BOTING NING

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EDUCATION

Ph.D., Boston University, Bioinformatics Jul 2017 - expected Sep 2022
- Mentored by Beane, JE, Lenburg, ME and Spira AE
- Received Moorman-Simon fellowship

MPH, Boston University, Biostatistics Sep 2014 - May 2016
- Received Merit Scholarship

B.A., Vanderbilt University, Molecular & Cellular Biology Sep 2009 - May 2013
- Graduated with honor from Biology Department for outstanding research; Received VUSRP Scholarship

RESEARCH & WORK EXPERIENCE

Dr. Avrum Spira and Dr. Marc Lenburg's Lab 05/2018-Present
Graduate Research Assistant Boston, MA
- Identified airway basal cell specific miRNA that contributes to bronchial PML progression using sample-match gene and miRNA expression profiles
- Led interdisciplinary investigation on Hippo and TP63 pathways as novel therapeutic targets to intercept early lung cancer progression
- Developed novel algorithm and R package `DReAmiR` for detecting miRNA regulatory network rewiring across multiple cancer-subtypes or cell-types
- Evaluated the predictive power of nasal epithelium miRNA expression profiles in differentiating malignant IPNs

Dr. Qiong Yang's Lab 08/2016-05/2017
Research Assistant Boston, MA
- Identified novel genetics factors and relevant pathways associated with Brain-Derived Neurotrophic Factors using genome-wide genotyping array and whole genome sequencing from FHS and other cohorts in CHARGE consortium
- Performed GWAS collaborating with CKDGen Consortium using densely imputed FHS genotype data to identify novel loci related to kidney disease, while controlling for population substructure

Epidemico, Inc. (acquired by Booz Allen Hamilton) 04/2015-08/2016
Analyst Boston, MA
- Facilitated the development of machine learning classifier for SupplyChainMap based on health informatics data
- Improved natural language processing function of SupplyChainMap, resulting in high sensitivity for differentiating true safety alert (>95%)

Framingham Heart Study, Dr. Rhoda Au's team 05/2015-05/2016
Research Assistant Boston, MA
- Built predictive regression model for neuropsychological and MRI outcomes based on traumatic brain injury status
- Used survival analysis to analyze dementia based on Clock Drawing Test and Digital Clock Drawing Test results, and the role of APOE in the association

Ellen Fanning Lab at Vanderbilt University 09/2012-07/2014
Research Assistant Nashville, TN
- Identified new interaction sites between SV40 helicase and RPA 70N subunits using biochemistry and structural methods and provided evidence for its importance during viral DNA replication

Daniel Kaplan Lab at Vanderbilt University 09/2010-08/2012
Undergraduate Research Assistant Nashville, TN
- Identified interaction domains between Eukaryotic helicase Mcm2-7 subunits and DNA replication initiation factor Dpb11

PUBLICATIONS

Kern J, Tilston-Lunel A, Federico A, **Ning B**, . . . , Varelas X. Inactivation of LATS1/2 drives luminal-basal plasticity to initiate basal-like mammary carcinomas. *Under review at Nature Communications.*

Ning B, Pfefferkorn RN, . . . , Lenburg ME and Beane JE. The role of epithelial miR-149 in immune modulation and progression of bronchial premalignant lesions. *In preparation.*

Ning B, Tilston-Lunel A, . . . , Lenburg ME and Varelas X. Transcriptional crosstalk between YAP, TEAD and TP63 is associated with early lung carcinogenesis. *In preparation.*

Ning B, Spira T, Beane JE and Lenburg ME. Differentail regulation analysis quantifies mirna regulatory roles and molecular subtype-specific targets. *Ready for submission.*

Ning B, Corbett S, Drizik E, . . . , Lenburg ME. miRNA regulatory landscape in the DIESEL exhaust exposed nasal epithelium. *Ready for submission.*

Lim Y, Beane JE, Tanaka Y, **Ning B**, Husted CR, . . . , Zhang H (2021) Exploration of alcohol use disorder-associated brain miRNA-mRNA regulatory networks. Translational psychiatry. 11 (1), 1-10.

Zhu H and **Ning B** (2021) Regulatory landscapes of specific miRNAs are conserved between cell lines and primary tumors. F1000Research. 10 (633), 633.

Hicks-Berthet J, **Ning B**, . . . , Lenburg ME, Beane JE, Monti S and Veralas X (2021) Yap/Taz inhibit goblet cell fate to maintain lung epithelial homeostasis. Cell reports 36 (2), 109347.

Gorski M, Jung B, [et al, including **Ning B**] (2021) Meta-analysis uncovers genome-wide significant variants for rapid kidney function decline. Kidney international 99 (4), 926-939.

Xu K, Shi X, Husted C, Hong R, Wang Y, **Ning B**, . . . , Beane JE (2021) Smoking modulates different secretory subpopulations expressing SARS-CoV-2 entry genes in the nasal and bronchial airways. medRxiv.

Tin A, Marten J, [et al, including **Ning B**] (2019) Target genes, variants, tissues and transcriptional pathways influencing human serum urate levels. Nature genetics 51 (10), 1459-1474.

Teumer A, Li Y, [et al, including **Ning B**] (2019) Genome-wide association meta-analyses and fine-mapping elucidate pathways influencing albuminuria. Nature communications 10 (1), 1-19.

Wuttke M, Li Y, [et al, including **Ning B**] (2019) A catalog of genetic loci associated with kidney function from analyses of a million individuals. Nature genetics 51 (6), 957-972.

Piers RJ, Devlin KN, **Ning B**, Liu Y, . . . , Au R and Libon DJ (2017) Age and Graphomotor Decision Making Assessed with the Digital Clock Drawing Test: The Framingham Heart Study. Journal of Alzheimer's Disease 60 (4), 1611-1620.

Dhingra N, Bruck I, Smith S, **Ning B** and Kaplan DL (2015) Dpb11 helps control assembly of the Cdc45-Mcm2-7-GINS replication fork helicase. Journal of Biological Chemistry 290 (12), 7586-7601.

Ning B, Feldkamp MD, Cortez D, Chazin WJ, Friedman KL and Fanning E (2015) Simian Virus Large T Antigen Interacts with the N-terminal Domain of the 70 kD Subunit of Replication Protein A in the Same Mode as Multiple DNA Damage Response Factors. PLoS One 10 (2), e0116093.

CONFERENCE PRESENTATIONS

Transcriptional crosstalk between YAP, TEAD and TP63 is associated with early lung carcinogenesis. AACR Annual Meeting 2021 (04/2021).

microRNA Expression Differences in Nasal Epithelium for Identifying Malignant Indeterminate Pulmonary Nodules. 11th EDRN Scientific Workshop (09/2019).

miRNA Regulatory Landscape in the Diesel Exhaust Exposed Nasal Epithelium. ATS 2019 International Conference (05/2019).

Genome-wide Association Study of Brain-derived Neurotrophic Factor. CHARGE 2017 NYC (03/2017).

Effects of Traumatic Brain Injury on Neurophysiological Test and MRI Scans in the Framingham Heart Study. International Brain Injury Association Conference (03/2017).

Displacement of the Minute Hand as a Preclinical Marker of Dementia: Clock Drawing in the Framingham Heart Study. INS 44th Annual Meeting (02/2016).

Investigating the Interaction of Dpb11 with MCM2-7 and DNA. Cold Spring Harbor Lab Annual Eukaryotic DNA Replication and Genome Maintenance meeting (09/2013).

Physical Interaction of SV40 T Antigen with the Checkpoint Recruitment Domain of Human RPA Facilitates Viral DNA replication. Cold Spring Harbor Lab Annual Eukaryotic DNA Replication and Genome Maintenance meeting (09/2013).

SKILLS

Bioinformatics: (single-cell) RNA-seq, ChIP-seq, CUT&RUN, Small RNA-seq

Statistics & Machine Learning: Generalized Linear Model, Network Model, Supervised/unsupervised Learning

Program Languages: R, Python, Bash, Nextflow, SAS

Public Databases: GEO, cBioPortal, TCGA, CCLE, ENCODE, DepMap, CMAP, GTEx, FANTOM5

Scientific Communication: RShiny, plotly, LaTeX, (R)markdown, Jupyter Notebooks

TEACHING & MENTORING EXPERIENCE

Mentor, Pioneers China Program   12/2019-05/2021

Conceived the study and mentored a high-school student to complete a bioinformatics project on comparing miRNA regulatory landscape between TCGA and CCLE data.

Student Mentor, BUBPWTF   09/2010-08/2021

Designed workshops for first-year Bioinformatics PhD students on R/Python/Bash and high performance computing environment.

Teaching Assistant, Boston University Introduction to Biostatistics   08/2019-12/2019

Led discussion, taught R programming and graded home work for Introduction to Biostatistics (BS704).