
BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Lucanic, Mark S.

eRA COMMONS USER NAME (credential, e.g., agency login): MLUCANIC

POSITION TITLE: Chief Technology Officer

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of California, Santa Cruz	B.A. Honors	06/2002	Molecular, Cell & Developmental Biology
University of California, Davis	Ph.D.	06/2007	Cell and Developmental Biology
University of California, Davis	Postdoctoral fellow	03/2008	Developmental Genetics
Buck Institute for Research on Aging. Novato, CA	Postdoctoral fellow	12/2017	Aging

A. Personal Statement

I am a broadly trained and multidisciplinary scientist. In my most recent academic endeavors, I sought to identify genes and chemicals that influence the aging process. My switch into the commercial sector was elicited by a desire to translate my research into producing a tangible benefit to society. To paraphrase Y Combinators unofficial moto; I wanted to 'make something people need'. As a founder and the CTO of Gerostate Alpha I am driven to develop a pharmaceutical treatment that will facilitate the healthy aging of human populations. Age is the single greatest risk factor for many human illnesses including neurodegenerative diseases, including Alzheimer's and Parkinson's. Pharmaceutical manipulation of the aging process presents the most exciting potential for mitigating the debilitating effects of these diseases. Gerostate Alpha is using novel strategies to identify targets and develop drugs for treating age-related disease. I also have a long history of collaboration with the other two founders of GSA, Gordon Lithgow and Simon Melov of the Buck Institute. Incubating at the Buck Institute gives us unique advantages to take advantage of state of the art phenotyping run by Simon Melov (our CEO), as well as regular meetings with Gordon Lithgow (Vice president of the Buck Institute, and co-founder of GSA). My broad experience and unique background in geroscience make me appropriate to lead this proposal.

B. Positions and Honors

2000-2002 High School and Secondary School In-Class Tutor with the AVID program. Watsonville, CA.
2002 Undergraduate Researcher: University of California, Santa Cruz.
Santa Cruz, CA.
2002 Highest Honors in Molecular, Cell and Developmental Biology, UC Santa Cruz
2002 Earl C. Anthony Graduate Student Fellowship
2003 Teaching Assistant. MCB 121. Molecular Biology of Eukaryotic Cells. University California,
Davis. Davis, CA.

2005 Center for Neuroscience Poster Award, Neuroscience pre-meeting symposium, UC Davis.
2007 GSA International *C. elegans* Meeting Poster Award, Honorable Mention.
2007-2008 Postdoctoral Fellow. University of California, Davis.
2008-2017 Postdoctoral Fellow. Buck Institute for Research on Aging. Novato, CA.
2012 American Federation of Aging Research / Ellison Medical Foundation Fellow
2012-2013 Adjunct Professor Touro University of California
2013 Discussion Leader. Gordon Research Seminar. Biology of Aging.
2018-2018 Research Assistant Professor. Buck Institute for Research on Aging. Novato, CA.
2018 Accepted into Y Combinator startup accelerator
2018-present Co-founder and Chief Technology Officer, Gerostate Alpha Incorporated.

Professional Memberships

2008 Member, Genetics Society of America
2013 Gerontological Society of America

Volunteer Reviewer for Scientific Journal

PLoS ONE
Experimental Gerontology
Current Medicinal Chemistry
PeerJ

C. Contributions to Science

Pharmacological manipulation of lifespan

For the last ten years of my academic career I studied chemical induced effects on lifespan. Over this period, I was involved in numerous projects in this area. Below, I have included several references that reflect my work. One is a review, I think was helpful for the community, while the other two cite projects I primarily directed and/or spearheaded. These include the first identification and characterization of an endocannabinoid system in *Caenorhabditis* and its role in dietary restriction induced lifespan regulation. The other demonstrates my leading role in the *Caenorhabditis* Intervention Testing Program (CITP). I was involved in the CITP from its inception and was the primary project manager designing its research direction, during my tenure with program.

Lucanic, M., Held, J.M., Vantipalli, M.C., Klang, I.M., Graham, J.B., Gibson, B.W., Lithgow, G.J., and Gill, M.S. (2011). N-acylethanolamine signalling mediates the effect of diet on lifespan in *Caenorhabditis elegans*. *Nature* 473, 226–229.

***Lucanic, M.**, Lithgow, G.J., and Alavez, S. (2013). Pharmacological lifespan extension of invertebrates. *Ageing Research Reviews*. 12, 445–458.

Lucanic, M., Plummer, T.W., Chen, E., Harke, J., Foulger, A.C., Onken, B., Coleman-Hulbert, A.L., Dumas, K.J., Suzhen, G., Johnson E., Bhaumik, D., Chang, C., Crist, A.B., Presley, M.P., Xue, J., Sedore, C.A., Chamoli, M., Harinath, G., Chen, M.K., Angeli, S., Royal, M.A., Willis, J.H., Edgar, D., Patel, S., Chao, E.A., Kamat, S., Hope, J., Ibanez-Ventoso, C., Kish, J.L., Guo, M., Lithgow, G.J., Driscoll, M. and Phillips, P.C. (*Caenorhabditis* Intervention Testing Program). (2017). Impact of genetic background and experimental reproducibility on identifying chemical compounds with robust longevity effects. *Nature Communications*. Feb 21;8:14256. doi: 10.1038/ncomms14256

High throughput screening for pro-longevity inducing chemicals

Screening has been my passion since I first encountered the seminal work of Christiane Nüsslein-Volhard and Eric Wieschaus. I have always attempted to emulate their cleverness of design and diligence of execution. As a graduate student I designed and executed forward and reverse genetic screens to identify and implicate specific genes. Since moving into studying the Biology of Aging I have focused on identifying chemical structures that can influence lifespan. Below I cite some of my work developing and implementing small molecule screening approaches. As part of Gerostate Alpha I am developing novel techniques to identify new drugs and targets with the goal of yielding revolutionary results on par with the giants of science who have influenced my career.

***Lucanic, M.**, Garrett, T., Yu, I., Calahorro, F., Asadi Shahmirzadi, A., Miller, A., Gill, M.S., Hughes, R.E., Holden-Dye, L., Lithgow, G.J. (2016). Chemical Activation of a Food Deprivation Signal Extends Lifespan. *Aging Cell*. doi: 10.1111/ace.12492

***Lucanic, M.**, Garrett, T., Gill, M.S., Lithgow, G.J. (2018). A Simple Method for High Throughput Chemical Screening in *Caenorhabditis elegans*. *J. Vis. Exp.* 2018 Mar 20;(133). doi: 10.3791/56892.

¹Banse, S.A., ¹**Lucanic, M.**, ¹Sedore, C.A., Coleman-Hulbert, A.L., Plummer, W.T., Chen, E., Kish, J.L., Hall, D., Onken, B., Presley, M.P., Jones, E.G., Blue, B.W., Garrett, T., Abbott, M., Xue, J., Guo, S., Johnson, E., Foulger, A.C., Chamoli, M., Falkowski, R., Melentijevic, I., Harinath, G., Huynh, P., Patel, S., Edgar, D., Jarrett, C.M., Guo, M., Kapahi, P., Lithgow, G.J., Driscoll, M., Phillips, P.C. (*Caenorhabditis* Intervention Testing Program) (2019). Automated lifespan determination across *Caenorhabditis* strains and species reveals assay-specific effects of chemical interventions. *Geroscience*. Dec;41(6):945-960. doi: 10.1007/s11357-019-00108-9. Epub 2019 Dec 10.

¹Co-lead authors

*Corresponding Author

Neural Development

My roots in Neuroscience are deep. As a graduate Student I trained at the University of California, Davis's Center for Neuroscience under Hwai-Jong Cheng an acclaimed neurobiologist who discovered Ephrins and trained under both John Flannagan and Marc Tessier-Lavigne. In Hwai-Jong's lab I researched the development of the nervous system, and specifically how neurons establish and maintain proper connectivity. I have included below references for some of my most influential work. At Gerostate Alpha I will continue to explore the nervous system, but instead of focusing on its development, we are aiming to develop strategies that can maintain its integrity during aging.

Lucanic, M., Kiley, M., Ashcroft, N., L'etoile, N., and Cheng, H.-J. (2006). The *Caenorhabditis elegans* P21-activated kinases are differentially required for UNC-6/netrin-mediated commissural motor axon guidance. *Development*. 133, 4549–4559.

Lucanic, M., and Cheng, H.-J. (2008). A RAC/CDC-42-independent GIT/PIX/PAK signaling pathway mediates cell migration in *C. elegans*. *PLoS Genetics*. 4, e1000269.

Chen, S.Y., Ho, C.T., Liu, W.W., **Lucanic, M.**, Shih, H.M., Huang, P.H., Cheng, H.J. (2018). Regulation of Axon Repulsion by MAX-1 SUMOylation and AP-3. *PNAS* 115, no. 35 (28 2018): E8236–45. <https://doi.org/10.1073/pnas.1804373115>.

D. Additional Information: Research Support and/or Scholastic Performance

Completed Research Support

2004-2006	T32 NIH training grant in molecular and cellular biology
2008-2010	T32 NIH training grant in the mechanisms of aging
2012	American Federation for Aging Research/Ellison Foundation Post-Doctoral Fellowship