Functioning, Disability and Health (ICF). Halifax, Nova Scotia, Canada. June 1-4, 2004.
- Prevention, 1950 to August 2001. American Public Health Association Annual Meeting, November 8-14, 2002.
- Shepard CW, Soriano-Gabarro M, Zell ER, Hayslett J, Lukacs S, Goldstein S, Factor S, Jones J, Ridzon R, Williams I, Rosenstein N, and the CDC Adverse Events Working Group (**Bales ME**). Antimicrobial Postexposure Prophylaxis for Anthrax: Adverse Events and Adherence. Emerg Infect Dis [serial online] 2002 Oct;8. Available from URL: <http://www.cdc.gov/ncidod/EID/vol8no10/02-0349.htm>

Panels & Workshops Conducted

Nahm, E.S., Gugerty, B., **Ho, D.**, Seagull, J., Vaidya, V. "Show Me the Outcomes! Methods to Assess the Effects of Clinical Information Systems (CIS) Implementation." Summer Institute in Nursing Informatics: Breaking the Barriers of Healthcare Informatics Conference. University of Maryland, Baltimore, Maryland. 2005.

Social networking

- **Bales ME**, Johnson SB, Weng C. Social network analysis of interdisciplinarity in obesity research. American Medical Informatics Association Annual Symposium, Nov. 8-12, 2008, Washington DC.
- Weng C, Gallagher D, **Bales ME**, Bakken S, Ginsberg HN. Understanding interdisciplinary health sciences collaborations: A campus wide survey of obesity experts. American Medical Informatics Association Annual Symposium, Nov. 8-12, 2008, Washington DC.

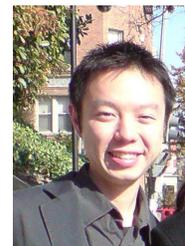
Public Health Informatics

- Dannenberg AL, **Bales ME**, Brachman PS, Kaufmann AF, Ashford DA. Epidemiologic responses to anthrax outbreaks: A review of field investigations conducted by the Centers for Disease Control and

From The Editors

Don't forget to share your milestones and other contributions with the group!

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