

## ΒΙΟΓΡΑΦΙΚΟ ΣΗΜΕΙΩΜΑ

Δεκέμβριος 2024

### ΧΡΗΣΤΟΣ Δ. ΓΕΩΡΓΙΟΥ

Ομότιμος Καθηγητής Βιοχημείας

Τομέας Γενετικής, Κυτταρικής και Αναπτυξιακής Βιολογίας

Τμήμα Βιολογίας

Πανεπιστήμιο Πατρών

Τηλ.(γραφ/εργαστ): 0030-2610-997227/-996770

Φαξ: 0030-2610-969278

E-mail: c.georgiou@upatras.gr

URL-GR: <http://www.biology.upatras.gr/personel/georgiou/>



### Πανεπιστημιακές σπουδές

1. Πτυχίο Φυσιογνωστικού Τμήματος, *Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης* (1969-1974).
2. Μάστερ στη Βιοχημεία, *Roosevelt University*, ΗΠΑ (1976-1979). Βαθμός πτυχίου άριστα με Τιμητική διάκριση (Honors).
3. Διδακτορικό στη Βιοχημεία-Βιολογία, *Illinois Institute of Technology*, ΗΠΑ (1980-1985). Βαθμός πτυχίου 3,95/4,00.
4. Μεταδιδακτορικές σπουδές στη Βιοχημεία-Μοριακή Βιολογία, Τμήμα Βιοχημείας, *University of Illinois at Urbana-Champaign*, ΗΠΑ (τριετείς, 1985-87).

### Ακαδημαϊκές θέσεις

1. Ομότιμος Καθηγητής Βιοχημείας στο Τμήμα Βιολογίας της Σχολής Θετικών Επιστημών του Πανεπιστημίου Πατρών (Απόφαση Συγκλήτου 143/28-11-2018).
2. Καθηγητής Βιοχημείας στο Τμήμα Βιολογίας της Σχολής Θετικών Επιστημών του Πανεπιστημίου Πατρών (από 18-06-2008 έως 31-08-2018).
3. Αναπληρωτής Καθηγητής Βιοχημείας στο Τμήμα Βιολογίας της Σχολής Θετικών Επιστημών του Πανεπιστημίου Πατρών (από 24-09-2002).
4. Επίκουρος Καθηγητής Βιοχημείας στο Τμήμα Βιολογίας της Σχολής Θετικών Επιστημών του Πανεπιστημίου Πατρών (από 10-1991).

5. Επίκουρος Καθηγητής Βιοχημείας στο Τμήμα Βιολογίας του Αριστοτέλειου Πανεπιστημίου Θεσσαλονίκης (20-03-1989).
6. Κάτοχος της ειδικότητας Κλινικής Χημείας και άδειας επαγγέλματος Κλινικού Χημικού, με απόφαση του Κεντρικού Συμβουλίου Υγείας του Υπουργείου Υγείας-Πρόνοιας (07-06-1988).
7. ARC-Associate, NASA Ames Research Center, Space Science and Astrobiology Division, SST, Moffett Field, CA, USA (christos.georgiou@nasa.gov).
8. Associate, Search for Extraterrestrial Intelligence Institute, Mountain View, California, USA.

### **Ερευνητικές δραστηριότητες**

Καλύπτουν την περιοχή της Βιοχημείας του Οξειδωτικού Στρες, και της Αστροβιολογίας. Επικεντρώνεται στα ακόλουθα επιμέρους ερευνητικά πεδία:

1. Βιοχημεία του οξειδωτικού στρες στους οργανισμούς και σχέση του με τη διαφοροποίηση και, γενικότερα, με φυσιολογικές και παθολογικές καταστάσεις βιολογικού και ιατρικού ενδιαφέροντος. Ανάπτυξη αναλυτικών βιοχημικών μεθόδων για την *in vivo/vitro* μέτρηση διαφόρων παραμέτρων του οξειδωτικού στρες και άλλων σχετιζόμενων βιολογικών παραμέτρων. Επίδραση των ηλεκτρομαγνητικών ακτινοβολιών υπερχαμηλών συχνοτήτων (50 Hz) στο οξειδωτικό στρες των οργανισμών, με προέκταση σε αυτές της κινητής τηλεφωνίας.

Η έρευνα στη βιοχημεία του οξειδωτικού στρες (ΟΣ) είναι επίσης μεταφραστική στην ιατρική, με την ανάπτυξη συγκεκριμένων αναλυτικών μεθόδων για τη μέτρηση βασικών παραμέτρων του ΟΣ, και με ενδεικτικές τις ακόλουθες εφαρμογές: ανάπτυξη δεικτών ox-LDL για την εκτίμηση του κινδύνου εμφάνισης ασθενειών που σχετίζεται με την αθηροσκλήρωση, εκτίμηση της ολικής αντιοξειδωτικής κατάστασης τροφίμων/ποτών για τη διατροφική αξιολόγησή τους, μέτρηση ελεύθερων ριζών οξυγόνου και οξειδωτικών τροποποιήσεων λιπιδίων, πρωτεϊνών και καταστροφής του DNA για την εκτίμηση της τοξικότητας φαρμάκων, πρόληψη ή θεραπεία μιας ή περισσότερων μετεγχειρητικών επιπλοκών από ορθοπαιδική ή αγγειακή χειρουργική επέμβαση, ή για χρήση στην πρόληψη ή θεραπεία του συνδρόμου διαμερίσματος, του συνδρόμου καταπλάκωσης, του πολλαπλού τραύματος ή/και των επιπλοκών του, κ.α.

2. Αστροβιολογία: Προέλευση και εύρεση ζωής σε άλλους πλανήτες. Ταυτοποίηση οξειδωτών ανασταλτικών μικροβιακής ζωής και επαγωγών οξειδωτικού στρες στη Γη και σε άλλους πλανήτες (π.χ. στον Άρη), χρησιμοποιώντας μοντέλα ερήμους όπως

Atacama, Mojave, Ανταρκτική κ.α. Η έρευνα γίνεται σε συνεργασία με τον αστρογεωφυσικό Christopher McKay (NASA Ames Research Center, ARC, Space Science and Astrobiology Division, SST, Moffett Field, California, USA), τον αστρογεωχημικό Richard Quinn (NASA ARC, and Search for Extraterrestrial Intelligence Institute, SETI, Mountain View, California, USA), τον γεωμικροβιολόγο Henry Sun (Desert Research Institute, Las Vegas, Nevada, USA), και τον καθηγητή Βιοχημείας David Deamer (Departments of Biomolecular Engineering, and Chemistry and Biochemistry, University of California, at Davis/Santa Cruz).

### Συγγραφικό έργο (144 επιστημονικές δημοσιεύσεις)

Παρατίθενται ανά έτος δημοσίευσης, ανά επιστημονικό αντικείμενο, και σε ξεχωριστή ενότητα οι αναφερόμενες στην Αστροβιολογία και τη Φιλοσοφία στη Βιολογία.

#### I. Επιστημονικά άρθρα σε διεθνή περιοδικά/βιβλία με διεθνείς κριτές

- **Scopus:** Public access site: <https://www.scopus.com/authid/detail.uri?authorId=7005194635>; **Articles with citation data = 129; Citations (since 1985) = 4485; h Index = 39.**
- **Web of Science:** Public access site: <https://www.webofscience.com/wos/author/record/956101>. Researcher ID B-8354-2013; Articles with citation data (since 1987) = **143; Citations = 4345 (citing articles = 3299); h Index = 38; Sum of Times Cited by Patents = 15; Citing Patents = 14. Verified peer reviewer: 179 articles, in 127 journals; verified editor records: 1.**
- **Google Scholar:** Public access site: <http://scholar.google.gr/citations?hl=en&user=HUhpF3YAAAAJ>; **Articles/books with citation data = 158; Citations (since 1988) = 6334; h Index = 46 (i10-index = 100).**
- **ResearchGate:** Public access site: [https://www.researchgate.net/profile/Christos\\_Georgiou5/reputation & /stats](https://www.researchgate.net/profile/Christos_Georgiou5/reputation&/stats). **Research items = 168; Reads = 64879; Recommendations = 109; Followers = 145; RG Score = 41.75 (>97% of RG members); Research Interest Score = 2839 (>97% of RG members); Citations = 5365; h Index = 41.**

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#### A. Δημοσιεύσεις χρονολογικά

1. **Georgiou, C. D.** (1985). Identification and characterization of membrane-bound cytochromes in *Vitreoscilla* (oxidase, peroxidase, respiration). Illinois Institute of

- Technology, ProQuest, UMI Dissertations Publishing No 8517575. Retrieved from <http://search.proquest.com/docview/303390454?accountid=28375>.
2. **Georgiou, C. D.**, Webster D. A. (1987). Identification of *b*, *c*, and *d* cytochromes in the membrane of *Vitreoscilla*. *Archives of Microbiology* 148: 328-333.
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  4. **Georgiou, C. D.**, Fang, H., Gennis, R. B. (1987). Identification of the *cydc* locus required for the expression of the functional form of the cytochrome *d* terminal oxidase complex in *Escherichia coli*. *Journal of Bacteriology* 169: 2107-2112.
  5. **Georgiou, C. D.**, Cokic, P., Carter, K., Webster, D. A., Gennis, R. B. (1988). Relationships between membrane-bound cytochrome *o* from *Vitreoscilla* and that of *Escherichia coli*. *Biochimica et Biophysica Acta* 933: 179-183.
  6. **Georgiou, C. D.**, Dueweke, T. J., Gennis, R. B. (1988). Regulation of expression of the cytochrome *d* terminal oxidase in *Escherichia coli* is transcriptional. *Journal of Bacteriology* 170: 961-966.
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  15. **Georgiou, C. D.** (1997). Lipid peroxidation in *Sclerotium rolfsii*: A new look into the mechanism of sclerotial biogenesis in fungi. *Mycological Research* 101: 460-464.
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**Από το 2018, έτος αφυπηρέτησης/απονομής του τίτλου Ομότιμου Καθηγητή: 29 άρθρα (συμπεριλαμβανόμενων 8 στην Αστροβιολογία· βλέπε στο τέλος της επόμενης ενότητας Δημοσιεύσεις ανά επιστημονικό αντικείμενο)**

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Το σύνολο είναι 144, και περιλαμβάνει 14 άρθρα στην Αστροβιολογία, και 3 άρθρα στη φιλοσοφία της Βιολογίας (παρατίθενται στο τέλος της επόμενης ενότητας *Δημοσιεύσεις ανά επιστημονικό αντικείμενο*).

## B. Δημοσιεύσεις ανά επιστημονικό αντικείμενο

### Biochemistry of bioenergetics (PhD - Post-doc) (13 articles)

1. **Georgiou, C. D.** (1985). Identification and characterization of membrane-bound cytochromes in *Vitreoscilla* (oxidase, peroxidase, respiration). Illinois Institute of Technology, ProQuest, UMI Dissertations Publishing No 8517575. Retrieved from <http://search.proquest.com/docview/303390454?accountid=28375>.
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  11. Hosler, J. P., Ferguson-Miller, S., Calhoun, M. W., Thomas, J. W., Hill, J., Lemieux, L., Ma, J., **Georgiou, C.**, Fetter, J., Shapleigh, J., Tecklenburg, M. M., Babcock, G. T., Gennis, B. R. (1993). Insight into the active-site structure and function of cytochrome oxidase by analysis of site-directed mutants of bacterial cytochrome *aa<sub>3</sub>* and cytochrome *bo*. *Journal of Bioenergetics and Biomembranes* 25: 121-136.
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#### **Biochemistry of plants (6 articles)**

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**Oxidative stress assays for reactive oxygen species (ROS) and antioxidant enzymes, and for ROS-oxidized lipids, proteins, DNA, ROS simulation (24 articles)**

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### **Biochemistry of oxidative stress in medicine (42 articles)**

#### Neurodegenerative diseases

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#### Obstructive jaundice-esophageal varices

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#### Hepatectomy-cholestatic liver-cirrhosis

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#### Bile duct ligation

1. Assimakopoulos, F. S., Vagianos, E. C., Zervoudakis, G., Filos, S. F., **Georgiou, C.**, Nikolopoulou, V., Scopa, D. C. (2004). Gut regulatory peptides bombesin and neurotensin reduce hepatic oxidative stress and histological alterations in bile duct ligated rats. *Regulatory Peptides* 120: 185-193.
2. Assimakopoulos, F. S., Maroulis, I., Patsoukis, N., Scopa, D. C., **Georgiou, C. D.**, Vagianos, E. C. (2007). Effect of antioxidant treatments on the gut-liver axis oxidative status and function in bile duct ligated rats. *World Journal of Surgery* 31: 2023-2032.
3. Grintzalis, K., Papapostolou, I., Assimakopoulos, S. F., Mavrakis, A., Faropoulos, K., Karageorgos, N., **Georgiou, C.**, Chroni, E., Dimitris Konstantinou, D. (2009). Time-related alterations of superoxide radical levels in diverse organs of bile duct-ligated rats. *Free Radical Research* 43: 803-808.

#### Ophthalmology-pseudoexfoliation syndrome

1. Gartaganis, S. P., Georgakopoulos, C. D., Patsoukis, N. E., Gotsis S. S., Gartaganis, V. S., **Georgiou, C. D.** (2005). Glutathione and lipid peroxide changes in pseudoexfoliation syndrome. *Current Eye Research* 30: 647–651.
2. Gartaganis, P. S., Patsoukis, N., Nikolopoulos, K. D., **Georgiou, C. D.** (2007). Evidence for oxidative stress in lens epithelial cells in pseudoexfoliation syndrome. *Eye* 21: 1406-1411.
3. Papadopoulou, G., Zisimopoulos, D., Kalaitzopoulou, E., Makri, O. E., Tsapardoni, F. N., Georgakopoulos, C. D., **Georgiou, C. D.** (2018). Age-related aqueous humor (AH) and lens epithelial cell/capsule protein carbonylation and AH protein concentration in cataract patients who have pseudoexfoliative diseases. *Molecular Vision* 24: 890-901.

#### Hemorrhagic shock

1. Panteli, E. S., Fligou, F., Papamichail, C., Papapostolou, I., Zervoudakis, G., **Georgiou, C. D.**, Filos, K. S. (2011). Quantification of superoxide radical production in 4 vital

organs of rats subjected to hemorrhagic shock. *American Journal of Emergency Medicine* 30: 476-480.

2. Filos, K. S., Panteli, E. S., Fligou, F., Papamichail, C., Papapostolou, I., Zervoudakis, G., Spiliopoulou, I., **Georgiou, C.** (2012). Clonidine pre-treatment prevents hemorrhagic shock-induced endotoxemia and oxidative stress in the gut, liver, and lungs of the rat. *Redox Report* 17: 246-251.

#### Diabetes/obesity

1. Karavassili, F., Valmas, A., Fili, S., **Georgiou, C. D.**, Margiolaki, I. (2017). In quest for improved drugs against diabetes: The added value of X-ray powder diffraction methods. *Biomolecules* 7(3). pii: E63.
2. Kostopoulou, K., Kalaitzopoulou, E., Papadea, P., Skipitari, M., Rojas Gil, A. P., Spiliotis, B. E., **Georgiou, D. C.** (2021). Oxidized lipid-associated protein damage in children and adolescents with type 1 diabetes mellitus: new diagnostic/prognostic clinical markers. *Pediatric Diabetes* DOI: 10.1111/pedi.13271.
3. Kostopoulou, K., Varemменou, A., Kalaitzopoulou, E., Papadea, P., Skipitari, M., Gil, A. P. R., Spiliotis, B. E., Sotirios Fouzas, S., **Georgiou, C. D.** (2024). New clinical markers of oxidized lipid-associated protein damage in children and adolescents with obesity. *Children* 11: 314.

#### Caloric restriction

1. Habeos, G. I., Filippopoulou, F., Habeos, E. E., Kalaitzopoulou, E., Skipitari, M., Papadea, P., Lagoumintzis, G., Niarchos, A., **Georgiou, C. D.**, Dionysios V. Chartoumpakis, D. V. (2022). Maternal calorie restriction during pregnancy induces the transcriptional activation of a cytoprotective response in embryonic liver, at least partially, in an Nrf2-dependent manner. *Antioxidants* 11: 2274.

#### Cancer

1. Alakhras, R. S., Stephanou, G., Demopoulos, N. A., Grintzalis, K., **Georgiou, C. D.**, Nikolaropoulos, S. S. (2014). DNA fragmentation induced by all-*trans* retinoic acid (ATRA) and its steroidal analogue EA-4 in C<sub>2</sub>C<sub>12</sub> mouse and HL-60 human leukemic cells *in vitro*. *Journal of Applied Toxicology* 34: 885-892.

#### **Oxidative stress in electrochemistry, radiation, environment (5 articles)**

1. Papaefthymiou, H. **Georgiou, C. D.** (2007). Indoor radon levels in primary schools of Patras, Greece. *Radiation Protection Dosimetry* 124: 172–176.
2. **Georgiou, C. D.** (2010). Oxidative stress-induced biological damage by low-level EMFs: Mechanism of free radical pair electron spin polarization and biochemical

amplification. *European Journal of Oncology* 5: 63-113 (In: *Non-thermal effects and mechanisms of interaction between electromagnetic fields and living matter*, Giuliani, L., Soffritti, M. Eds, *Ramazzini Institute European J. Oncology Library* 5, ISBN: 978-88-6261-166-4).

3. **Georgiou, C.D.**, Margaritis, L.H. (2021). Oxidative stress and NADPH oxidase: Connecting electromagnetic fields, cation channels and biological effects. *International Journal of Molecular Sciences* 22(18): 10041.
4. **Georgiou, C.D.**, Kalaitzopoulou, E., Skipitari, M., Papadea, P., Varemменou, A., Gavriil, V., Sarantopoulou, E., Kollia, Z., Cefalas, A.-C. (2022). Physical differences between man-made and cosmic microwave electromagnetic radiation and their exposure limits, and radiofrequencies as generators of biotoxic free radicals. *Radiation* 2: 285-302.
5. Svarnas, P., Poupouzas, M., Papalexopoulou, K., Kalaitzopoulou, E., Skipitari, M., Papadea, P., Varemменou, A., Giannakopoulos, E., **Georgiou, C. D.**, Georga, S., Krontiras, C. (2022). Water modification by cold plasma jet with respect to physical and chemical properties. *Applied Sciences* 12: 11950.

**Astrobiology: Alien life and planetary reactive oxygen species:  
detection/methods/instrumentation (14 articles/book chapters/20 meetings)**

1. **Georgiou, C. D.**, Papapostolou, I., Sun, H., McKay, C. P. (2007). Superoxide radical assays and applications in Mars-like Atacama soil. *Journal of Geophysical Research* 112: G04S13.
2. **Georgiou, C. D.**, Deamer, D. W. (2014). Lipids as universal biomarkers of extraterrestrial life. *Astrobiology* 14(6): 541-549.
3. **Georgiou, C. D.**, Sun, H. J., McKay, C. P., Grintzalis, K., Papapostolou, I., Zisimopoulos, D., Panagiotidis, K., Zhang, G., Koutsopoulou, E., Christidis, G. E., Margiolaki, I. (2015). Evidence for photochemical production of reactive oxygen species in desert soils. *Nature Communications* 6: 7100. DOI: 10.1038/ncomms8100.
4. Deamer, D. W., **Georgiou, C. D.** (2015). Hydrothermal conditions and the origin of cellular life. *Astrobiology* 15: 1091-1095.
5. **Georgiou, C. D.**, Zisimopoulos, D., Panagiotidis, K., Grintzalis, K., Papapostolou, I., Quinn, R. C., McKay, C. P., Sun, H. (2016). Martian superoxide and peroxide O<sub>2</sub> release (OR) assay: A new technology for terrestrial and planetary applications. *Astrobiology* 16(2): 126-142 (posted on **NASA Technical Reports Server** - Providing

Access to NASA's Technology, Research, and Science:  
<http://ntrs.nasa.gov/search.jsp?R=20160000582>).

6. **Georgiou, C. D.**, Zisimopoulos, D., Kalaitzopoulou, E., Quinn, R. C. (2017). Radiation driven formation of reactive oxygen species in oxychlorine containing Mars surface analogues. *Astrobiology* 17(4): 319-336.
7. **Georgiou, C. D.** (2018). Functional properties of amino acid side chains as biomarkers of extraterrestrial life. *Astrobiology* 18(11): 1479-1496.
8. **Georgiou, C. D.**, McKay, C., Quinn, R., Kalaitzopoulou, E., Papadea, P., Skipitari, M. (2019). The Oxygen Release Instrument: Space mission reactive oxygen species measurements for habitability characterization, biosignature preservation potential assessment, and evaluation of human health hazards. *Life (Basel)* 9: 70; doi:10.3390/life9030070.q
9. **Georgiou, C. D.** (2019). Intelligent equipment control for space applications in astrogeobiology: Oxidant detection on planetary surfaces. *Системная инженерия и информационные технологии (Systems Engineering and Information Technology)* 1(2): C. 30-32 (ISSN 2658-5014; <http://siit.ugatu.su/index.php/journal/article/view/19>).
10. **Georgiou, C. D.**, Deamer, D. W. (2021). Amphiphilic self-assembly and the origin of life in hydrothermal conditions, Ch 19, 12 p. In *Handbook of Lipid Membranes: Molecular, Functional, and Materials Aspects* (Ed Safinya, C. R., Radler, J.), 1<sup>st</sup> edition, CRT Press, Boca Raton, pp 376, eBook ISBN 9780429194078.
11. **Georgiou, C. D.**, Chatzitheodoridis, E., Kalaitzopoulou, E., Papadea, P., Skipitari, M., Varemменou, A., Thoma, A., Stavrakakis, H. -A., Kapagiannidis, A., Markopoulos, I., Platanou, D., Alexandrou, A., Holynska, M. (2022). Reactive Oxygen Species (ROS) detection in planetary regoliths, soils and ices with the OxR device. *9<sup>th</sup> European Conference for Aeronautics and Space Sciences (EUCASS)*, Lille, France. DOI: 10.13009/EUCASS2022-7283.
12. **Georgiou, C. D.**, McKay, C., Reymond, J. L. (2023). Organic catalytic activity as a method for agnostic life detection. *Astrobiology* 23(10): 1118-1127.
13. Neveu, M., Quinn, R., Barge, L., Craft, K., German, C., Getty, S., Glein, C., Parra, M., Science Organizing Committee. Burton, A., Cary, F., Corpolongo, A., Fifer, L., Gangidine, A., Gentry, D., **Georgiou, C. D.**, Haddadin, Z., Herbold, C., Inaba, A., Jordan, S., Kalucha, H., Klier, P., Knicely, J., Li, A., McNally, P., Millan, M., Naz, N., Raj, C. G., Timm, J., Yang, Z. Workshop Report Contributors. (2024). Future of the search for life: Workshop report. *Astrobiology* 24: 114-129.

14. Chatzitheodoridis, E., **Georgiou, C. D.**, Ferus, M., Kalaitzopoulou, E., Stavrakakis, H. - A., Markopoulos, I., Holynska, M. (2024). Sensing technologies for the challenging Lunar environment. *Advances in Space Research* 74(7): 3407-3436.

*Astrobiology meetings/seminars*

1. **Georgiou C. D.** 2009. Invited speaker of the *Desert Research Institute* (Las Vegas, USA) in March 27: Speech title 'Methodological approaches in the detection of oxidants in Mars and other planets'.
2. **Georgiou C. D.** 2009. Invited by Ames Research Center, Space Science Division (Dr. Christopher P. McKay) to participate as Lecturer/Researcher in the field astrobiology research program 'Spaceward Bound' (<http://quest.nasa.gov/projects/spacewardbound/field.html>), jointly sponsored by NASA Ames Research Center, Desert Research Institute, and California State University, which took place in the Mojave Desert and Death Valley during March 22-27.
3. **Georgiou C. D.** 2012. Seminar at NASA Ames Research Center (Astrobiology Division), titled "Lipids as Biomarkers in the Search for Life", on August 03.
4. **Georgiou C. D.** 2009, 2014. Invitations by Dr Chris McKay (Space Science Division) to NASA Ames Research Center, Astrobiology Division (Moffett Field, Mountain View, CA) for research collaboration, on April 25 1(to August 09) on May 05, 2012 (to August 05) and on March 25, **2014** (to August 6).
5. **Georgiou C. D.** 2015. Invited speaker (topic title "Oxidative Stress: From Biochemistry to Astrogeobiology") in the 66<sup>th</sup> Annual meeting on Biochemistry & Molecular Biology, 1-13 December, Athens, Greece.
6. McKay, C. P., Davila, A., **Georgiou, C. D.**, Sun, H. (2015). Amino acids as evidence for life in the plumes of the outer solar system (abstract ID #3005). Workshop on the Potential for Finding Life in a Europa Plume. Convened by the *Planetary Science Division*, NASA Headquarters, Washington, DC, and co-hosted by *NASA Astrobiology Institute* and *Solar System Exploration Research Virtual Institute* at *NASA Ames Research Center*, Moffett Field, California, on February 18.
7. Sun, H. J., McKay, C. P., **Georgiou C. D.**, Daly, M. (2015). Origin of radiation resistance in terrestrial microorganisms. *Astrobiology Science Conference*, Chicago, Illinois, June 15-19 (abstract ID #7408).
8. **Georgiou C. D.** 2017. Invited speaker (topic title: Intelligent Equipment for Space Applications) in the *Russian – Greek Scientific Workshop*, 17 – 27 July, organized by



the Ufa State Aviation Technical University (Laboratory for Automation and Robotics), Ufa, Russia, and the University of Patras, Patras, Greece.

9. **Georgiou, C. D.** (2020). Biosignatures for the search of extraterrestrial life: on Mars, Europa, and Enceladus. 4th Network of Researchers on Horizontal Gene Transfer and Last Universal Common Ancestor (NoR HGT & LUCA) Conference - Molecules to Microbes, November 4-6, 2018, Eugenides Foundation, Athens, Greece (Jheeta, S. NoR CEL conference report). *Sci* 2: 86; doi: 10.3390/sci2040086.
10. **Georgiou, C. D.** 2021. Planetary reactive oxygen species (ROS): from O<sub>2</sub> harvesting for Mars/Moon space stations, to astronaut health and the search for extraterrestrial life. *1<sup>st</sup> Athens Space & Satellite Industry Summit. Digital Conference*, July 7 & 8, 2021.
11. **Georgiou, C.D.**, Chatzitheodoridis, E. (2022). From reactive oxygen species (ROS) and astrobiology to the production of oxygen from planetary soils, *Singularity Talks: NoRCEL, Board, Astrobiology Society, The University of Manchester*, Live Event March 23, 2022 (<https://www.youtube.com/watch?v=IKRwedjdX1A>).
12. **Georgiou, C.D.**, Chatzitheodoridis, E., Kalaitzopoulou, E., Papadea, P., Skipitari, M., Varemmenou, A., Thoma, A., Stavrakakis, H. -A., Kapagiannidis, A., Markopoulos, I., Platanou, D., Alexandrou, A., Holynska, M. (2022). Reactive oxygen species (ROS) detection in planetary regoliths, soils and ices with the OxR device. Oral presentation EUCASS-9121871, Abstract-ID 7283 (Space Exploration – ISRU) *9<sup>th</sup> European Conference for Aeronautics and Space Sciences, EUCASS-3AF 2022*, 27<sup>th</sup> June to 1<sup>st</sup> July, Lille Grand Palais, France.
13. **Georgiou, C.D.**, Chatzitheodoridis, E., Kalaitzopoulou, E., Papadea, P., Skipitari, M., Varemmenou, A., Thoma, A., Stavrakakis, H. -A., Kapagiannidis, A., Markopoulos, I., Platanou, D., Alexandrou, A.<sup>3</sup>, Holynska, M. (2022). OxR: An instrument to identify reactive oxygen species (ROS) on planetary regoliths, soils and ices. Oral presentation B0.2-0005-22, Abstract-ID 31430 (section: B0.2 Space Resources, presentation B0.2-0005-22). *44<sup>th</sup> COSPAR Scientific Assembly*, Athens, Greece, July 16 to 24, 2022 (<https://cospar-assembly.org/uploads/documents/Finalprogram-2022.pdf>).
14. Chatzitheodoridis, E., **Georgiou, C. D.** (2022). OxR: an instrument for measuring Reactive Oxygen Species in nature, NoRCE ([https://norcel.net/oxr\\_instrument/](https://norcel.net/oxr_instrument/)), Sept 4, 2022.
15. Chatzitheodoridis, E., Jheeta, S., **Georgiou, C. D.**, Markopoulos, I., Holynska, M. (2022). New instruments, methods, and experiments in astrobiology research: Venus and Mars. The 13<sup>th</sup> Moscow Solar System Symposium 13M-S<sup>3</sup> (VN-12, oral), 10-14 October 2022, Space Research Institute, Moscow.

16. **Georgiou, D. C.**, Chatzitheodoridis, E., Kalaitzopoulou, E., Papadea, P., Skipitari, M., Varemменou, A., Thoma, A., Stavrakakis, H. -A., Argyrou, D., Kapagiannidis, A., Markopoulos, I., Alexandrou, A., Holynska, M. (2023). OxR: A novel device for Reactive Oxygen Species (ROS) detection for astrobiology and planetary research (oral presentation by Stavrakakis, H. -A.), Biennial European Astrobiology Conference (BEACON), European Astrobiology Institute (EAI), La Palma Island (Canary Islands, Spain), May, 8 to 12, 2023.
17. **Georgiou, C. D.** invited presentation, titled Organic catalytic activity as a method for agnostic life detection, *Young Researchers' Forum* meeting (June 21, 2023, 10:45-12:00, room Ba030), ESA - European Space Research and Technology Centre (ESTEC), Keplerlaan 1, Postbus 299, 2200 AG Noordwijk, The Netherlands.
18. Chatzitheodoridis, H., Ferus, M., **Georgiou, C. D.**, Holynska, M. (2024). Shooting stars: can their understanding provide insights to spacecraft re-entry atmospheric effects? *Understanding the Atmospheric Effects of Spacecraft Re-entry ESA ESTEC Workshop* (<https://indico.esa.int/event/493/>), Jan 10 – 11, 2024, The Netherlands.
19. **Georgiou C. D.** 2024. Invited interdisciplinary Scientific Seminar in Oxidative Astrobiology at European Space Research and Technology Centre (ESTEC) of European Space Agency (ESA), The Netherlands, on 18 April 2024 (room Ba030), titled "Planetary Reactive Oxidants: field and lab methods to monitor and counter their negative impact on space missions, astronaut health, and Earth's atmosphere" (<https://esait.webex.com/webappng/sites/esait/recording/e0da30f4dfb1103cbebb92a8aeacbde8/playback>, <https://www.cosmos.esa.int/web/space-science-faculty/events/seminars>, posted for 6 months).
20. **Georgiou, C. D.**, Chatzitheodoridis, E., McKay, C. P. (2024). Lunar dust chemical reactivity: A methodological assessment on astronaut health, Lunar station oxygen supply, and other applications (No. 3065; <https://www.hou.usra.edu/meetings/lunarsurface24/pdf/5018.pdf>). NASA Lunar Surface Science Workshop 24: Science Drivers and Capabilities for Lunar Surface Habitat Research Facilities (<https://www.hou.usra.edu/meetings/lunarsurface2020/>, <https://lunarscience.arc.nasa.gov/lssw/>), August 20, Houston, USA.
21. Chatzitheodoridis, E., **Georgiou, C. D.**, Kalaitzopoulou, E., Stavrakakis, H. -A., Markopoulos, I., Holynska, M. (2024). Microfluidic instruments to assess biotoxicity from Reactive Oxygen Species (ROS) of planetary regoliths tested on high-fidelity simulants. Abstract EANA2024-118, EANA 2024 conference, September 3-6, 2024, "Alte Technik", Graz University of Technology, Graz, Austria.

22. **Georgiou, C. D.**, Chatzitheodoridis, E., Holynska, M., Tighe, A. P. (2024). Instrumental methods to monitor and counter planetary oxidants in space applications, abstract 543050, ISMSE16 conference, Saint-Raphaël, France-Oct 2024.
23. Chatzitheodoridis, **Georgiou, C. D.**, E., Holynska, M., Tighe, A. P. (2024). The significance of producing activated Lunar and Martian dust simulants of high-fidelity for planetary exploration and habitability purposes, abstract 543067, ISMSE16 conference, Saint-Raphaël, France-Oct 2024.

### **Biological philosophy articles**

1. **Georgiou, D. C.** (2004). Analogies between Aristotle's ontology and biological ideologies on human nature. *Nature, Society, and Thought* 17(1): 47-65.
2. **Georgiou, C. D.** (2016). Unconditional communist equality among individuals - Beyond the Marxist equality limited to the abolition of classes. *Critique - Journal of Socialist Theory* 44(1-2): 129-160.
3. **Georgiou, C. D.** (2019). The molecular biology of the elites is replaced by an environmentally interactive biology of social equality. *Critique - Journal of Socialist Theory* 47(1): 89-121.

### II. Ανακοινώσεις σε συνέδρια (Ελληνικά/Διεθνή)

Περιλαμβάνονται **100** επιστημονικές ανακοινώσεις, **37** εκ των οποίων είναι σε διεθνή συνέδρια. Εκ των **37** επιστημονικών ανακοινώσεων, 12 είναι δημοσιευμένες σε διεθνή επιστημονικά περιοδικά με κριτές και δεν συμπεριλαμβάνονται στον κατάλογο των "Επιστημονικών άρθρων σε διεθνή περιοδικά/βιβλία με κριτές".

### III. Συγγραφή πανεπιστημιακών παραδόσεων

1. *Πειραματική Βιοχημεία*, 1993.
2. *Έρευνα και Πείραμα στη Βιοχημεία*, 1994.
3. *Βιοτεχνολογία: Εφαρμογές των Βιοκαταλυτών στην Βιοτεχνολογία*, 1996.
4. *Βιοτεχνολογία*, 2006 (με συνσυγγραφείς τους συναδέλφους Γεώργιο Δημητριάδη και Γεώργιο Αγγελή, του Τμήματος Βιολογίας του Πανεπιστημίου Πατρών).
5. *Biotechnology in Greece: Teaching & Research Activities*, 1998 (συμμετέχων συγγραφέας): επίβλεψη Κ. Α. Ρουμπελάκη-Αγγελάκη, καθηγήτρια του Τμήματος Βιολογίας του Πανεπιστημίου Κρήτης.
6. *Βιοχημεία: Πείραμα και Θεωρία*, 2001, 2003, 2012.

#### IV. Μετάφραση βιβλίων

1. Philip Kitcher, *Οι Ζωές που Έρχονται: Η γενετική επανάσταση και οι ανθρώπινες δυνατότητες*, Εκδόσεις Πανεπιστημίου Πατρών, 2000 (μόνος μεταφραστής).
2. Κάρολος Δαρβίνος, *Καταγωγή των ειδών*, Εκδόσεις Πανεπιστημίου Πατρών, 1998 (συμμεταφραστής).
3. Jena Kolata, *Κλώνος: Ο δρόμος προς την Dolly και η πορεία μπροστά*, Εκδόσεις Τραυλός, Αθήνα 1999 (συμμεταφραστής με τους συναδέλφους Σταμάτη Νικόλαο και Διονύση Δραΐνα).
4. Επιμέλεια μετάφρασης των βιβλίων *Βιοχημεία* (των Lubert Stryer, Jeremy M. Berg, John L. Tymoczko, ISBN 9789925563333, Broken Hill Publishers Ltd, έτος έκδοσης 2018), και *Lehninger's Βασικές Αρχές Βιοχημείας (Lehninger Principles of Biochemistry)*, 2η έκδοση (των David L. Nelson, Michael M. Cox, ISBN 9789925563203, Broken Hill Publishers Ltd, έτος έκδοσης 2018).

#### **Διακεκριμένες επιστημονικές δημοσιεύσεις**

- Δημοσιεύσεις σε επιστημονικά περιοδικά του **Nature**:
  - Georgiou, C. D.**, Papapostolou, I., Grintzalis, K. (2008). Superoxide radical detection in cells, tissues, organisms (animals, plants, insects, microorganisms), and soils. *Nature Protocols* 3: 1679-1692. **IF: 10.032** (2018).
  - Georgiou, C. D.**, Papapostolou, I., Grintzalis, K. (2009). Protocol for the quantitative assessment of DNA concentration and damage (fragmentation and nicks). *Nature Protocols* 4: 125-131. **IF: 10.032** (2018).
  - Georgiou, C. D.**, Sun, H. J., McKay, C. P., Grintzalis, K., Papapostolou, I., Zisimopoulos, D., Panagiotidis, K., Zhang, G., Koutsopoulou, E., Christidis, G. E., Margiolaki, I. (2015). Evidence for photochemical production of reactive oxygen species in desert soils. *Nature Communications* 6: 7100. **IF: 12.124** (2018).
- Δημοσιεύσεις στα κορυφαία επιστημονικά περιοδικά της Βιοχημείας της Οξειδωτικής Πίεσης **Free Radical Biology Medicine** και **Redox Biology**:
  - Grintzalis, K., Papapostolou, I., Zisimopoulos, D., Stamatiou, I., **Georgiou, C. D.** (2014). Multiparametric protocol for the determination of thiol redox state in the living matter. *Free Radical Biology Medicine* 74: 85-98. **IF: 5.606** (2017).
  - Grintzalis, K., Zisimopoulos, D., Grune, T., Weber, D., **Georgiou, C. D.** (2013). Method for the simultaneous determination of free/protein malondialdehyde and lipid/protein hydroperoxides. *Free Radical Biology Medicine* 59: 27-35. **IF: 5.606** (2017).

- Georgiou, C. D.**, Zisimopoulos, D., Argyropoulou, V., Kalaitzopoulou, E., Salachas, G., Grune, T. (2018). Protein and cell wall polysaccharide carbonyl determination by a neutral pH 2,4-dinitrophenylhydrazine-based photometric assay. *Redox Biology* 17: 128-142. **IF: 6.337** (2017).
- Georgiou, C. D.**, Zisimopoulos, D., Argyropoulou, V., Kalaitzopoulou, E., Ioannou, P. V., Salachas, G., Grune, T. (2018). Protein carbonyl determination by a rhodamine B hydrazide-based fluorometric assay. *Redox Biology* 17: 236-245. **IF: 6.337** (2017). Η μέθοδος έγινε εμπορικό κιτ από την *Cayman Chemical Co, USA* (Protein Carbonyl Fluorometric Assay Kit Item No. 701530: <https://www.caymanchem.com/product/701530/protein-carbonyl-fluorometric-assay-kit>, last accessed August 6, 2020), όπως επίσης πιστοποιείται και από το users manual (<https://www.caymanchem.com/pdfs/701530.pdf>, last accessed August 6, 2020).
- Αφιέρωμα του **Lab Times** (a news magazine for the European Life Sciences), υπό τον τίτλο “**Bradford assay goes Hellenic**” [March 2009, p. 56, URL [http://www.labtimes.org/labtimes/issues/lt2009/lt03/lt\\_2009\\_03\\_56\\_56.pdf](http://www.labtimes.org/labtimes/issues/lt2009/lt03/lt_2009_03_56_56.pdf), last access August 24, 2018], στην ακόλουθη δημοσίευση:
 

**Georgiou, C. D.**, Grintzalis, K., Zervoudakis, G., Papapostolou, I. (2008). Mechanism of Coomassie brilliant blue G-250 binding to proteins: a hydrophobic assay for nanogram quantities of proteins. *Analytical and Bioanalytical Chemistry* 391: 391-403.
  - Αφιέρωμα του **Science Trends** (a USA science news magazine), υπό τον τίτλο “**Methods to examine oxidatively carbonylated proteins and cell walls**” [August 2018, <http://doi.org/10.31988/SciTrends.28552>, URL <https://sciencetrends.com/methods-to-examine-oxidatively-carbonylated-proteins-and-cell-walls/>, last access November 07, 2021], στις ακόλουθες δημοσιεύσεις:
 

**Georgiou, C. D.**, Zisimopoulos, D., Argyropoulou, V., Kalaitzopoulou, E., Salachas, G., Grune, T. (2018). Protein and cell wall polysaccharide carbonyl determination by a neutral pH 2,4-dinitrophenylhydrazine-based photometric assay. *Redox Biology* 17: 128-142.

**Georgiou, C. D.**, Zisimopoulos, D., Argyropoulou, V., Kalaitzopoulou, E., Ioannou, P. V., Salachas, G., Grune, T. (2018). Protein carbonyl determination by a rhodamine B hydrazide-based fluorometric assay. *Redox Biology* 17: 236-245.
  - Η ακόλουθη ερευνητική μελέτη χαρακτηρίστηκε εξέχον *Key Scientific Article* από την *Global Medical Discovery* "ως ιδιαίτερου ενδιαφέροντος για τον τομέα ανάπτυξης

φαρμάκων και την προώθηση της βιοϊατρικής έρευνας" [Grintzalis, K., Zisimopoulos, D., Grune, T., Weber, D., **Georgiou, C. D.** (2013). Method for the simultaneous determination of free/protein malondialdehyde and lipid/protein hydroperoxides. *Free Radical Biology Medicine* 59: 27-35 - <http://globalmedicaldiscovery.com/key-scientific-articles/method-simultaneous-determination-freeprotein-malondialdehyde-lipidprotein-hydroperoxides/>]. Η *Global Medical Discovery* [ISSN 1929-8536: <http://globalmedicaldiscovery.com>] είναι ένας εξέχων οργανισμός επιστημονικής ενημέρωσης που επιλέγει ελάχιστες από τις πιο πρόσφατες καινοτόμες ανακαλύψεις της επιστημονικής, ιατρικής και φαρμακευτικής κοινότητας "μέσα από περισσότερα από 20.000 άρθρα και από τα πιο αυστηρά ελεγχόμενα από κριτές επιστημονικά περιοδικά που δημοσιεύονται κάθε εβδομάδα".

- Η ακόλουθη ερευνητική μελέτη χρησιμοποιήθηκε από την **International Agency for Research on Cancer** (IARC) για την σύνταξη της έκθεσής της με τίτλο "Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields, IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, No. 102, 2011" ([https://www.ncbi.nlm.nih.gov/books/NBK304630/pdf/Bookshelf\\_NBK304630.pdf](https://www.ncbi.nlm.nih.gov/books/NBK304630/pdf/Bookshelf_NBK304630.pdf)), η οποία χρησιμοποιήθηκε από τον **Παγκόσμιο Οργανισμό Υγείας** (WHO) για να ταξινομήσει τις ραδιοσυχνότητες των Η/Μ πεδίων στους πιθανούς καρκινογόνους παράγοντες (στην Ομάδα 2B). Η έκθεση των IARC-WHO κάνει αναφορά στην ακόλουθη ερευνητική μελέτη στις σελίδες 101, 103, 121.

**Georgiou, C. D.** (2010). Oxidative stress-induced biological damage by low-level EMFs: Mechanism of free radical pair electron spin polarization and biochemical amplification. *European Journal of Oncology* 5: 63-113 (In: *Non-thermal effects and mechanisms of interaction between electromagnetic fields and living matter*, Giuliani, L., Soffritti, M. Eds, *Ramazzini Institute European J. Oncology Library* 5, ISBN: 978-88-6261-166-4).

### **Διεθνής/εθνική κατάταξη επιστημονικού έργου**

1. Κατάταξη στους κορυφαίους 100.000 επιστήμονες παγκοσμίως από όλα τα επιστημονικά πεδία για το 2020, στο 2% των κορυφαίων επιστημόνων του επιστημονικού μου υποπεδίου ("Updated science-wide author databases of standardized citation indicators" <https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/6>), και στους 66 (σε σύνολο πάνω από 700 μέλη ΔΕΠ του Πανεπιστημίου Πατρών) από τους

839 κορυφαίους Έλληνες επιστήμονες παγκοσμίως από όλα τα επιστημονικά πεδία (<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3>, version 2).

2. Κατάταξη στο ανώτερο % ποσοστό: I. Στο συνδυαστικό πεδίο Βιοχημεία/Αστροβιολογία/Οξειδωτική Πίεση: 0,38% μεταξύ των Ευρωπαίων επιστημόνων (2.440 στους 650.381), 0,4% μεταξύ των επιστημόνων παγκοσμίως (8.892 στους 2.221.143). II. Στη γενική κατάταξη, 4,4% μεταξύ των επιστημόνων του Πανεπιστημίου Πατρών (44 στους 1.006), 5% μεταξύ των Ελλήνων επιστημόνων (657 στους 12.980), 5,5% μεταξύ των Ευρωπαίων επιστημόνων (35.696 στους 650.381), 4,5% μεταξύ των επιστημόνων παγκοσμίως (99.727 στους 2.221.143). Πηγή: *Scientific Index 2024* (<https://www.adscientificindex.com/scientist/christos-d-georgiou/1840002>).
3. Κατάταξη στο 2% των κορυφαίων επιστημόνων του κόσμου, Επιτροπή Διεθνών Κατατάξεων Πανεπιστημίου Πατρών, Γραμματεία Πρυτανείας, 26 Σεπτεμβρίου 2024 ([https://www.upatras.gr/wp-content/uploads/2024/09/Συνημμένο\\_2.pdf](https://www.upatras.gr/wp-content/uploads/2024/09/Συνημμένο_2.pdf)).
4. ScholarGPS κορυφαία κατάταξη: συνολικά 1%, οξειδωτικό στρες 0,16%, αναλυτική χημεία 5,24%) <https://scholargps.com/scholars/67873892695643/christos-d-georgiou>.

### **Κριτής/εκδότης σε διεθνή επιστημονικά περιοδικά - Εξωτερικός αξιολογητής υποψηφίων καθηγητών σε διεθνή ερευνητικά ιδρύματα**

Κριτής στα ακόλουθα **127** περιοδικά (Web of Science verified): *ACS Applied Materials & Interfaces, ACS Medicinal Chemistry Letters, Advances in Agricultural Science, Advances in Redox Research, African Journal of Agricultural Research, African Journal of Biotechnology, African Journal of Microbiology Research, AIMS Microbiology, American Mineralogist, Analytical and Bioanalytical Chemistry, Analytical Biochemistry, Analytical Chemistry, Annals of Biomedical Engineering, Annals of Microbiology, Antioxidants, Applied and Environmental Microbiology, Applied Microbiology and Biotechnology, Applied Sciences, Astrobiology, Biocell, Biochemistry and Biophysics Reports, Biochimica et Biophysica Acta (BBA) - Molecular Cell Research, Biogeochemistry, BioMed Research International, Biomedicines, BioTechniques, BMC Gastroenterology, BMC Genomics, Canadian Journal of Microbiology, Cell Biochemistry and Biophysics, Cells, Chemical Papers, Chromatography, Clinical Biochemistry, Clinical Nutrition, Colloids and Surfaces B: Biointerfaces, Comparative Biochemistry and Physiology, Crystals, Current Diabetes Reviews, Current Eye Research, Current Genetics, Drugs of Today, Electromagnetic Biology and Medicine, Entropy, Environmental and Experimental Botany, Environmental Microbiology, Environmental Science & Technology, FEMS Microbiology Letters, Foods,*

*Free Radical Biology and Medicine, Free Radical Research, Frontiers in Microbiology, Fungal Biology, Fungal Genetics and Biology, Gastroenterology Research and Practice, Gene, Genes, Geosciences, Insights in Biology and Medicine, International Journal of Aerospace Engineering, International Journal of Developmental Neuroscience, International Journal of Molecular Science, International Journal of Radiation Biology, Journal of Agricultural and Food Chemistry, Journal of Agricultural Science and Technology, Journal of Applied Microbiology, Journal of Basic Microbiology, Journal of Clinical Microbiology and Biochemical Technology, Journal of Coastal Life Medicine, Journal of Food Processing and Preservation, Journal of Fungi, Journal of Geophysical Research: Earth Surface, Journal of Hazardous Materials, Journal of Industrial and Engineering Chemistry, Journal of Ophthalmology, Journal of Personalized Medicine, Journal of Pharmaceutical and Biomedical Analysis, Journal of Physical Chemistry Letters, Journal of Phytopathology, Journal of Proteome Research, Journal of Proteomics, Journal of Separation Science, Journal of Signal Transduction, Journal of Zhejiang University SCIENCE B, Life, Life Sciences, Marine Drugs, Metabolites, Microbial Biotechnology, Microbial Ecology, Microbiology, Microbiology Spectrum, Micron, Microorganisms, Molecular Biotechnology, Molecular Vision, Molecules, Mycologia, Mycopathologia, Mycoscience, Nanomaterials, Nature Protocols, Ocular Immunology and Inflammation, Online International Journal of Medicinal Plants Research, Oxidative Medicine and Cellular Longevity, PeerJ, Pharmaceuticals, Pharmaceutics, Photochem, Physiological and Molecular Plant Pathology, Phytochemistry, Plant Pathology Journal, Planta, Plants, Plos One, Polish Journal of Microbiology, Preparative Biochemistry and Biotechnology, Processes, Sci, Scientific Reports, Separations, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, Sustainability, The Neuroscientist, The Open Mycology Journal, Toxins, Viruses*

Editorial positions στα ακόλουθα **20** περιοδικά: **Astrobiology** (<https://home.liebertpub.com/publications/astrobiology/99/editorial-board>), **AIMS Microbiology** (<http://www.aimspress.com/news/131.html>), **Endocrine & Metabolic Drugs** (<http://benthamscience.com/journals/clinical-immunology-endocrine-and-metabolic-drugs/editorial-board/#top>), **Frontiers in Aging, Metabolism and Redox Biology** (<https://www.frontiersin.org/journals/aging/sections/aging-metabolism-and-redox-biology/editors>), **Frontiers in Public Health - Radiation and Health** (<https://www.frontiersin.org/journals/public-health/editors>), **HSOA Journal of Cell Biology & Cell Metabolism** (<http://www.heraldopenaccess.us/journals/Cell-Biology-&-Cell-Metabolism>)



Metabolism), *Jacobs Journal of Plant Biology* (<http://plantbiology.jacobspublishers.com>), *Journal of Astrobiology & Outreach* (<http://www.esciencecentral.org/journals/astrobiology-and-outreach.php>), *Journal of Biology and Medicine* (<http://www.peertechz.com/Biology-Medicine/editorialboard.php>), *Journal of Cellular and Molecular Pharmacology* (<https://www.omicsonline.org/editorialboard-journal-cellular-molecular-pharmacology.php>), *Journal of Cellular Toxicology and Cell Biology* (<http://norcaloa.org/index.php/CTCB/about/editorialTeam>), *Insights in Biology and Medicine* (<https://www.heighpubs.org/hjbm/editors.php>), *International Journal of Cell & Systems Developmental Biology* (<http://scidoc.org/IJCSDB.php>), *Journal of Coastal Life Medicine*, *Journal of Gene Therapy for Genetic Disorders* (<http://heraldopenaccess.org/herald/eb/Genetics/>), *Molecular Enzymology and Drug Targets* (<http://www.medt.com.es/editors.php>), *Journal of Infectious Diseases and Pathogenesis* (<http://www.scholarenajournals.org/journals/journal-of-infectious-diseases-and-pathogenesis/editorial-board.php>), *Journal of Novel Physiotherapy & Rehabilitation* (<http://www.omicsonline.org/editorialboard-physiotherapy-physical-rehabilitation.php>), *Reactive Oxygen Species* (<http://www.aimsoci.com/ros/index.php/ros/about/editorialTeam>), *Separations* (<https://www.mdpi.com/journal/separations/editors>), *SRL Bioanalysis & Biomedicine* (<http://scireslit.com/Bioanalysis/editorsJ.php>).

Web of Science verified editor records: AIMS Microbiology

### **Αξιολογητής ακαδημαϊκής καριέρας επιστημόνων**

1. Cyprus University of Technology (Dr. Dimitris Tsalts, Department of Agricultural Sciences, Biotechnology and Food Science), Cyprus, 2014.
2. Desert Research Institute (Dr. Henry Sun, Division of Earth and Ecosystem Sciences), Las Vegas, NV, USA, 2015.

Permanent member of the evaluators of the Permanent Committee for Academic Promotion of King Abdulaziz University, Kingdom of Saudi Arabia for:

3. Dr. Maryam Abdu Abdullah AL-Ghamdi, for promotion to the rank of Associate Professor, General Specialization "Biochemistry" Subspecializing "Clinical & Physiological Biochemistry", 2017.
4. Dr. Mohammed Hamed Zainy Mutwakil, for promotion to the rank of Professor, General Specialization "Biology" Subspecializing "Molecular Biology", 2017.
5. Dr. Hanaa Mohamad Ahmad Kashlan, for promotion to the rank of Professor, General Specialization "Biochemistry", Subspecializing "Biochemistry", 2017.

6. Dr. Safaa Yousef Mohammad Qusti, for promotion to the rank of Professor, General Specialization "Biochemistry", Subspecializing "Biochemistry", 2017.
7. Dr. Nahed Hassan Hamza Hajara, for promotion to the rank of Associate Professor, General Specialization "Biological Sciences", Subspecializing "Biology", 2017.
8. Dr. Absarul Haque, for promotion to the rank of Associate Professor, General Specialization "Biological Sciences", Subspecializing "Molecular Biology", 2018.
9. Dr. Aulfat Mohammed Abdulgader Omar, for promotion to the rank of Associate Professor, General Specialization "Biochemistry", Subspecializing "Biochemistry", 2018.
10. Dr. Ayat Badr Othman Alghafari, for promotion to the rank of Associate Professor, General Specialization "Biochemistry", Subspecializing "Biochemistry", 2018.
11. Dr. Amadehah Nooh Soleman Alsiny, for promotion to the rank of Professor, General Specialization "Biochemistry", Subspecializing "Biochemistry", 2018.
12. Dr. Wedad Makhdoor Warid Albeshri, for promotion to the rank of Professor, General Specialization "Biochemistry", Subspecializing "Biochemistry", 2018.
13. Dr. Amal Hasanain Mohamad Hamza, for promotion to the rank of Professor, General Specialization "Biochemistry", Subspecializing "Clinical and Nutritional Biochemistry", 2018.
14. Dr. Sawsan Omar Mohammedmoosa Khoja, for promotion to the rank of Associate Professor, General Specialization "Biochemistry", Subspecializing "Clinical Biochemistry", 2018.
15. Dr. Mohammad Zubair Alam, for promotion to the rank of Associate Professor, General Specialization "Microbiology", Subspecializing "Microorganisms", 2019.
16. Dr. Hussein Abdulrahman Mahdi Almehdar, for promotion to the rank of Professor, General Specialization "Biological Sciences", Subspecializing "Biology", 2019.
17. Dr. Sohair Mohammed H Khojah, for promotion to the rank of Associate Professor, General Specialization "Biochemistry" Subspecializing "Molecular biosciences", 2020.

### **Μέλος συμβουλίων έρευνας - Επιστημονικός αξιολογητής σε ερευνητικά Ιδρύματα**

1. Τομεακό Επιστημονικό Συμβούλιο Φυσικών Επιστημών, στο Εθνικό Συμβούλιο Έρευνας και Καινοτομίας (αναπληρωματικό μέλος, ΦΕΚ 200/10-04-2018).
2. *French National Research Agency (ANR)*. Scientific evaluator of a research proposal submitted for funding to the ANR) by French and American scientists (May 2016).

3. *Ελληνικό Ίδρυμα Έρευνας και Καινοτομίας*. Συντονιστής 5μελούς ομάδας κριτών και κριτής (στην τελική αξιολόγηση 430 προτάσεων), στο Πρόγραμμα χρηματοδότησης υποψηφίων διδασκόντων στον Τομέα των Επιστημών Ζωής (2017).
4. *NASA's 2016 Solar System Workings (SSW) Program*. Scientific evaluator of a research proposal submitted for funding to the SSW Program by NASA scientists (June 2017).
5. Invited expert reviewer (on 2018) to be included in the REPRISE database (<https://reprise.cineca.it/en>) of the Italian Ministry of Education, Universities and Research (MIUR).
6. *Εθνικό Ίδρυμα ΠΑΣΤΕΡ*. Τακτικό μέλος 7μελούς επιτροπής αξιολόγησης υποψηφιοτήτων για τις θέσεις τριών (3) μελών του Διοικητικού Συμβουλίου του Ιδρύματος (μετά από απόφαση υπουργείων Παιδείας και Υγείας στις 22-1-2019, 18/1/2018-αρ.πρωτ. 7886).
7. Ορισθείς Εμπειρογνώμονας Φυσικού Αντικειμένου στην 1<sup>η</sup> Προκήρυξη Ερευνητικών Έργων ΕΛΙΔΕΚ για την ενίσχυση Μεταδιδασκόντων Ερευνητών/τριών (2019).
8. Invited reviewer for the 3<sup>rd</sup> Call 2020 (JTC2020) of the European Research Area (ERA) Personalised Medicine (PerMed), an ERA-NET (under Horizon 2020) Cofund program, supported by 32 partners from 23 countries (Canada, Israel, Turkey, Egypt, Europe, EE, <http://www.era-permed.eu/partners/>), and co-funded by the European Commission to promote joint transnational innovative research projects in PerMed.
9. E-thesis Examination member selected by Dublin City University in 2023 (for MSc candidate Aaron Farrelly).
10. E-thesis Examination member selected by Dublin City University in 2023 (for PhD candidate Yongda Li).
11. Invited reviewer in the evaluation process for the European Partnership for Personalised Medicine (EP PerMed) Joint Transnational Call 2024, by the EU and more than 50 international partners (<https://www.eppermed.eu/>).

### **Συμμετοχή σε επιστημονικούς οργανισμούς**

Μέλος διεθνών επιστημονικών οργανισμών: Fellow of the *American Heart Association* and member of the *American Chemical Society*, *American Association for the Advancement of Science*, *American Phytopathological Society*, *European Society for Free Radical Research* (also the Hellenic section), *Society for Redox Biology & Medicine*, *Society of Integrative and Comparative Biology*, *Hellenic Societies of Biological Sciences* and

*Biochemistry and Molecular Biology, International Commission for Electromagnetic Safety* (member of the Scientific Secretariat), *The Committee for Skeptical Inquiry*. Ιδρυτικό μέλος, και μέλος του 1<sup>ου</sup> Διοικητικού Συμβουλίου της *Ελληνικής Εταιρίας Ελεύθερων Ριζών και Οξειδωτικού Στρες* (Παράρτημα της *European Society for Free Radical Research*). Μέλος της Sigma Xi - The Scientific Research Honor Society από το 2023 (ιδρύθηκε το 1886: <https://www.sigmaxi.org/home>).

### **Διεθνείς επιστημονικές συνεργασίες & ιδρυματικές συμφωνίες**

1. **NASA Ames Research Center (ARC), Space Science Division** (Moffett Field, California, USA): collaboration with the planetary-geophysicist Christopher McKay and the astrochemist Richard Quinn (also in SETI), on issues of Astrobiology and on the development of theories (and methodologies) for the detection of extraterrestrial life.
2. **Official Agreement between the NASA (Headquarters) and the University of Patras**, since 2011, to provide for Dr. Christos D. Georgiou, visiting researcher status.
3. **Search for Extraterrestrial Intelligence Institute (SETI)**, Mountain View, California, USA, with Richard Quinn (also in ARC) and Alfonso Davila on Astrobiology.
4. **Desert Research Institute** (Nevada, USA): collaboration with the geo-microbiologist Dr. Henry Sun.

The aim of the scientific collaboration with institutes #1, 2 and 3 is the development of field methods for the identification and quantification of toxic oxidants in Mars soil using Mars-like terrestrial desert soil models.

5. **National Institutes of Health (NIAAA, Oxidative Stress and Tissue Injury, Rockville USA)**: collaboration with Staff Scientists Drs Partha Mukhopadhyay and Pal Pacher, in developing new methods for the quantitative evaluation of oxidative stress.
6. **Department of Agriculture, USA (ARS, Southern Regional Research Center, Food and Feed Safety Research Unit)**: collaboration with Drs. Perng-Kuang Chang and Jeffrey W. Cary, Staff Scientists.
7. **Northern Illinois University, USA**: collaboration with Dr. Ana M. Calvo, Assoc. Professor. The aim of the scientific collaboration with institutions #4 and #5 is the study of oxidative stress in relation with sclerotial differentiation and the toxin aflatoxin biosynthesis in the fungus *Aspergillus flavus*.
8. **North Carolina State University, USA**: collaboration with professor Dr. Marc A. Cubeta on the role of oxidative stress in the sclerotogenesis of the phytopathogenic fungus *Rhizoctonia solani*.

9. **Friedrich Schiller University** (Jena, Germany): collaboration with Prof./Dr. Tilman Grune (Chair of the *Department of Nutritional Toxicology* in the *Institute of Nutrition*) on the development of methods for the quantification of lipid and protein peroxidation.
10. **German Institute of Human Nutrition**, Potsdam-Rehbruecke, Germany: collaboration with Prof./Dr. Tilman Grune, Scientific Director.
11. **University of California at Santa Cruz, USA**: collaboration with Prof. David Deamer (Departments of Biomolecular Engineering, and Chemistry and Biochemistry on Astrobiology).
12. **International Commission for Electromagnetic Safety** (ICEMS: <http://www.icems.eu>): Member since 2008 of ICEMS (member of the Scientific Secretariat), which conducts research to protect public health from electromagnetic fields, and also to develop the scientific basis and strategies for assessment, prevention, management and communication of environmental risks in accordance with the precautionary principle.

### **Πρόσκληση σε διεθνή συνέδρια και σεμινάρια**

1. Προσκεκλημένος ομιλητής της αμερικάνικης επιστημονικής οργάνωσης *Society for Integrative and Comparative Biology (SICB)* στο διεθνές συνέδριό της με τίτλο 'Metamorphosis: A Multikingdom Approach', που έγινε στις 4–8 Ιανουαρίου 2006 στο Orlando της Florida των ΗΠΑ. Ο τίτλος της ομιλίας μου ήταν 'Sclerotial metamorphosis in filamentous fungi is induced by oxidative stress'.
2. Προσκεκλημένος ομιλητής του *Desert Research Institute* (Las Vegas, USA) στις 27 Μαρτίου 2009, με θέμα μεθοδολογικές προσεγγίσεις μου στην ανίχνευση οξειδωτών στον Άρη και σε άλλους πλανήτες.
3. Invited by Ames Research Center, Space Science Division (Dr. Christopher P. McKay) to participate as Lecturer/Researcher in the field astrobiology research program 'Spaceward Bound' (<http://quest.nasa.gov/projects/spacewardbound/field.html>), jointly sponsored by NASA Ames Research Center, Desert Research Institute, and California State University, which took place in the Mojave Desert and Death Valley during March 22-27, 2009.
4. Προσκεκλημένος Lecturer -για την παρουσίαση και επίδειξη βιοχημικών μεθόδων μέτρησης του οξειδωτικού στρες που έχει αναπτύξει το εργαστήριό μου- σε εργαστηριακό μάθημα με τίτλο 'Techniques in Free Radical Research', που οργανώνει η ευρωπαϊκή επιστημονική οργάνωση *Federation of European Biochemical Societies*

(FEBS) για ευρωπαϊούς μεταπτυχιακούς φοιτητές και μεταδιδάκτορες στο University of Debrecen της Ουγγαρίας μεταξύ 27 Αυγούστου και 2 Σεπτεμβρίου 2010. Η πρόσκληση έγινε από τον Καθηγητή Laszlo Virag (M.D., Ph.D. D.Sc.), Department of Medical Chemistry, Medical and Health Science Center, University of Debrecen (βλέπε ιστοσελίδα μαθήματος <http://febs.unideb.hu/eloadok>).

5. Invitations by Dr Chris McKay (Space Science Division) to NASA Ames Research Center, Astrobiology Division (Moffett Field, Mountain View, CA) for research collaboration, on April 25, 2011(to August 09) on May 05, 2012 (to August 05) and on March 25, 2014 (to August 6).
6. Seminar at NASA Ames Research Center (Astrobiology Division), titled "Lipids as Biomarkers in the Search for Life", on August 03, 2012.
7. Invited speaker (topic title "Oxidative Stress: From Biochemistry to Astrogeobiology") in the 66<sup>th</sup> Annual meeting on Biochemistry & Molecular Biology, 1-13 December 2015, Athens, Greece.
8. Invited speaker (topic title: Intelligent Equipment for Space Applications) in the *Russian – Greek Scientific Workshop*, 17 – 27 July 2017, organized by the Ufa State Aviation Technical University (Laboratory for Automation and Robotics), Ufa, Russia, and the University of Patras, Patras, Greece.
9. Invited speaker (topic title: Biochemical mechanisms of biological damage in man from non-ionizing electromagnetic radiations) in the 7<sup>th</sup> Panhellenic Forum of Public Health & Social Medicine, 3 – 5 November 2017, Conference & Cultural Centre of the University of Patras, Patras, Greece.
10. Workshop on Research Integrity (open session chair), co-organized by the EMBO Science Policy Programme and the University of Patras Bioethics Committee, Conference & Cultural Center of the University of Patras, Greece, 17 May 2018.
11. Πρόεδρος στην συνεδρία Chemical Biology του 72<sup>ου</sup> Συνεδρίου της Ελληνικής Εταιρείας Βιοχημείας & Μοριακής Βιολογίας, Συνεδριακό & Πολιτιστικό Κέντρο, Πανεπιστήμιο Πατρών, 2-4 Δεκεμβρίου 2022.

### **Ερευνητικά προγράμματα - υποτροφίες**

1. Συμμετοχή σε επιστημονικά προγράμματα με το Τμήμα Βιοχημείας του Πανεπιστημίου University of Illinois at Urbana-Champaign των ΗΠΑ (από 1985 μέχρι το 1997), με χρηματοδοτήσεις από τα ερευνητικά ιδρύματα *American Heart Association*, *National Science Foundation* και *National Institutes of Health* των ΗΠΑ.

2. Επιστημονικός υπεύθυνος προγράμματος βασικής έρευνας **Κ. Καραθεοδωρής**, 'Ο ρόλος των ελεύθερων ριζών οξυγόνου στην σκληρωτική διαφοροποίηση μυκήτων'. Χρηματοδότης το Πανεπιστήμιο Πατρών. Διάρκεια 1998-2001.
3. Πρόγραμμα εφαρμοσμένης έρευνας **ΠΑΒΕ**, αναφορικά με μέθοδο φυσικής επεξεργασίας ευπαθών γεωργικών προϊόντων, **ΕΠΕΤ II**. Διάρκεια 1998-2000.
4. Πρόγραμμα εφαρμοσμένης έρευνας **ΠΕΝΕΔ** αναφορικά με τη δομή και λειτουργία του ευκαρυωτικού ριβοσώματος ως ένας εκ τριών συνεργαζόμενων επιστημονικών φορέων, με επιστημονικό υπεύθυνο τον συνάδελφο Διονύσιο Συνετό της Ιατρικής Σχολής του Πανεπιστημίου Πατρών, και τρίτο συνεργαζόμενο τη συνάδελφο Ελένη Γεωργιάτσου, της Ιατρικής Σχολής του Πανεπιστημίου Θεσσαλίας. Διάρκεια 2000-2002.
5. Επιστημονικός υπεύθυνος προγράμματος **ΕΠΕΑΕΚ II «ΗΡΑΚΛΕΙΤΟΣ»** για τον ρόλο του οξειδωτικού στρες στη διαφοροποίηση. Διάρκεια 2002-2005.
6. Επιστημονικός υπεύθυνος προγράμματος βασικής έρευνας **Κ. Καραθεοδωρής** αναφορικά με την επίδραση της ηλεκτρομαγνητικής ακτινοβολίας στο οξειδωτικό στρες. Χρηματοδότης το Πανεπιστήμιο Πατρών. Διάρκεια 2007-2010
7. Συνεργαζόμενος ερευνητής σε πρόγραμμα **Thalis** με τίτλο "The role of dopamine in neuronal plasticity and learning and memory in rats, in models of dopamine deficiency and in Parkinsons disease patients", με επιστημονικό συντονιστή την Φεβρωνία Αγγελάτου, Καθηγήτρια του Τμήματος Ιατρικής του Πανεπιστημίου Πατρών. Διάρκεια 2012-2015.
8. **NASA 'Exobiology'**, program "**Origin of radiation resistance**". Co-PI with Michael Daly (*Uniformed Services University of the Health Sciences, Bethesda, Maryland, USA*), and Christopher McKay (*NASA Ames Research Center, ARC, Space Science and Astrobiology Division, Moffett Field, CA, USA*). PI Henry Sun (*Desert Research Institute, Las Vegas, NV, USA*), grant \$603,498, duration 2016 until 2019 (Co-PI is the only status set by NASA for non-US citizens).
9. Επιστημονικός υπεύθυνος **Προγράμματος Αριστείας IKY-SIEMENS, τομέας Υγεία**, για υποψήφιους διδάκτορες (χρηματοδότηση **Φανής Καραβασίλη**), 'Μελέτη της επίδρασης του οξειδωτικού στρες στην ινσουλίνη και δομικός χαρακτηρισμός της ινσουλίνης παρουσία προσδετών με κρυσταλλογραφία ακτίνων-Χ'. Προϋπολογισμός προγράμματος 32.000,00 ευρώ. Διάρκεια 2015 έως 2017.
10. **Υποτροφίες Μποδοσάκη για λήψη μεταπτυχιακού διπλώματος** (χρηματοδότηση **Μαριάννας Σκιπητάρη**, διατριβή Μάστερ "Ανάπτυξη συστήματος φωτοδιεγερόμενου νανοσωματιδιακού  $TiO_2$  προς παραγωγή των ελευθέρων ριζών υδροξυλίου και σουπεροξειδίου για αντιοξειδωτικές αξιολογήσεις των οργανισμών"), 46<sup>ο</sup> τακτικό

πρόγραμμα υποτροφιών 2019-2020 του Ιδρύματος **Μποδοσάκη** για την πραγματοποίηση Μεταπτυχιακών Σπουδών. Διάρκεια Σεπτέμβριος 2018 έως Φεβρουάριος 2019.

11. **Υποτροφίες Μποδοσάκη για υποψήφιους διδάκτορες** (χρηματοδότηση **Μαριάννας Σκιπητάρη**, διδακτορική διατριβή “Ανάπτυξη συστήματος τεχνητής παραγωγής βιογενών ελευθέρων ριζών για την προσομοιωμένη μελέτη των οξειδωτικών τροποποιήσεων σε κρίσιμα βιομόρια σε συνδυασμό με την αντιοξειδωτική κατάσταση των διαφόρων βιολογικών συστημάτων”), 47<sup>ο</sup> τακτικό πρόγραμμα υποτροφιών 2019 - 2020 Ιδρύματος **Μποδοσάκη** για την πραγματοποίηση διδακτορικών σπουδών. Διάρκεια Σεπτέμβριος – Δεκέμβριος 2019.
12. **NASA ‘Habitable Worlds’, program “UV and Oxidation Resistance in Desert Lichens and the Habitability of Mars”**. Co-PI with Christopher McKay (*NASA Ames Research Center, ARC, Space Science and Astrobiology Division, Moffett Field, CA, USA*). PI Henry Sun (*Desert Research Institute, Las Vegas, NV, USA*), grant \$516,874, duration 2020 until 2022 (Co-PI is the only status set by NASA for non-US citizens).
13. **Υποτροφίες ΕΛ.ΙΔ.Ε.Κ. για υποψήφιους διδάκτορες**, 2<sup>η</sup> Προκήρυξη, 2019 (χρηματοδότηση **Ηλέκτρας Καλαϊτζοπούλου**), πρόγραμμα “Ανάπτυξη μεθόδου για την *in vivo* ποσοτικοποίηση της ελεύθερης ρίζας υδροξυλίου στους οργανισμούς”, απόφαση 653, προϋπολογισμός 18.000 €. Διάρκεια 15-10-2019 έως 14-06-2021.
14. Υποτροφία **Μεντζελόπουλου-Πανεπιστημίου Πατρών** για υποψήφιους διδάκτορες (χρηματοδότηση **Μαριάννας Σκιπητάρη**, διδακτορική διατριβή «Ανάπτυξη συστήματος τεχνητής παραγωγής βιογενών ελευθέρων ριζών για την προσομοιωμένη μελέτη των οξειδωτικών τροποποιήσεων σε κρίσιμα βιομόρια σε συνδυασμό με την αντιοξειδωτική κατάσταση των διαφόρων βιολογικών συστημάτων»). Διάρκειας 3 έτη (2020 έως 2023).
15. **ΕΛ.ΙΔ.Ε.Κ. Πρόγραμμα Ερευνητικών Έργων για την Ενίσχυση των Μελών ΔΕΠ και Ερευνητών/τριων και την Προμήθεια Ερευνητικού Εξοπλισμού Μεγάλης Αξίας** (1<sup>η</sup> Προκήρυξη), συμμετοχή στο ερευνητικό σκέλος οξειδωτικού στρες, άτυπη λόγω μη δικαιώματος κατάθεσης δεύτερου προγράμματος (χρηματοδότηση της υποψήφιας διδάκτορος **Πολυξένης Παπαδέα**), τίτλος έργου “Μικρότεροι κρύσταλλοι, ταχύτερα πειράματα, ισχυρότερες δέσμες: καινοτόμες προσεγγίσεις για το σχεδιασμό & την παραγωγή φαρμάκων (CrystDRUG)”. Διάρκεια 16-02-2020 έως 16-02-2023.
16. Συνεργασία με την αμερικάνικη χημική εταιρεία **Cayman Chemical** στην ανάπτυξη εμπορικών kit χημικών αναλύσεων στις παραμέτρους του οξειδωτικού στρες. Ανάπτυξη και διεθνής κυκλοφορία του εμπορικού kit Protein Carbonyl Fluorometric Assay Kit Item No. 701530 (<https://www.caymanchem.com/product/701530/protein-carbonyl->



fluorometric assay-kit).

17. Πρόγραμμα του Ευρωπαϊκού Οργανισμού Διαστήματος (**ESA**) με τίτλο **"From Reactive Oxygen Detection to Oxygen Farming"** (για την κατασκευή οργάνου ανίχνευσης και μέτρησης δραστικών μορφών οξυγόνου σε χώμα/ορυκτά του Φεγγαριού και του Άρη), contract no. 4000136482/21/NL/GLC/ον. Διάρκεια 01-12-2021 έως 31-05-2023. Ο ESA δημοσίευσε αφιέρωμα για το πρόγραμμα στα αγγλικά ("Seeking out Moon and Mars superoxides for oxygen farming"), και στα ελληνικά ("Αναζητώντας σουπεροξειδία στη Σελήνη και στον Άρη με στόχο την «αποκομιδή» οξυγόνου"), στις ακόλουθες ιστοσελίδες του:

**1. ESA front page:** Article under its shortened English title **"Moon and Mars superoxides for oxygen farming"**:

[https://www.esa.int/Enabling\\_Support/Space\\_Engineering\\_Technology/Moon\\_and\\_Mars\\_superoxides\\_for\\_oxygen\\_farming](https://www.esa.int/Enabling_Support/Space_Engineering_Technology/Moon_and_Mars_superoxides_for_oxygen_farming), *Reactive oxygen species detector concept*:  
[https://www.esa.int/ESA\\_Multimedia/Images/2022/03/Reactive\\_oxygen\\_species\\_detector\\_concept](https://www.esa.int/ESA_Multimedia/Images/2022/03/Reactive_oxygen_species_detector_concept)

**2. ESA's Technology Tweet:**

[https://twitter.com/ESA\\_Tech/status/1499778261697576961](https://twitter.com/ESA_Tech/status/1499778261697576961)

**3. Space Engineering & Technology:** Article under its full English title **"Seeking out Moon and Mars superoxides for oxygen farming"**:

[https://www.esa.int/Enabling\\_Support/Space\\_Engineering\\_Technology/Seeking\\_out\\_Moon\\_and\\_Mars\\_superoxides\\_for\\_oxygen\\_farming](https://www.esa.int/Enabling_Support/Space_Engineering_Technology/Seeking_out_Moon_and_Mars_superoxides_for_oxygen_farming), *Reactive oxygen species detector concept*:  
[https://www.esa.int/ESA\\_Multimedia/Images/2022/03/Reactive\\_oxygen\\_species\\_detector\\_concept](https://www.esa.int/ESA_Multimedia/Images/2022/03/Reactive_oxygen_species_detector_concept)

**4. ESA / Space in Member States / Greece**

([https://www.esa.int/Space\\_in\\_Member\\_States/Greece](https://www.esa.int/Space_in_Member_States/Greece)): Άρθρο με ελληνικό τίτλο **"Αναζητώντας σουπεροξειδία στη Σελήνη και τον Άρη με στόχο την «αποκομιδή» οξυγόνου"** (με περιγραφή στα Ελληνικά του σχεδίου του *ανιχνευτή δραστικών μορφών οξυγόνου*):

[https://www.esa.int/Space\\_in\\_Member\\_States/Greece/Anazethontas\\_soyperoxehidia\\_ste\\_Selhene\\_kai\\_ston\\_Hare\\_me\\_sthocho\\_ten\\_apokomidhe\\_oxyghonoy](https://www.esa.int/Space_in_Member_States/Greece/Anazethontas_soyperoxehidia_ste_Selhene_kai_ston_Hare_me_sthocho_ten_apokomidhe_oxyghonoy)

**5. Ανάρτηση στην πύλη Δραστηριοτήτων της ESA:**

<https://activities.esa.int/4000136482>

18. **FEBS Young Scientists' Forum (YSF) 2023 & 47th FEBS Congress**, Tours, France, 6–12 July 2023. Funding my Ph.D. candidate Marianna Skipitari's participation.

19. "Υποστήριξη ερευνητικής δραστηριότητας με επιστημονικό αντικείμενο την **αστρο/βιοχημεία της οξειδωτικής πίεσης**", με κωδικό 82874 (Πανεπιστήμιο Πατρών ΕΛΚΕ, 17-01-2024), διάρκεια 5 έτη.
20. Πρόγραμμα του Ευρωπαϊκού Οργανισμού Διαστήματος (**ESA**) με τίτλο "**Lunar Dust Biotoxic Chemical Reactivity: quantitative detection**" (για την κατασκευή οργάνου για την ποσοτική ανίχνευση της βιοτοξικής χημικής δραστηριότητας της σεληνιακής σκόνης), contract no. 4000145471/24/NL/MGu/ov. Διάρκεια 01-11-2024 έως 31-04-2026.
21. Υποτροφία **Μεντζελόπουλου**-Πανεπιστημίου Πατρών για υποψήφιους διδάκτορες (χρηματοδότηση **Ευφημίας Μιχαήλ**, διδακτορική διατριβή «Μέθοδοι ποσοτικής αξιολόγησης της ελεύθερης και εστεροποιημένης οξειδωμένης χοληστερίνης στις οξειδωμένες λιποπρωτεΐνες χαμηλής πυκνότητας (oxLDL) και σύνδεσή της με την μετατροπή των oxLDL-κορεσμένων μακροφάγων προς δημιουργία αθηρωματικών πλακών»). Διάρκειας 3 έτη (2025 έως 2028).

### **Βιοτεχνολογική αξιοποίηση του ερευνητικού έργου και πατέντες**

Οι πατέντες μου (με συν-εταίρο το Πανεπιστήμιο Πατρών) είναι οι ακόλουθες:

1. Συσκευή καλλιέργειας μικροοργανισμών σε υγρά θρεπτικά υποστρώματα εντός τρυβλίων Petri (Οργανισμός Βιομηχανικής Ιδιοκτησίας, ΟΒΙ, αριθμ. διπλώματος 1003266).
2. Χρησιμοποίηση βενζοϊκού και 2-υδροξυ-βενζοϊκού οξέος στην καταπολέμηση σκληρωτιογόνων μυκήτων που προσβάλλουν λαχανικά, φρούτα και όσπρια' (ΟΒΙ, αριθμ. διπλώματος 1004036).
3. Μέθοδος ποσοτικοποίησης της ελεύθερης ρίζας του ανιόντος του σουπεροξειδίου (ΟΒΙ, αριθμός/ημερομηνία κατάθεσης 20050100440/23-08-2005).
4. Μέθοδος προσδιορισμού των μοριακών παραμέτρων της θειολικής οξειδοαναγωγικής κατάστασης (ΟΒΙ, αριθμός/ημερομηνία κατάθεσης 20050100433/18-08-2005).
5. Μέθοδος για την φωτομετρική ποσοτικοποίηση των πρωτεϊνικών καρβονυλομάδων (ΟΒΙ, αριθμός/ημερομηνία κατάθεσης 20160100568 / 04.11.2016).
6. Μέθοδος για την φθορισμομετρική ποσοτικοποίηση των πρωτεϊνικών καρβονυλομάδων (ΟΒΙ, αριθμός/ημερομηνία κατάθεσης 20160100569 / 04.11.2016).
7. Φαρμακευτικοί συνδυασμοί και kit για την πρόληψη ή τη θεραπεία του πόνου και άλλων επιπλοκών της ορθοπαιδικής ή αγγειακής χειρουργικής και του πολλαπλού τραύματος (ΟΒΙ GR20180100514 / 07.11.2018).

Η διεθνής εταιρεία *Cayman Chemical* (Ann Arbor, Michigan, USA: <https://www.caymanchem.com/Home>), που εξειδικεύεται στην ανάπτυξη μεθόδων ποσοτικοποίησης παραμέτρων του οξειδωτικού στρες, στις 27 Ιουλίου 2017 σύναψε με το εργαστήριό μου και το Πανεπιστήμιο Πατρών συμφωνία αδειοδότησης των πατεντών 5 και 6 προς την ανάπτυξη δύο εμπορικών κιτ για τη φωτομετρική και φθορισμομετρική ποσοτικοποίηση των πρωτεϊνικών καρβονυλομάδων. Η μέθοδος της πατέντας #6 έγινε εμπορικό κιτ (*Cayman Chemical Protein Carbonyl Fluorometric Assay Kit* Item No. 701530: <https://www.caymanchem.com/product/701530/protein-carbonyl-fluorometric-assay-kit>, last accessed August 6, 2020), όπως επίσης πιστοποιείται και από το users manual (<https://www.caymanchem.com/pdfs/701530.pdf>, last accessed August 6, 2020).

### **Διοικητικό έργο**

1. Μέλος της Επιτροπής Βιοηθικής του Πανεπιστημίου Πατρών (αναπληρωματικό από τις 31-3-2011 έως τις 13-11-2014, τακτικό από 13-11-2014 και εντεύθεν).
2. Αναπληρωματικό μέλος της Επιτροπής Εκδόσεων του Γραφείου Εκδόσεων του Πανεπιστημίου Πατρών.
3. Μέλος των ακόλουθων επιτροπών του τμήματος Βιολογίας (και σε σχέση με το Πανεπιστήμιο): Επιτροπή σύνταξης Μεταπτυχιακού Προγράμματος Σπουδών (ΕΠΕΑΕΚ II), Επιτροπή Επαγγελματικών Προβλημάτων των Βιολόγων, Επιτροπή Ελέγχου Εύφλεκτων Εργαστηριακών Υλικών (πρόεδρος), Υπεύθυνος διαχείρισης τοξικών αποβλήτων του Τμήματος, Επιτροπή Προγράμματος Μορφωτικών Ανταλλαγών (Erasmus, Socrates), Επιτροπή Αξιολόγησης του Τμήματος Βιολογίας στα Ευρωπαϊκά Πανεπιστήμια, Αναπληρωματικό μέλος της Επιτροπής Ευρωπαϊκών Εκπαιδευτικών Προγραμμάτων, Εκπρόσωπος στην Επιτροπή Βιοηθικής, Επιτροπή Ιστοσελίδας (Πρόεδρος), Επιτροπή Κτιρίου, Επιτροπή Ακαδημαϊκών Θεμάτων,
4. Αναπληρωτής Πρόεδρος του Τμήματος Βιολογίας του Πανεπιστημίου Πατρών (ακαδημαϊκά έτη 2016-2017 και 2017-2018).
5. Αντιπρόεδρος της Επιτροπής Ηθικής και Δεοντολογίας Έρευνας του Πανεπιστημίου Πατρών (ΕΛΚΕ Π.Π. 558/16.07.2018 - 564/24.09.2018).

## Επιστημονικές γνωματεύσεις σε κρατικούς οργανισμούς

1. Προσκεκλημένος εμπειρογνώμονας από τον Εθνικό Οργανισμό Φαρμάκων για την επιστημονική αξιολόγηση των ομοιοπαθητικών σκευασμάτων (8 Απριλίου 2016).
2. Προσκεκλημένος εμπειρογνώμονας από το Υπουργείο Υποδομών, Μεταφορών και Δικτύων της Ελλάδας για επιστημονική πρόταση στον καθορισμό ορίων ασφαλούς έκθεσης των πολιτών στις ηλεκτρομαγνητικές ακτινοβολίες (1 Αυγούστου 2016).
3. Προσκεκλημένος εμπειρογνώμονας από το Κεντρικό Συμβούλιο Υγείας ως εμπειρογνώμονας για κατάθεση επιστημονικής εισήγησης κατά της άσκησης της ομοιοπαθητικής από ιατρούς, και κατά της εκπαιδευτικής πιστοποίησής της (20 Απριλίου 2017).
4. Προσκεκλημένος εμπειρογνώμονας (αναφορικά με τις βιολογικές βλάβες στον άνθρωπο εκ των ηλεκτρομαγνητικών ακτινοβολιών από διάφορες πηγές και ιδιαίτερα από τα κεραιοσυστήματα) από την Ειδική Μόνιμη Επιτροπή Προστασίας Περιβάλλοντος της Βουλής (στις 17 Μαΐου 2017) στη συνεδρίαση της με θέμα: "Εξέταση του πλαισίου εγκατάστασης κεραιοσυστημάτων" (<http://www.hellenicparliament.gr/Vouli-ton-Ellinon/ToKtirio/Fotografiko-Archeio/#97ba4a5f-7794-4a1d-8eb6-a77700bc4ae3>).
5. Προσκεκλημένος εμπειρογνώμονας από την επιτροπή Εκπαίδευσης και Μετεκπαίδευσης του Κεντρικού Συμβουλίου Υγείας (αναφορικά με επιστημονική εισήγησή μου κατά της άσκησης της ομοιοπαθητικής από ιατρούς, και κατά της εκπαιδευτικής πιστοποίησής της) για συνεδρίαση με θέμα «Επίσημη αναγνώριση της πρακτικής ομοιοπαθητικής» (29 Μαΐου 2017).
6. Προσκεκλημένος εμπειρογνώμονας από τις Κοινοβουλευτικές Επιτροπές Υγείας και Περιβάλλοντος της Βουλής των Αντιπροσώπων της Κυπριακής Δημοκρατίας, στις 19 Σεπτεμβρίου και 24 Οκτωβρίου 2019, με θέμα της ημερήσιας διάταξης, «Οι κίνδυνοι που προκύπτουν στη δημόσια υγεία από τη χρήση του δικτύου 5G».

## Εκπαιδευτικό έργο

### I. Διδασκαλία προπτυχιακών μαθημάτων στο Τμήμα Βιολογίας

1. *Βιοχημεία I*
2. *Βιοχημεία II*
3. *Βιοτεχνολογία*
4. *Βιοηθική και Ηθική της Τεχνολογίας*

## **II. Διδασκαλία μεταπτυχιακών μαθημάτων στο Τμήμα Βιολογίας**

1. *Ειδικά Μαθήματα Βιοχημείας*
2. *Βιοχημεία του Οξειδωτικού Στρες*

## **III. Εκπόνηση μεταπτυχιακών διατριβών υπό την επιστημονική επίβλεψή μου**

Διδακτορικές διατριβές (PhD): 12 (1 από 13 Οκτ. 2023 ως Ομότιμος Καθηγητής, βάσει Νόμου 4957-2022)

Μεταπτυχιακά διπλώματα ειδίκευσης (MSc): 15

## **IV. Μεταδιδακτορικοί ερευνητές (Post-Docs): 3**

### **Ιδρύματα και θέσεις επιστημονικής εξέλιξης μεταπτυχιακών φοιτητών**

Harvard Medical School (2 Post-Doc), Beth Israel Deaconess Medical Center (1 Post-Doc), 1Globe Health Institute (1 Post-Doc) al in USA, Université catholique de Louvain, Belgium (1 PhD, 1 Post-Doc), University of Birmingham, United Kingdom (1 Post-Doc), Dublin City University, Ireland (Assis. Prof.), Université Libre de Bruxelles, Belgium (1 Post-Doc), University Hospital Erlangen-Nuremberg, Germany (1 PhD), Karolinska Institutet, Sweden (2 Post-Docs), FORTH-ICE-HT, Hellas (1 PostDoc), BIANEΞ, Hellas (2 positions)