

Clinton Heinze

ARCS Foundation fellow
NSF Graduate Research fellow
Dept of Bioengineering, University of Washington

Email: cmheinze@uw.edu
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EDUCATION

University of Washington

PhD candidate in bioengineering, expected 2024

PhD advisors: Prof. Suzie Pun & Dr. Michael Jensen

University of Wisconsin - Madison

B.S. in Biomedical Engineering, 2018 – Graduated with distinction

Specialization: cell/tissue/biomaterial engineering

Cumulative GPA: 3.86 on a 4.0 scale, Biomedical Engineering GPA: 4.0 on a 4.0 scale

- *Study Abroad program: Nanyang Technological University (NTU), Singapore (autumn 2016)*

RESEARCH & DESIGN EXPERIENCE

Graduate Research Assistant (September 2018 – present)

Department of Bioengineering, University of Washington, Seattle, WA

Seattle Children's Therapeutics, Seattle Children's Research Institute, Seattle, WA

Primary Investigators: Dr. Michael Jensen & Dr. Suzie Pun

- Designed novel hapten-specific chimeric antigen receptors (CARs)
- Cloned plasmid constructs and produced/titrated virus for CAR T cell production.
- Assessed anti-tumor functionality of expanded and purified CAR T cells using *in vitro* cytokine and chromium release assays
- Developed materials to target tumors and present antigen to universal CAR T cells

Undergraduate Research Assistant (June 2015 – July 2018)

Department of Human Oncology, University of Wisconsin School of Medicine and Public Health, Madison, WI

Primary Investigators: Dr. Zachary Morris & Dr. Paul Sondel

- Evaluated the existence and role of endogenous tumor-specific antibody responses induced by treatments
 - Lead role on project – *1st author abstract, published*
- Assessed the transcriptional upregulation time courses for various immune susceptibility markers induced by radiation therapy - *published*
- Investigated the impact of immune tolerance in metastatic murine models and the use of radiation therapy to counteract its impact on other cancer therapies – *published*
- Development of *in situ* vaccine techniques for cancer immunotherapy through *in vivo* and cell analysis experiments

Capstone Design: “Implantable Light Source for Driving Optogenetic Constructs,” (Jan. 2017 – May 2018)

Department of Biomedical Engineering, University of Wisconsin – Madison, Madison, WI

Advisor: Dr. Jeremy Rogers, *Client*: Dr. Jay Yang

Role (January 2017 – May 2017): Student representative for department curriculum/outreach committee.

Role (May 2017 – January 2018): Team Leader, project organizer

Role (January 2018 – May 2018): Communicator, project organizer

- Designed, fabricated, and tested a wirelessly controlled implantable device and its paired user interface to administer light stimulation to anion channelrhodopsin (ACR) in the sciatic nerve of experimental rats
- Designed and fabricated a biomaterial casing for the implanted device

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PUBLICATIONS

1. Baniel, C. C., **Heinze, C. M.**, Hoefges, A., Sumiec, E. G., Hank, J. A., Carlson, P., Jin, W., Patel, R. B., Sriramaneni, R. N., Gillies, S. D., Korman, A. J., Erbe, A. K., Schwarz, C. N., Rakhmilevich, A. L., Sondel, P. M., Morris, Z. S. (2020) Combination in situ vaccine plus checkpoint blockade induces memory humoral response. *Frontiers in Immunology*. <https://doi.org/10.3389/fimmu.2020.01610>
2. Clark, P. A., Sriramaneni, R. N., Jin, W. J., Jagodinsky, J. C., Bates, A. M., Jaquish, A. A., Anderson, B. R., Le, T., Lubin, J. A., Chakravarty, I., Arthur, I. S., **Heinze, C. M.**, Guy, E. I., Kler, J., Klar, K. A., Carlson, P. M., Kim, K. M., Kuo, J. S., & Morris, Z. S. (2020). In situ vaccination at a peripheral tumor site augments response against melanoma brain metastases. *Journal for immunotherapy of cancer*, 8(2), e000809. <https://doi.org/10.1136/jitc-2020-000809>
3. Morris, Z. S., Guy, E. I., Werner, L. R., Carlson, P. M., **Heinze, C. M.**, Kler, J. S., Busche, S. M., Jaquish, A. A., Sriramaneni, R. N., Carmichael, L. L., Loibner, H., Gillies, S. D., Korman, A. J., Erbe, A. K., Hank, J. A., Rakhmilevich, A. L., Harari, P. M., & Sondel, P. M. (2018). Tumor-Specific Inhibition of *In Situ* Vaccination by Distant Untreated Tumor Sites. *Cancer immunology research*, 6(7), 825–834. <https://doi.org/10.1158/2326-6066.CIR-17-0353>
4. Werner, L. R., Kler, J. S., Gressett, M. M., Riegert, M., Werner, L. K., **Heinze, C. M.**, Kern, J. G., Abbariki, M., Erbe, A. K., Patel, R. B., Sriramaneni, R. N., Harari, P. M., & Morris, Z. S. (2017). Transcriptional-mediated effects of radiation on the expression of immune susceptibility markers in melanoma. *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*, 124(3), 418–426. <https://doi.org/10.1016/j.radonc.2017.08.016>

HONORS/AWARDS

- NSF GRFP – 2020-2023
- ARCS Foundation Fellowship – 2018-2021
- Dean's List (7 semesters) – 2014-2018
- Citizenship Award – 2014-2018
- UW-Madison Biomedical Engineering Design Excellence Award – 2018
- Witkay, Wendel James Scholarship – 2016
- UW College of Engineering Freshman Academic Achievement Award – 2015

ABSTRACTS, ORAL PRESENTATIONS, & POSTERS

1. Hoefges A, Erbe AK, Melby D, Rakhmilevich AL, Hank JA, Baniel C, **Heinze CM**, Ong IM, Mcilwain S, Li H, Pinapati R, Garcia B, Patel J, Morris ZS, Sondel PM. Detection of tumor-specific antibodies and their binding regions in mice cured from B78 melanoma. SITC 33rd Annual Meeting, Poster Presentation. Nov. 2018, National Harbor, MD.
2. Carlson PM, **Heinze CM**, Patel R, Marsh I, Grudzinski J, Hernandez R, Gillies SD, Loibner H, Rakhmilevich AL, Otto M, Bednarz B, Weichert J, Sondel PM, Morris ZS. Molecular targeted alkyl

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phosphocholine-mediated radiotherapy synergizes with immunotherapy for potent *in situ* vaccination in syngeneic murine melanoma. ImmunoTx Summit, Poster Presentation. Jan. 2018, San Diego, CA.

3. **Heinze CM**, Baniel C, Carlson P, Hank JA, Sriramaneni RN, Guy EI, Kler J, Busche S, Gillies SD, Loibner H, Korman AJ, Rakhmilevich AL, Sondel PM, Morris ZS. Combining *in situ* vaccination with checkpoint blockade enhances an endogenous anti-tumor B-cell response resulting in tumor-specific humoral memory. SITC 32nd Annual Meeting, Poster Presentation. Nov. 2017, National Harbor, MD.
 - Abstract featured: Bristol-Myers Squibb in their Best-of-Abstracts Highlights
4. Carlson PM, **Heinze CM**, Grudzinski J, Hernandez R, Gillies SD, Loibner H, Rakhmilevich A, Otto M, Bednarz B, Weichert J, Sondel PM, Morris ZS. Molecular targeted radiotherapy facilitates *in situ* vaccination in treatment-refractory murine metastatic melanoma. SITC 32nd Annual Meeting, Poster Presentation. Nov. 2017, National Harbor, MD.
5. Guy EI, Busche S, Carlson P, **Heinze CM**, Schwarz CN, Sriramaneni RN, Kler J, Meagher MM, Erbe AK, Hank JA, Rakhmilevich AL, Sondel PM, Morris ZS. Intratumor injection of tumor-specific antibody and IL2 triggers *in situ* vaccination following local radiation therapy. SITC 32nd Annual Meeting, Poster Presentation. Nov. 2017, National Harbor, MD.
6. Sriramaneni SN, Clark PA, **Heinze CM**, Guy EI, Kler J, Busche S, Carlson P, Gillies SD, Loibner H, Korman AJ, Sondel PM, Kuo JS, Morris ZS. *In situ* vaccination at a peripheral tumor augments response in the brain to checkpoint blockade in a murine model of metastatic melanoma. SITC 32nd Annual Meeting, Poster Presentation. Nov. 2017, National Harbor, MD.
7. Veerankutty S, Carlson PM, Baiu DC, **Heinze CM**, Boruch AE, Erbe AK, Grudzinski JJ, Hernandez R, Bednarz BP, Weichert JP, Sondel PM, Morris ZS, Otto M. Molecular-targeted radiotherapy with an alkyl-phosphocholine analog leads to immunomodulation in a syngeneic murine melanoma model. SITC 32nd Annual Meeting, Poster Presentation. Nov. 2017, National Harbor, MD.
8. Morris ZS, Guy EI, **Heinze CM**, Kler J, Gressett MM, Werner LR, Gillies SD, Korman AJ, Loibner H, Hank JA, Rakhmilevich AL, Harari PM, Sondel PM. Concomitant immune tolerance in mice with tumors at two sites exhibits reciprocal tumor specificity and requires regulatory T cells. SITC 31st Annual Meeting, Poster Presentation. Nov. 2016, National Harbor, MD.
9. Morris ZS, Guy EI, Francis DM, Gressett MM, **Heinze CM**, Carmichael LL, Rakhmilevich AL, Yang RK, Huang S, Hank JA, Gillies SD, Harari PM, Sondel PM. Combining Radiation and Tumor-Specific Antibodies to Promote an Anti-Cancer Immune Response and Eradicate Tumors. 9th Annual UWCCC Research Retreat, February 2016, Madison, WI.

LABORATORY SKILLS

- *Bench work*: Flow cytometry, Western blotting, gel electrophoresis, IHC, Bradford Assay, qPCR, cell culture, lentivirus production and titering, chromium release assays, cytokine release assays, intracellular cytokine staining, and cloning.
- *Mouse work*: mouse handling, facial vein bleeds, intraperitoneal, intra-tumor, retro-orbital, and subcutaneous injections, tumor measuring, shaving, tumor resection, organ harvests, cardiac punctures, and tumor irradiation
- *Imaging*: bright-field microscopy, confocal microscopy, IVIS imaging, IncuCyte imaging
- *Software*: Matlab, SolidWorks, Arduino IDE, ImageJ, FlowJo, Prism, Microsoft Office Suite

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VOLUNTEER ACTIVITIES/HOBBIES/EXTRACURRICULARS

Bryant Elementary School Science Mentor (January 2019 – March 2020)

- Leadership role: Experiment designer and 5th grade science mentor

Geneva Campus Church Youth Volunteer (December 2015 – May 2018)

- Leadership role: Teacher and mentor for high school students

Tutor for the Greater University Tutoring Service (September 2015 – May 2017)

- Topics taught: First- and second-year physics, statics, organic chemistry, calculus semesters 1-3, & statistics

UW-Madison Ultimate Frisbee & NTU Ultimate Frisbee (September 2015 – May 2017)

- Specialty: defensive line

Volunteer Trip with MEDLIFE (2015)

- Two-week trip in Tanzania assisting local doctors and setting up pop-up medical clinics

Hobbies: Backpacking, skiing, biking, Ultimate Frisbee, kayaking, running, photography & travel.