Stuart Clayton
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EDUCATION

- 2013-2017, B.S. in Exercise Physiology (Health Professions Emphasis), Minor in Biology; West Virginia University. Magna Cum Laude. (3.63 GPA)
- 2017-2018, M.S. in Health Science, West Virginia University. (Did not earn degree due to financial reasons, 30/37 credits completed with 4.0 GPA).
- 2022-Present, Ph.D. in Biomedical Science, West Virginia University

Cumulative GPA: 3.70
MCAT (2015 version): (128, 127, 128, 127 | 510 78th percentile)

RESEARCH EXPERIENCE

Over 1000 hours of research experience. (Does not include research under work experience)

Graduate research assistant in muscle physiology and cancer lab of Dr. Emidio Pistilli, Fall 2022 – Present.

- Effects of breast cancer on skeletal muscle fatigue
  - The significance of this research is to first establish if skeletal muscle fatigue occurs in the absence of cachexia. Secondly, the aim is to establish the underlying mechanisms as to how this muscle fatigue progresses.
  - Implant existing female breast cancer patient-derived xenografts (PDXs) into NSG mice for our current tumor model.
  - Currently working on establishing male breast cancer PDXs in NSG mice to examine any sex differences in skeletal muscle physiology.
  - Technical skills learned: castration, RNA isolation, RNA-seq analysis.

Graduate research assistant in cardiovascular and respiratory lab of Dr. Mark Olfert. Fall 2017 – Summer 2018.

- Acute effects of e-cigarette exposure on peripheral vascular function.
  - The significance of this research is to further understanding of the impacts of e-cigarette use on the cardiovascular system.
  - Performed surgical procedures on rats.
  - Used ultrasound on rats to measure flow-mediated dilation.

Undergraduate research assistant in neuroscience lab of Dr. Sergiy Yakovenko. Spring 2017.

- Helped with collection and analysis of data gathered from human subjects.

Undergraduate research assistant in cardiovascular lab of Dr. Paul Chantler. Spring 2016 – Spring 2017.

- Effects of depression and stress on cardiovascular system in rats.
  - The significance of this project is the potential information it can yield on determining the largest areas of risk for developing cardiovascular disease in

individuals with chronic depression and/or high stress.
    - Performed basic nutritional, medical, and physiological tasks on laboratory rats.
    - Performed post-mortem macro- and microsurgery procedures. Macro includes organ removal and sectioning of excised organs. Micro includes removal of superficial brain vessels under a microscope.
    - Performed assays on tissue samples, such as western blot and immuno-fluorescence.
    - Data analysis.
- Influence of electronic cigarettes on vascular function in mice.
    - This research is significant because at the moment very little is known about the long-term effects of e-cigarettes on the vascular system.
    - Analyzed ultrasound echo-cardiography and pulse-wave velocity data from mice.

PUBLICATIONS/ABSTRACTS

Olfert, I. M., Devallance, E., Hoskinson, H., Branyan, K. W., **Clayton, S. A.**, Pitzer, C. R., . . . Chantler, P. D. (2017). Chronic exposure to electronic cigarette (E-cig) results in impaired cardiovascular function in mice. *Journal of Applied Physiology*. doi:10.1152/japplphysiol.00713.2017

Clayton, S.A., DeVallance, E., Branyan, K.W., Pitzer, C., Breit, M., Hoskinson, H., Erdreich, B.H., Klinkhachorn, P., Chantler, P.D., Olfert, I.M. (2017) Vaping to vascular damage: the role of E-Cigarettes on vascular function. FASEB Journal. Vol 31, Issue S1. [abstract].

DeVallance, E., Branyan, K., Lemaster, K., **Clayton, S.A.**, Killmer, C., Frisbee, J., Chantler, P.D. (2017) Exercise reverses metabolic syndrome perivascular adipose tissue impairment of aortic relaxation. FASEB Journal. Vol 31, Issue S1. [abstract].

Sheets, W.J., Dawson, M.L., Ashman, M.E., **Clayton, S.A.**, Asano S., Brooks, S.D., Frisbee, J., Chantler, P.D. (2017) Can exercise protect against chronic stress induced cerebral microvessel changes in Lean and Obese Zucker rats? FASEB Journal. Vol 31, Issue S1. [abstract].

WORK EXPERIENCE

Research Technician, Genetic and Tumor Model Core Facility, West Virginia University, Jan 2019 – Present

- Create new Patient-derived Xenograft (PDX) lines from human tumor samples.
- Maintain and expand existing PDX lines.
- Extract DNA from original and engrafted tumor cells for short tandem repeat authentication.
- Maintain forms and documentation for procedures and projects.
- Maintain any supplies, reagents, or equipment needed for the core.
- Assist with any technical work necessary to carry out projects for investigators.
- Technical duties includes: Colony management and breeding, tumor resection, tumor tissue/cells transplant/injection, tissue collection, tumor tissue dissociation (using Miltenyi AutoMacs), tagging, tail clipping, ear punch, weaning, euthanasia (isoflurane & CO2), hormone pellets transplant, SQ/IP injection, survival surgeries, blood collection,

mice fluorescent (IVIS) and ultrasound imaging, ultrasound image tumor volume analysis, mouse and cell irradiation, intracranial injections, sperm cryo for mouse strain preservation, working in ABSL2 environments.

Information Technology, West Virginia University, June-August 2015
- Provide basic technical support for Windows based computers

Personal Trainer, Stansbury Fitness Center, August 2014 – May 2016
- Perform baseline fitness tests on new clients or progress tests on existing
- Plan workout routines for clients
- Guide clients through exercises if desired

COMPUTER EXPERIENCE [https://github.com/sclayton33]
Brief descriptions of some practice projects follow, visit Github for more info and source code.

Python (>1 year)
- *image-mods* – command line script to perform some basic modifications to images. Uses the cImage library.
- *physio-calc* – performs various physiological calculations. Has a GUI made using PyQt5 and has .exe build.
- o*pen-journal* – a basic journal app with PyQt5 GUI. Has encryption feature to keep journals private. Can be installed via pip command.

Data Science (<1 year)
- IBM Data Science Professional Certificate. Skills include: data collection via APIs and web scraping (requests, BeautifulSoup); data wrangling and cleaning (Pandas, NumPy); exploratory data analysis using SQL and visualization (seaborn, matplotlib, Folium, Dash, Plotly); machine learning using scikit-learn, SCIPy (K-Nearest neighbors, decision trees, logistic regression, support vector machines, linear regression, multiple and poly regression).

Django (<1 year)
- *django-blog* – has basic blog features. Featured post section, sorting by categories, search. Front-end is made using HTML and CSS.
- p*dxdb* –meant to be open database of pdx tumor models. Might include database browsing front-end, submission forms, user accounts. Uses HTML and CSS currently.

Linux (>2 years)
- Command line skills include: changing directories, creating and removing files, installing/updating/purging packages, adding and removing repositories, modifying files, managing processes, running scripts, installing programs without package manager.

Other skills:
- Git – creating repositories, committing, pushing, creating branches, adding files
- Networking – firewall port management, port forwarding, configuring domain settings

CONFERENCES ATTENDED
- Experimental Biology 2017; Chicago, IL
- Van Liere Research Day 2017; Morgantown, WV
- Undergraduate Research Day at West Virginia University 2017; Morgantown, WV

- Allegheny-Erie Toxicology Regional Conference 2017; Morgantown, WV

CERTIFICATIONS

Mini-Courses from Jackson Labs:

- Common Laboratory Mouse Strains
- Mutant and Transgenic Mouse Strains
- History and Development of the Mouse Model System
- Basics of Mouse Genetics
- Basics of CRISPR/Cas9

VOLUNTEER EXPERIENCE

Only major activities listed.

- 144 hours, Muscular Dystrophy Association Summer Camp
    - Provided all necessary care for a child with muscular dystrophy for the duration of the week. Included assistance dressing, bathing, eating, participating in activities, transporting if not in motorized wheelchair.
- 20 hours, disaster relief for flooding in southern WV, 2016
    - Collected donations to be sorted and shipped to areas of need.
    - Cleaned damaged homes and removed debris.
- 80 hours. Ruby Memorial Hospital, Emergency Department, 4 hours/week, Fall 2016-Spring 2017
    - Stock medical supply carts, transport human fluid samples for processing, provide help as request by nurses, doctors, etc.
- 40 hours, Volunteer laborer, Global Medical and Dental Brigades trip to Nicaragua, March 2017
    - Helped build bathrooms, showers and laundry facilities; dug piping trenches for water project.
- 60 hours, Volunteer, Jim Dunn Run, 2012-2017
    - Assisted with event set-up and take down, coordinated runners and organization of event.

LEADERSHIP EXPERIENCE

Attended Catalyzing Advocacy in Science and Engineering (CASE) workshop in Washington, D.C., hosted by the American Association for the Advancement of Science (AAAS). March 18-21, 2018.

- Learned about supporting effective science policy and keeping basic research well-funded.
- Met with WV representatives and senators to discuss the research we were currently engaged in and to encourage future funding.

West Virginia University Student Government Association, Executive Director of Sustainability, Fall 2016 – Spring 2017.

- Planned and executed initiatives to improve the function, reach, and understanding of sustainable means of living in Morgantown and surrounding areas.

SHADOWING/CLINICAL EXPERIENCE

Ruby Memorial Hospital, Morgantown WV

- 100 hours of observation in a wide variety of medical specialties and sub-specialties including: Neurosurgery, Surgical Intensive Care Unit, Anesthesiology, Family Medicine, Vascular surgery, Plastic surgery, Pediatrics, Pediatric Intensive Care Unit, Oncology, Surgical Oncology, Autopsy, general surgery, Gynecology, Cardiothoracic surgery, Urology, Orthopedics, Trauma, and Oral/Maxillofacial surgery.

INTERNSHIPS

Health Careers Opportunity Program, West Virginia University, Summer 2016

- An 8-week program aimed toward preparing students for medical school. Six weeks consisted of MCAT prep. Two weeks were done on-campus. Students shadowed doctors, worked with admissions faculty to draft personal statements, had mock interview with members of admissions committee, talked with med students and doctors to gain insight about the profession. Program concluded with 10-minute presentation on assigned topic, mine being diabetic nephropathy, and reflections on program.

STUDY ABROAD

Global Medical and Dental Brigades, Nicaragua, March 2-12, 2017

- Saw 2257 patients over four days of clinics. Triaged patients, shadowed doctors, handed out medications and instructed patients on proper hygiene habits. On public health days we built bathrooms, showers, and laundry facilities for families. On water day we dug a trench for piping as a part of ongoing water delivery system project.