

# Sean Maden

---

## Contact:

Phone: (425) 205-0659  
Address: 625 15<sup>th</sup> Ave E, Upper Unit  
Seattle, WA 98112  
E-mail: smaden@fredhutch.org;  
maden.sean@gmail.com

GitHub: Profile: <https://github.com/metamaden>  
Groups: GradyLab; FredHutch

---

## Undergraduate Degree

Reed College, *Portland, OR* September 2007 - May 2011  
Bachelor's of Arts (B.A.) Biology, emphasis: population genetics  
Rigorous liberal arts curriculum in humanities and science; Population biology and genetics emphasis; Thesis characterizing population declines in genetic diversity of lab cichlids (*A. burtoni*) using microsatellite molecular markers.

## Selected Research Experience

Research Data Analyst Assistant October 2015 - present  
Fred Hutch, Seattle, WA  
Principal Investigators: Dr. William Grady, Dr. Ming Yu  
[Lab website](#)

Studied epigenetics of gastroesophageal cancers; Applied data processing and analytical pipelines for arrays and next-generation technologies; Motivated inter-lab and department collaboration; Coauthored, edited manuscripts of original research for publication; Made significant contributions to grant writing; Conducted lectures and poster presentations at conferences; Applied R, Python, and related statistical computing software for data mining and biostatistical analysis; Optimized workflows and lab repositories.

Bioinformatics Research Intern April - September 2015  
Fred Hutch, Seattle, WA  
Principal Investigator: Dr. William Grady; Postdoc project lead: Dr. Ming Yu  
[Lab website](#)

Carried out original analyses of cancer epigenetic data; Self-taught analytical programming; Presentation of findings and research discussion at lab meetings.

Laboratory Assistant January – October 2013  
Principle Investigator/Advisor: Dr. Gail Jarvik  
University of Washington Medical Genetics  
Analyzed clinical population and epidemiologic data; Quantified gene-environment interactions with modeling and regression techniques; Programmed preprocessing workflows for next-generation genomics; Coauthored and edited published manuscript of findings (see Publications).

Undergraduate Thesis Researcher September 2010 - May 2011  
Advisor: Dr. Suzy Renn  
[Thesis website](#)  
Reed College, Biology Department  
Quantified effects of laboratory breeding on genetic diversity in cichlid fishes (*A. burtoni*) using microsatellites; Authored thesis studying genetic diversity of lab cichlid fishes with microsatellites, and defended thesis before professorial board; Attained department grant funding (see Research Awards).

## Scientific Memberships, Fellowships, and Funding

2016 SAS-BWF Fellow, Fred Hutch, Seattle, WA May 2016 - 2017  
Advisors: Dr.'s Bill Grady and Ming Yu  
Fellowship hosted and funded by SAS Institute and Burroughs Wellcome Fund. Contributed to ongoing research of epigenetics of colorectal cancer and biomarker discovery for clinical screening. Worked closely with JMP developers and recommended new software features based on real research needs.

AACR Associate Member, Fred Hutch, Seattle, WA Jan 2016 - present  
Recognized and supported by Association for Cancer Research (AACR) as promising early-career cancer investigator. AACR is one of the largest cancer research organizations in the US, and it hosts numerous annual meetings and workshops to help cancer researchers network and learn from colleagues.

Undergraduate Research Grant, Reed College, Portland, OR Winter 2010  
Advisor: Dr. Suzy Renn  
Granted funding to extend research for undergraduate senior thesis studying genetic diversity of *A. burtoni* fishes (see Publications), awarded by Reed College Biology Department based on submission of original research overview.

Fischer Memorial Fellow, Reed College, Portland, OR Summer 2010  
Advisor: Dr. Robert Kaplan  
Designed and conducted habitat field survey experiment of native at-risk frog *Rana aurora*, constructed breeding habitat and compiled a literature review of amphibian ecology. Authored and coauthored extensive reports presented as contributions to canon of Fisher Fellows past and present.

## Scientific Publications

### First Author

1. Ming Yu\*, **Sean Maden**\*, Matthew Stachler\*, Andrew M. Kaz, Tai J. Heinzerling, Rachele M O'Leary, Xinsen Xu, Adam Bass, Amitabh Chak, Joseph E. Willis, Sanford D. Markowitz, William M. Grady. *Subtypes of Barrett's Esophagus and Esophageal Adenocarcinoma Based on Genome-wide Methylation Analysis*. 2017, Gut. \*co-first authors (Accepted for publication)
2. **Sean Maden**, Advisor: Suzy P Renn. *Observed Declines in Genetic Diversity Across Successive Generations of a Captive *Astatotilapia burtoni* Lineage, Using Microsatellite Molecular Markers*. Senior Thesis, 2011 Reed College. ([link](#))

### Co-Author

3. Georg E. Luebeck, William D. Hazelton, Kit Curtius, **Sean K. Maden**, Ming Yu, Kelly T. Carter, Wynn Burke, Paul D. Lampe, Christopher I. Li, Cornelia M. Ulrich, Polly A. Newcomb, Maria Westerhoff<sup>11</sup>, Andrew M. Kaz, Yanxin Luo, John M. Inadomi, William M. Grady. *Implications of epigenetic drift in colorectal neoplasia*. 2018 (Under peer review)
4. Ludovic Barault, Alessio Amatu, Giulia Siravegna, Agostino Ponzetti, Sebastian Moran, Andrea Cassingena, Benedetta Mussolin, Chiara Falcomatà, Alexandra Binder, Carmen Cristiano, Daniele Oddo, Carlotta Cancelliere, Sara Bustreo, Katia Bencardino, **Sean Maden**, Alice Vanzati, Patrizia Zavattari, Mauro Truini, William M. Grady, Patrizia Racca, Karin B. Michels, Salvatore Siena, Manel Esteller, Alberto Bardelli, Andrea Sartore-Bianchi, Federica Di Nicolantonio. *Discovery of methylated circulating DNA biomarkers for comprehensive non-invasive monitoring of treatment response in metastatic colorectal cancer*. 2017 Gut; PMCID: PMC5897187 ([link](#))
5. Georg E. Luebeck, Kit Curtius, William D Hazelton, **Sean Maden**, Ming Yu, Prashanthi N Thota, Deepa T Patil, Amitabh Chak, Joseph E Willis, William M Grady. *Identification of a key role of widespread epigenetic drift in Barrett's esophagus and esophageal adenocarcinoma*. 2017 Clinical Epigenetics; PMCID: PMC5644061. ([link](#))
6. Daniel Seung Kim, **Sean K Maden**, Amber A Burt, Jane E Ranchalis, Clement E Furlong and Gail P Jarvik. *Dietary fatty acid intake is associated with paraoxonase 1 activity in a cohort-based analysis of 1,548 subjects*. 2013 Lipids in Health and Disease; PMCID: PMC3878825. ([link](#))

### Acknowledgements

7. Kit Curtius, Chao-Jen Wong, William D. Hazelton, Andrew M. Kaz, Amitabh Chak, Joseph E. Willis, William M. Grady, Georg E. Luebeck. *A Molecular Clock Infers Heterogeneous Tissue Age Among Patients with Barrett's Esophagus*. May 11, 2016 PLoS Comput Bio.; PMID: 27168458 ([link](#))

## Selected Bioinformatics Skills and Interests

R, JMP, STATA, statistical software;  
 Bioconductor/Bioc;  
 Tibbles, tidyverse, dply, Rstudior;  
 R modules, ggplot2, Gviz;  
 R-shiny apps, reactive programming;  
 GitHub, version control;  
 Python and shell scripting;  
 Windows and nix interfaces;  
 Compute clusters/kernels;  
 Parallel computing;  
 Amazon Web Services (AWS);  
 Cloud optimization;  
 TCGA, GEO, and GDAC repos;  
 PostgreSQL clinical records db;  
 SQL queries;  
 Sweave, knitr, LaTeX typesetting;  
 Statistical modeling and regression;

Machine learning, automation;  
 SVM, elastic net, glmnet;  
 ROC/AUC and predictive analyses;  
 Biomarker discovery;  
 Next-generation sequencing;  
 Methylation array data mining;  
 Gene network analysis;  
 Epigenetic regulation of expression;  
 Medical and genomic informatics;  
 Biomedical data science;  
 Gene Ontology/KEGG enrichment;  
 Hi-C and TAD 3d assays;  
 Comparative epigenetics;  
 ChIP-seq, enhancer activity;  
 Super-enhancers, ROSE algorithm;  
 VELs/Disease histone activation;

## Scientific Presentations

1. (poster) Mitra Barahimi, **Sean Maden**, Ming Yu, Kelly Carter, William Grady.  
*Discovery and Validation of Potential Field Cancerization Molecular Markers That Associate With Metachronous Polyp Formation*. 2017 (abstract submitted to 2018 Digestive Disease Week).
2. (lecture) **Sean Maden**. *Identification of Novel Molecular Characteristics of Methylation Subtypes in Esophageal Adenocarcinoma by Integrated Analysis*. Cancer Epigenetics Affinity Group meeting. Fred Hutch campus. Nov. 7, 2017.
3. (poster) **Sean Maden\*** and Georg Luebeck\*, Kit Curtius, William Hazelton, Ming Yu, Prashanti Thota, Deepa Patil, Amitabh Chak, Joseph Willis, William Grady \*co-first authors. *Scope and Significance of Epigenetic Drift in Barrett's Esophagus*. Cancer Systems Biology Consortium (CSBC) Principal Investigator Meeting, Broad Institute MIT, Cambridge, MA. Oct 3, 2017 ([link](#))
4. (lecture) **Sean Maden**. *Spatial and temporal epigenetic pattern gradients differentiate normal and progressed tissues in esophagus*. Cancer Intervention and Surveillance Modeling Network (CISNET) 2017 meeting, Esophageal Cancer projects, June 6, 2017.
5. (poster) **Sean Maden\***, Ming Yu\*, Matthew Stachler\*, Andrew M. Kaz, Tai J. Heinzerling, Rachele M O'Leary, Xinsen Xu, Adam Bass, Amitabh Chak, Joseph E. Willis, Sanford D. Markowitz, William M. Grady (\*co-first authors). *Genome-wide methylation analysis reveals methylator subtypes of Barrett's esophagus and esophageal adenocarcinoma*. 2016 AACR Annual Meeting, Abstract: #3192, Session: DNA Methylation 1 ([link](#))

## Graduate Science Coursework

University of Washington  
Fall 2012- Fall 2013 (no degree obtained)

**PHG 536:** Bioinformatics and  
Sequence Analysis  
**BIOSTAT 517/518:** Applied Biostatistics  
I and II  
**EPI 512/513:** Epidemiological  
Methods I and II  
**PHG 512:** Law and Ethics in Public  
Health Genetics  
**PHG 513:** Pharmacogenetics and  
Toxicogenomics

**BIOST 580:** Biostatistics Seminar  
**EPI 583:** Epidemiology Seminar  
**GENOME 525:** Topics in Human  
Genetics  
**PHG 511:** Genetic Epidemiology  
**PHG 521:** Culture and Societal  
Genomics  
**PHG 523:** Genetics and the Law

## Undergraduate Science Coursework

Reed College, Undergraduate Courses  
Fall 2007- Spring 2011 (obtained B.A. Biology)

**MATH 111:** Calculus  
**MATH 112:** Intro to Analysis  
**PHYS 100:** General Physics I  
**HIST 315:** Medieval/Renaissance  
Science and Religion  
**BIOL 332:** Vascular Plant Diversity  
**BIOL 101/102:** Introductory Biology  
**CHEM 101/102:** Introductory  
Chemistry  
**BIOL 361:** Genetics  
**BIOL 431:** Seminar: Ecology and  
Evolution of Plant-Human Interactions  
**BIOL 358:** Microbiology

**BIOL 366:** Population Ecology and  
Evolution  
**CHEM 201/202:** Organic Chemistry I  
and II  
**PHIL 201:** Logic  
**BIOL 351:** Developmental Biology  
(lecture only)  
**BIOL 431:** Seminar: Chromosome  
Structure  
**PHIL 316:** Philosophy of Science  
**BIOL 431:** Seminar: Gene  
Duplication/Overexpression

Shoreline Community College, Undergraduate Courses  
Fall 2014- Winter 2015 (no degree obtained)

**BIOL 270:** Molecular Biology  
**BIOL 285:** Basics of Bioinformatics  
**BIOL 286:** Molecular Diagnostics

**BIOL 265/266:** Solution and Media  
Prep I and II  
**BIOL 275:** Recombinant DNA

## Find Me Online

GitHub: <https://github.com/metamaden>; <https://github.com/GradyLab>  
ResearchGate: [https://www.researchgate.net/profile/Sean\\_Maden3](https://www.researchgate.net/profile/Sean_Maden3)  
LinkedIn: [linkedin.com/in/sean-maden-41623640/](https://www.linkedin.com/in/sean-maden-41623640/)  
GradyLab website: <https://research.fhcrc.org/grady/en.html>

---

References available upon request.

---