Jessica Scarborough
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EDUCATION

2017-Present — Case Western Reserve University School of Medicine
Medical Scientist Training Program
- Doctor of Medicine (expected graduation 2024)
- PhD field of study: Systems Biology and Bioinformatics

2015-2017 — University of San Francisco
Master of Science in Health Informatics
- GPA: 4.00
- Thesis: Scarborough, Jessica A., "The Acquisition and Analysis of Electroencephalogram Data for the Classification of Benign Partial Epilepsy of Childhood with Centrotemporal Spikes" (2017). *Master's Theses*. 221.

2012-2016 — University of San Francisco
Bachelor of Science in Biology with Honors
- GPA: 3.91
- Minor in Chemistry
- Concentration in Molecular Biology
- Thesis: Scarborough, Jessica A., "Phylogenetic Analysis of Human Cytomegalovirus pUS27 and pUS28: Ascertaining an Independent or Linked Evolutionary History" (2016). *Undergraduate Honors Theses*. 8.

HONORS AND AWARDS

2022	Doctoral Excellence Award, CWRU, Systems Biology and Bioinformatics
2022	Third place winner (out of 35 teams), MD++ Datathon
2021	Best Poster Award, Biomedical Graduate Student Symposium
2021	Invited Talk, Case Cancer Comprehensive Center Annual Meeting
2021	Annual Pitch Competition Winner, Translational Fellowship Program, CWRU
2021	F30 Ruth L. Kirschstein Individual Predoctoral NRSA for MD/PhD and other Dual Degree Fellowships
2020	Best Poster Award, Biomedical Graduate Student Symposium, CWRU
2020	Translational Fellowship, CWRU and Cleveland Clinic Foundation
2019	Rising Star Award at the Innovators in AYA Cancer Symposium, CWRU
2012-2016	Dean's List, University of San Francisco
2016	Dean's Medal of Excellence, University of San Francisco
2016	Graduated *summa cum laude* in Biology, University of San Francisco
2015	Carol Chihara Award, University of San Francisco

WORK EXPERIENCE

2014-2017 — Content Producer and Strategist at Keas, San Francisco, CA
- Managed company internship division by reviewing resumes, interviewing candidates, and mentoring interns

- Evaluated all global content for scientific accuracy, grammar, and tone consistency
- Directed focus of global content based on medical experience and in-depth appraisal of peer-reviewed publications
- Keas was acquired by Welltok in 2016.

March 2022 – Present Venture Fellow at Cleveland Life Science Advisors, Cleveland, CA

- Designed, produced, and optimized pitch deck for inaugural venture fund, which raised >15% over target
- Performs scientific diligence for early-stage biomedical companies assessing product viability, market fit, and potential for disruptive innovation

RESEARCH EXPERIENCE

2015-2016 B.S. University of San Francisco, Biology Department
PI: Juliet Spencer, PhD

- Extracted individual protein codes, aligned sequences, and analyzed the phylogenetic history of two proteins from Human Cytomegalovirus
- Published honors thesis as a peer-reviewed article cited in Bibliography

2015-2017 M.S. University of San Francisco, Health Informatics Department
PI: William Bosl, PhD

- Performed exploratory research regarding disease progression in traumatic brain injuries, autism, and post-malarial neurological syndrome
- Collaborated with Boston Children's Hospital to examine the state of data analysis in the context of research accessibility to electronic health records (EHRs)

2017 – 2022 Ph.D. Case Western Reserve University/Cleveland Clinic Foundation, Translational Hematology and Oncology Research Department
PI: Jacob Scott, MD, PhD

- Developed novel method for the extraction of gene expression signatures predictive of chemotherapeutic response, including US Patent App 17/587,410
- Utilized gene expression signatures produced with method above for the prediction of chemo-sensitivity in Ewing's sarcoma cancer cell lines used in time-series evolution experiments
- Managed and mentored group of data science-focused members of the laboratory (a role typically reserved for post-doctoral fellows)

BIBLIOGRAPHY

Peer Reviewed Articles

Scarborough, J. A., Eschrich, S. A., Torres-Roca, J., Dhawan, A., & Scott, J. G. (2022). Exploiting convergent evolution to derive a pan-cancer cisplatin sensitivity gene expression signature. medRxiv.

Scarborough, J. A., & Scott, J. G. (2022, January). Translation of Precision Medicine Research Into Biomarker-Informed Care in Radiation Oncology. In Seminars in Radiation Oncology (Vol. 32, No. 1, pp. 42-53). WB Saunders.

Ruthberg, J. S., Kocharyan, A., Farrokhian, N., Stahl, M. C., Hicks, K., **Scarborough, J**., ... & Otteson, T. (2022). Hearing loss patterns in enlarged vestibular aqueduct syndrome: Do fluctuations have clinical significance?. International Journal of Pediatric Otorhinolaryngology, 111072.

Weaver, D. T., Pishas, K. I., Williamson, D., **Scarborough, J.,** Lessnick, S. L., Dhawan, A., & Scott, J. G. (2021). Network potential identifies therapeutic miRNA cocktails in Ewing sarcoma. PLoS computational biology, 17(10), e1008755.

Scott, J. G., Sedor, G., Ellsworth, P., **Scarborough, J. A.,** Ahmed, K. A., Oliver, D. E., ... & Torres-Roca, J. F. (2021). Pan-cancer prediction of radiotherapy benefit using genomic-adjusted radiation dose (GARD): a cohort-based pooled analysis. The Lancet Oncology, 22(9), 1221-1229.

Scott, J. G., Sedor, G., **Scarborough, J. A.,** Kattan, M. W., & Torres-Roca, J. F. (2021). Radiotherapy with genomic-adjusted radiation dose–Authors' reply. The Lancet Oncology, 22(11), e470-e471.

Weaver D.T., McElvany B.D., Gopalakrishnan V, Card K.J., Crozier D, Dhawan A, Dinh M.N., Dolson E, Farrokhian N, Hitomi M, Ho E, Jagdish T, King E.S., Cadnum J.L., Donskey C.J., Krishnan N, Kuzmin G, Li J, Maltas J, Mo J, Pelesko J, **Scarborough J.A.,** Sedor G, Tian E, An G.C., Diehl S.A., Scott J.G. UV decontamination of personal protective equipment with idle laboratory biosafety cabinets during the COVID-19 pandemic. *PLoS One*. 2021;16(7):e0241734. doi: 10.1371/journal.pone.0241734. eCollection 2021. PubMed PMID: 34310599; PubMed Central PMCID: PMC8312969.

Robinson N.J., Miyagi M, **Scarborough J.A.**, Scott J.G., Taylor D.J., Schiemann W.P.. SLX4IP promotes RAP1 SUMOylation by PIAS1 to coordinate telomere maintenance through NF-κB and Notch signaling. *Sci Signal*. 2021 Jun 29;14(689). doi: 10.1126/scisignal.abe9613. PubMed PMID: 34187905; PubMed Central PMCID: PMC8353884.

Scarborough J.A., Tom M.C., Kattan M.W, Scott J.G.. Revisiting a Null Hypothesis: Exploring the Parameters of Oligometastasis Treatment. *Int J Radiat Oncol Biol Phys*. 2021 Jun 1;110(2):371-381. doi: 10.1016/j.ijrobp.2020.12.044. Epub 2021 Jan 21. PubMed PMID: 33484786; PubMed Central PMCID: PMC8122026.

Scarborough J.A., McClure E., Anderson P., Dhawan A., Durmaz A., Lessnick, S.L., Hitomi, M., Scott, J.G., Identifying States of Collateral Sensitivity during the Evolution of Therapeutic Resistance in Ewing's Sarcoma. *iScience*. 2020. PMC7334607.

Scott, J. G., Sedor, G., **Scarborough, J. A.,** Kattan, M. W., Peacock, J., Grass, G. D., Mellon, E.A., Thapa, R., Schell, M., Waller, A., Poppen, S., Andl, G., Teer, J.K., Eschrich, S.A., Dilling, T.J., Dalton W.S., Harrison, L.B., Fox, T., Torres-Roca, J. F. (2020). Personalizing Radiotherapy Prescription Dose Using Genomic Markers of Radiosensitivity and Normal Tissue Toxicity in NSCLC. *Journal of Thoracic Oncology*. 2020. PMID: 33301984

Scarborough J.A., Paul J.R., Spencer J.V., "Evolution of the ability to modulate host chemokine networks via gene duplication in human cytomegalovirus (HCMV)." *Infection, Genetics, and Evolution.* July 2017. PMID: 28315475

Oral Presentations

Scarborough J.A., McClure E., Hitomi M., Anderson P., Scott J., "Exploiting Convergent Evolution to Extract States of Collateral Sensitivity in Ewing Sarcoma" (2019). *Oral Presentation*. Innovators in AYA Cancer; Case Comprehensive Cancer Center; Cleveland, OH

Scarborough J.A., Dhawan A., Eschrich S., Torres-Roca J., Scott J.G., "The extraction and validation of the Cisplatin Sensitivity Signature (CisSig)" (2021). *Oral Presentation*. Case Comprehensive Cancer Center Annual Retreat; Cleveland, OH

Scarborough J.A., Dhawan A., Eschrich S., Torres-Roca J., Scott J.G., "The extraction and validation of the Cisplatin Sensitivity Signature (CisSig)" (2022). *Oral Presentation*. Wellcome Connecting Sciences Evolutionary Systems Biology 2022 Conference; Virtual

Poster Presentations

Scarborough J.A., Loddenkemper T., Bosl W., "Nonlinear Analysis for Detection and Classification of Benign Childhood Epilepsy with Centrotemporal Spikes (BECTS)" (2017). *Poster Presentation*. American Clinical Neurophysiology Society Annual Meeting and Conference; Phoenix, AZ.

Scarborough J.A., Spencer J.V., Paul J., "Virus-Host Co-evolution: Determining the Origin of Human Cytomegalovirus US27 and US28" (2016). *Poster Presentation*. Creative Activity and Research Day; University of San Francisco, San Francisco, CA.

Scarborough, J.A., Dhawan, A., Scott, J., "Generating Gene Expression Signatures Predictive of Therapeutic Response in Lung Adenocarcinoma" (2018). *Poster presentation*. Cleveland Clinic Foundation Lerner Research Day; Cleveland, OH.

Scarborough, J.A., Dhawan, A., Scott, J., "Generating Gene Expression Signatures Predictive of Therapeutic Response in Lung Adenocarcinoma" (2018). *Poster presentation*. Case Western Reserve University Lepow Research Day; Cleveland, OH.

Scarborough, **J.A.**, Dhawan, A., Scott, J., "A Novel Method for Extracting Gene Signatures Predictive of Chemotherapeutic Response" (2019). *Poster presentation*. Case Western Reserve University Lepow Research Day; Cleveland, OH

Scarborough, J.A., McClure, E., Sedor, G., Hitomi, M., Scott, JG. Identifying States of Collateral Sensitivity During the Evolution of Therapy Resistance in Ewing's Sarcoma. (2019) *Poster Presentation*. Innovators in AYA Cancer Symposium. Cleveland, OH.

Scarborough, J.A., Dhawan A., Scott, J.G. Deriving Robust Gene Signatures Predictive of Chemotherapeutic Response. (2019) *Poster Presentation*. Case Western Reserve University Biomedical Graduate Student Symposium. Cleveland, OH.

Scarborough, J.A, Dhawan, A., Scott, J., Deriving Robust Gene Signatures Predictive of Chemotherapeutic Response (2020). *Poster presentation*. American Association for Cancer Research 2020 Virtual Annual Meeting II. Virtual Meeting due to COVID-19.

Scarborough, J.A., Tom, M., Scott, J.G. Revisiting a Null Hypothesis: Exploring the parameters of oligometastasis treatment (2020) *Poster Presentation*. Case Western Reserve University Biomedical Graduate Student Symposium. Cleveland, OH. * Best Poster Award

Scarborough, J.A., Tom, M., Kattan, M., Scott, J.G. Revisiting a Null Hypothesis: Exploring the parameters of oligometastasis treatment (2021) *Poster Presentation*. Case Western Reserve University Lepow Day. Cleveland, OH.

Scarborough J.A., Dhawan A., Eschrich S., Torres-Roca J., Scott J.G., "The extraction and validation of the Cisplatin Sensitivity Signature (CisSig)" (2021). *Poster Presentation*. Case Western Reserve University Biomedical Graduate Student Symposium; Cleveland, OH * Best Poster Award

Scarborough, J.A., Nair, M., Scott, J.G., Mian, O., "Recursive partitioning analysis to define novel prognostic groups in bladder cancer patients undergoing curative intent tri-modality therapy" (2022). *Poster Presentation*. AAP/ASCI/APSA Joint Meeting 2022; Chicago, IL

INSTITUTIONAL SERVICE

2014-2016 — Peer Advisor at University of San Francisco, Biology Department
- Held office hours for students to ask questions regarding schedule planning and academic success
- Planned student-professor events to encourage discussion and collegiality within department

2021 — Student Liaison, Entrepreneurship in Science and Medicine Seminar, CWRU
- Organized content and planned unified vision for first annual seminar series providing education to early-stage scientists about the translation and commercialization of scientific discoveries

RELEVANT SKILLS

Software: R (advanced, base R and Tidyverse), Python (intermediate), SQL (beginner), LaTeX, Jupyter Notebook, RMarkdown, RStudio, git and GitHub, Visual Studio Code, Linux command scripting

Research Expertise: traditional statistics, data visualization, data cleaning, data normalization, machine learning regression and classification, differential gene expression analysis (microarray and RNA-seq), analysis pipelines