

William D. Duncan, MS, PhD

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EDUCATION

2014	PhD Philosophy	University at Buffalo, Buffalo, NY
2004	MS Computer Science	Clemson University, Clemson, SC
1995	BA Philosophy	Western Carolina University, Cullowhee, NC

ACADEMIC HONORS

2006- 2014	NSF Fellow in University at Buffalo Integrative and Graduate Education and Research Traineeship (IGERT) program in Geographic Information Science (http://www.ncgia.buffalo.edu/giscience/)
2002- 2003	NSF Fellow in Clemson University Graduate K-12 Math and Science Program (http://www.clemson.edu/gk12/)
1995	Graduated BA cum laude with honors

ACADEMIC APPOINTMENTS and POSITIONSs

2022-present	Clinical Associate Professor	University of Florida College of Dentistry Gainesville, FL
2016-present	Affiliated Faculty	University at Buffalo Department of Philosophy Buffalo, NY
2016-present	Adjunct Professor of Health Informatics	IU School of Informatics and Computing at IUPUI Indianapolis, IN
2016-2019	Assistant Professor of Oncology	Roswell Park Comprehensive Cancer Center Buffalo, NY
2015-2016	Assistant Research Scientist	Regenstrief Institute Indianapolis, IN
2014-2015	Postdoctoral Researcher	University at Buffalo Research Foundation Buffalo, NY
2010-2014	Graduate Research Assistant	University at Buffalo School of Dental Medicine Buffalo, NY
2006-2010	Graduate Teaching Assistant/Instructor	University at Buffalo Department of Philosophy Buffalo, NY

PROFESSIONAL EXPERIENCE

2019-2022	Software Developer	Lawrence Berkeley National Laboratory Berkeley, CA
2019-2019	Senior Scientific Programmer	University at Buffalo Department of Biomedical Informatics

2006-2006	Software Developer	Buffalo, NY Ettain Group Charlotte, NC
2001-2006	Software Developer	General Software Systems Telecommuter, company based in Fort Lauderdale, FL
2000-2001	Software Developer	Buncombe County Government Asheville, NC
1999-2000	Software Developer	Drake Software Franklin, NC

MILITARY EXPERIENCE

1989-1991 US Army Cannon Crew Member (Rank E-3)
Served in Desert Storm, Honorable discharge
Awards: Army Commendation, Army Achievement, Southeast Asia Service, and Kuwait Liberation

ACADEMIC SERVICE

Students Supervised

2014-2018 Suhila Sawesi, Indiana University-Purdue University Indianapolis
PhD committee member (PhD awarded)
2014-2020 Kanitha Phalakornkule Indiana University-Purdue University Indianapolis
PhD committee member (PhD awarded)

Manuscript Reviews

International Conference on Biomedical Ontology (ICBO)
Bio-Ontologies (Conference)
American Medical Informatics Association (AMIA)
Formal Ontology in Information Systems (FOIS) (Conference)
Scientific Data
Minds and Machines
The Journal of Open Source Software
Trilogía Ciencia Tecnología Sociedad
Applied Clinical Informatics
Applied Ontology

Workshops and Conference Organized

Co-organizer 13th International Conference on Biomedical Ontologies
September 2022, University of Michigan, Ann Arbor, Michigan, US

Co-organizer OBO Core Workshop
11th International Conference on Biomedical Ontologies
September, 2020, Virtual Conference

- Co-organizer COB as a Community Resource
Intelligent Systems for Molecular Biology
July, 2020, Virtual Conference
- Co-organizer 10th International Conference on Biomedical Ontologies
July 2019, University at Buffalo, Buffalo, New York, US
- Co-organizer 2nd International Workshop on Oncology and Ontology
9th International Conference on Biomedical Ontologies
August 2018, Oregon State University, Corvallis, Oregon, US
- Co-organizer 1st International Workshop on Oncology and Ontology
8th International Conference on Biomedical Ontologies
September 2017, New Castle, UK

CURRENT RESEARCH

Oral Health and Disease Ontologies (<https://github.com/oral-health-and-disease-ontologies>)

Summary: The goal of this project is to develop an ontological framework to represent oral conditions, and use this ontology to integrate data from multiple dental providers. To date, we have successfully used the Oral Health and Disease Ontology to integrate dental records from 99 dental practices that used two different electronic medical record systems.

AWARDS

1. Travel Award (\$1000), February 2018: *Ontology of Informed Consent: An Approach to Specimen and Data Sharing*
2. Travel Award (\$500), October 2017: *Microbiology for the CTSA 2017*
3. Travel Award (\$500), April 2018: *Ontologies for Stem Cells and Stem Cell Lines*

PRESENTATIONS

1. *Ontologies in Medicine*
University of Florida Spatial Biology Retreat (October 2022, Gainesville, FL)
2. *Using Semantic Technologies to Link Metagenomic Data for the National Microbiome Data Collaborative*
2020 U.S. Semantic Technologies Symposium Series (March 2020, Raleigh, NC)
3. *Ontologies for Neoplasms*
2nd International Workshop on Oncology and Ontology (August 2018, Corvallis, OR)
4. *Towards an Ontology for Representing Malignant Neoplasms*
1st International Workshop on Oncology and Ontology (September 2017, New Castle, UK)
5. *Applied Ontology: Metaphysics Meets Informatics*
Western Carolina University (November 2014, Cullowhee, NC)

6. *Representing Intracoronaral Tooth Restorations in the Ontology for Oral Health and Disease*
ICBO 2013: 4th International Conference on Biomedical Ontology (July 2013, Montreal, CA)
7. *Expressing Basic Formal Ontology in Type Predicate Logic*
University of Essex Logic Colloquium (May 2011, Essex, UK)
8. *Using Ontological Dependence to Distinguish Between Hardware and Software*
Artificial Intelligence and Simulation of Behavior Conference (April 2011, York, UK)
9. *Making Ontological Sense of Hardware and Software*
Institute for Geoinformatics, International Research Training Group, University of Muenster (June 2010, Muenster, Germany)

TEACHING EXPERIENCE

1. *Spring 2019*: Guest lecture in Department of Biomedical Informatics, University at Buffalo – Cancer Data Systems
2. *Fall 2018*: Guest lecture in Department of Biomedical Informatics, University at Buffalo – Dental Informatics Overview
3. *Spring 2018*: Guest lecture for Clinical and Translational Science Institute - A Brief Introduction to Description Logics and OWL
4. *Fall 2017*: Guest lecture in Department of Biomedical Informatics, University at Buffalo – Roswell Park Comprehensive Cancer Center Biomedical Data Science Shared Resource
5. *Spring 2017*: Guest lecture in Department of Biomedical Informatics, University at Buffalo – Description Logics
6. *Spring 2011*: Teaching Assistant, University of Buffalo, Research Ethics (Instructor: David Triggles, graduate course)
7. *Spring 2010 - Fall 2010*: Teaching Assistant, University of Buffalo, Introduction to Philosophy (Instructor: Michael McGlone)
8. *Spring 2009*: Teaching Assistant, University of Buffalo, Research Ethics (Instructor: David Triggles, graduate course)
9. *Fall 2007 - Spring 2008*: Instructor, University of Buffalo, Critical Thinking
10. *Summer 2007*: Instructor, Western Carolina University, Critical Thinking
11. *Spring 2004*: Lab Instructor, Clemson University, Introduction to Computers

12. *Fall 2003*: Teaching Assistant, Clemson University, Operating Systems
(Instructor: D.E. Stevens)

13. *Summer 1998*: Instructor, Western Carolina University, Introduction to Philosophy

GRANT SUPPORT

Current Grant Support

Co-investigator

Collaborative Research: Ranges: Building Capacity to Extend Mammal Specimens from Western North America

2228392 NSF

05/01/23-04/30/27

PI: Guralnick, Robert

The goal of this project is to establish the Ranges Digitization Network (“Ranges”). The Ranges network will digitize traits from over one million mammal specimens in 19 U.S. natural history museums, and produce datasets that are in standard format and easy to find in online biodiversity platforms. This will allow researchers to build better baselines for biodiversity and improve predictions of how mammals respond to changing environments.

Development of Opportunities for Research (DOOR) in Dental Schools: Future Academic Interdisciplinary Workforce and Collaborators for the National Dental Practice-Based Research Network (PBRN)

1U01DE033262-01 NIDCR

09/03/23-06/30/28

PI: McNeil, Daniel

The University of Florida (UF) College of Dentistry and East Carolina University (ECU) School of Dental Medicine are collaborating to establish an academic multidisciplinary practice-based research network within and between their respective dental schools to provide clinical faculty, residents, and predoctoral students with a competency-based training program for skills development, research mentorship, and participation in practice- oriented clinical research.

Completed Grant Support

Software Developer

National Microbiome Data Collaborative (NMDC)

DE-AC02-05CH11231 DOE BER

07/01/19-09/30/21

PI: N. Mouncey

The vision of the NMDC is to empower the research community to harness microbiome data exploration and discovery through a collaborative and integrative data science ecosystem. The NMDC will address fundamental roadblocks in microbiome data science through implementation of guiding principles to make data findable, accessible, interoperable and reusable (FAIR).

Co-investigator

Immuno-Oncology Translation Network: Data Management and Resource-Sharing Center at Roswell Park

U24 CA232979

NCI

09/30/2018-06/30/2023

The Data Management and Resource-Sharing Center (DMRC) serves as an administrative and analytic hub for translational studies in the NCI-supported Immuno-Oncology Translation Network (IOTN).

Data Analyst

Programming Hematopoietic Stem Cells for Long-Term Targeted T Cell Therapy of Patients with Relapsed Ovarian Cancer

C030158 New York State Department of Health 10/01/2015-09/30/2019

PI: Adekunle Odunsi

Summary: The study investigates how to harness the immune system in order to improve outcomes for ovarian cancer patients.

Data Analyst

Administrative Supplement to SPORE

P50 CA159981 NCI 07/01/2016-06/30/2019

PI: Adekunle Odunsi

Summary The goal of Administration Core is to ensure that translational goals of the RPCCC-UPCI Ovarian Cancer SPORE is to provide leadership, direction and administrative services for the purposes of enhancing research productivity and maintaining a stimulating translational research environment for ovarian cancer.

Co-investigator

Predicting Response to Ovarian Cancer Adjuvant Chemo via Electronic Medical Data

IRG-14-194-11 American Cancer Society 06/27/17-12/31/17

PI: Eng, Keven

Summary: This project uses treatment information in the Roswell Park's electronic medical record system to analyze outcomes for ovarian cancer patients.

Co-Investigator

Leveraging electronic dental record (EDR) data for clinical research

5U19DE022516-03 National Dental PBRN, NIDCR 01/01/2015 - 06/30/2018

PIs: Gilbert, Gregg and Thyvalikakath, Thankam

Summary: The major goal of this project is to explore the feasibility of using electronic dental records data to assess outcomes of posterior composite restorations (PCR) and tooth loss following root canal treatment (RCT).

Consultant

PRO: A Protein Ontology in OBO Foundry for Integration of Biomedical Knowledge

2R01GM080646 NIGMS 09/01/2015 - 08/31/2019

PI: Smith, Barry – Subcontract

Summary: The goal of this project is to develop and test an ontological framework for the description of proteins that will allow more precise annotation and more accurate prediction of their biological properties.

Postdoctoral Researcher

Enhancing the Cell Ontology in Support of CyTOF and Flow Cytometry

N/A NIAID 06/01/2014 - 04/15/2015
PI: Diehl, Alexander – Subcontract, HIPC
Summary: This project is part of the Human Immunology Project Consortium (<http://www.immuneprofiting.org/hipc>), and supplements the “Vaccination and Infection: Indicators of Immunological Health and Responsiveness” project (NIAID 1U19AI090019). The project aims to further develop the Cell Ontology for use in characterizing data obtained from CyTOF and flow cytometry.

Postdoctoral Researcher

Analysis of restoration longevity in elderly patients using electronic dental records
5R03DE023358 NIDCR 06/01/2014 - 04/15/2015
PI: Schleyer, Titus
Summary: This project addresses how patient-, tooth- and restoration-level factors affect the longevity of amalgam and composite restorations in an elderly patient population in two large HMOs.

Research Assistant

PRO: A Protein Ontology in OBO Foundry for Integration of Biomedical Knowledge
2R01GM080646 NIGMS 09/01/2013 - 05/31/2014
PI: Smith, Barry – Subcontract
Summary: The goal of this project is to devise and test an ontological framework for the description of proteins that will allow more precise annotation and more accurate prediction of their biological properties.

Research Assistant

Data extraction using electronic dental records in dental practice-based research networks
5R21DE021178 NIDCR 09/01/2012 - 05/31/2014
PI: Schleyer, Titus
Summary: This project proposes to test the feasibility of a generalizable approach to extracting clinical data from electronic dental record systems to support practice-based, clinical research in dental PBRNs.

Research Assistant

INPC Ontologies Project
N/A Regenstrief Foundation Innovation Grant 09/01/2013 - 05/31/2014
PIs: Ruttenberg, Alan and Schleyer, Titus
Summary: The Indianapolis Network for Patient Care (INPC) is a statewide health information exchange that collects data from 25,000 physicians, 94 hospitals, 110 clinics, surgery centers, and other healthcare organizations. This project investigated how constraints at the class level can improve data quality by converting a small subset of INPC data into an ontology. Additionally, queries were developed that probed the ontology for answers to research questions.

PUBLICATIONS

myNCBI: <https://bit.ly/34rKuWe>

Research Gate: <https://www.researchgate.net/profile/William-Duncan-5/research>

Google Scholar: https://scholar.google.com/citations?user=JmK0_REAAAAJ&hl=en

Journal Articles (peer reviewed)

1. Thyvalikakath T, Siddiqui ZA, Eckert G, LaPradd M, **Duncan WD**, Gordan VV, Rindal DB, Jurkovich M, Gilbert GH (2024). Survival analysis of posterior composite restorations in National Dental PBRN general dentistry practices. *Journal of Dentistry*. 141: 104831. PMID: 38190879. <https://pubmed.ncbi.nlm.nih.gov/38190879>.
2. Aravindraja C, Jeepipalli S, **Duncan W**, Vekariya KM, Bahadekar S, Chan EKL, Kesavalu L (2023). Unique miRomics Expression Profiles in Tannerella forsythia-Infected Mandibles during Periodontitis Using Machine Learning. *International Journal of Molecular Sciences*. 24(22):16393. <https://doi.org/10.3390/ijms242216393>
3. Lin AY, Arabandi S, Beale T, **Duncan WD**, Hicks A, Hogan WR, Jensen M, Koppel R, Martínez-Costa C, Nytrø Ø, Obeid JS, Oliveira JP, Ruttenberg A, Seppälä S, Smith B, Soergel D, Zheng J, Schulz S. (2023). Improving the Quality and Utility of Electronic Health Record Data through Ontologies. *Standards*. 3(3):316-340. <https://doi.org/10.3390/standards3030023>
4. Meyer R, Appeltans W, **Duncan WD**, Dimitrova M, Gan Y-M, Stjernegaard Jeppesen T, Mungall C, Paul DL, Provoost P, Robertson T, Schriml L, Suominen S, Walls R, Sweetlove M, Ung V, Van de Putte A, Wallis E, Wieczorek J, Buttigieg PL (2023). Aligning Standards Communities for Omics Biodiversity Data: Sustainable Darwin Core-MIxS Interoperability. *Biodiversity Data Journal*. 11: e112420. <https://doi.org/10.3897/BDJ.11.e112420>
5. Chan LE, Thessen AE, **Duncan WD**, Matentzoglou N, Schmitt C, Grondin C, Vasilevsky N, McMurphy JA, Robinson PN, Mungall CJ & Haendel MA (2023). The Environmental Conditions, Treatments, and Exposures Ontology (ECTO): Connecting Toxicology and Exposure to Human Health and Beyond. *Journal of Biomedical Semantics*. 14(1):3. <https://pubmed.ncbi.nlm.nih.gov/36823605>.
6. Nicolas M, Balhoff JP, Bello SM Bizon C, Brush M, Callahan TJ, Chute CG, **Duncan WD**, Evelo CT, Gabriel D, Graybeal J, Gray A, Gyori BM, Haendel M, Harmse H, Harris NL, Harrow I, Hegde HB, Hoyt AL, Hoyt CT, Jiao D, Jiménez-Ruiz E, Jupp S, Kim H, Koehler S, Liener T, Long Q, Malone J, McLaughlin JA, McMurphy JA, Moxon S, Munoz-Torres MC, Osumi-Sutherland D, Overton JA, Peters B, Putman T, Queralt-Rosinach N, Shefchek K, Solbrig H, Anne T, Tudorache T, Vasilevsky N, Wagner AH & Mungall CJ (2022). A Simple Standard for Sharing Ontological Mappings (SSSOM). *Database*. vol 2022, 2022, baac035, <https://doi.org/10.1093/database/baac035>.
7. Matentzoglou N, Goutte-Gattat D, Tan S, Balhoff JP, Carbon S, Caron AR, Duncan WD, Flack JE, Haendel M, Harris NL, Hogan WR, Hoyt CT, Jackson RC, Kim H, Kir H, LM,

- McMurry JA, Overton JA, Peters B, Pilgrim C, Stefancsik R, Robb SM, Toro S, Vasilevsky NA, Walls R, Mungall CJ & Osumi-Sutherland D (2022). Ontology Development Kit: a toolkit for building, maintaining and standardizing biomedical ontologies. *Database*. vol 2022, 2022, baac087, <https://doi.org/10.1093/database/baac087>.
8. He Y, Yu H, Huffman A, Yu AL, Natale DA, Beverley J, Zheng L, Perl Y, Wang Z, Liu Y, Ong E, Wang Y, Huang P, Tran L, Du J, Shah Z, Shah E, Desai R, Huang H, Tian Y, Merrell E, **Duncan WD**, Arabandi S, Schriml LM, Zheng J, Masci AM, Wang L, Liu H, Smaili FZ, Hoehndorf R, Pendlington ZM, Roncaglia P, Ye X, Xie J, Tang Y, Yang X, Peng S, Zhang L, Chen L, Hur J, Omenn GS, Athey B & Smith B (2022). A Comprehensive Update on CIDO: The Community-based Coronavirus Infectious Disease Ontology. *Journal of Biomedical Semantics*. 13: 25 (2022). <https://pubmed.ncbi.nlm.nih.gov/36271389>.
9. Thyvalikakath T, LaPradd M, Siddiqui Z, **Duncan WD**, Eckert G, Medam JK, Rindal DB, Jurkovich M, Gilbert GH & National Dental PBRN Collaborative Group (2022). Root Canal Treatment Survival Analysis in National Dental PBRN Practices. *Journal of Dental Research*. 101(11): 1328-1334. <https://doi.org/10.1177/00220345221093936>.
10. Hills DJ, Damerow JE, Ahmmed B, Catolico N, Chakraborty S, Coward CM, Crystal-Ornelas R, **Duncan WD**, Goparaju LN, Lin C, Liu Z, Mudunuru MK, Rao Y, Rovetto RJ, Sun Z, Whitehead BP, Wyborn L & Yao T (2022). Earth and Space Science Informatics Perspectives on Integrated, Coordinated, Open, Networked (ICON) Science. *Earth and Space Science*. 9(4). <http://doi.org/10.1029/2021EA002108>.
11. Hu B, Canon S, Eloë-Fadrosh EA, Anubhav FNU, Babinski M, Corilo Y, Davenport K, **Duncan WD**, Fagnan K, Flynn M, Foster B, Hays D, Huntemann M, Jackson EKP, Kelliher J, Li P, Lo C, Mans D, McCue LA, Mouncey N, Mungall CJ, Piehowski PD, Purvine SO, Smith M, Varghese NJ, Winston D, Xu Y & Chain PSG (2022). Challenges in Bioinformatics Workflows for Processing Microbiome Omics Data at Scale. *Frontiers in Bioinformatics, section Genomic Analysis*. <https://doi.org/10.3389/fbinf.2021.826370>.
12. Jackson R, Matentzoglou N, Overton JA, Vita R, Balhoff JP, Buttigieg PL, Carbon S, Courtot M, Diehl AD, Dooley DM, **Duncan WD**, Harris NL, Haendel MA, Lewis SE, Natale DA, Osumi-Sutherland D, Ruttenberg A, Schriml LM, Smith B, Stoeckert CJ, Vasilevsky NA, Walls RL, Zheng J, Mungall CJ & Peters B (2021). OBO Foundry in 2021: operationalizing open data principles to evaluate ontologies. *Database*. vol 2021: 2021, baab069, <https://doi.org/10.1093/database/baab069>.
13. Meyer R, Buttigieg PL, Wiczorek J, Jeppesen TS, **Duncan WD**, Gan Y-M, Sweetlove M, Suominen S & Sustainable Darwin Core MIxS Interoperability TG (2021). Aligning Standards Communities: Sustainable Darwin Core MIxS Interoperability. *Biodiversity Information Science and Standards*. vol. 5: e73775. <https://doi.org/10.3897/biss.5.73775>.
14. Eloë-Fadrosh EA, Ahmed F, Anubhav, Babinski M, Baumes J, Borkum M, Bramer L, Canon S, Christianson DS, Corilo YE, Davenport KW, Davis B, Drake M, **Duncan WD**, Flynn MC, Hays D, Hu B, Huntemann M, Kelliher J, Lebedeva S, Li P, Lipton M, Lo C, Martin S,

- Millard D, Miller K, Miller MA, Piehowski P, Jackson EP, Purvine S, Reddy TBK, Richardson R, Rudolph M, Sarrafan S, Shakya M, Smith M, Stratton K, Sundaramurthi JC, Vangay P, Winston D, Wood-Charlson EM, Xu Y, Chain PSG, McCue LA, Mans D, Mungall CJ, Mouncey NJ & Fagnan K (2021). The National Microbiome Data Collaborative Data Portal: an integrated multi-omics microbiome data resource. *Nucleic Acids Research*. 50(D1): D828-D836. <https://academic.oup.com/nar/article/50/D1/D828/6414581>.
15. Vangay P, Burgin J, Johnston A, Beck KL, Berrios DC, Blumberg K, Canon S, Chain P, Chandonia JM, Christianson D, Costes SV, Damerow J, **Duncan WD**, Dundore-Arias JP, Fagnan K, Galazka JM, Gibbons SM, Hays D, Hervey J, Hu B, Hurwitz BL, Jaiswal P, Joachimiak MP, Kinkel L, Ladau J, Martin SL, McCue LA, Miller K, Mouncey N, Mungall C, Pafilis E, Reddy TBK, Richardson L, Roux S, Schriml LM, Shaffer JP, Sundaramurthi JC, Thompson LR, Timme RE, Zheng J, Wood-Charlson EM & Elloe-Fadrosh EA (2021). Microbiome Metadata Standards: Report of the National Microbiome Data Collaborative's Workshop and Follow-On Activities. *mSystems*. 6(1): e01194-20. <https://doi.org/10.1128/mSystems.01194-20>.
 16. Thyvalikakath TP, **Duncan WD (co-first author)**, Siddiqui Z, LaPradd M, Eckert G, Schleyer T, Rindal DB, Jurkovich M, Shea T, Gilbert GH & National Dental PBRN Collaborative Group (2020). Leveraging Electronic Dental Record Data for Clinical Research in the National Dental PBRN Practices. *Applied Clinical Informatics*. <https://pubmed.ncbi.nlm.nih.gov/32349142>.
 17. Wood-Charlson EM, Anubhav, Auberry D, Blanco H, Borkum MI, Corilo YE, Davenport KW, Deshpande S, Devarakonda R, Drake M, **Duncan WD**, Flynn MC, Hays D, Hu B, Huntemann M, Li PE, Lipton M, Lo CC, Millard D, Miller K, Piehowski PD, Purvine S, Reddy TBK, Shakya M, Sundaramurthi JC, Vangay P, Wei Y, Wilson BE, Canon S, Chain PSG, Fagnan K, Martin S, McCue LA, Mungall CJ, Mouncey NJ, Maxon ME & Elloe-Fadrosh EA (2020). The National Microbiome Data Collaborative: enabling microbiome science. *Nature reviews. Microbiology*. 18(6): 313–314. <https://pubmed.ncbi.nlm.nih.gov/32350400>.
 18. Gu F, Farrugia MK, **Duncan WD**, Feng Y, Hutson AD, Schlecht NF, Repasky EA, Antoch MP, Miller A, Platek A, Platek ME, Iovoli AJ & Singh AK (2020). Daily Time of Radiation Treatment Is Associated with Subsequent Oral Mucositis Severity during Radiotherapy in Head and Neck Cancer Patients. *Cancer Epidemiol Biomarkers Prevention*. 29(5): 949-955. PMID: 32098893. <https://pubmed.ncbi.nlm.nih.gov/32098893>.
 19. Duncan WD, Thyvalikakath T, Haendel M, Torniai C, Hernandez P, Song M, Acharya A, Caplan DJ, Schleyer T & Ruttenberg A (2020). Structuring, Reuse and Analysis of Electronic Dental Data using the Oral Health and Disease Ontology. *Journal of Biomedical Semantics*. 11(1):8. <https://pubmed.ncbi.nlm.nih.gov/32819435/>.
 20. Serra LM, **Duncan WD** & Diehl AD (2019). An ontology for representing hematologic malignancies: the cancer cell ontology. *BMC Bioinformatics*. 20 (Supplement 5): 231-236.

<https://doi.org/10.1186/s12859-019-2722-8>.

21. He Y, **Duncan WD**, Cooper DJ, Hansen J, Iyengar R, Ong E, Walker K, Tibi O, Smith S, Serra L, Zheng J, Sarntivijai S, Schurer S, O'Shea KS & Diehl AD (2019). OSCI: Standardized stem cell ontology representation and use cases for stem cell investigation. *BMC Bioinformatics*. 20 (Suppl. 5): 180 (2019). <https://doi.org/10.1186/s12859-019-2723-7>.
22. Starbuck KD, Szender JB, **Duncan WD**, Morrell K, Etter JL, Zsiros E, Odunsi K, Moysich K & Eng KH (2018). Prognostic impact of adjuvant chemotherapy treatment intensity for ovarian cancer. *PLOS ONE*. 2018; 13(11): e0206913. PMID: 30418985. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6231633>.
23. Iovoli AJ, Platek AJ, Degraaff L, Wang C, **Duncan WD**, Wooten KE, Arshad H, Gupta V, Kuriakose MA, Hicks WL, Platek ME & Singh AK (2018). Routine surveillance scanning in HNSCC: Lung screening CT scans have value but head and neck scans do not. *Oral Oncology*. 86: 273-277. <https://doi.org/10.1016/j.oraloncology.2018.10.008>.
24. **Duncan WD** (2017). Ontological distinctions between hardware and software. *Applied Ontology*. 12(1), 5-32. doi: 10.3233/AO-170175. <https://content.iospress.com/articles/applied-ontology/ao175>.
25. Natale DA, Arighi CN, Blake JA, Bona J, Chen C, Chen SC, Christie KR, Cowart J, D'Eustachio P, Diehl AD, Drabkin HJ, **Duncan WD**, Huang H, Ren J, Ross K, Ruttenberg A, Shamovsky V, Smith B, Wang Q, Zhang J, El-Sayed A & Wu CH. (2017). Protein Ontology (PRO): enhancing and scaling up the representation of protein entities. *Nucleic Acids Research* (Jan 4). doi: 10.1093/nar/gkw1075. PMID: 27899649. <https://pubmed.ncbi.nlm.nih.gov/27899649>.
26. Ray PL, Cox AP, Jensen M, Allen T, **Duncan W** & Diehl AD (2016). Representing Vision and Blindness. *Journal of Biomedical Semantics* 7(15). <https://doi.org/10.1186/s13326-016-0058-0>.
27. Jensen M, Cox AP, Chaudhry N, Ng M, Sule D, **Duncan W**, Ray P, Weinstock-Guttman B, Smith B, Ruttenberg A, Szigeti K, Diehl AD (2013). The Neurological Disease Ontology. *Journal of Biomedical Semantics* 4(42). doi:10.1186/2041-1480-4-42. PMID: 24314207. <http://www.ncbi.nlm.nih.gov/pubmed/24314207>.

Conference Proceedings (peer reviewed)

1. Bartnik A, Serra L, Smith M, **Duncan WD**, Ruttenberg A, Dwyer M & Diehl AD (2022). Development of an Image Data Set Class: Its Role in Biomedical Imaging and Neuroimaging Research. *Proceedings from ICBO 2022: International Conference on Biomedical Ontology* (Forthcoming). September 25-28, 2022. https://icbo-conference.github.io/icbo2022/papers/ICBO-2022_paper_2848.pdf.

2. Chan LE, Vasilevsky NA, Thessen A, Matentzoglu N, **Duncan WD**, Mungall CJ & Haendel A (2021). A semantic model leveraging pattern-based ontology terms to bridge environmental exposures and health outcomes. *Proceedings of the International Conference on Biomedical Ontologies 2021*. September 16-18, 2021, Bolzano, Italy. CEUR, vol 3073: 48-55. <http://ceur-ws.org/Vol-3073/paper5.pdf>.
3. He Y, Yu H, Ong E, Wang Y, Liu Y, Huffman A, Hsin-Hui H, Beverly J, Lin Asiyah YL, **Duncan WD**, Xie J, Hur J, Yang X, Chen L, Omenn GS & Smith B (2020). CIDO: The Community-Based Coronavirus Infectious Disease Ontology. *Proceedings of the 11th International Conference on Biomedical Ontologies (ICBO)*. September 16-19, 2020, Bolzano, Italy. CEUR, vol 2807: E.1-10. <http://ceur-ws.org/Vol-2807/paperE.pdf>.
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