

Mirko LEDDA

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AREAS OF SPECIALIZATION

Genetics - Genomics - Computational Biology - Structural Biology - Molecular Biology
Bioinformatics - Statistics - Machine Learning - Software Development

EDUCATION

- 2014- Ph.D. in Integrative Genetics and Genomics with Emphasis in Biotechnology (DEB)**
University of California at Davis, CA, USA Expected graduation in Early 2019
- 2008 B.Sc. in Life Sciences with Emphasis in Biotechnology**
University of Applied Sciences (HES-SO), Sion, Switzerland

PROFESSIONAL EXPERIENCE

- 2009-2014 Research Assistant** Nestlé Research Center, Lausanne, Switzerland
Activity manager for projects aimed at understanding taste perception physiology. My contributions included:
- Genome-wide association studies (GWAS) of human metabolism and taste perception; Discovered new biomarkers for the health-status of the gastrointestinal tract and new genetic drivers of bitter taste perception.
 - Statistical methods development to analyze human taste phenotypic data;
 - Set up of the single cell Ca^{2+} -imaging technique and development of computational tools for automated data analysis.
 - Functionalization and *in vitro* validation of several human, feline and rat GPCRs/TRP channels in mammalian cells (HEK, Hela, CHO, Chem-1 and primary rat DRG neurons). Receptor-interaction studies using siRNAs and co-expression approaches.
 - Method development for the expression and purification of water-insoluble proteins in *E. coli*.
- 2008-2014 Soldier, specialist in biological weapons** Swiss Army (Labor Spiez), Spiez, Switzerland
Development and validation of laboratory techniques for the identification of pathogenic Bacteria, Viruses and Toxins.
- 2008 Diploma Thesis student** University of Palermo, Palermo, Italy
Studies about a gene with unknown function, in the bacterial strain *Streptomyces coelicolor*. Work incorporated in the European project *ActinoGEN* aimed at "developing novel genomics-based approaches to exploit hitherto overlooked genetic resources for new antibiotics".

TEACHING EXPERIENCE

- 2018 Quantitative Genetics and Selection Theory, UC Davis** Guest Lecturer
1h30 lecture on fundamental concepts in Machine Learning.
- 2017 Machine Learning Workshop for the Plant Sciences Dept., UC Davis** Lecturer
4h lecture on fundamental concepts in Machine Learning for the Ross-Ibarra, Knapp and Runcie labs.
- Topics in Biomedical Engineering: Computational Genomics, UC Davis** Guest Lecturer
Two 2h lectures on fundamental concepts in Machine Learning.
- 2016 Quantitative Genetics and Selection Theory, UC Davis** Teaching assistant
Teaching R programming and the mathematical bases of selection theory in lab sessions.
- 2015 Quantitative Genetics and Selection Theory, UC Davis** Course development
Preparation of the teaching material for this newly proposed class.

AWARDS

- 2017 Graduate Student Travel Award** UC Davis
Competitive award to cover the cost to attend, as a speaker, the *2017 [BC]2 Basel Computational Biology Conference* in Basel, Switzerland.
- 2016 Registration Bursary** Wellcome Genome Campus Scientific Conferences
Competitive award to cover the cost to attend, as a speaker, the *2016 Computational RNA Biology Conference* in Cambridge, UK.
- Summer Graduate Student Researcher Award** UC Davis
3-months support for graduate research in engineering, computer science, and disciplines with engineering-related applications and methods.

MEMBERSHIP

- 2018 The RNA Society** Student member

COMMUNITY SERVICE

- 2015- Graduate Student Association (GSA)** UC Davis
Representative for the IGG graduate program.
- 2017 IGG Annual Colloquium** UC Davis
Member of the organizing committee.
- Teen Biotech Challenge 2017** DEB, UC Davis
Judge for System and Computational Biology websites.
- Topics in Biomedical Engineering: Computational Genomics (BIM189C)** UC Davis
Mentored three students for their final projects.
- 2016 Teen Biotech Challenge 2016** DEB, UC Davis
Judge for System and Computational Biology websites.
- 2015 Science in the Siskiyou** Dunsmuir High School, Dunsmuir, CA, USA
Presented biology research and taught basic genetic concepts to three 9th to 12th grade high-school classes.
- Science vs Fiction** Senior Center, Davis, CA, USA
Presented common scientific misconceptions followed by an open discussion with seniors.
- IGG program** UC Davis
Mentor for all incoming international IGG students and mentor for a 1st year IGG student.

PUBLICATIONS (* INDICATES CO-AUTHORSHIP)

- 2018** [Ledda M.](#) and Aviran S., patteRNA: transcriptome-wide search for functional RNA elements via structural data signatures, *Genome Biology* in press
- 2016** Choudhary K., Shih N.P., Deng F., [Ledda M.](#), Li B. and Aviran S., Metrics for rapid quality control in RNA structure probing experiments, *Bioinformatics* 32(23): 2575-3583 [[doi](#)]
- Deng F.*, [Ledda M.*](#), Vaziri S. and Aviran S., Data-directed RNA secondary structure prediction using probabilistic modeling, *RNA* 22(8): 1109-19 [[doi](#)]
- Michlig González S., Meylan Merlini J., Beaumont M., [Ledda M.](#), Tavenard A., Mukherjee R., Camacho S and le Coutre J., Acute Effects of single ingestion of TRPV1, TRPA1 and TRPM8 agonists on the energetic metabolism and the autonomic activity in healthy subjects, *Scientific Reports* 6:

20795 [doi]

- 2014** Rueedi R.*, Ledda M.*, Nicholls A.W., Salek R.M., Marques-Vidal P., Morya E., Sameshima K., Montoliu I., Da Silva L., Collino S. et al., Genome-wide association study of metabolic traits reveals novel gene-metabolite-disease links, *PLoS Genetics* 10(2) [doi]
- 2013** Ledda M.*, Kotalik Z.*, Destito M.C.S., Souza M.M., Cirillo C. a., Zamboni A., Martin N., Morya E., Sameshima K., Beckmann J.S. et al., GWAS of human bitter taste perception identifies new loci and reveals additional complexity of bitter taste genetics, *Human Molecular Genetics* 23: 259-267 [doi]
- Godinot N., Yasumatsu K., Barcos M.E., Pineau N., Ledda M., Viton F., Ninomiya Y., le Coutre J. and Damak S., Activation of tongue-expressed GPR40 and GPR120 by non caloric agonists is not sufficient to drive preference in mice, *Neuroscience* 250: 20-30 [doi]
- Montoliu I.*, Genick U.*, Ledda M., Collino S., Martin F.P., Le Coutre J. and Rezzi S., Current status on genome-metabolome-wide associations: An opportunity in nutrition research, *Genes and Nutrition* 8: 19-27 [doi]
- 2011** Genick U.K., Kotalik Z., Ledda M., Souza Destito M.C., Souza M.M., Cirillo C. a., Godinot N., Martin N., Morya E., Sameshima K. et al., Sensitivity of genome-wide-association signals to phenotyping strategy: The PROP-TAS2R38 taste association as a benchmark, *PLoS One* 6(11) [doi]

PATENTS

- 2014** Genick U.K., Ledda M., Montoliu I., Le Coutre J., Rezzi S., Collino S., Martin F.P., Da Silva L., Genetic and urine-derived markers of human metabolic and gut microbial states - US Patent Office, *US Patent 20,150,160,191* (issued in 2015)
- 2012** Genick U.K., Ledda M., Montoliu I., Le Coutre J., Rezzi S., Collino S., Martin F.P., Da Silva L., Genetic and urine-derived markers of human metabolic and gut microbial states - European Patent Office, *EP2687845 A1* (issued in 2014)

TALKS AND POSTERS

- 2017 [BC]2 Basel Computational Biology Conference** Congress Center, Basel, Switzerland
Ledda M. and Aviran S., patteRNA: Transcriptome-wide search for functional RNA elements via structural data signatures. *Speaker - 20min talk*
- Genome Research Day** 23andMe, Mountain View, CA
Ledda M. and Aviran S., Transcriptome-wide search for functional RNA elements via structural data signatures. *Poster*
- 2016 Computational RNA Biology Conference** Wellcome Trust, Cambridge, UK
Ledda M., Deng F., Vaziri S., and Aviran S., Data-directed RNA secondary structure prediction using probabilistic modeling. *Speaker - 15min talk*

HOBBIES/INTERESTS

Soccer - Alpine Ski - Hiking - Taking (many) pictures - Building servers at home

References upon request