

# Clarissa Verish

🌐 clarissaverish.com

## Education

---

### Bachelor of Arts, Chemistry

Wellesley College, Wellesley, MA

2012-2017

## Work Experience

---

### Research Fellow

*Human-Computer Interaction Lab, Wellesley College – Wellesley, MA*

2016-2019

- Research fellow in an innovative Human-Computer Interaction Lab with a focus on creating tools for science education, engagement, and outreach.
- Managed and executed multiple large-scale, multi-year research projects, employing project management, iterative design principles, user experience research, creative problem-solving, and critical thinking.
- Designed software and hardware prototypes using a variety of methods, including programming languages such as Python, Java, JavaScript, C/C++, and LaTeX, and tools such as Arduino, electrical components, paper prototypes, laser cutter, Adobe Illustrator, Mechanical Turk, and Qualtrics.
- Created novel visualizations for user experience research, academic papers, grant proposals, presentations, and textbooks.
- Designed and conducted research studies that included in-person and online data collection methods, analyzed data using statistical software and Python scripts, published academic papers, and presented research at conferences.
- Coordinated with researchers across multiple institutions, conducted collaborative research projects, managed teams of researchers, and networked with a global research community.

### Teacher – Intro to Computer Science

*Dana Hall School – Wellesley, MA*

2018-2019

- Designed a project-based curriculum for high schoolers focusing on problem-solving techniques and basic coding skills.
- Introduced concepts related to computer ethics, project creation from ideation to implementation, and multidisciplinary applications of computer science.
- Created labs to teach HTML/CSS/JavaScript, Python, and Arduino prototyping.
- Taught a combined lab-lecture class of nine high-school aged students.

### Teaching Assistant – Tangible User Interfaces

*Computer Science Department, Wellesley College – Wellesley, MA*

2017-2019

- Developed and taught labs related to sewable electronics and Arduino.
- Assisted students with the implementation of their semester-long tangible user interface projects.

### Lab Instructor – Computing for the Socio-Techno Web

*Media Arts and Science Department, Wellesley College – Wellesley, MA*

2017-2019

- Instructed labs for students in an introductory web development course on HTML5, CSS3, and JavaScript.
- Assisted students during office hours, graded homework, and provided feedback.

### Educational Content Creator

*Library and Technology Services, Wellesley College – Wellesley, MA*

2015

- Worked with chemistry professors to update and improve lecture note graphics using Adobe Illustrator.
- Created LaTeX documents for error analysis lecture notes.
- Recorded, edited, and narrated organic chemistry lab instructional videos.

## Research Projects

---

### **CRISPEE: A Tangible Gene-Editing Platform for Early Childhood**

*Co-PIs: Dr. Orit Shaer, Wellesley College; Dr. Marina Bers, Tufts University*

2017-2019

- Invented and designed an educational toy for children ages 5-7 through an iterative design process.
- Fabricated and programmed prototype using Arduino, felt, wood, and other age-appropriate materials.
- Created curricular supplements that introduce and reinforce key concepts related to bioengineering.
- Designed and conducted multiple rounds of studies with children in multi-day, informal learning settings.
- Created Python scripts to analyze quantitative and qualitative data collected during trials.
- Iterated on the design of the toy, informed by results of user testing and input from children and teachers.
- Led a team of students in creating a prototype of a supplementary bio-ethics game and an electronic plushie.

### **BacToMars: Creative Engagement With Bio-Design for Children**

*Co-PIs: Dr. Orit Shaer, Wellesley College; Dr. Marina Bers, Tufts University*

2017

- Developed educational videos to supplement a collaborative bioengineering computer game.
- Designed and conducted multi-day studies testing the game and supplemental materials with children.
- Analyzed data by coding video data for qualitative themes, and created Python scripts that parsed these themes to identify learning outcomes.
- Led a team of students in the development of supplemental minigames.

### **Personal Genomics for Human-Computer Interaction**

*Co-PIs: Dr. Orit Shaer, Wellesley College; Dr. Oded Nov, New York University*

2016-2017

- Created novel interactive genomic visualizations for use by non-experts using the d3 JavaScript library.
- Conducted in-person and online user testing to collect user experience metrics, comprehension of the information presented by the tool, and subjective user experience and satisfaction.
- Created Python scripts that analyzed user experience metrics and survey scores to understand patterns of use and compare the effectiveness of different visualizations.

### **Heavenly Chemistry: Radiolysis of Organic Molecules in the Interstellar Medium**

*PI: Dr. Christopher Arumainayagam, Wellesley College*

2012-2016

- Conducted research exploring the synthesis of organic molecules in a simulated deep-space environment.
- Analyzed mass spectrometry data and created visualizations for papers and conference presentations.
- Troubleshooted and repaired the complex research apparatus.
- Refined research protocols and wrote a lab manual for future research students.
- Mentored younger students in conducting research.

## Conferences

---

### **Presentations**

- "BacToMars: A Collaborative Video Game for BioDesign", July 2019, Proceedings of Computer Supported Collaborative Learning (CSCL '19), Lyon, France.
- "CRISPEE: A Tangible Gene Editing Platform for Early Childhood." August 2018, Milieux Institute, Montreal, QC, Canada.

### **Poster Sessions**

- "BacToMars: a Collaborative Educational Video Game for Teaching Biological Engineering." Proceedings of the 12th International Conference on the Foundations of Digital Games, August 2017, Cape Cod, MA.
- "BacToMars: Creative Engagement With Bio-Design for Children." Proceedings of the 2017 Conference on Interaction Design and Children, June 2017, Stanford, CA.
- "Heavenly Chemistry: Water Radiolysis." Conference of the American Chemical Society, March 2014, Houston, TX.

### **Demo Session**

- "CRISPEE: a Tangible Gene Editing Platform for Early Childhood." Proceedings of the Twelfth International Conference of Tangible, Embedded, and Embodied Interaction, March 2018, Stockholm, Sweden.

## Publications

---

Strawhacker, A., **Verish, C.**, Shaer, O., & Bers, M. (2020). Young Children's Learning of Bioengineering with CRISPEE: a Developmentally Appropriate Tangible User Interface. *Journal of Science Education and Technology*, 1-21.

**Verish, C.**, Strawhacker, A., Bers, M., & Shaer, O. (2020). CRISPEE: An Interactive Museum Exhibit for Engaging Children with Biological Engineering. In *Proceedings of the 2020 Connected Learning Summit* (Conference cancelled).

Davidson, A.-L., Naffi, N., Duponsel, N., Jawhar, H., Ruby, I., Gholami, F., Zefi, A., **Verish, C.**, Krsmanovich, B., Kamel, A. (2020). Pushing the boundaries of maker fundamentals to unleash innovation in higher education. *SALTISE 2020*. June 8-9, Montréal, Québec. (Conference cancelled).

**Verish, C.**, Strawhacker, A., Westendorf, L., Pollalis, C., Sullivan, A., Loparev, A., ... & Shaer, O. (2019). BacToMars: A Collaborative Video Game for BioDesign. In *Proceedings of the 13th International Conference on Computer Supported Collaborative Learning* (pp. 652-655).

Muender, T., Gulani, S. A., Westendorf, L., **Verish, C.**, Malaka, R., Shaer, O., & Cooper, S. (2019). Comparison of mouse and multi-touch for protein structure manipulation in a citizen science game interface. *Journal of Science Communication*, 18(1), A05.

Westendorf, L., Shaer, O., Pollalis, C., **Verish, C.**, Nov, O., & Ball, M. P. (2018). Exploring genetic data across individuals: design and evaluation of a novel comparative report tool. *Journal of medical Internet research*, 20(9), e10297.

**Verish, C.**, Strawhacker, A., Bers, M., & Shaer, O. (2018, March). CRISPEE: a tangible gene editing platform for early childhood. In *Proceedings of the Twelfth International Conference on Tangible, Embedded, and Embodied Interaction* (pp. 101-107).

Strawhacker, A., Bers, M., **Verish, C.**, Sullivan, A., & Shaer, O. (2018). Enhancing children's interest and knowledge in bioengineering through an interactive videogame. *Journal of Information Technology Education: Innovations in Practice*, 17(1), 55-81.

Loparev, A., Sullivan, A., **Verish, C.**, Westendorf, L., Davis, J., Flemings, M., ... & Shaer, O. (2017, August). BacToMars: a collaborative educational video game for teaching biological engineering. In *Proceedings of the 12th International Conference on the Foundations of Digital Games* (pp. 1-3).

Loparev, A., Sullivan, A., **Verish, C.**, Westendorf, L., Davis, J., Flemings, M., ... & Shaer, O. (2017, June). BacToMars: Creative engagement with bio-design for children. In *Proceedings of the 2017 Conference on Interaction Design and Children* (pp. 623-628).

Westendorf, L., Pollalis, C., **Verish, C.**, Shaer, O., Metaxas, P. T., Finn, S. T., ... & Nov, O. (2017). From Personal Genomics to Twitter: Visualizing the Uncertainty of Evidence. In *Designing for Uncertainty in HCI: When Does Uncertainty Help? Workshop*, CHI 2017 Computer-Human Interaction.

Boyer, M. C., Rivas, N., Tran, A. A., **Verish, C. A.**, & Arumainayagam, C. R. (2016). The role of low-energy ( $\leq 20$  eV) electrons in astrochemistry. *Surface Science*, 652, 26-32.

**Verish, C. A.**, Regovich, K. R., Abdullahi, S. M., & Arumainayagam, C. (2014, March). Heavenly chemistry: Water radiolysis. In *Abstracts of Papers of the American Chemical Society* (Vol. 247).