UNIVERSITÀ DEGLI STUDI DELL'AQUILA

DISCAB
Dipartimento di Scienze Cliniche Applicate e Biotecnologiche

CURRICULUM VITAE

PERSONAL INFORMATION	Name and Surname: Darin Zerti Department: Department of Biotechnological and Applied Clinical Sciences Address: via Vetoio, Coppito II, Floor II, room B.3.10 City: L'Aquila postal code 67100 Nation: Italy E-mail address: **darin.zerti@univaq.it**

CURRENT POSITION	Research Fellow-A in BIO/09

EDUCATION OTHER QUALIFICATIONS	- 29.03.2012: Master's degree in medical biotechnology, University of L'Aquila, Italy, Vote: 110/110 cum laude - 20.04.2016: PhD in Biochemical Sciences & Neuroscience, XXVIII cycle, SSD BIO/09, Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, Italy - 31.01.2022: National Scientific Qualification (art.16 of the law 30 December 2010, n.240) to Associate Professor in physiology, 05-D1; SSD BIO/09 - 10.01.2023: Individual qualification (D.M. 5 August 2021, art. 8, paragraph 10) and obtaining the necessary credits to perform the functions referred to in art. 1, paragraph 1, let. a) of the Ministerial Decree of August 5, 2021, for Modules 3.1, 3.2, 4, 6.1, 6.2, 7, 8, 20, 21 and 22 and of the Directorial Decree of 18 March 2022, art. 2, paragraph 8 (protocol number 502)

ACADEMIC APPOINTMENTS	• 03.01.2017\31.07.2019: Research Associate, Institute of Genetic Medicine, Newcastle University, Stem Cell Lab of Professor Majlinda Lako. Research Topic: study of the human retinal neurogenesis and retinal diseases utilizing both post-mortem human ophthalmic tissue and human pluripotent stem cells. • 01-09-2016\31-12-2016: Scholarship at Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila. Research topic: pathways of natural agents in animal model of retinal neurodegeneration. • 01-04-2015\15-09-2015: Visiting PhD student, Institute of Genetic Medicine, Newcastle University, Stem Cell Lab of Professor Majlinda Lako. Project title: "Assessment of the expression of IGF-1 components in Human retinal tissue". • 01-08-2013\ 31-08-2013: Visiting PhD student, Institute of Neuroscience, Medical School, Newcastle University, Laboratory of Professor Evelyne Sernagor. Research Topic: Electrophysiology techniques.

TEACHING EXPERIENCE	- 2023- present: Bachelor course in biomedical laboratory Techniques [D3L] at University of L'Aquila, course of *Physiology* [D0422]; - 2023- present: Bachelor course in medical radiology techniques [D3R], imaging and radiotherapy at University of L'Aquila, course of *Physiology* [D1518]; - 2023- present: Master course Neurosciences [F4S] at University of L'Aquila, course of *Integrative Neurophysiology* [DM0617]; - 2019-2023, Biotechnology bachelor [B3B] course at University of L'Aquila, course *Physiology* [DM0058]; - 2021-present, Physical Education bachelor course at University of L'Aquila, course *Physiology and Motor Control* [E0583] and - 2019-2021, Medical Biotechnology [B4M] master course at University of L'Aquila, course *Biotechnology of Human Nervous System* [B0389]

RESEARCH ACTIVITIES	The research activity is mainly focused on the functional study related to the visual system and the mechanisms underlying retinal neurodegeneration. Her scientific interest is focuses on the degeneration of the neuroretina and the retinal pigment epithelium, including the involvement of the retinal vascular system and the breakdown of the blood-retinal barrier. The experimental approaches, that include both *in-vitro* and *in-vivo* studies, aim to broaden knowledge on the processes that lead to vision loss, in pathologies that affect the human retina such as age-related macular degeneration, with the final goal of identify new therapeutic targets. • 2024 UNIVAQ GRANT awarded by the University of L'Aquila, € 3700 *(PI)* • 2024 DISCAB GRANT awarded by the Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, € 4920 (*PI*) • 2023 DISCAB GRANT awarded by the Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, € 4780 (*Co-I*) • 202-2025 RETINA UK GRANT, £ 249.944 (*Co-I*) • 2022-2026 MRC, £ 1.335.813 *(Co-I)* • 2022 UNIVAQ GRANT awarded by the University of L'Aquila, (*PI)* €3500 • 2022 DISCAB GRANT awarded by the Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, € 7119 (*Co-I*) • 2021 DISCAB GRANT awarded by the Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, € 6000 (*Co-I*)

RESPONSIBILITY IN ACADEMIC ACTIVITIES	Member of the Safety Committee of the department

EDITORIAL BOARD, EDITORIAL ACTIVITIES, SOCIETY MEMBERSHIP	- **2023:** Guest Editor per lo special issue "Advances in Visual Neuroscience" for the journal Applied Sciences - **2021 – to date**: Topic Editor of journal Applied Sciences Manuscript Peer Reviewer: Biomedicines, Journal of Personalized Medicine, International Journal of Molecular Sciences, Healthcare, Applied Sciences, Photonics, Pharmaceutic, Bioengineering, Genes, Brain Sciences, Nanomaterials and International Journal of Environmental Research and Public Health, Stem Cells, Jove review and Advances Science. • **2013 – to date**: Società Italiana di Neuroscienze (SINS) • **2016 – 2021**: The Association for Research in Vision and Ophthalmology (ARVO) • **2023- ad oggi**: Società Italiana di Fisiologia (SIF)

SCIENTIFIC ACHIEVEMENTS BIBLIOMETRIC INDICATORS	**Scopus Author ID: 57192110490 https://orcid.org/0000-0003-0865-8088** (H-Index 16, i10-Hirsch 18, total number of quotes 2756, median number of quotes by article 8.78)

SELECTED PUBLICATIONS	1. Dorgau B*, Collin J*, Rozanska A, **Zerti D**, Unsworth A, Hussain R, Coxhead J, Dhanaseelan T, Sowden J, Fitzpatrick D, Queen R and Lako M. "Spatiotemporal single cell analyses reveal the transient emergence of retinal progenitor cells in the ciliary margin of developing human retina" * Joint first authors. *Nature Communications* (Impact Factor 16.6), March 2024 manuscript accepted. 2. Carozza G*, **Zerti D***, Tisi A, Ciancaglini M, Maccarrone M and Maccarone R. "An overview of Retinal light damage models for preclinical studies on Age-related Macular Degeneration: Identifying molecular hallmarks and therapeutic targets" * Joint first authors. *Reviews in the Neurosciences* (Impact Factor 4.7) 2023 Dec 29. doi: 10.1515/revneuro-2023-0130. 3. Collin J*, Hasoon M*, **Zerti D**, Hammadi S, Dorgau B, Clarke L, Steel D, Hussain R, Coxhead J, Lisgo S, Queen R and Lako M. "Single cell RNA sequencing reveals transcriptional changes of human choroidal and retinal pigment epithelium cells during fetal development, in healthy adult and intermediate age-related macular degeneration" * Joint first authors. *Human Molecular Genetics* (Impact Factor 6.15). 2023 Jan 16; doi: 0.1093/hmg/ddad007 4. Rozanska A., Cerna Chavez R., Queen R., Dorgau B., **Zerti D**., Beh C., Collin J., Davey T., Coxhead J., Hussain R., Steel D., Al-aama J., Benvenisty N., Armstrong L., Parulekar M. and Lako M. "pRB-depleted pluripotent stem cell retinal organoids recapitulate cell state transitions of retinoblastoma development" *Stem Cells Translational Medicine* (Impact Factor 5.61), 2022, 11(4), pp. 415–433. doi: 10.1093/stcltm/szac008 5. Tisi A, **Zerti D**, Genitti G, Vicentini MT, Baccante M, Flati V,

Maccarone R. "Characterization of SARS-CoV-2 Entry Factors' Expression in Corneal and Limbal Tissues of Adult Human Donors Aged from 58 to 85" *J Ocul Pharmacol Ther.* (Impact Factor 2.671), 2021 Dec 7. doi: 10.1089/jop.2021.0085

6. Collin J*, Queen R*, **Zerti D**, Steel D, Bowen B, Parulekar M and Lako M. "Dissecting transcriptional and chromatin accessibility heterogeneity of proliferating cone precursors in human retinoblastoma tumours by single cell sequencing" *Investigative Ophthalmology and Visual Science* (Impact Factor 4.799), 2021, May 3;62(6):18. doi: 10.1167/iovs.62.6.18. * Joint first authors

7. Collin J*, Queen R*, **Zerti D***, Bojic S, Dorgau B, Moyse N, Moya Molina M, Yang C, Dey S, Reynold G, Hussain R, Coxhead J.M., Lisgo S, Henderson D, Joseph A, Rooney P, Ghosh S, Connon C, Haniffa M, Figueiredo F, Armstrong L and Lako M. "A single cell atlas of human cornea that defines its development, limbal stem and progenitor cells and their interactions with the immune cells" * Joint first authors. *Ocul Surf.* (Impact Factor 5.033), 2021 Jul;21:279-298. doi: 10.1016/j.jtos.2021.03.010

8. **Zerti D***, Hilgen G*, Dorgau B, Collin J, Ader M, Armstrong L, Sernagor E and Lako M. "Transplanted pluripotent stem cell-derived photoreceptor precursors elicit conventional and unusual light responses in mice with advanced retinal degeneration" * Joint first authors. *Stem Cells* (Impact Factor 6.277), Jan 2021 39(7), pp. 882–896. doi: 10.1002/stem.3365

9. Collin J*, Queen R*, **Zerti D**, Dorgau B, Georgiou M, Djidrovski I, Hussain R, Coxhead J. M., Joseph A, Rooney P, Lisgo S, Figueiredo F, Armstrong L, Lako M. "Co-expression of SARS-CoV-2 entry genes in the superficial adult human conjunctival, limbal and corneal epithelium suggests an additional route of entry via the ocular surface" * Joint first authors. *Ocul Surf.* (Impact Factor 5.033), 2021 Jan 3:S1542-0124(20)30097-5. doi: 10.1016/j.jtos.2020.05.013

10. Muus C, Luecken MD, Eraslan G, Sikkema L, Waghray A, Heimberg G, Kobayashi Y, Vaishnav ED, Subramanian A, Smillie C, Jagadeesh KA, Duong ET, Fiskin E, Triglia ET, Ansari M, Cai P, Lin B, Buchanan J, Chen S, Shu J, Haber AL, Chung H, Montoro DT, Adams T, Aliee H, Allon SJ, Andrusivova Z, Angelidis I, Ashenberg O, Bassler K, Bécavin C, Benhar I, Bergenstråhle J, Bergenstråhle L, Bolt L, Braun E, Bui LT, Callori S, Chaffin M, Chichelnitskiy E, Chiou J, Conlon TM, Cuoco MS, Cuomo ASE, Deprez M, Duclos G, Fine D, Fischer DS, Ghazanfar S, Gillich A, Giotti B, Gould J, Guo M, Gutierrez AJ, Habermann AC, Harvey T, He P, Hou X, Hu L, Hu Y, Jaiswal A, Ji L, Jiang P, Kapellos TS, Kuo CS, Larsson L, Leney-Greene MA, Lim K, Litviňuková M, Ludwig LS, Lukassen S, Luo W, Maatz H, Madissoon E, Mamanova L, Manakongtreecheep K, Leroy S, Mayr CH, Mbano IM, McAdams AM, Nabhan AN, Nyquist SK, Penland L, Poirion OB, Poli S, Qi C, Queen R, Reichart D, Rosas I, Schupp JC, Shea CV, Shi X, Sinha R, Sit RV, Slowikowski K, Slyper M, Smith NP, Sountoulidis A, Strunz

M, Sullivan TB, Sun D, Talavera-López C, Tan P, Tantivit J, Travaglini KJ, Tucker NR, Vernon KA, Wadsworth MH, Waldman J, Wang X, Xu K, Yan W, Zhao W, Ziegler CGK; NHLBI LungMap Consortium; Human Cell Atlas Lung Biological Network (**Zerti D** author under HCA Lung network). "Single-cell meta-analysis of SARS-CoV-2 entry genes across tissues and demographics." Nat Med. (Impact Factor 53.44), 2021 Mar;27(3):546-559. doi: 10.1038/s41591-020-01227-z

11. **Zerti D**, Moya Molina M, Dorgau B, Mearns S, Bauer R, Al-Aama J and Lako M. "IGFBPs mediate IGF-1's functions in retinal lamination and photoreceptor development during pluripotent stem cell differentiation to retinal organoids" *Stem Cells* (Impact Factor 6.277), Jan 2021 39(4), pp. 458–466. doi: 10.1002/stem.3331

12. Tucker NR, Chaffin M, Bedi KC Jr, Papangeli I, Akkad AD, Arduini A, Hayat S, Eraslan G, Muus C, Bhattacharyya RP, Stegmann CM; HCA Lung network (**Zerti D** author under HCA Lung network), Margulies KB and Ellinor PT. "Myocyte-Specific Upregulation of ACE2 in Cardiovascular Disease: Implications for SARS-CoV-2-Mediated Myocarditis" *Circulation* (Impact Factor 29.69), 2020 Aug 18;142(7):708-710. doi: 10.1161/CIRCULATIONAHA.120.047911

13. Sungnak W, Huang N, Bécavin C, Berg M, Queen R, Litvinukova M, Talavera-López C, Maatz H, Reichart D, Sampaziotis F, Worlock KB, Yoshida M, Barnes JL; HCA Lung Biological Network (**Zerti D** author under HCA Lung network)."SARS-CoV-2 entry factors are highly expressed in nasal epithelial cells together with innate immune genes" *Nat Med.* (Impact Factor 53.44), 2020 May;26(5):681-687. doi: 10.1038/s41591-020-0868-6

14. **Zerti D**, Collin J, Queen R, Cockell SJ, Lako M "Understanding the complexity of retina and pluripotent stem cell derived retinal organoids with single cell RNA sequencing: current progress, remaining challenges and future prospective" *Curr Eye Res*. (Impact Factor 2.424), 2020 Mar;45(3):385-396. doi: 10.1080/02713683.2019.1697453

15. **Zerti D**., Dorgau B., Felemban M., Ghareeb A.E., Yu M., Yuchun D., Krasnogor N. and Lako M. "Developing a simple method to enhance the generation of cone and rod photoreceptors in pluripotent stem cell derived retinal organoids" *Stem Cells* (Impact Factor 6.277), 2020 Jan;38(1):45-51. doi: 10.1002/stem.3082

16. Mellough C.B., Collin J., Queen R., Hilgen G., Dorgau B., **Zerti D.**, Felemban M., White K., Sernagor E. and Lako M. "Systematic comparison of retinal organoid differentiation from human pluripotent stem cells reveals stage specific, cell line and methodological differences" *Stem Cells Translational Medicine* (Impact Factor 5.61), 2019 Mar 27. doi: 10.1002/sctm.18-0267

17. Collin J*., **Zerti D**.*, Queen R., Santos-Ferreira T., Coxhead J.,

Hussain R., Steel D., Mellough C., Ader M., Sernagor E., Armstrong L. and Lako M. "CRX expression in pluripotent stem cell derived photoreceptors marks a transplantable subpopulation of early cones" *joint first authors. *Stem Cells* (Impact Factor 6.277), 2019 Jan 25. doi: 10.1002/stem.2974

18. Dorgau B, Felemban M, Hilgen G, Kiening M, **Zerti D**, Hunt NC, Doherty M, Whitfield P, Hallam D, White K, Ding Y, Krasnogor N, Al-Aama J, Asfour HZ, Sernagor E, Lako M. "Decellularised extracellular matrix-derived from neural retinal and retinal pigment epithelium enhance the expression of synaptic markers and light responsiveness of human pluripotent stem cell derived retinal organoids". *Biomaterials* (Impact Factor 12.479), 2019 Jan22;199:63-75. doi: 10.1016/j.biomaterials.2019.01.028

19. Collin J, Queen R, **Zerti D**, Hilgen B, Hussain R, Coxhead J, Cockell S and Lako M. "Deconstructing retinal organoids: Single cell RNA-Seq reveals the cellular components of human pluripotent stem cell derived retina". *Stem Cells* (Impact Factor 6.277), 2018 Dec 12. doi: 10.1002/stem.2963

20. Mellough C., Bauer R., Collin J., Dorgau B., **Zerti D**., Izuogu O.G., Dolan D.W.P., Yu M., Hallam D., Steyn J.S., White K., Steel D., Santibanez-Koref M., Elliott D., Jackson M., Grellscheid S., Lindsay S. and Lako M. "An integrated transcriptional analysis of the developing human retina." *Development* (Impact Factor 6.868), 2019 Jan 29;146(2). pii: dev169474. doi: 10.1242/dev.169474

21. Chicagova V.*, Hallam D.*, Collin J., **Zerti D**., Dorgau B., Felemban M., Lako M. and Steel D. (* joint first authors). "Cellular regeneration strategies for macular degeneration: past, present and future", *Eye (Lond.)* (Impact Factor 3.775), 2018 May; 325(5):946-971. doi: 10.1038/s41433-018-0061-z

22. Felemban M, Dorgau B, Hunt NC, Hallam D, **Zerti D.**, Bauer R, Ding Y, Collin J, Steel D, Krasnogor N, Al-Aama J, Lindsay S, Mellough C, Lako M. "Extracellular matrix expression in human pluripotent stem cell derived retinal organoids recapitulates retinogenesis in vivo and reveals an important role for IMPG1 and CD44 in the development of photoreceptors and interphotoreceptor matrix." *Acta Biomater*. (Impact Factor 8.947), 2018 May 16. doi: 10.1016/j.actbio.2018.05.023

23. Maccarone R.*, Rapino C.*, **Zerti D**., Di Marco S., Natalia B., Di Tommaso M., Bisti S. and Maccarrone M. "Modulation of Type-1 and Type-2 Cannabinoid Receptors by Saffron in a rat model of retinal neurodegeneration" * joint first authors. *PLoS One* (Impact Factor 3.24) 2016 Nov 18;11(11):e0166827. doi: 10.1371/journal.pone.0166827

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PLACE AND DATE

L'Aquila, 19th April 2024