

Curriculum vitae

28/08/2025

PERSONAL INFORMATION

ALBERTO BISCONTIN

Date of birth: 06/06/1983

Nationality: Italian

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National Scientific Habilitation as Associate Professor in Genetics (ASN 05/I1 II fascia -BIO/18) obtained in 2020.

PREVIOUS POSITIONS

- 2023-ongoing Research Fellow [Ric. T.D. (A)], Plant Genomics and Biotechnology group, Department of Agricultural, Food, Environmental and Animal Sciences, University of Udine, Italy
- 2020-2022 Postdoctoral Fellow, Sleep and Rhythms in Medicine group, Department of Medicine, University of Padova, Italy
- 2018-2020 Postdoctoral Fellow, Principal Investigator for the project PNRA16_00225 “Ontogenesis of the circadian clock in the Antarctic krill *Euphausia superba*”, Neurogenetics and Chronobiology group, Dept. of Biology, University of Padova, Italy
- 2014-2017 Postdoctoral Fellow, Institut für Medizinische Immunologie, Charité-Universitätsmedizin Berlin, Germany
- 2012-2014 Postdoctoral Fellow, Neurogenetics and Chronobiology group, Dept. of Biology, University of Padova, Italy

FELLOWSHIPS

- 2008 Research Fellowship, C.R.I.B.I. (Interdipartimental Center of Biotechnology Research and Innovation), University of Padova, Italy

EDUCATION

- 2009-2012 PhD in Biosciences and Biotechnology, *curriculum* Genetics and Molecular Biology of Development, Dept. of Biology, University of Padova, Italy
- 2007 Master in Industrial Biotechnology, Dept. of Biology, University of Padova, Italy

GRANTS AND AWARDS

PNRA16_00225 Programma Nazionale di Ricerche in Antartide
115.400 Euro

January 2018 - December 2020

“Ontogenesis of the circadian clock in the Antarctic krill *Euphausia superba*”.

Role in the Project: **Coordinator / Principal Investigator**

Real-Time PCR Grant 2019 by Promega Corporation (Wisconsin, USA)

10.000 \$

June 2019 - December 2019

The circadian clock of the Antarctic krill *Euphausia superba*.

Winner. One of the three winners out of more than 400 worldwide applications.

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

Member of the National Biodiversity Future Centre (NBFC), Spoke 4 “Ecosystem functions, services, and solutions”, within WP 4.3, which focuses on biodiversity conservation in protected areas by leveraging intraspecific genetic variability and developing models and statistical approaches to predict changes in biodiversity and ecosystem processes.

Member of the Italian Association for Genetics (Associazione Genetica Italiana; AGI).

Member of the international Helmholtz Virtual Institute “PolarTime” (<http://www.polartime.org>) Antarctic research program: Biological timing in a changing marine environment – clocks and rhythms in polar pelagic organisms.

Former Member of the European Biological Rhythms Society (EBRS) 2017-2022.

INTERNATIONAL EXPERIENCE

In the framework of the international Antarctic research program "PolarTime", I was hosted at the prestigious Australian Antarctic Division (Hobart, Tasmania) in the Laboratory of Dr. So Kawaguchi for two months (February-March 2016).

COMMISSIONS OF TRUST

Review Editor for Frontiers in Ecology and Evolution

Reviewer of scientific articles in the field of Genetics, Genomics, Ecology and Chronobiology for PubMed-indexed journals, including Scientific Reports, iScience, BMC Genomics, Molecular Ecology and Insects

ORGANISATION OF SCIENTIFIC MEETINGS

Member of the organizing committee for the European Biological Rhythms Society (EBRS) trainee day in 2021 and 2022

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

Co-supervisor for an ongoing PhD project within the National PhD Program in Biodiversity (National Biodiversity Future Center), University of Udine

Supervisor for the curricular internship of one master’s degree student in Molecular Biotechnology, University of Udine.

Co-supervisor for the theses of four master degree students in Molecular Biology/Biotechnology, Dept. of Biology, University of Padova.

Co-supervisor for the theses of nine students in Molecular Biology/Biotechnology, Dept. of Biology, University of Padova.

TEACHING ACTIVITIES

“Genomic Analyses for Biodiversity Research” course (20 hours, 4 CFU) for the PhD Program in Biodiversity of the National Biodiversity Future Centre (since 2024)

“Special Genetics module I” practicals for Biotechnology students, University of Udine (A.A. 2024/25, 2023/24)

"Genetics 2" practicals for Molecular Biology students, University of Padova, (A.A. 2018/19, 2015/16).

"Introduction to OMICS" practicals for Biotechnology students, University of Padova

(A.A. 2020/21, 2019/20, 2017/18, 2016/17, 2015/16, 2013/14, 2012/13, 2011/12).

"Genetics 1 and genetic engineering" practicals for Molecular Biology students, University of Padova (A.A. 2022/23, 2021/22, 2020/21, 2019/20, 2018/19, 2017/18).

"Neurobiology" practicals for Molecular Biology students, University of Padova (A.A. 2020/21).

"Functional Genomics" practicals for Industrial Biotechnology students, University of Padova (A.A. 2012/13).

"Genetic Engineering" practicals for Molecular Biology students, University of Padova (A.A. 2009/10).

EARLY ACHIEVEMENTS TRACK-RECORD

My main scientific contributions have been in the field of biological rhythms, which I have studied, from a molecular up to a behavioural level, in model and non-model organisms. In particular, I have focused on the characterization of the molecular clock of the Antarctic krill *Euphausia superba*, combining advanced molecular techniques with the most up to date bioinformatics approaches.

In 2014, I joined the international Antarctic research program "Polar-Time", that brings together researchers from different scientific fields to elucidate the molecular bases of biological rhythms in high latitude regions. Over the following 4 years, under the supervision of Prof. Achim Kramer, I worked on the functional characterization of the molecular clock of krill, providing precious information on the evolution of the clock mechanism in mammals and insects. These findings still represent one of the very few examples of functional characterisation of a circadian clock in a marine organism.

As part of the "Polar-Time" network program, I have published six additional peer-reviewed papers (three of which I am the first author) that further explore the involvement of the circadian clock in the regulation of diel and seasonal cycles in krill. In 2017, I contributed to the creation and the publication of the first and most comprehensive krill transcriptome database (KrillDB), which remains the most useful available bioinformatics tool to study molecular processes in krill.

In the same year, I obtained a 3-year PNRA Grant (Programma Nazionale di Ricerca in Antartide, Italian National Programme for Research in the Antarctica) as principal investigator, to study the role of the circadian clock in krill ontogenesis.

I have also always been extremely interested in the technical aspects of research, and in setting up/upgrading useful molecular protocols. My first publication as first author dates back to 2010 when, during my first year as a PhD student, I developed an innovative labelling system of small RNA molecules to assess the expression profile of tens of miRNAs at the same time. This innovative approach has been subsequently utilised to validate the differential expression of three histotype-predictive miRNAs in seven human rhabdomyosarcoma cell lines.

In 2013, I set up a qRT-PCR-based protocol for mitochondrial DNA quantification in flies, which is now routinely used.

In 2016, I had the opportunity to spend 2 months at the Australian Antarctic Division in Tasmania, where I set up an *in situ* hybridization protocol on krill larvae and adults.

In 2017, I designed a genotyping assay to test two polymorphisms (a SNP and a VNTR) in the human clock gene *Per3*. I then contributed to a piece of human research documenting significant associations between *Per3* polymorphic variants and chronotype.

In 2022, I defined a SNP panel for the molecular assessment of human chronotype based on the S.P.E.T. (Single Primer Enrichment Technology) genotyping-by-sequencing approach. In 2024, I validated the SNPs panel with a specifically developed PCR-based genotyping card to replace the high-throughput approach. The

use for this can be envisaged in both public health initiatives and in precision medicine.

In 2023, I contributed to the assembly of the 48.01 Gb chromosome-level genome of the Antarctic krill, one of the largest animal assemblies reported to date.

Since 2023, as member of the National Biodiversity Future Centre, I have been studying biodiversity through genomic approaches in Italian endemic plant species. I combine expertise in molecular biology with second- and third-generation sequencing technologies, bioinformatic analyses, and population genetics tools to investigate genetic variability, population structure, and the evolutionary processes that influence species conservation.

PUBLICATIONS (ISI)

I am author of 24 publications on peer-reviewed journals, including 2 papers as corresponding author and 8 as first author. H index = 14 (Scopus).

(°as corresponding author, *authors contributed equally to this work)

Stefanelli C., Colaiani D., Mazzotta G.M., Sales G., Bertolucci C., Meyer B., **Biscontin A.**°, De Pittà C. Functional characterization of the second feedback loop in the circadian clock of the Antarctic krill *Euphausia superba*. *BMC Biology* 22. December 2024.

Biscontin A., Russo A., Marnetto D., Pagani L., Costa R., Montagnese S. Validation and TaqMan Conversion of a Molecular Chronotype Assessment Approach. *Journal of Biological Rhythms* 20. November 2024.

Domenie E.D., Zarantonello L., Mangini C., Formentin C., Giusti G., Ruggerini D., Cusumano P., **Biscontin A.**, Costa R., Montagnese S. The Alarm Clock Against the Sun: Trends in Google Trends Search Activity Across the Transitions to and from Daylight Saving Time. *Journal of Circadian Rhythms*. November 2023.

Astone M., Oberkersch R.E., Tosi G., **Biscontin A.**, Santoro M.M. The circadian protein BMAL1 supports endothelial cell cycle during angiogenesis. *Cardiovascular Research* 119(10). August 2023.

Lupi L., Bordin A., Sales G., Colaiani D., Vitiello A., **Biscontin A.**, et al. Persistent and transient olfactory deficits in COVID-19 are associated to inflammation and zinc homeostasis. *Frontiers in Immunology* 14. July 2023.

Shao C., Sun S., Liu K., Wang J., Li S., Liu Q., Deagle B.E., Seim I., **Biscontin A.**, et al. The enormous repetitive Antarctic krill genome reveals environmental adaptations and population insights. *Cell* 186. March 2023.

Urso I., **Biscontin A.**, Corso D., Bertolucci C., Romualdi C., De Pittà C., Meyer B., Sales G. A thorough annotation of the krill transcriptome offers new insights for the study of physiological processes. *Scientific Report* 12. July 2022.

Biscontin A., Zarantonello L., Russo A., Costa R., Montagnese S. Toward a Molecular Approach to Chronotype Assessment. *Journal of Biological Rhythms* 37. Jun 2022.

Montagnese S., Zarantonello L., Formentin C., Zancato C., Bonetto M.B., **Biscontin A.**, Cusumano P., Costa R. Sleep, circadian rhythmicity and response to chronotherapy in university students: Tips from chronobiology practicals. *Journal of Circadian Rhythms* 19. Jan 2021.

Piccolin F., Pitzschler L., **Biscontin A.**, Kawaguchi S., Meyer B. Circadian regulation of diel vertical migration (DVM) and metabolism in Antarctic krill *Euphausia superba*. *Scientific Reports* 10. Oct 2020.

Horing F.*, **Biscontin A.***, Harms L., Sales G., Reiss C.S., De Pitta C., Meyer B. Seasonal gene expression profiling of Antarctic krill in three different latitudinal regions. *Marine Genomics*. Aug 2020.

Biscontin A.°, Martini P., Costa R., Kramer A., Meyer B., Kawaguchi S., Teschke

M., De Pittà C. Analysis of the circadian transcriptome of the Antarctic krill *Euphausia superba*. Scientific Reports 9. Sep 2019.

Piotto C., **Biscontin A.**, Millino C., Mognato M. Functional validation of miRNAs targeting genes of DNA double-strand break repair to radiosensitize non-small lung cancer cells. Biochimica et Biophysica Acta (BBA) - Gene Regulatory Mechanisms 1861. Dec 2018.

Piccolin F., Meyer B., **Biscontin A.**, De Pittà C., Kawaguchi S., Teschke M. Photoperiodic modulation of circadian functions in Antarctic krill *Euphausia superba* Dana, 1850 (Euphausiacea). Journal of Crustacean Biology 38. Sep 2018.

Cusumano P., **Biscontin A.**, Sandrelli F., Mazzotta G.M., Tregnago C., De Pittà C., Costa R. Modulation of miR-210 alters phasing of circadian locomotor activity and impairs projections of PDF clock neurons in *Drosophila melanogaster*. Plos Genetics, epub. Jul 2018.

Biscontin A., Wallach T., Sales G., Grudziecki A., Janke L., Sartori E., Bertolucci C., Mazzotta G.M., De Pittà C., Meyer B., Kramer A., Costa R. Functional characterization of the circadian clock in the Antarctic krill, *Euphausia superba*. Scientific Reports 7. Dec 2017.

Turco M., **Biscontin A.**, Corrias M.G., Caccin L., Bano M., Chiaromanni F., Salamanca M., Mattei D., Salvoro C., Mazzotta G.M., De Pittà C., Middleton B., Skene D.J., Montagnese S., Costa R. Diurnal preference, mood and the response to morning light in relation to polymorphisms in the human clock gene PER3. Scientific Reports 7. Jul 2017.

Sales G., Deagle B.E., Calura E., Martini P., **Biscontin A.**, De Pittà C., Kawaguchi S., Romualdi C., Meyer B., Costa R., Jarman S. KrillDB: A de novo transcriptome database for the Antarctic krill (*Euphausia superba*). PlosONE, e-pub. Feb 2017.

Biscontin A., Frigato E., Sales G., Mazzotta G.M., Teschke M., De Pittà C., Jarman S., Meyer B., Costa R., Bertolucci C. The opsin repertoire of the Antarctic krill *Euphausia superba*. Marine Genomics 29. May 2016.

Meyer B.*, Martini P.*, **Biscontin A.**, De Pittà C., Romualdi C., Teschke M., Frickenhaus S., Harms L., Freier U., Jarman S., Kawaguchi S. Pyrosequencing and de novo assembly of Antarctic krill (*Euphausia superba*) transcriptome to study the adaptability of krill to climate-induced environmental changes. Molecular Ecology Resources 15. Apr 2015.

Da-Re C., von Stockum S., **Biscontin A.**, Millino C., Cisotto P., Zordan M.A., Zeviani M., Bernardi P., De Pittà C., Costa R. Leigh syndrome in *Drosophila melanogaster*: morphological and biochemical characterization of Surfl post-transcriptional silencing. Journal of Biological Chemistry 289. Aug 2014.

Da-Re C., Franzolin E., **Biscontin A.**, Piazzesi A., Pacchioni B., Gagliani M.C., Mazzotta G., Tacchetti C., Zordan M.A., Zeviani M., Bernardi P., Bianchi V., De Pittà C., Costa R. Functional characterization of drim2, the *Drosophila melanogaster* homolog of the yeast mitochondrial deoxynucleotide transporter. Journal of Biological Chemistry 289. Jan 2014.

De Pittà C.*, **Biscontin A.***, Albiero A., Sales G., Millino C., Mazzotta G.M., Bertolucci C., Costa R. The Antarctic krill *Euphausia superba* shows diurnal cycles of transcription under natural conditions. PLoS One, e-pub. Jul 2013.

Biscontin A., Casara S., Cagnin S., Tombolan L., Rosolen A., Lanfranchi G., De Pittà C. New miRNA labeling method for bead-based quantification. BMC Molecular Biology 11. Jun 2010.

Biscontin A. "Functional characterization of the circadian clock in the Antarctic krill *Euphausia superba*." Fifth PolarTime Workshop. Padova, November 6-7, 2017.

Biscontin A. "Functional characterization of the circadian clock machinery in the Antarctic krill *Euphausia superba*". Invited at the Second Scientific Retreat of the Department of Biology, Padova, February 13-14, 2017.

Biscontin A. "Towards the molecular architecture of the circadian clockwork in Krill". Fourth PolarTime Workshop. Berlin, April 14-15, 2016.

Biscontin A. "Towards the molecular architecture of the circadian clockwork in Krill". Third PolarTime Workshop. Schloß Machern, March 09-12, 2015.

Biscontin A. "The Search for clock genes in Antarctic krill". Second PolarTime Workshop. Obergurgl, January 27-31, 2014.

Biscontin A. "The dynamic changes of expression signatures in the larval development of *Mytilus galloprovincialis*". Workshop "Next Generation Sequencing" Third edition, Bari, October 12-14, 2011.

Biscontin A. "New miRNA labeling method for bead-based quantification". Bio-Plex User Meeting, Florence, May 13, 2010.

CONFERENCE PROCEEDINGS

Patients with persistent or transient Covid19-related olfactory deficits show a different gene expression pattern in the olfactory mucosa. Lupi L., De Pittà C., Calistri A., **Biscontin A.**, Bordin A., Ottaviano G., Reale A., Antonini A., Parolin C., Mucignat C. ECRO XXXII August 31 - September 3, 2022, Berlin, Germany.

Designing a SNPs panel for molecular chronotype assessment. **Biscontin A.**, Zancato C., Montagnese S., Costa R. AGI 2021, Associazione Genetica Italiana. 22-24 September 2021, Cortona, Italy.

Shedding light on the molecular clock of the Antarctic krill *Euphausia superba*. **Biscontin A.**, Piccolin F., Urso I., Bertolucci C., Kramer A., Costa R., Kawaguochi S., Meyer B., Sales G., De Pitta' C. SCAR 2020 3-7 August 2020. Poster, virtual presentation.

Defining the circadian transcriptome of the Antarctic krill. **Biscontin A.**, Martini P., Costa R., Kramer A., Meyer B., Kawaguochi S., Teschke M., De Pitta' C. AGI 2019, Associazione Genetica Italiana. 26-28 September 2019, Cortona, Italy.

Functional characterization of the circadian clock in the Antarctic krill, *Euphausia superba*. **Biscontin A.**, Wallach T., Sales G., Grudziecki A., Janke L., Sartori E., Bertolucci C., Mazzotta G.M., De Pitta' C., Meyer B., Kramer A., Costa R. AGI 2017, Associazione Genetica Italiana. 7-9 September 2017, Cortona, Italy.

MiRNA-mediated modulation of DNA double-strand repair genes in γ -irradiated human cancer cells. Piotto C., **Biscontin A.**, Barbieri V., Mognato M. MICROS 2017- 17th International Symposium on Microdosimetry. 5-10 November 2017, Venezia, Italy. Oral communication by Mognato M.

Role of miRNAs targeting genes of DNA double-strand break repair in radioresistant non-small lung cancer cells. Piotto C., Pettenuzzo, M., Barbieri V., **Biscontin A.**, Mognato M. EU-US Conference on Repair of Endogenous DNA Damage. 24-28 September 2017, Udine, Italy.

Catalase in Antarctic fish. Corrà F., Poloni E., Callegaro E., Bramuzzo S., Gerdol M., Buonocore F., Scapigliati G., **Biscontin A.**, De Pitta' C., Bakiu R., Santovito G. XVIIIth scientific meeting of the Italian Association of Developmental and Comparative

Immunobiology (IADCI). 8-10 February 2017, Viterbo, Italy. Conference proceedings published on Invertebrate survival journal 14. 2017.

Sensitizing radio-resistant cancer cells to ionizing radiation through miRNA-based treatments. Piotto C., **Biscontin A.**, Mognato M. XVII Convegno SIRR, Società Italiana per le Ricerche sulle Radiazioni. 25-27 September 2016, Trento, Italy. Oral communication by Mognato M.

Diurnal preference, subjective sleepiness and the response to morning light in relation to polymorphisms in the human clock gene period3. Turco M., **Biscontin A.**, Corrias M., Caccin L., Bano M., Chiaromanni F., Salamanca M., Mazzotta M.G., De Pitta' C., Middleton B., Skene D. J., Costa R., Montagnese S. 3rd Congress of the European Sleep Research Society. 13-16 September 2016, Bologna, Italy.

Sensitization of human cancer cells to ionizing radiation through microRNAs targeting genes of DNA-double strand break repair. Piotto C., **Biscontin A.**, Mognato M. 42nd Conference of the European Radiation Research Society (ERRS). 4-8 September 2016, Amsterdam, Netherlands.

Biological timing in Antarctic krill: Endogenous clocks and physiological rhythms at the daily and annual scale. Teschke M., Piccolin F., Scholl A., De Pitta' C., Costa R., Kawaguchi S., **Biscontin A.**, Kramer A., Meyer B., Time and Light: Novel concepts and Models in Sensory and Chronobiology symposium. 8-10 May 2016, Vienna, Austria. Oral communication by Teschke M.

454 pyrosequencing and de novo assembly of Antarctic krill (*Euphausia superba*) transcriptome. **Biscontin A.**, Martini P., De Pitta' C., Romualdi C., Teschke M., Frickenhaus S., Harms L., Freier U., Spahic S., Jarman S., Kawagouchi S., Costa R., Meyer B. XIII FISV Congress, Federazione Italiana Scienze della Vita. 24-27 September 2014, Pisa, Italy.

Double effect of a micro RNA over-expression on circadian clock components of *Drosophila melanogaster*. Cusumano P., **Biscontin A.**, Bee L., Cagnin S., Sandrelli F., De Pitta' C., Costa R. XIII Congress of the European Biological Rhythms Society. 18-22 August 2013, Munich, Germany.

Gene expression profiling around the clock in the antarctic krill (*Euphausia superba*) De Pitta' C., **Biscontin A.**, Albiero A., Mazzotta G.M., Bertolucci C., Sales G., Romualdi C., Lanfranchi G., Costa R. SRBR 2012, Society for Research on Biological Rhythms. 19-23 May 2012, Sandestin, Florida.

The dynamic changes of expression signatures in the larval development of *Mytilus galloprovincialis*. **Biscontin A.**, De Pitta' C., Albiero A., Sales G., Moro E., Romualdi C., Lanfranchi G. 3rd Next Generation Sequencing Workshop. 12-14 October 2012, Bari, Italy.

Gene expression profiling around the clock in the antarctic krill (*Euphausia superba*). De Pitta' C., **Biscontin A.**, Albiero A., Mazzotta G.M., Bertolucci C., Sales G., Romualdi C., Lanfranchi G., Costa R. Joint Meeting AGI-SIBV-SIGA, Associazione Genetica Italiana. 19-22 September 2011, Assisi, Italy.