

# Curtis L. Petersen, MS, MPH

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Ph.D. Student  
Dartmouth

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## EDUCATION

*Dartmouth College*, Hanover, NH

**Burroughs Wellcome Big Data in the Life Sciences Fellow**

**Doctor of Philosophy** *The Dartmouth Institute for Health Policy & Clinical Practice* 2016-Current

Thesis: The Utility of Mobile Health Data To Healthcare

**Masters of Science** *Quantitative Biomedical Science Program* 2020

Thesis: DNA Methylation As Clinical Marker

*Dartmouth College*, Hanover, NH

**Masters in Public Health** *The Dartmouth Institute for Health Policy & Clinical Practice* 2014

Internship: Creating an Accountable Care Organization assessment tool

Capstone Project: Risk of multifocal breast cancer in women with atypical hyperplasia, *Cancer* 2017

*University of Oregon*, Eugene, OR

**Bachelors of Science** *Biology & Biochemistry* 2009

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## PROFESSIONAL

*ImagineCare Digital Health*, Dartmouth-Hitchcock, Lebanon NH

**Data & Evidence Curator** 2014-2016

- Conducting systematic reviews and writing clinical care algorithms based on evidence
- Writing analytic algorithms of passively and actively collected data
- System architecture & logic design of semi-automated response system
- Analyzing, interpreting, & summarizing data to feed into design and business cases

*Druker/Deininger & Dao Lab*, Oregon Health & Science University, Portland, OR

**Research Assistant II** 2009-2013

- Investigated the role of a CXCR4 antagonist in eliminating residual leukemia, *Blood* 2012
- Studied cytokine effect on JAK2V617F mutations in myeloproliferative neoplasms, *Blood* 2011
- Investigated the interaction between fanconi anemia, hematopoietic regulators, and betacatenin, *Blood* 2012

*Zebrafish International Resource Center*, University of Oregon, Eugene, OR

**Research Assistant** 2005-2009

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## TEACHING & MENTORING

### Teaching Assistant: Dartmouth, MPH/MS Students

- PH 139: Epidemiology & Biostatistics I + Lab Summer 2016 & 2017
- PH 140: Epidemiology & Biostatistics II + Lab Fall 2016 & 2017
- PH 141: Regression & Other Statistical Approaches + Lab Winter 2017
- PH 147: Advanced Methods in Health Services Research + Lab Spring 2017

### Instructor: Dartmouth, MPH/MS/MD/Postdoc/Residents

- Introduction to R: Workshop Winter 2017
- Graduate Research Peer Mentor Fall 2017-Spring 2019

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## SKILLS

### Technical

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Research	Programing
Machine Learning: classification, regression, clustering, feature engineering; Inferential Methods: Experimental & Observational Study Design; Artificial Neural Networks; Repeated Measures: Hierarchical Modeling; Health Informatics: Natural Language Processing; Genomic/Epigenomic Associations: Cell Type Estimation; Molecular Cloning & Cell Culture	R: Shiny, tidyverse, caret; Python: Pandas, Jupyter; Karas/Tensorflow; Stata; SQL; Ract-Native; Bioconductor & Biopython

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### Non-Technical

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Critical Thinking	Communication
Data Wrangling; Teaching Statistical Language Classes (R & Stata); Teaching Epidemiological Concepts; Judged Public Presentations Protocol Synthesis; Analytic Plans	Manuscripts & Analytic Reports; Building Interactive Data Dashboards; Logic & Conceptual Models; Writing Evidence As Guidelines; Verbal & Poster Presentations; Conflict Resolution & Negotiation

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## AWARDS & ACHIEVEMENTS

- Fellowship: Burroughs Wellcome Fund - Big Data in the Life Sciences Training Program 2018-current
- Dartmouth Graduate Student Council President 2019-2020
- Dartmouth Graduate Student Executive Council Academic Chair 2018-2019
- Winner of 5th Annual Epidemiology Poster Award, The Obesity Society 2017
- Student Employee of the Year, University of Oregon 2009
- Recipient, Benjamin A. Gilman Scholarship (Competitive International Study Program) 2009
- Eagle Scout, Boy Scouts of America 2004

## PUBLICATIONS

### Peer Reviewed Manuscripts

ORCID: <https://orcid.org/0000-0002-7210-447X>

### Google Scholar Link

Agarwal, A.\*, Fleischman, A.G.\*, **Petersen CL\***, Loriaux, M.M., Woltjer, R., Druker, B.J. and Deininger, M.W., Effects of Plerixafor (AMD3100) In Combination with Tyrosine Kinase Inhibition In a Murine Model of CML. *Am Soc Hematology*. 2010. 3389-3389. \*co-first authors

Fleischman, A.G., Aichberger, K.J., **Petersen, C.L.**, Doratotaj, S., Bumm, T.G., Pahl, H.L., Druker, B.J. and Deininger, M.W., Jak2 V617F Induced TNF Resistance as a Mechanism of Clonal Expansion In Myeloproliferative Neoplasm. *Am Soc Hematology*. 2010.

Fleischman, A.G., Aichberger, K.J., Luty, S.B., Bumm, T.G., **Petersen, C.L.**, Doratotaj, S., Vasudevan, K.B., LaTocha, D.H., Yang, F., Press, R.D. and Loriaux, M.M., TNF $\alpha$  facilitates clonal expansion of JAK2V617F positive cells in myeloproliferative neoplasms. *Blood*. 2011., 118(24), pp.6392-6398.

Dao, K.H.T., Rotelli, M.D., **Petersen, C.L.**, Kaech, S., Nelson, W.D., Yates, J.E., Newell, A.E.H., Olson, S.B., Druker, B.J. and Bagby, G.C., FANCL ubiquitinates  $\beta$ -catenin and enhances its nuclear function. 2012. *Blood*, 120(2), pp.323-334.

Agarwal, A., Fleischman, A.G., **Petersen, C.L.**, MacKenzie, R., Luty, S., Loriaux, M., Druker, B.J., Woltjer, R.L. and Deininger, M.W., Effects of plerixafor in combination with BCR-ABL kinase inhibition in a murine model of CML. 2012. *Blood*, 120(13), pp.2658-2668.

Nutter EL, Weiss JE, Marotti JD, Barth RJ Jr, Eliassen MS, Goodrich ME, **Petersen, C.L.**, Onega T. Personal history of proliferative breast disease with atypia and risk of multifocal breast cancer. 2017 Dec 20. *Cancer*. PMID:29266172

**Petersen, C.L.**, Wechsler, E.V., Halter, R.J., Boateng G.G., Proctor, P.O., Kotz, D.F., Batsis, J.A., Detection, Monitoring, and Feasibility of Repetitions Using an mHealth-Enabled Resistance Band, ACM ISBN 978-1-4503-5958-0/18/09. Applications, Systems and Engineering Technologies, September 26–28, 2018 <https://doi.org/10.1145/3278576.3278586>

Saunders, C.H., **Petersen, C.L.**, Durand, M.A., Bagley, P.J., Elwyn, G., Bring on the machines: could machine learning improve the quality of patient-education materials? A systematic search and rapid review., *JCO Clinical Cancer Informatics*. 2018.

Weeks, W.B., **Petersen, C.L.**, Mishra M.K., Curto, D., Cano, P., Hswen, Y., Serra, S.V., Elwyn, G., Soro, P.S., Tomás, J.F., Comparing three methods for reducing psychotropic use in older demented Spanish care home residents

**Petersen, C.L.**, Weeks, W.B., Norin, O., Weinstein, J.N., Development and Implementation of a Person-Centered, Technology-Enhanced Care Model For Managing Chronic Conditions: Cohort Study, *JMIR Mhealth Uhealth* 2019;7(3):e11082, URL: <https://mhealth.jmir.org/2019/3/e11082>, DOI: 10.2196/11082, PMID: 30892274

Brooks, J.M., **Petersen, C.L.**, Titus, A.J., Umucu, E., Chiu, C.Y., Bartels, S.J., & Batsis, J.A., Varying Levels of Food Insecurity Associated with Clinically Relevant Depressive Symptoms in U.S. Adults Aged 60 Years and Over: Results from the 2005–2014 National Health and Nutrition Survey, *Journal of Nutrition in Gerontology and Geriatrics*, 38:3, 218-230, DOI: 10.1080/21551197.2019.1611520

Schott S.L., Xu K., Berkowitz J., **Petersen C.L.**, Saunders C., Sobti N., Coylewright M.; Timing of electric health record Integrated Decision Aid (IDEa) for stroke prevention in atrial fibrillation matters; *Journal of the American College of Cardiology* Mar 2019, 73 (9 Supplement 1) 3005; DOI: 10.1016/S0735-1097(19)33611-3

Batsis, J.A., **Petersen, C.L.**, Crow, R.S., Cook, S.B., Stevens, C.J. Mackenzie, Titus, A., Bartels, S.J., Weight Change and Risk of Frailty: Data from the National Health and Nutrition Examination Surveys 1999-2004.

Obesity. 2019. Clinical Nutrition. ISSN 0261-5614, <https://doi.org/10.1016/j.clnu.2019.10.032>. (<http://www.sciencedirect.com/science/article/pii/S0261561419331255>)

Levy, J.J., Titus A.J., **Petersen, C.L.**, Chen Y., Salas L.A., Christensen B.C., MethylNet: A Modular Deep Learning Approach to Methylation Prediction, bioRxiv 692665; doi: <https://doi.org/10.1101/692665>

Crow, R.S., **Petersen, C.L.**, Cook, S.B., Titus, A.J., MacKenzie, T. A., Batsis, J.A., Reported Weight Change in Older Adults and Presence of Frailty. The Journal of Frailty and Aging (JFA). <http://dx.doi.org/10.14283/jfa.2019.44>

**Petersen, C.L.**, Brooks, J.M., Titus, A.J., Vasquez, E., Batsis, J.A., Relationship Between Food Insecurity and Functional Limitations in Older Adults from 2005-2014 NHANES. Journal of Nutrition in Gerontology and Geriatrics. 2019. DOI: 10.1080/21551197.2019.1617219

Brooks, J.M., **Petersen, C.L.**, Kelly, S.M., Reid, M.C., Likelihood of depressive symptoms in US older adults by prescribed opioid potency: National Health and Nutrition Examination Survey 2005-2013. Int J Geriatr Psychiatry. 2019; 1– 9. <https://doi.org/10.1002/gps.5157>

Batsis, J.A., **Petersen, C.L.**, Crow, R.S., Cook, S.B., Stevens, C.J. Mackenzie, Weight change and risk of the foundation of National Institute of Health Sarcopenia-defined low lean mass: Data from the National Health and Nutrition examination surveys 1999-2004 [published online ahead of print, 2019 Nov 4]. Clin Nutr. 2019;S0261-5614(19)33125-5. doi:10.1016/j.clnu.2019.10.032

**Petersen, C.L.**, Mishra M.K., Curto, D., Cano, P., Hswen, Y., Serra, S.V., Elwyn, G., Soro, P.S., Tomás, J.F., Weeks, W.B., Reducing psychotropic medication use in non-demented older care home residents. Journal of General Internal Medicine. (2019) doi:10.1007/s11606-019-05517-2

Crow, R.S., **Petersen, C.L.**, Cook, S.B., Batsis, J.A., Reported Weight Change in Older Adults and Presence of Frailty. J Frailty Aging. 2020;9(2):74-81. doi: 10.14283/jfa.2019.44. PMID: 32259180; PMCID: PMC7202674.

Batsis JA, **Petersen, CL**, Clark MM, Cook SB, Lopez-Jimenez F, Al-Nimr RI, Pidgeon D, Kotz D, Mackenzie TA, Bartels SJ. A Weight-Loss Intervention Augmented by a Wearable Device in Rural Older Adults with Obesity: A Feasibility Study. J Gerontol A Biol Sci Med Sci. 2020 May 8;glaa115. doi: 10.1093/gerona/glaa115. Epub ahead of print. PMID: 32384144.

**Petersen, C.L.**, Halter, R.J., Kotz, D.F., Loeb, L., Cook, S.B., Pidgeon, D., Christensen, B.C., Batsis, J.A., Using Natural Language Processing and Sentiment Analysis to Augment Traditional User-Centered Design: Development and Usability Study. JMIR Mhealth Uhealth. 2020;8(8):e16862. Published 2020 Aug 7. doi:10.2196/16862

### Manuscripts Under Review & In Revision

**Petersen, C.L.**, Chen, J.Q., Salas, L.A., Christensen, B.C., Peripheral blood DNA methylation in panic disorder, a joint analysis of two studies. Nature Translational Psychiatry. 2020.

**Petersen, C.L.**, Christensen, B.C., Batsis, J.A., Weight loss intervention results in decreased DNA methylation age and improved functional ability in older obese adults. Clinical Epigenetics. 2020.

### Manuscripts In Preparation

Nelson, H.H., Miller, J.S., Christensen, B.C., **Petersen, C.L.**, Koestler D.C., Kelsey, K.T., Cytomegalovirus (CMV) is associated with leukocyte PDCD1 methylation and patient outcome in head and neck cancer.

**Petersen, C.L.**, Li X., Halter, R.J., Kotz, D.F., Batsis, J.A., Positive perceptions of mHealth based physical activity and weight reduction program.

**Petersen, C.L.**, Jacobson, N., Decrease blood pressure during remote medical sensing of hypertensive adults: large open trial.