Curriculum Vitae et Studiorum

Personal information

First Name – Surname	Alessio Reggio
Scopus-ID	57207762503
ORCID	0000-0001-5333-7502
E-mail	Alessio.reggio@unicamillus.org
Nationality – Gender – DOB	Italian – Male – 30 June 1988
Languages	Italian, English

Academic Position and Research Experience

Associate professor	October 2024 – present
Employer	Unicamillus – International University of Medical Science
Research Activity	The research activity focused on the characterization of molecular alterations underlining human diseases.
Research scientist	October 2022 – October 2024
Employer	IRBM Science Park S.p.A.,
Research Activity	The research activity focused on the development, miniaturization and validation of high-throughput platforms for screening large libraries of small molecules and peptides for several disease indications.
Postdoctoral position	January 2022 – September 2022
Employer	University of Rome "Tor Vergata", Italy – Rome – PI: Dr. Cesare Gargioli
Research Activity	The project aimed at testing novel therapeutics to halt disease progression in muscular dystrophies
Postdoctoral position	November 2019 – December 2021
Employer	Telethon Institute of Genetics and Medicine, Italy – Pozzuoli (NA) – PI: Dr. Paolo Grumati
Research Activity	The project aimed at characterizing the role of ER-phagy in healthy and pathological contexts
Postdoctoral position	April 2019 – October 2019 (Assegno di ricerca)
Employer	University of Rome "Tor Vergata", Italy – Rome – PI: Prof. Gianni Cesareni
Research Activity	The research project focused on the understanding the role of the canonical β-catenin signaling in controlling the differentiation of Fibro/Adipogenic Progenitors
PhD in Cell and Molecular Biology	November 2015 – April 2019
Employer	University of Rome "Tor Vergata", Italy – Rome – PI: Prof. Gianni Cesareni
Research Activity	The project focused on the characterization of new therapeutic approaches, drug- and diet-based, to mitigate the severity of DMD

Education and Training

PhD Program in Cell and Molecular Biology	November 2015 – April 2019
Institution	University of Rome "Tor Vergata", Italy – Rome
Master of Science in Cell and Molecular Biology	October 2013 – October 2015
Graduation grade	110/110 with honors
Institution	University of Rome "Tor Vergata", Italy – Rome
Bachelor of Science in Biological Sciences	October 2008 – May 2013
Institution	University of Rome "Tor Vergata", Italy – Rome

Project coordinator/Principal investigator

Year 2022	WNTtoWIN: Pharmacological reconstitution of the WNT5A/β-catenin axis to counteract fibroadipogenic degeneration in Duchenne Muscular Dystrophy. AFM- Téléthon, grant n°#23551 – budget 25,500.00

Institution	University of Rome "Tor Vergata", Italy – Rome
Year 2021	Learning to control the Janus-faced nature of autophagy in embryonal rhabdomyosarcoma – Umberto Veronesi Foundation; budget: 30,000.00
Institution	Telethon Institute of Genetics and Medicine, Italy – Pozzuli (NA)
Year 2020	Dissecting the role of core autophagy genes in controlling rhabdomyosarcoma proliferation and survival – Umberto Veronesi Foundation; budget: 30,000.00
Institution	Telethon Institute of Genetics and Medicine, Italy – Pozzuli (NA)
September 2018 – to – October 2019	Project coordinator for the project "Annotazione nella banca dati MINT di interazioni che regolano la rigenerazione muscolare"
Institution	University of Rome "Tor Vergata", Italy – Rome

Chair and organizer of national/international conferences or workshop

February 2018 - University of Rome Tor Vergata.	**Organizer and chair** of the PhD workshop "Let's talk about DNA metabolism, cell division and…how to stay happy and focused in science!".
Institution	University of Rome "Tor Vergata", Italy – Rome

Achievements

Abilitazione Scientifica Nazionale	February 2023 to February 2034 05/H2 – ISTOLOGIA
State degree for the practice of biologist profession	January 2018
Institution	University of Rome "Tor Vergata", Italy – Rome
Federation of European Laboratory Animal Science Associations (FELASA)	November 2017
License number	F023/09
Institution	Santa Lucia Foundation – Rome
License for "Accesso all'utilizzo delle strutture di servizio alla sperimentazione animale"	January 2015
Institution	University of Rome "Tor Vergata", Italy – Rome

Honors

Journal cover – 2023	Journal cover in **Disease Models and Mechanisms**, issue June 2023 – Link: https://journals.biologists.com/dmm/article/16/6/dmm049915/318463/A-3D-adipogenesis-platform-to-study-the-fate-of
Award – 2023	"Contributi premiali per i ricercatori e assegnisti di ricerca per rafforzarne la condizione professionale e potenziare il sistema della ricerca del Lazio"
Post-doctoral Fellowship - 2022	January 2022
Awarding body	**AFM-Téléthon; Grant n°#23551**
Title of the project	Pharmacological reconstitution of the WNT5A/β-catenin axis to counteract fibroadipogenic degeneration in Duchenne Muscular Dystrophy
Post-doctoral Fellowship - 2021	January 2021
Awarding body	**Umberto Veronesi Foundation**
Title of the project	Learning to control the Janus-faced nature of autophagy in embryonal rhabdomyosarcoma
Post-doctoral Fellowship - 2020	January 2020
Awarding body	**Umberto Veronesi Foundation**
Title of the project	Dissecting the role of core autophagy genes in controlling rhabdomyosarcoma proliferation and survival

Academic activities

From 2020 – to present	Supervisor of two young postdocs
Institution	Telethon Institute of Genetics and Medicine
Academic year 2018/2019	**Supervisor (correlator)** – Master degree in Cell and molecular Biology; Chiara d'Ercole.

	Thesis title: Effetti dell'inibitore della chinasi GSK-3β sul differenziamento adipogenico e miogenico.
Institution	University of Rome "Tor Vergata", Italy – Rome
Academic year 2018/2019	**Supervisor (correlator)** – Bachelor degree in Biological Sciences; Emanule Salvi. Thesis title: Valutazione dell'azione anti-adipogenica dell'Azatioprina sui FAPs e sui pre-adipociti 3T3-L1, mediante saggio di colorazione "Oil Red O" e analisi di Western Blot.
Institution	University of Rome "Tor Vergata", Italy – Rome
Year 2018	**Teaching assistant** (tutoraggio) **for the activities related to BIO/13**
Institution	University of Rome "Tor Vergata", Italy – Rome
Year 2017	**Teaching assistant** (tutoraggio) **for the activities related to BIO/13**
Institution	University of Rome "Tor Vergata", Italy – Rome
Academic year 2017/2018	**Supervisor (correlator)** - Master degree in Cell and molecular Biology; Giorgia Massacci. Thesis title: Impatto di una dieta ad alto contenuto di grassi sulla patologia distrofica in topi mdx, modello murino della Distrofia Muscolare di Duchenne.
Institution	University of Rome "Tor Vergata", Italy – Rome
Academic year 2016/2017	**Supervisor (correlator)** - Master degree in Cell and molecular Biology; Giuliano Maiolatesi. Thesis title: L'inibizione di GSK3β blocca il differenziamento adipogenico nei progenitori fibro/adipogenici (FAPs)
Institution	University of Rome "Tor Vergata", Italy – Rome

Recent Conferences

June 2021	Talk at the Virtual Keystone Symposia: "Targeted protein degradation: from small molecules to complex organelles". Presentation title – Role of FAM134 family members in endoplasmic reticulum remodeling, ER-phagy and collagen quality control.
October 2019	Talk at the Inter-university institute of Myology (IIM) meeting in Assisi: "Pathogenesis and therapies of neuromuscular diseases". Presentation title – Adipogenesis of skeletal muscle Fibro/Adipogenic Progenitors is controlled by the Wnt5a/GSK3/β-catenin axis.
October 2018	Talk at the IIM meeting in Assisi: "Pathogenesis and therapies of neuromuscular diseases". Presentation title - High-fat diet ameliorates key pathological features of a dystrophic mouse model.
April 2018	Poster session at the Max Delbrück center for molecular medicine in Berlin: "Muscle Development Regeneration and Disease". Poster title – A high-fat rich dietary regimen reverts "the dystrophic metabolic signature" of fibro/adipogenic progenitors (FAPs) and muscle satellite cells (MuSCs).
June 2017	Poster session at 63° Convegno GEI – Gruppo Embriologico Italiano. Poster Title – High content screening identifies azathioprine as a negative modulator of the intrinsic adipogenic potential of muscle Fibro/Adipogenic Progenitors. Disrupting muscle cell differentiation trajectories by small molecules.
May 2017	Poster session at the EMBO meeting in Heidelberg: "Advanced in stem cells and regenerative medicine". Poster title – High content screening identifies azathioprine as a negative modulator of the intrinsic adipogenic potential of muscle Fibro/Adipogenic Progenitors. Disrupting muscle cell differentiation trajectories by small molecules.

Membership

March 2024 – present	Ad hoc reviewer for AFM-Téléthon post-doctoral fellowship
March 2024 – present	Review Editor for the journal "Frontiers in Molecular Biosciences" – section: molecular diagnostics and therapeutics
June 2023 – present	Ad hoc reviewer for Duchenne Muscular Dystrophy UK
September 2022 – present	Review Editor for the journal "Frontiers in Physiology" – section: striated muscle biology
July 2021 – present	Member of "Società italiana di biochimica e biologia molecolare (SIB)"
January 2020 – present	Ad hoc reviewer for Nature communication journal

Technical skills

- Fully independent in writing and reviewing complex grant applications as well as preparation of scientific manuscript for high impact journals
- Development of high-content screening platform for in vitro and cell-based analyses
- Animal handling
- Planning of pre-clinical studies for muscle-related disorders using rodent models
- Isolation of primary cells from murine and human specimens
- Culture and maintenance of primary and continuous cell lines
- Wide range of biochemistry techniques
- Wide range of histological techniques
- Proteomics, transcriptomics and single cell mass cytometry sample preparations and data analysis

Current activities

Research activity is focused on the characterization of pathogenic signaling pathways underlining skeletal muscle disease, especially muscular dystrophies. Moreover, research activity focuses on the concretization of early stages of the drug discovery process by optimizing, developing and validating novel platforms for screening large chemical libraries, including small molecules and peptides. Such research contribution enabled the success of several programs engaged with internal units and external partners such as pharmaceutical companies, biotechs as well as research institutes and non-profit foundations. In this context, the research activity focused in the generation, miniaturization and validation of novel and highly sensitive systems, including biochemical HTS (i.e. enzymatic and protein-protein interactions) and Cell-based HTS (i.e. target/phenotype detection, reported-based assay, viability/proliferation).

8-year track record

The main scientific achievements contributed to characterize molecular alterations that are responsible for human diseases, especially in the field of muscular dystrophies.

- I have identified two novel ER-phagy receptors (i.e., FAM134A and FAM134C) that in concert to FAM134B govern ER turnover, ER shape and collagen homeostasis within cells.
- I have elucidated that the pharmacological inhibition of GSK3 efficiently limits intramuscular fatty infiltrates, opening a new therapeutic opportunity to mitigate intramuscular infiltrations of ectopic adipose tissue in Duchenne Muscular Dystrophy.
- In collaboration with the prestigious group of Matthias Mann, I have contributed to demonstrate that GSK3 blockage is a valuable strategy to stimulate insulin production and secretion in pancreatic islets of diabetic rodents.
- I have profiled the first proteome of FAPs extracted from healthy and dystrophic mouse muscles. Such approach led me to define a dystrophic metabolic signature that specifically characterize dystrophic FAPs whose metabolic demands mainly rely on glycolysis than oxidative phosphorylation. Using a nutritional diet-based approach, I have demonstrated that favoring lipid mobilization in dystrophic mice restores mitochondrial functionalities of FAPs, thus ameliorating the *mdx* dystrophic phenotype. The β-catenin-follistatin axis mainly accounts in mediating such ameliorations.

All the scientific achievements above reported are corroborated by scientific publications in international peer reviewed journals.

Publications

1 Vitaliti A, **Reggio A**, Colletti M, Galardi A, Palma A. Integration of single-cell datasets depicts profiles of macrophages and fibro/adipogenic progenitors in dystrophic muscle. *Exp Cell Res* 2024; **442**: 114197. (**Co-First authored publication**)

2 De Paolis F, Testa S, Guarnaccia G, Reggio A, Fornetti E, Cicciarelli F *et al.* Long-term longitudinal study on swine VML model. *Biol Direct* 2023; **18**: 42.

3 **Reggio A**, De Paolis F, Bousselmi S, Cicciarelli F, Bernardini S, Rainer A *et al.* Development of a platform of 3D adipogenesis to model, at higher scale, the impact of LY2090314 compound on fibro/adipogenic progenitor adipogenic drift. *Dis Model Mech* 2023. doi:10.1242/dmm.049915.

4 Di Lorenzo G, Iavarone F, Maddaluno M, Plata-Gómez AB, Aureli S, Quezada Meza CP *et al.* Phosphorylation of FAM134C by CK2 controls starvation-induced ER-phagy. *Sci Adv* 2022; **8**: eabo1215.

5 Chipurupalli S, Ganesan R, Martini G, Mele L, Reggio A, Esposito M *et al.* Cancer cells adapt FAM134B/BiP mediated ER-phagy to survive hypoxic stress. *Cell Death Dis* 2022; **13**: 357.

6 Cable J, Weber-Ban E, Clausen T, Walters KJ, Sharon M, Finley DJ *et al.* Targeted protein degradation: from small molecules to complex organelles—a Keystone Symposia report. *Ann N Y Acad Sci* 2022; **1510**: 79–99.

7 **Reggio A**, Buonomo V, Berkane R, Bhaskara RM, Tellechea M, Peluso I *et al.* Role of FAM134 paralogues in endoplasmic reticulum remodeling, ER-phagy, and Collagen quality control. *EMBO Rep* 2021; : 1–20.

8 Giuliani G, Rosina M, **Reggio A**. Signaling pathways regulating the fate of fibro/adipogenic progenitors (FAPs) in skeletal muscle regeneration and disease. *FEBS J* 2021; **1**: febs.16080.

9 Giuliani G, Vumbaca S, Fuoco C, Gargioli C, Giorda E, Massacci G *et al.* SCA-1 micro-heterogeneity in the fate decision of dystrophic fibro/adipogenic progenitors. *Cell Death Dis* 2020; : 1–24.

10 **Reggio A**, Buonomo V, Grumati P. Eating the unknown: Xenophagy and ER-phagy are cytoprotective defenses against pathogens. *Exp Cell Res* 2020; **396**: 112276.

11 Petrilli LL, Spada F, Palma A, Reggio A, Rosina M, Gargioli C *et al.* High-Dimensional Single-Cell Quantitative Profiling of Skeletal Muscle Cell Population Dynamics during Regeneration. *Cells* 2020; **9**. doi:10.3390/cells9071723.

12 **Reggio A**, Rosina M, Palma A, Cerquone Perpetuini A, Petrilli LL, Gargioli C *et al.* Adipogenesis of skeletal muscle fibro/adipogenic progenitors is affected by the WNT5a/GSK3/β-catenin axis. *Cell Death Differ* 2020; **27**: 2921–2941.

13 Cerquone Perpetuini A, Giuliani G, Reggio A, Cerretani M, Santoriello M, Stefanelli R *et al.* Janus effect of glucocorticoids on differentiation of muscle fibro/adipogenic progenitors. *Sci Rep* 2020; **10**: 5363.

14 **Reggio A**, Rosina M, Krahmer N, Palma A, Petrilli LL, Maiolatesi G *et al.* Metabolic reprogramming of fibro/adipogenic progenitors facilitates muscle regeneration. *Life Sci Alliance* 2020; **3**: e202000646.

15 Palma A, Perpetuini AC, Ferrentino F, Fuoco C, Gargioli C, Giuliani G *et al.* Myo-REG: A portal for signaling interactions in muscle regeneration. *Front Physiol* 2019. doi:10.3389/fphys.2019.01216.

16 Marinkovic M, Fuoco C, Sacco F, Cerquone Perpetuini A, Giuliani G, Micarelli E *et al.* Fibro-adipogenic progenitors of dystrophic mice are insensitive to NOTCH regulation of adipogenesis. *Life Sci Alliance* 2019; **2**: e201900437.

17 Sacco F, Seelig A, Humphrey SJ, Krahmer N, Volta F, Reggio A *et al.* Phosphoproteomics Reveals the GSK3-PDX1 Axis as a Key Pathogenic Signaling Node in Diabetic Islets. *Cell Metab* 2019; **29**: 1422-1432.e3.

18 Rosina M, Langone F, Giuliani G, Perpetuini AC, Reggio A, Calderone A *et al.* Osteogenic differentiation of skeletal muscle progenitor cells is activated by the DNA damage response. *Sci Rep* 2019; **9**: 5447.

19 **Reggio A**, Spada F, Rosina M, Massacci G, Zuccotti A, Fuoco C *et al.* The immunosuppressant drug azathioprine restrains adipogenesis of muscle Fibro/Adipogenic Progenitors from dystrophic mice by affecting AKT signaling. *Sci Rep* 2019; **9**: 1–23.

I authorize the processing of my personal data present in the CV in accordance with Legislative Decree 30 June 2003, n. 196 "Code regarding the protection of personal data" and art. 13 of the GDPR (EU Regulation 2016/679).

Rome
29/08/2024

Tutto il contenuto di informazioni dichiarato nel presente curriculum vitae corrisponde a verità, ai sensi degli articoli 46 e 47 del D.P.R. 445 del 2000.