A. Grant Schissler

Developing and disseminating statistical informatic methods to facilitate precision medicine

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GitHub	github.com/grizant

EDUCATION

PhD Candidate in Statistics–Statistical Informatics track 2012-current

University of Arizona, Tucson, AZ

Statistics Graduate Interdisciplinary Program (GIDP)

Minor in Genetics

Advisors: Walter W. Piegorsch (Statistics) & Yves A. Lussier (Biomedical Informatics)

Expected graduation date: May 2017

MS Applied Statistics 2009-2011

Kennesaw State University, Kennesaw, GA

Honors Graduate (4.0 GPA)

BS Applied Mathematics 2002-2005

Georgia Institute of Technology, Atlanta, GA

Dean's List, Social/Personality Psychology Certificate

RESEARCH AREAS

Statistical

Single-subject inference, count data, multivariate statistics, computing, machine learning, high dimensional data, small-sample, paired-sample statistics, big data, data visualization, high-throughput data

Interdisciplinary

Biomedical informatics, bioinformatics, precision medicine, clinical translation, N-of-1, gene expression, gene set analysis, single-cell RNA-seq, cancer, systems biology, case-based reasoning, big clinical data

APPOINTMENTS

Research Assistant 2014-current

Lussier Group, Center for Biomedical Informatics & Biostatistics, University of Arizona

Developing statistical informatics methodology for precision medicine. Engaging in interdisciplinary research: working with an expert team of statisticians, physicians, engineers, biologists, geneticists, and computer scientists. Responsibilities include original research, statistical support, grant writing, and software engineering. Here is a link describing our work to Tucson ABC-affiliate KGUN9 (@1:30 minutes).

Statistical Consultant 2013-2014

HTG Molecular, Tucson, AZ

Worked with an interdisciplinary team to develop gene expression platforms, design and analyze experiments for process and technical improvement, analyze gene expression for clients, implement advanced R programming and visualization, communicate results to management, and apply current research findings in a practical setting.

Instructor/Teaching Assistant 2012-2014

University of Arizona

Developed curriculum and served as an instructor of Preparation for University-Level Mathematics. Also taught Statistical Foundations in the Information Age including R programming.

Mathematics Instructor/Athletic Coach 2006-2012

Tri-Cities High School, East Point, GA

Designed and utilized best-practice pedagogy to teach nearly every secondary mathematics course offered in Georgia. Specialized in AP Statistics. Implemented effective classroom management and motivational systems. Designed and delivered professional development for teachers.

PEER-REVIEWED JOURNAL PUBLICATIONS [Stats]

1. Qike Li*, A. Grant Schissler*, Vincent Gardeux, Joanne Berghout, Ikbel Achour, Colleen Kenost, Haiquan Li, Hao Helen Zhang and Yves A. Lussier, "kMEn: analyzing noisy and bidirectional transcriptional pathway responses in single subjects", *Journal of Biomedical Informatics,* **to appear**, (2016).

2. A. Grant Schissler, Qike Li, James Chen, Colleen Kenost, Ikbel Achour, Dean Billheimer, Haiquan Li, Walter W. Piegorsch, and Yves A. Lussier, "Analysis of aggregated cell-cell statistical distances within pathways unveils therapeutic-resistance mechanisms in circulating tumor cells", *Bioinformatics* **32**, 12 (2016).

3. A. Grant Schissler, Vincent Gardeux, Qike Li, Ikbel Achour, Haiquan Li, Walter W. Piegorsch and Yves A. Lussier, "Dynamic changes of RNA-sequencing expression for precision medicine: N-of-1-*pathways* Mahalanobis distance within pathways of single subjects predicts breast cancer survival", *Bioinformatics* **31**, 12 (2015).

* = joint first authorship

ORIGINAL ARTICLES UNDER REVIEW

1. A. Grant Schissler, Walter W. Piegorsch and Yves A. Lussier, "Testing for differentially expressed genetic pathways with single-subject N-of-1 data in the presence of inter-gene correlation", **under review**, (2016).

2. V Gardeux*, I Achour*, AG Schissler*, A Bosco, J Li, J Berghout, D Saner, MJ Halonen, DJ Jackson, H Li, FD Martinez, and YA Lussier, "Pioneering a virogram assay for precision medicine: personal transcriptome response to rhinovirus identifies children prone to asthma exacerbation", **under review**, (2016).

3. Qike Li, A. Grant Schissler, Vincent Gardeux, Ikbel Achour, Colleen Kenost, Joanne Berghout, Haiquan Li, Hao Helen Zhang and Yves A. Lussier, "N-of-1-*pathways* MixEnrich: advancing precision medicine via single-subject analysis in discovering dynamic changes of transcriptomes", **under review**, (2016).

* = joint first authorship

ORIGINAL ARTICLES IN PREPARATION

1. A. Grant Schissler, Qike Li, Colleen Kenost and Yves A. Lussier, "nof1: a software package in R and online tool for single-subject transcriptome analyses via N-of-1-*pathways*", **in preparation**, (2016).

2. Jingyu Liu, Walter W. Piegorsch, A. Grant Schissler and Susan L. Cutter, "Autologistic modeling in quantitative risk analysis, with applications to urban vulnerability assessment of terrorism outcomes", **in preparation**, (2016).

3. Mallorie H. Fiero, Kevin Doubleday, A. Grant Schissler, Joseph Watkins, Bell, Melanie L., "Increasing awareness of careers and an education in statistics among quantitatively-talented underrepresented high school students", **in preparation**, (2016).

COMPUTING SKILLS (15+ years experience)

Software author/maintainer (release in November 2016)
N-OF-1-PATHWAYS *R Package*

Programming/Scripting Languages
R *(expert)*, SHELL(BASH), PBS/LSF HIGH-PERFORMANCE COMPUTING

Statistical Packages
SPSS, SAS 9 *(Certified Advanced Programmer)*, MINITAB, R

Operating Systems
MAC OS, WINDOWS, LINUX

Reproducible Research/Publishing
EMACS ORG-MODE, MS WORD, ADOBE ILLUSTRATOR, GIT, LaTeX

SYNERGISTIC ACTIVITIES/ASSOCIATIONS

- University of Arizona Graduate & Professional Student Council Travel Grant Judge (September 2016) September 2015, Journal of Biomedical Informatics
- Contributed to the University of Arizona Health Sciences' participation in the National Precision Medicine Initiative® (Feb 2016)
- Peer review for the *Journal of Biomedical Informatics* (2015)
- Secondary Education Statistics Diversity Outreach: Collaboratively developed and delivered motivational statistics presentation for Saguaro High School statistics classes (29 Apr 2015), Catalina HS (29 Jan 2016), Sunnyside HS (12 Feb 2016), Bisbee HS (5 Apr 2016)
- Member: American Statistical Association (ASA), International Society for Computational Biology (ISCB)
- Educator: Clear and Renewable Georgia Educator Certificate Mathematics (6-12)

PRESENTATIONS AT PROFESSORIAL MEETINGS, CONFERENCES, EVENTS

1. JSM-2016, Chicago IL, August 2016 (Testing for differentially expressed pathways from within-subject matched pairs of RNA-seq data sets)
2. ISMB-2016, Orlando FL, July 2016 (Statistical distances in circulating tumor cells)
3. First workshop on Interdisciplinary Statistics, CIMAT Guanajuato Mexico, June 2016 (Statistical informatics for precision medicine)
4. ISMB/ECCB-2015, Dublin, July 2015 (N-of-1-*pathways* MD)
5. 2016 Mathematics Educator Appreciation Day, Tucson, 23 Jan 2016 (Incorporating quantitatively-talented and underrepresented high school students in Arizona into the biostatistics community)

SEMINARS AND COLLOQUIA

1. University of Arizona Biostatistics Seminar, *Statistical Development of N-of-1-pathways MD*, 17 Feb 2016
2. University of Arizona Statistics Student Meeting, *Reproducible Research through GNU Emacs Org-mode*, 18 Feb 2014

POSTER SESSIONS AND SHOWCASES

1. JSM 2016 - Chicago, *Increasing awareness of careers and an education in statistics among quantitatively-talented underrepresented high school students*, Aug 2016
2. University of Arizona Student Showcase, *N-of-1-pathways for precision medicine*, 24 Feb 2016
3. GIDP Student Research Showcase, *N-of-1-pathways for precision medicine*, 10 Dec 2015

AWARDS & GRANTS

- 2016 GPSC Travel Grant, Merit-based travel grant for JSM 2016 in Chicago, IL
- 2016 ISMB Travel Fellowship, Merit-based travel fellowship for ISMB 2016 in Orlando, FL
- Summer 2016 HE Carter Travel Award, Graduate Interdisciplinary Programs, University of Arizona
- Summer 2015 HE Carter Travel Award, Graduate Interdisciplinary Programs, University of Arizona
- 2015 ASA Biometrics Section Funding of Proposed Strategic Initiative: Incorporating quantitatively-talented and underrepresented high school students in Arizona into the biostatistics community. - Grant Co-Investigator

TEACHING

@ U. of Arizona:

- Fall 2012/2013: **SAS100AX: Preparation for University Level Mathematics**
  Instructor: Guided first year students to became independent learners through explicit instruction of metacognition, mathematics learning strategies, performance traits, and rapid skill acquisition. Designed "flipped" classroom curriculum to maximize student learning and engagement. Formerly behind students were retained at much higher rates than on-level students.
- Fall 2012: **ISTA116: Statistical Foundations in the Information Age**
  Teaching Assistant: Led a weekly statistics laboratory. We focused on a broad range of applications with computing solutions via R.

@ Tri-Cities High School, Math Dept.:

- 2008-2012: **AP Statistics**
  Instructor: Received best-practice training from Paul Myers and Josh Tabor among others. Designed and implemented "flipped" classroom curriculum. Grew the statistics program by gaining stakeholder interest, resulting in more than a 50% increase in student enrollment. Increased AP exam success and student awareness of statistical careers. Spearheaded data-driven decision making for student/school initiatives.

- 2006-2012: **Other Secondary Math Courses**
  GPS Advanced Algebra, Discrete Math, Trigonometry, Geometry, Algebra I-III:
  Taught every secondary course available except AP Calculus. Specialized in teaching 11^{th} grade students to prepare them for the Georgia High School Graduation Test (GHSGT). The GHSGT is a major determinant of student and school-wide achievement. Designed and led after-school tutorial programs for GHSGT.