

DAYNE LEWIS FILER

EDUCATION

UNC School of Medicine, Chapel Hill, NC

Doctor of Medicine	2022 (<i>expected</i>)
Doctor of Philosophy, Bioinformatics & Computational Biology	2020

The College of Idaho, Caldwell, ID

B.S. Mathematics, Human Biology and Political Economy Minors (<i>summa cum laude</i>)	2012
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EXPERIENCE

UNC School of Medicine, Chapel Hill, NC

Graduate Research Assistant, Wilhelmsen Laboratory	2017 – 2020
Graduate Rotation Student, Wilhelmsen Laboratory	2016
Graduate Rotation Student, Juliano Laboratory	2016

US EPA National Center for Computational Toxicology, Research Triangle Park, NC

ORISE Research Fellow, Reif & Judson Laboratories	2012 – 2016
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Mount Desert Island Biological Laboratory, Salisbury Cove, ME

REU Summer Fellow, Boyer Laboratory	2011
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The College of Idaho, Caldwell, ID

Undergraduate Research Assistant, Heggland Laboratory	2009 – 2012
Mountain State Tumor Medical Research Institute Summer Fellow, Heggland Laboratory	2010
Idaho INBRE Summer Research Summer Fellow, Heggland Laboratory	2009

HONORS AND AWARDS

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|--|-------------|
| ▪ Eugene S. Mayer Honor Society for Community Service | 2018 |
| ▪ Bioinformatics and Computational Biology Fellowship Award | 2018 |
| ▪ Outstanding INBRE Student | 2012 |
| ▪ Best Graduate/Undergraduate Oral Presentation, 54 th Idaho Academy of Science Meeting | 2012 |
| ▪ Nel Tobias Travel Award | 2011 |
| ▪ Second-Year Calculus Student of the Year | 2009 |
| ▪ College of Idaho Heritage Scholarship | 2008 – 2012 |

COMPLETE WORKS

PUBLICATIONS

1. DL Filer, F Kuo, AT Brandt, CR Tilley, PA Mieczkowski, JS Berg, K Robasky, Y Li, C Bizon, JL Tilson, BC Powell, DM Bost, CD Jeffries, and KC Wilhelmsen (2021). Pre-capture multiplexing provides additional power to detect copy number variation in exome sequencing. *BMC Bioinformatics*. Accepted.
2. DL Filer, PA Mieczkowski, AT Brandt, KL Gilmore, BC Powell, JS Berg, KC Wilhelmsen, and NL Vora (2021). Noninvasive prenatal exome sequencing diagnostic utility limited by sequencing depth and fetal fraction. *Prenat Diagn*. Accepted.
3. E Aliverti, JL Tilson, DL Filer, B Babcock, A Colaneri, J Ocasio, TR Gershon, KC Wilhelmsen, and DB Dunson (June 2020). Projected t-SNE for batch correction. *Bioinformatics* 36(11): 3522–3527. PMID: 32176244.
4. AP Morgan, NF Brazeau, B Ngasala, LE Mhamilawa, M Denton, M Msellem, U Morris, DL Filer, O Aydemir, JA Bailey, JB Parr, A Mårtensson, A Bjorkman, and JJ Juliano (Jan. 2020). Falciparum malaria from coastal Tanzania and Zanzibar remains highly connected despite effective control efforts on the archipelago. *Malar J* 19(1): 47. PMID: 31992305.
5. DL Filer, P Kothiya, RW Setzer, RS Judson, and MT Martin (Feb. 2017). tcpl: the ToxCast pipeline for high-throughput screening data. *Bioinformatics* 33(4): 618–620. PMID: 27797781.
6. AL Karmaus, TD Trautman, M Krishan, DL Filer, and LA Fix (May 2017). Curation of food-relevant chemicals in ToxCast. *Food Chem Toxicol* 103: 174–182. PMID: 28285935.
7. S Auerbach, DL Filer, D Reif, V Walker, AC Holloway, J Schlezinger, S Srinivasan, D Svoboda, R Judson, JR Bucher, and KA Thayer (Mar. 2016). Prioritizing Environmental Chemicals for Obesity and Diabetes Outcomes Research: A Screening Approach Using ToxCast High Throughput Data. *Environ Health Perspect*. PMID: 26978842.
8. R Judson et al. (Oct. 2016). Analysis of the Effects of Cell Stress and Cytotoxicity on In Vitro Assay Activity Across a Diverse Chemical and Assay Space. *Toxicol Sci* 153(2): 409. PMID: 27605417.
9. AL Karmaus, DL Filer, MT Martin, and KA Houck (June 2016). Evaluation of food-relevant chemicals in the ToxCast high-throughput screening program. *Food Chem Toxicol* 92: 188–196. PMID: 27103583.
10. AL Karmaus, CM Toole, DL Filer, KC Lewis, and MT Martin (Jan. 2016). High-Throughput Screening of Chemical Effects on Steroidogenesis Using H295R Human Adrenocortical Carcinoma Cells. *Toxicol Sci*. PMID: 26781511.
11. RS Judson, FM Magpantay, V Chickarmane, C Haskell, N Tania, J Taylor, M Xia, R Huang, DM Rotroff, DL Filer, KA Houck, MT Martin, N Sipes, AM Richard, K Mansouri, RW Setzer, TB Knudsen, KM Crofton, and RS Thomas (Nov. 2015). Integrated Model of Chemical Perturbations of a Biological Pathway Using 18 In Vitro High-Throughput Screening Assays for the Estrogen Receptor. *Toxicol Sci* 148(1): 137–154. PMID: 26781511.
12. DL Filer, HB Patisaul, T Schug, DM Reif, and KA Thayer (Dec. 2014). Test driving ToxCast: endocrine profiling for 1858 chemicals included in phase II. *Current Opinion in Pharmacology* 19: 145–152. PMID: 25460227.
13. DM Rotroff, MT Martin, DJ Dix, DL Filer, KA Houck, TB Knudsen, NS Sipes, DM Reif, M Xia, and RS Judson (Aug. 2014). Predictive endocrine testing in the 21st century using *in vitro* assays of estrogen receptor signaling responses. *Environmental Science and Technology* 48(15): 8706–8716. PMID: 24960280.

14. SY Cai, DA Lionarons, L Hagey, CJ Soroka, A Mennone, and JL Boyer (June 2013). Adult sea lamprey tolerates biliary atresia by altering bile salt composition and renal excretion. *Hepatology* 57(6): 2418–2426. PMID: 23175353. (Acknowledged for technical assistance).
15. KB Paul, JM Hedge, C Macherla, DL Filer, E Burgess, SO Simmons, KM Crofton, and MW Hornung (Oct. 2013). Cross-species analysis of thyroperoxidase inhibition by xenobiotics demonstrates conservation of response between pig and rat. *Toxicology* 312: 97–107. PMID: 23959146.

CONFERENCE ABSTRACTS

1. DL Filer, KC Wilhelmsen, BC Powell, KL Gilmore, CM Powell, JS Berg, and NL Vora (2020). Novel sequencing-based framework for non-invasive fetal genotyping. Poster Presentation. 40th SMFM Annual Meeting-The Pregnancy Meeting, Dallas, TX.
2. DL Filer, KL Gilmore, BC Powell, PA Mieczkowski, KC Wilhelmsen, and NL Vora (2019). Exome sequencing of cell-free fetal DNA for detection of pathogenic variants: a pilot study. Poster Presentation. 69th Annual Meeting of the American Society of Human Genetics, Houston, TX.
3. DL Filer, F Kuo, C Bizon, K Robasky, JS Berg, JL Tilson, JP Evans, and KC Wilhelmsen (2018). Whole exome sequencing for exon-level copy-number variation in small-sample clinical settings. Poster Presentation. 68th Annual Meeting of the American Society of Human Genetics, San Diego, CA.
4. K Connors, DL Filer, NS Sipes, RS Judson, KA Houck, and MT Martin (2015). High-Content Screening of ToxCast Compounds Using Vala Sciences' Complex Cell Culturing Systems. Poster Presentation. The Society of Toxicology 54th Annual Meeting, San Diego, CA.
5. DL Filer, KA Houck, MT Martin, and RS Judson (2015). Making Sense of the New ToxCast Data: A Case Study with PPAR γ . Poster Presentation. The Society of Toxicology 54th Annual Meeting, San Diego, CA.
6. AL Karmaus, DL Filer, CM Toole, KC Lewis, and MT Martin (2015). Screening Chemical Effects on Steroidogenesis in H295R Human Adrenocortical Carcinoma Cells. Poster Presentation. The Society of Toxicology 54th Annual Meeting, San Diego, CA.
7. NC Kleinstreuer, Q Zang, DL Filer, MT Martin, KA Houck, D Allen, W Casey, and RS Judson (2015). Using ToxCast/Tox21 Assays and QSAR Modeling to Predict Androgen Receptor Pathway Activity. Poster Presentation. The Society of Toxicology 54th Annual Meeting, San Diego, CA.
8. DL Filer (Sept. 2014). ToxCast Data Analysis Workflow. Oral Presentation. US EPA's Chemical Safety Research: Second ToxCast Data Summit.
9. DL Filer, RS Judson, DM Rotroff, DM Reif, AM Richard, KA Houck, and MT Martin (2014). Protein-fragment complementation assays detect and describe nuclear receptor activity across the ToxCast chemical library. Poster Presentation. The Society of Toxicology 53rd Annual Meeting, Phoenix, AZ.
10. RS Judson et al. (2014). *In vitro* screening of 1877 industrial and consumer chemicals, pesticides, and pharmaceuticals in up to 782 assays: ToxCast Phase I and II. Poster Presentation. The Society of Toxicology 53rd Annual Meeting, Phoenix, AZ.
11. PG Kothiya, DM Reif, RS Judson, DL Filer, AM Richard, and MT Martin (2014). ToxCast workflow: big data processing and analysis of high-throughput screening assays for environmental chemicals. Poster Presentation. The Society of Toxicology 53rd Annual Meeting, Phoenix, AZ.
12. MT Martin, AL Forgacs, DL Filer, and C Toole (2014). Effects of ToxCast Phase I chemicals on steroidogenesis in H295R human adrenocortical carcinoma cells. Poster Presentation. The Society of Toxicology 53rd Annual Meeting, Phoenix, AZ.

13. KB Paul, DL Filer, RS Judson, VS Wilson, KM Crofton, SO Simmons, and MT Martin (2014). Adaptation of T47D-KBluc and MDA-kb2 to screening and comparison to other receptor reporter platforms. Poster Presentation. The Society of Toxicology 53rd Annual Meeting, Phoenix, AZ.
14. A Wang, JA Franzosa, I Shah, DL Filer, NC Kleinstreuer, S Marinakos, and KA Houck (2014). Comparing bioactivity profiles of diverse nano materials based on high-throughput screening (HTS) in ToxCast. Poster Presentation. The Society of Toxicology 53rd Annual Meeting, Phoenix, AZ.
15. DL Filer, A Wilson, MT Martin, KA Houck, DM Reif, and RS Judson (2013). Multiplexed gene expression data: cell stress induced promiscuity. Poster Presentation. The Society of Toxicology 52nd Annual Meeting, San Antonio, TX.
16. DL Filer (2012). Cadmium disrupts the extracellular matrix secreted by human osteosarcoma Soas-2 cells. Oral Presentation. 54th Idaho Academy of Science Annual Meeting, Idaho Falls, ID.
17. DL Filer (2012). Cadmium disrupts the extracellular matrix secreted by human osteosarcoma Soas-2 cells. Oral Presentation. 7th Annual College of Idaho Student Research Conference, Caldwell, ID.
18. SW Wright, DL Filer, KB Quinney, and SJ Heggland (2012). Cadmium disrupts the extracellular matrix secreted by human osteosarcoma Saos-2 cells. Poster Presentation. The Society of Toxicology 51st Annual Meeting, San Francisco, CA.
19. DL Filer (2011). Circulation of bilirubin in adult sea lamprey. Oral Presentation. MDIBL/INBRE Summer Student Symposium, Salisbury Cove, ME.
20. DL Filer, SY Cai, and JL Boyer (2011). Functional characterization of ASBT-like transporter in the intestine of sculpin, *Myoxocephalus octodecemspinosus*. Poster Presentation. 20th Regional Murdock Conference on Undergraduate Research, Seattle, WA.
21. MA Simmonds, CM Christensen, DL Filer, DE Haggard, KS Arbon, and SJ Heggland (2011). Cadmium exposure alters the expression of key regulatory genes in osteoblastic cells via activation of the ERK signaling pathway. Poster Presentation. The Society of Toxicology 50th Annual Meeting, Washington, DC.
22. DL Filer, DE Haggard, and SJ Heggland (2010). Cadmium alters mineralization in Saos-2 osteoblastic cells. Poster Presentation. 19th Regional Murdock Conference on Undergraduate Research, McMinnville, OR.
23. DL Filer, DE Haggard, and SJ Heggland (2010). Investigating a potential protective role of 17 β estradiol against cadmium-induced toxicity in mineralizing osteoblastic cells. Poster Presentation. 9th Annual INBRE Research Conference, Moscow, ID.
24. DL Filer, JR Weese, MC Eide, and E Yensen (2010). Do soils affect invasion by Bur Buttercup (*Ranunculus testiculatus*) in the Snake River Birds of Prey Area, Southwestern Idaho? Poster Presentation. 5th Annual College of Idaho Student Research Conference, Caldwell, ID.
25. KS Arbon, DL Filer, and SJ Heggland (2009). 17 β Estradiol protects cadmium-induced oxidative stress in human osteoblast-like cell line, Saos-2. Poster Presentation. The Endocrine Society 91st Annual Meeting, Washington, DC.
26. DL Filer, KS Arbon, WA Harvey, and SJ Heggland (2009). The effect of 17 β estradiol and its metabolites on cadmium-induced oxidative stress. Poster Presentation. 18th Regional Murdock Conference on Undergraduate Research, Spokane, WA.
27. DL Filer, KS Arbon, WA Harvey, and SJ Heggland (2009). The effect of 17 β estradiol and its metabolites on cadmium-induced oxidative stress. Poster Presentation. 8th Annual INBRE Research Conference, Pocatello, ID.

SOFTWARE

1. *bcTSNE: Projected t-SNE for Batch Correction*. R Package.
<https://cran.r-project.org/web/packages/bcTSNE/index.html>.
2. *htlcr: How to Learn to Code R*. R Package. <https://github.com/How-to-Learn-to-Code/rclass>.
3. *mcCNV: CNV detection for multiplexed capture exome sequencing*. R Package.
<https://github.com/daynefiler/mcCNV>.
4. *tcpl: ToxCast Data Analysis Pipeline*. R Package.
<https://cran.r-project.org/web/packages/tcpl/index.html>.

FUNDING

- | | | | | |
|----|--|-----------|--|-------------------|
| 1. | 550KR231934 | PI: Vora | North Carolina Translational and Clinical Sciences Institute | |
| | Expanding the utility of non-invasive prenatal genetic testing | | | 05/2020 – 05/2021 |
| | Role: Investigator | | | \$50,000 |
| 2. | F30HD101228 | PI: Filer | National Institute of Child Health & Human Development | |
| | Expanding the utility of prenatal genetic testing | | | 11/2019 – 10/2023 |
| | Role: Principal Investigator | | | \$179,260 |
| 3. | Pilot Grant | PI: Filer | Illumina, Inc. & UNC High Throughput Sequencing Facility | |
| | Expanding the utility of non-invasive prenatal genetic testing | | | 05/2019 – 05/2021 |
| | Role: Principal Investigator | | | \$6,687 |

TEACHING

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|----|----------------------------------|------------------------|--------------------------|
| 1. | Practical R for Scientists | UNC School of Medicine | Spring 2020 |
| 2. | How to Learn to Code | UNC School of Medicine | Summers 2016, 2018, 2019 |
| 3. | MAT123, Applied Mathematics (TA) | College of Idaho | Spring 2012 |
| 4. | MAT152, Calculus II (TA) | College of Idaho | Fall 2011 |
| 5. | BIO330, Cell Biology (TA) | College of Idaho | Fall 2011 |
| 6. | BIO220, Freshman Biology II (TA) | College of Idaho | Spring 2011 |
| 7. | MAT151, Calculus I (TA) | College of Idaho | Fall 2010, Spring 2011 |
| 8. | BIO120, Freshman Biology I (TA) | College of Idaho | Fall 2010 |

PROFESSIONAL SERVICE

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| ■ | Board of Directors for Come to the Table, Inc. | 2018 – 2019 |
| ■ | Emergency Department Volunteer, UNC Hospital, Chapel Hill, NC | 2013 – 2014 |
| ■ | Member, NIEHS 2013 Career Fair Planning Committee | 2012 – 2013 |
| ■ | Citizen Teacher, Citizen Schools, Durham, NC | 2012 |
| ■ | Member, College Budget Committee | 2010 – 2012 |

- Member, Student Research Committee 2010 – 2012
- Member, Tenure Track Math Faculty Search Committee 2010 – 2011