PANAGIOTIS CHANDRIS

Assistant Professor of Biochemistry
Department of Molecular Biology and Genetics
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Education

Ph.D.	Cell biology and biochemistry, University of Crete, Greece Thesis Title: "*Structural and biochemical changes in the nucleus of human diploid fibroblasts during the process of replicative senescence*"	December 2010
M.S.	courses and research training Cell and Molecular Biology at the Institute of Biology, NCSR Demokritos (Athens).	2002 – 2003
Ptychio	(MS equivalent) *Agricultural University of Athens, Greece Department of Agricultural Biology and Biotechnology. Diploma thesis: "Probabilistic models for survival curves of soil microbial populations following antibiotic treatment"*	1994

Current position: Assistant Professor of Biochemistry MBG, DUTH — Feb 2025 – present

Research Experience (reverse chronological order)

- Senior research associate BSRC Al. Fleming — November 2024 – Jan 2025
- Postdoctoral associate Hellenic Pasteur Institute — 1/22-October 2024
- Visiting Scientist (Invited-Whitman Associate), MBL Woods Hole, Advanced Imaging Lab — 10/2021 – 12/21
- Research Associate BSRC Al. Fleming — 10/2019 – 12/21
- Visiting Scientist (Invited), Albert Einstein University (NY), — 2018-2019
- Research Fellow (Employee) NIBIB, NIH — 2015-2019
- Postdoctoral fellow (Visiting Fellow) NIBIB, NIH — 2014-2015
- Postdoctoral fellow (Visiting Fellow) NIDDK, NIH — 2011-2013

Pre-doc:

- Research scientist (Pre-doc): NHLBI, NIH (Bethesda) — 2/2010-12/2010
- Pre-doc fellow and Research associate (postgrad):DEMOKRITOS (Biology) & BSRC Al. Fleming — 1998-2010

Fellowships*:*

National Institutes of Health postdoctoral fellowship (VF) — 2011–2015
NCSR Demokritos, Pre-doctoral fellowship.
EMBO Short-term (4 months) pre-doctoral fellowship: study of mitosis by real-time microscopy in human diploid fibroblasts (The Gurdon Institute, Cambridge UK). — 2002

Honors and Awards

NIH FARE award (Fellows Award for Research Excellence) — 2016

Research Interests:

- "Omics" approaches for the study of metabolism (metabolomics, proteomics, lipidomics)
- Mitochondrial-nuclear communication and metabolic rewiring
- Sphingolipid metabolism and its effect on endoplasmic reticulum and mitochondrial physiology
- RNA dynamics and local translation. Single molecule imaging (RNA/protein)
- Development of genetically encoded fluorescent reporters to monitor metabolic / enzymatic activity and protein-protein interactions by using cutting-edge microscopy and flow cytometry.

Research skills:

Live cell imaging and next generation fluorescence microscopy:

- Wide field, Confocal and TIRF microscopy in live cell imaging. Use of fluorescent proteins to study dynamics of intracellular organelles with the employment of approaches such as Photoactivation, Photoconversion, Recovery and Loss of Fluorescence upon Photobleaching (FRAP, FLIP). Bimolecular interaction approaches – Bimolecular fluorescence complementation (BiFC), dimerization dependent fluorescent proteins (ddFPs), FRET, FLIM, Fluorescence Anisotropy.
- Single molecule RNA imaging. Orthogonal labeling strategies. Single particle tracking.
- Super resolution microscopy (PALM/dSTORM, Structured Illumination Microscopy, STED).
- Selective plane illumination microscopy (SPIM).
- Two-photon microscopy.

Multiparametric Flow Cytometry.
Biochemistry: Subcellular fractionation, protein purification and chromatography.

Teaching activity (Graduate course lectures/thematic series):

- Aspects of Metabolism: Graduate program in translational medicine Democritus University of Thrace, Department of Molecular Biology and Genetics (2023-present)
- Imaging metabolism in real time: Graduate program in translational medicine Democritus University of Thrace, Department of Molecular Biology and Genetics (2023-present)
- "RNA dynamics and metabolism" at the Biology Department of National and Kapodistrian University of Athens (2020-2022)
- "Intracellular and systemic compartmentalization of metabolism" at the Biology Department of National and Kapodistrian University of Athens (2020-2022)
- "Intracellular and systemic compartmentalization of metabolism" at the School of Health Science and Education of Harokopio University of Athens (2022-2023).
- "From single molecule to intravital imaging" BSRC Alexander Fleming/Medical School of Athens joint graduate program (2022-2024).

Attended conferences (most recent only)

- EMBO Workshop: *Cell biology of the nervous system: Long-term resilience and vulnerability* (Crete, May 8-11, 2023) "Mechanisms of αSynuclein-mediated coordination of RNA metabolism" (poster presentation). ***Chandris P***., Segklia P., Samiotaki M., Antoniou N., Panayotou G., Matsas R., Taoufik E.
- Virtual conference "*Advanced Functional Imaging"*, September 13th 2021. **Invited speaker.** Title talk: *"Metabolism under the microscope lens. More than meets the eye".*
- National Conference of the Hellenic Society of Biochemistry and Molecular Biology (Nov 29 – Dec 1st 2019) ***Oral presentation:*** "Unravelling the role of nitrogen source in intracellular mitochondrial compartmentalization".

Chandris P., Giannouli CC., English B., Loncarek J., Kong D., Ohja N., Patterson G., Bleck C., Samiotaki M. Stamatakis G., Panayotou G., Shroff H.

- *The Mitochondrial Biogenesis and Dynamics in Health and Disease Conference* (FASEB) (May 19-24, 2019, Palm Springs CA, USA). ***Oral presentation:*** "Intracellular compartmentalization of mitochondrial population driven by glutamine availability" ***Chandris P.,*** Giannouli CC., English B., Loncarek J., Kong D., Ohja N., Patterson G., Bleck C., Panayotou G., Shroff H.
- Nutrient Signaling October 25 - 28, 2018 Cold Spring Harbor, NY. "Differential translational activity of mitochondrial subpopulations, driven by TCA cycle anaplerosis" (poster presentation) ***Chandris P.,*** Giannouli CC., English B., Chen J. Loncarek J., Kong D., Ohja N., Patterson G., Bleck C., Singer RH., Panayotou G., Shroff H.

PUBLICATIONS

Book chapters:

- Samiotaki M., Panayotou G., ***Chandris P*.*** "Detection of phosphatase interacting partners by mass spectrometry". *Invited chapter in "Protein Tyrosine Phosphatases: Methods and Protocols" in* **Methods in Molecular Biology (Springer Ed.)** (2024) *2024:2743:165-180. doi: 10.1007/978-1-0716-3569-8_11. (*Corresponding author).*

Papers (reverse chronological order):

Published/submitted

1) ***Chandris P****.*, Giannouli CC., Coleman RA., Gupta S., Dunn T., Malide D., Proia RL., Singer R., Wymann MP.,* Samiotaki M. Stamatakis G., Panayotou G.,*Shroff H. "Endoplasmic reticulum protein homeostasis drives nanoclustering of SPT-ORMDL holocomplex for the tight control of de novo sphingolipid synthesis" (submitted). (* Corresponding author).*
2) Kenworthy C., Liou SH, ***Chandris P.***, Wong V., Dziuba P., Liu Wei-Li, Lavis LD, Singer RH, and Coleman RA. "Bromodomains regulate dynamic targeting of the PBAF chromatin-remodeling complex to chromatin hubs" *(**Biophysical Journal**, 2022 May 3; 121(9):1738-1752). (Also: bioRxiv 111674; doi: https://doi.org/10.1101/111674).*
3) ***Chandris P.****, Giannouli CC. Panayotou G. "Imaging approaches for the study of metabolism in real time using genetically encoded reporters" ***Front Cell Dev Biol. 2022 Jan 18;9:725114. doi: 10.3389/fcell.2021.725114. eCollection 2021*** (**Corresponding author*).
4) Guo M., ***Chandris P.***, Giannini JP, Trexler AJ, Fischer R., Chen J., Vishwasrao H., Rey-Suarez I., Wu Y., Waterman C., Patterson GH, Upadhyaya A., Taraska J., Shroff H. "Single shot super-resolved total internal reflection fluorescence microscopy" ***Nature Methods****. 2018 Jun;15(6):425-428 [Epub ahead of print]*
5) Wu Y., Kumar A., Smith C., Ardiel E., ***Chandris P.***, Christensen R., Rey-Suarez I., Guo M., Vishwasrao HD., Chen J., Tang J., Upadhyaya A., La Riviere PJ., Shroff H. "Reflective imaging improves resolution, speed, and collection efficiency in light sheet microscopy" ***Nature Communications****. 2017 Nov 13;8(1):1452.*
6) Wu Y., ***Chandris P.***, Winter P., Edward Kim E., Jaumouille V., Kumar A., Guo M., Leung JM, Smith C., Rey IS, Upadhyaya A., Liu H, Waterman C., Ramamurthi K., LaRiviere P, Shroff H. "Simultaneous multi-view capture and fusion improves spatial resolution in wide-field and light-sheet microscopy" ***Optica****,* 2016 Aug 20;3(8):897-910.

7) Kumar A., Christensen R, Guo M., ***Chandris P.***, Duncan W., Wu Y., Santella A., Moyle M., Winter P., Colón-Ramos D., Bao Z., Shroff H. "Improving Contrast and Optical Sectioning in Dual-View Light-Sheet Microscopy" ***MBL Biological Bulletin***, Special Issue (invited submission), 2016 Aug;231(1):26-39.

8) Winter PW, ***Chandris P.***, Fischer RS, Wu Y, Waterman CM, Shroff H "Incoherent structured illumination improves optical sectioning and contrast in multiphoton super-resolution microscopy" ***Optics Expres****,* 2015 Feb 23; 23(4): 5327-34.

9) Gupta SD, Gable K, Alexaki K, ***Chandris P.***, Proia RL. Dunn TM and Harmon JM "Expression of the ORMDLS, modulators of Serine Palmitoyltransferase, is regulated by sphingolipids in mammalian cells" ***J Biol Chem.*** 2015 Jan 2; 290(1): 90-8.

10) Kumar A, Wu Y, Christensen R, ***Chandris P.***, Gandler W, McCreedy E, Bokinsky A, Colón-Ramos D, Bao Z, McAuliffe M, Rondeau G, Shroff H. "Dual-view plane illumination microscopy for rapid and spatially isotropic imaging". ***Nature Protocols****. 2014 Nov; 9(11): 2555-73.*

11) Giannouli CC*., ***Chandris P*.***, Proia RL. "In vivo imaging of S1P directed cell movement", ***Review BBA***, 2014 May; 1841(5): 738-44. (***** *Equal contribution*).

12) Olszewski MB, ***Chandris P.***, Eisenberg E., Greene LE. "Disruption of clathrin-mediated trafficking causes centrosome overduplication and senescence". ***Traffic***, 2014 Jan; 15(1): 60-77

13) York A., ***Chandris P.***, Nogare DD., Head J., Wawrzusin P., Fischer RS, Chitnis A., Shroff H. "Instant super-resolution imaging in live cells and embryos via analog image processing". ***Nature Methods***, 2013 Nov; 10(11): 1122-6.

14) ***Chandris P.***, Giannouli CC, Panayotou G, Kletsas D. "Compromise in mRNA processing machinery in senescent human fibroblasts: implications for a novel potential role of phospho-ATR (ser428)" ***Biogerontology***. 2010 Aug; 11(4): 421-36.

As a research assistant prior to graduate studies, (surname spelling prior to application of the EU international spelling system):

15) Alexandratou E, Yova D, ***Handris P.***, Kletsas D, Loukas S. "Human fibroblast alterations induced by low power laser irradiation at the single cell level using confocal microscopy". ***Photochem. Photobiol Sci.*** 2002 Aug; 1(8): 547-52.

16) Kletsas D, Pratsinis H, Zervolea I, ***Handris P.***, Sevaslidou E, Ottaviani E, Stathakos D. "Fibroblast responses to exogenous and autocrine growth factors relevant to tissue repair. The effect of aging". ***Ann N Y Acad Sci****.* 2000 Jun; 908:155-66.