

REGENERATIVE PHARMACOLOGY LAB

Professor Ioannis Charalampopoulos

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Group Title: Regenerative Pharmacology

A. Research Group Overview

As group leader of the Regenerative Pharmacology Lab at the Neuroscience Division, Institute of Molecular Biology and Biotechnology (IMBB), and Professor of Pharmacology, at the Medical School, University of Crete, we aim to translate basic research's findings to pre-clinical drug development processes and human models of nervous system diseases. Our research interests are focusing on the investigation of endogenous Neurotrophins and their receptors, which control brain development and maintenance during adulthood and in aging, while they importantly participate in neuronal survival, differentiation and repair. We exploit the neurotrophin receptors mechanisms by developing novel ligands exerting therapeutic effects on human and animal models of neurological diseases (like Alzheimer's Disease), targeting on their pharmacological use as new therapeutic factors. We decipher the multiple neuronal effects of these receptors and thus we have produced novel neurotrophin analogs with desired pharmacological properties (targeted signalling, small size, lipophilicity etc), inducing adult neurogenesis and neuroprotection. In order to explore the aforementioned effects of neurotrophin analogs to their receptors and in parallel to define their pharmacological actions against specific neurodegenerative disease, we use primary neuronal and glial cultures (neurons, microglia, oligodendrocytes and astrocytes isolated from hippocampus, cortex, cerebellum, Superior Cervical Ganglia and Dorsal Root Ganglia) or embryonic (cortical) and adult (SVZ and hippocampal) neural stem cells cultures. Moreover, as a novel translational outcome, we have developed protocols and standard operating procedures for producing human induced Pluripotent Stem Cells (hiPSCs)-derived neurons, astrocytes and microglial cells, from Alzheimer's Disease (AD) patients or healthy individuals. Additionally, we test our prototypic compounds for their efficacy to promote neuroprotection or neurorepair through their ability to induce adult neurogenesis, in *in vivo* animal models of neurodegenerative diseases, like Alzheimer's Disease (using the 5xFAD mice), in combination with conditional, genetically-modified for specific neurotrophin receptors, mice (p75NTR-KO, p75NTR^{flox-Nestin-cre} and p75KO/5xFAD). Finally, we have developed 3D platforms of specific materials -like collagen scaffolds- that efficiently support mouse and human neuronal cultures, mimicking specific brain circuits under normal or pathological conditions in a more realistic way, and in collaboration with bioengineers, we use soft nanorobotics for their administration to the brain in a less invasive way (www.softreach.eu, EIC-PATHFINDER). The last 4 years, we have also expanded our interest to the interplay of neurotrophins with other key factors in neurological diseases, like glucocorticoids or hyperglycaemia. In this aspect, we explore the potential interactions of glucocorticoid rhythmicity (circadian and ultradian rhythms) or hyperglycaemic conditions in the expression and functional alterations of neurotrophic factors and their receptors, in order to reveal their synergy or antagonism on neuroinflammation under physiological or pathological conditions. To this end, we have set up and operate a microfluidic platform for precise drug administration in human neurons and astrocytes. In conclusion, the major interest of our work is not only to produce but also to translate basic knowledge to novel pharmacological applications and potential therapeutics. For that reason, the last 5 years we have oriented our scientific direction towards the establishment and use of human cells. We have established a hiPSCs culture facility at IMBB, and we are collaborating with the Institute of Pharmacological Research and Technology (IFET) to co-develop a neuroinflammation on chip platform, in order to be used in drug screening. Through our participation in a National Infrastructure program for establishing an Organoid Unit as part of a national consortium for drug development, we vision to establish a human stem cell facility for providing tools and disease models for novel pharmacological approaches, based on well-defined pathological mechanisms of human diseases.

B. Positioning and role

My lab is characterized by its focus on the pharmacology of neurotrophic factors, and their therapeutic application on neurodegenerative diseases by using human and mouse models. We are closely collaborating with many other groups in Medical School and IMBB, as well as with research teams from other Universities and Institutes. We are developing novel pharmacological agents and devices for pursuing translational research against neurological diseases like Alzheimer's Disease and Spinal Cord Injury, while we have co-founded a spin-off company of FORTH and UoC, named ReNeuroCell Therapeutics. Finally, we organize and participate at many training events, administration committees and meetings/conferences that take place at Medical School, University of Crete and IMBB-FORTH.

C. Group Structure and Personnel (December 2025)

Number of PhD student and postdoctoral fellows trained so far:

- 3 PhD finished (supervisor)
- 5 PhDs finished (co-supervisor)
- 4 Postdoctoral Research Fellows
- 12 MS students (Master Thesis supervisor)
- 23 Undergraduate Diploma Students (Thesis supervisor)
- 5 ERASMUS students (3 months internship)

Current composition of the laboratory:

2 Postdocs

- Dr Konstantina Chanoumidou has joined the lab 5 years ago as an expert on hiPSCs technology. She was recently elected as Assistant Professor at the Pharmacology Dept. of the Medical School, University of Crete.
- Dr Maria Anna Papadopoulou is an expert on Alzheimer's Disease pathology, mainly in adult hippocampal neurogenesis and neurotrophin signaling studies. She is member of our team for 8 years.

2 PhDs, ongoing (supervisor).

- Alexandros Tsimpolis (started his PhD at 2020) is studying the interactions of glucocorticoids and BDNF under physiological and pathological conditions. He is aiming to defense his PhD Thesis at the end of 2025.
- Chrystalla Konstantinou (started her PhD at 2024) is investigating the neurotrophin-related effects on neuroinflammatory processes during Alzheimer's Disease.

1 Master Student

- Despoina Kritikaki (started at 2025). Title: "Exploring the role of neurotrophin receptors in neuroinflammation in Alzheimer's Disease."

1 undergraduate diploma student

- Angeliki Paraskevi Kyriakaki (started at 2025). Title: "Studying the role of hypoglycemia in human neuroinflammation."

2 ERASMUS students

- Aman Kumar, University of Siena
- Sina Bühler, University of Cologne

D. Short CV



BIOGRAPHICAL SKETCH
Ioannis Charalampopoulos

NAME: Ioannis Charalampopoulos

Personal Webpages:

<https://www.imbb.forth.gr/en/research-en/neurosciences/item/3677-ioannis-charalampopoulos>

https://www.researchgate.net/profile/Ioannis-Charalampopoulos-2?ev=hdr_xprf

<https://www.linkedin.com/in/charalampopoulosioannis/>

POSITION TITLE:

- **Professor of Pharmacology, Medical School, University of Crete & Clinical Pharmacology Laboratory, University General Hospital (PAGNI)**
- **Researcher at Institute of Molecular Biology and Biotechnology (IMBB), Foundation of Research and Technology Greece (FORTH)**
- **Co-Founder of the spin-off company [ReNeuroCell Therapeutics](#)**

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Biology Dept., University of Patras	BSc	06/1997	Biology
Medical School, University of Crete	MSc	09/2000	Neuroscience
Medical School, University of Crete	PhD	12/2004	Neuropharmacology
Neuroscience Dept., Karolinska Institutet	Postdoctoral	09/2007	Molecular Neurobiology

A. Positions and Honors.

Academic – Professional Positions

2005-2007: Post-doctoral fellow at Molecular Neurobiology Lab (PI: Prof. Carlos F. Ibáñez), Dept. of Neuroscience, Karolinska Institutet, Stockholm, Sweden

2007-2010: Research Scientist, Dept. of Pharmacology, Medical School, University of Crete

2010-2014: Lecturer in Pharmacology, Medical School, University of Crete.

2014-2019: Assistant Professor of Pharmacology, Medical School, University of Crete

2018-present: Researcher/Group Leader, Institute of Molecular Biology and Biotechnology (IMBB), Foundation of Research and Technology, Hellas (FORTH)

2019-2023: Associate Professor of Pharmacology, Medical School, University of Crete

2021-2024: Director of the Graduate Program in Neurosciences, Medical School, University of Crete

2023-present: Professor of Pharmacology, Medical School, University of Crete

2024-present: Co-founder of ReNeuroCell Therapeutics, spin-off company of FORTH and UoC

Other Experience and Professional Memberships

- Associate Editor at *Neuropharmacology (specialty section of Frontiers in Neuroscience, Frontiers in Neurology, Frontiers in Pharmacology and Frontiers in Psychiatry)* and member of the Editorial Board of *Pharmacology Research & Perspectives* & *Biomedicines*.
- Co-Editor at the Special Issue of *Frontiers in Endocrinology (Lausanne)*, 2024: "Steroid receptors in neuron and glia."
- Reviewer in >30 journals including Nature Communications, Advanced Science, Cell Reports Medicine, Biomaterials, Cell Death and Disease, etc.

Member of the following Scientific Societies:

- Federation of European Biochemical Societies (FEBS).
- Federation of European Neuroscience Societies (FENS).
- Hellenic Brain Council (HBC)
- International Brain Research Organization (IBRO).
- Hellenic Society of Molecular Biology and Biochemistry.
- Hellenic Society for Neuroscience.
- Hellenic Society of Gene Therapy and Regenerative Medicine

Honors

- Invited speaker in >25 international and national meetings, (e.g. from the FENS, Gordon Research Conference for Neurotrophic Factors, Hellenic Initiative Against Alzheimer's Disease, Hellenic Neuroscience Society, Hellenic Society of Gene Therapy and Regenerative Medicine, Hellenic Society of Molecular Biology and Biotechnology, Greek Society of Basic and Clinical Pharmacology, NGF Meeting, Golden Helix Symposium, COST actions)
- 12 Awards in international and national meetings for best oral or poster presentations

B. Selected peer-reviewed publications

81 peer-reviewed Medline papers (all PubMed papers at: <https://pubmed.ncbi.nlm.nih.gov/?term=Charalampopoulos+I%5BAuthor%5D+NOT+Agricul&sort=date&size=100>)

h index: 36, Total Citations: >3500

Selected Publications:

1. Maria Kokkali, Kanelina Karali, Evangelia Thanou, Maria Anna Papadopoulou, Ioanna Zota, Alexandros Tsimpolis, Paschalis Efstathopoulos, Theodora Calogeropoulou, Ka Wan Li, Kyriaki Sidiropoulou, Achille Gravanis, **Ioannis Charalampopoulos. *Molecular Psychiatry*, Jun;30(6) 2025 (*Corresponding Author).**
2. Despoina Charou, Thanasis Rogdakis, Alessia Latorrata, Maria Valcarcel, Vasileios Papadogiannis, Christina Athanasiou, Alexandros Tsengenes, Maria Anna Papadopoulou, Dimitrios Lypitkas, Matthieu D. Lavigne, Theodora Katsila, Rebecca C. Wade, M. Zameel Cader, Theodora Calogeropoulou, Achille Gravanis & **Ioannis Charalampopoulos***. *Stem Cell Research & Therapy*, **15, 200 2024 (*Corresponding Author)**
3. Zota I, Chanoumidou K, **Charalampopoulos I***, Gravanis A. *Glia*. **2024 Jan 11. (*Corresponding Author)**
4. Efstathopoulos P, Kourgiantaki A, Karali K, Sidiropoulou K, Margioris AN, Gravanis A, **Charalampopoulos I. *Transl Psychiatry*. 2015 Nov 24;5:e685 (# Corresponding author).**
5. **Charalampopoulos I**, Vicario A, Pediaditakis I, Gravanis A, Simi A, Ibáñez CF. *Cell Rep*. **2012 Dec 27;2(6):1563-70**
6. Lazaridis I.* , **Charalampopoulos I***, Alexaki VI, Avlonitis N, Pediaditakis I, Efstathopoulos P, Calogeropoulou T, Castanas E, Gravanis A. *PloS Biol.*, **Vol 9(4), 2011, (*equal contributors)**
7. Vilar M*, **Charalampopoulos I***, Kenchappa RS*, Simi A*, Karaca E, Reversi A, Choi S, Bothwell M, Mingarro I, Friedman W, Schiavo G, Bastiaens P, Verveer P, Carter BD, Ibáñez CF. *Neuron*, **2009, 62(1): 72-83 (* equal contributors)**
8. **Charalampopoulos I**, Remboutsika E, Margioris AN, Gravanis A. *Trends Endocrinol Metab*. **2008, 19(8):300-7.**
9. **Charalampopoulos I**, Tsatsanis C, Dermitzaki E, Alexaki VI, Castanas E, Margioris AN, Gravanis A. *PNAS*, **2004, 101:8209-14**

Patent Application: PCT (International Publication Number): WO 2008/155534 A2

EPO-UK 711948,0: Neuroprotective synthetic spiro-neurosteroids.

E. Major outcomes and achievements during the 4 last years

During the last 4 years, our research team has managed to publish 18 research papers (14 original papers, 3 review papers and 1 editorial), with our recent work on Molecular Psychiatry journal to be in the highlights of Medical School and FORTH. Two recent research papers are under review (pre-prints, <https://www.biorxiv.org/cgi/content/short/2025.09.11.675537v1>, <https://doi.org/10.21203/rs.3.rs-7184834/v1>). Most of this published research were in collaboration with other research groups in Europe due to our ITN Marie S. Curie program ‘EuroNeurotrophin’ which was completed in 2022, as well as to long-term collaboration with Greek colleagues from a ‘‘Research-Create-Innovate’’ grant and the National Initiative against neurodegenerative diseases. We have also been granted with significant competitive grants from European Agencies (HORIZON2020, European Initiative Council) and national funds (Hellenic Foundation of Research and Innovation, Bodossakio Foundation), as well as collaboration with the pharmaceutical industry (Institute of Pharmaceutical Research and Technology, ELPEN Pharmaceutical company).

The Regenerative Pharmacology Laboratory had successfully granted to coordinate an EIC-PATHFINDER01, named SoftReach (www.softreach.eu) in order to develop soft nanorobotics system for less invasive drug administration in the brain, in collaboration with King’s College, Universities of Thessaly and Cyprus, as well as the Gremse-IT GmbH company. This project will be completed at July 2026 and we plan to submit a proposal for the next step, the EIC-Transition grants, in order to further increase TRLs of the new products. The next phase of our collaboration with the Institute of Pharmaceutical Research and Technology is also planned in order to proceed our newly developed Neuroinflammation-on-chip platform into the preclinical drug testing. Additionally, we have secured a donation of microfluidic system equipment [the main components of which include two high-precision microfluidic controllers and a flow sensor] from the ELPEN Pharmaceutical Company, and with the parallel purchase of accompanying equipment, we developed a chronopharmacological studies infrastructure. This cutting-edge technology allows for the temporospatial controlled delivery of drugs with simultaneous collection and measurement of multiple biomarkers in a multitude of cellular systems.

Over the last 4 years, the Regenerative Pharmacology Laboratory has developed a Human Induced Pluripotent Stem Cells (hiPSCs) Lab at IMBB-FORTH, from cell lines obtained through collaborations with the Universities of Oxford and Johns Hopkins. At the same time, and through collaboration with the Neurology Clinic of the University Hospital of Heraklion, consent protocols have been approved from patients for the collection of biological material in order to reprogram the collected cells into human pluripotent stem cells. During these years, we have successfully developed protocols for hiPSC-derived neurons, astrocytes and microglia cells, providing important tools for human research and cell therapy assays.

We have generated new mouse models ($p75^{\text{flox}}\text{-Nestin}^{\text{Cre}}$ $p75\text{KO}/5\text{xFAD}$ mice) in order to evaluate the significance of this neurotrophin receptor to Alzheimer’s Disease pathology and also to adult hippocampal neurogenesis. In parallel, we have developed selective antagonists of $p75^{\text{NTR}}$ that could be used as pharmacological agents for this receptor also in Alzheimer’s Disease but also in many other neurodegenerative conditions where it is involved.

The last 4 years we have closely collaborate with Dr Dimitris Tzeranis, an expert on biomaterials and tissue engineering, developing 3D collagen scaffolds as carriers of neural stem cells, targeting the *ex vivo* creation of neural networks but also their use as neuroimpants in brain trauma. Last year, a new spin-off company of the FORTH and UoC has been established, aiming to provide new therapeutic approaches against brain trauma. We are under negotiations with Venture Capitals and pharmaceutical companies in order to secure the necessary funding for the proof of concept of our products.

Finally, the last 2 years, I coordinate the IMBB participation in OSTRI proposal as part of the National Infrastructures Program, aiming to develop an Organoid Unit for enhancing human research and providing pre-clinical services for drug development and testing.

F. Targets and Strategic plan for the upcoming period

The lack of effective treatment for devastating neurodegenerative diseases, especially Alzheimer's Disease, has stimulated great interest in the development of neuroprotective and neuroregenerative means that can prevent and/or reverse progressive loss of neuronal function. It is of general acceptance in the scientific community that stem cells and tissue engineering platforms are promising tools in translational medicine directed at tissue and organ regeneration and repair. The importance of cell replacement therapies using pluripotent stem cells that can give rise to specific cellular types found in neuronal tissue is consisting a major breakthrough in the context of developing new treatments against neurodegenerative diseases. In addition, the understanding of the endogenous machinery that dictates cellular and tissue de- or re-generation, remains one of the main challenges. The discovery of human adult neurogenesis potential opens new avenues and opportunities for treating neurological diseases and disorders, particularly through the exploitation of endogenous regenerative capacity. By dissecting the molecular mechanisms and components that underlie these intrinsic de-/re-generative signaling pathways, we could design effective therapies to inhibit neuronal loss, repair damaged tissue or even replace the dead cells via tissue engineering. In addition, novel drugs and biodevices for secure administration will revolutionize the field of Regenerative Pharmacology and Medicine.

Targeting the endogenous regenerative capacity of nervous tissue, our strategic plan is to take benefit of our expertise on the development and pharmacological use of novel, patented neurotrophin analogs and use them as therapeutic agents for controlling hippocampal neurogenesis, neuronal survival against amyloid toxicity and enhancing cognitive performance in AD, while in parallel we develop humanized disease models that validate the mouse models. Our prototypic, patented molecule, named BNN27, which has been already licensed to the German company [Novaliq](#) for preclinical testing against diabetic retinopathy, has been shown multifactorial beneficial effects in Alzheimer's Disease, driving our efforts on this neurodegenerative disorder for preclinical testing. In parallel, we have deciphered the exact role and properties of neurotrophin receptors, their interplay with other factors (glucocorticoids, hyperglycemia) on a disease specific manner, and revealed the significant parameters that could be pharmacologically targeted. In order to transfer this basic knowledge to a translational opportunity, and in collaboration with pharmaceutical agencies, we will explore the efficacy of existing and new drugs against depression and diabetes, using human neuronal and glial cells, while we aim to detect new biomarkers for neurodegenerative diseases. By establishing an Organoid Unit at FORTH, as well as a new biobank in the Medical School, we aim to amplify our hiPSC expertise and further increase their use for human disease modelling.

Neurogenic drugs/biomaterials might reverse or compensate deficits and impairments associated with neurological diseases and disorders in a more effective and less invasive way than the exogenous transplantation of neural precursors, since they can be pharmacodynamically controlled. Their potential for regenerative medicine is of no doubt and their scientific, therapeutic and commercial value is immense. To ensure improved administration and more targeted drug or cell delivery to the brain, we will explore the use of soft nanorobotics for delivery of scaffold-based drug or cell delivery in neurodegenerative diseases, such as Alzheimer's Disease and Spinal Cord Injury, with specific products development from our spin-off, Reneurocell Therapeutics. Finally, through our new submitted European grants (EIC, MSC ITN), we will expand our collaboration network, open new research questions (e.g. the impact of pollution in brain health, depression and Alzheimer's Disease interplay) offering the adaptation of new technologies, while our highly-ranked national proposals ("Trust Your Stars", "Research-Innovate" actions) will provide national networking.

G. Funding 2022-2025

- 1. Title and Reference Number of the Grant:** “SoftReach: Minimally Invasive Soft-Robot-Assisted Deep-Brain Localized Therapeutics Delivery for Neurological Disorders” (101099145).
Funding Agency and Funding Scheme: HORIZON-European Innovation Council (EIC)-2022-PATHFINDER01-European Commission
Amount of grant for the Team: 1.010.000€
Start date and end date of the grant: 2023-2026
- 2. Title and Reference Number of the Grant:** National Flagship Project for elucidating the genetic basis of the neurodegenerative diseases Alzheimer's and Parkinson's, for detecting reliable biomarkers and for developing innovative technologies and therapeutic strategies for precision medicine.
Funding Agency and Funding Scheme: General Secretary of Research and Innovation, Ministry of Development
Amount of grant for the Team: 610.000€
Start date and end date of the grant: 2024-2026
- 3. Title and Reference Number of the Grant:** Neuroinflammation on chip
Funding Agency and Funding Scheme: Institute of Pharmacological Research and Technology (IFET)
Amount of grant for the Team: 122.000€
Start date and end date of the grant: 2023-2025
- 4. Title and Reference Number of the Grant:** Studying the role of the p75 neurotrophin receptor in hyperglycemic conditions.
Funding Agency and Funding Scheme: Bodossakio Foundation
Amount of grant for the Team: 48.000€
Start date and end date of the grant: 2022-2024
- 5. Title and Reference Number of the Grant:** Dissecting the role of p75 neurotrophin receptor in the hippocampal adult neurogenesis as a novel therapeutic application against Alzheimer's Disease. KA10490
Funding Agency and Funding Scheme: Hellenic Foundation of Research and Innovation, 1st Call for H.F.R.I. Research Projects to Support Faculty Members & Researchers and Procure High-Value Research Equipment
Amount of grant for the Team: 180.000€.
Start date and end date of the grant: 2019 -2023
- 6. Title and Reference Number of the Grant:** Study on the interactions between glucocorticoid and brain-derived neurotrophic factor interactions under physiological and pathological conditions.
Funding Agency and Funding Scheme: Hellenic Foundation of Research and Innovation
Amount of grant for the Team: 42.000€
Start date and end date of the grant: 2022-2025
- 7. Title and Reference Number of the Grant:** DINNESMIN: Development of Innovative Neuroprotective Neurogenerative Synthetic Micro-Neurotrophins., T1EDK-03186
Funding Agency and Funding Scheme: General Secretary of Research and Innovation, National Funding, Call for Operational Programme 'Competitiveness, Entrepreneurship and Innovation'
Amount of grant for the Team: 220.000€
Start date and end date of the grant: 2018 – 2022

8. Title and Reference Number of the Grant: A European training network for the discovery of neurotrophin small molecule mimetics as potential therapeutic agents for neurodegeneration and neuroinflammation, EU765704

Funding Agency and Funding Scheme: European Commission, Marie Skłodowska Curie Actions - Innovative Training Networks (ITN), Call: H2020-MSCA-ITN-2017

Amount of grant for the Team: 455.000€

Start date and end date of the grant: 2018 –2022

9. Title and Reference Number of the Grant: National Flagship Project for Research on neurodegenerative diseases on the basis of precision medicine.

Funding Agency and Funding Scheme: General Secretary of Research and Innovation, Ministry of Development

Amount of grant for the Team: 65.000€

Start date and end date of the grant: 2019-2022

10. Title and Reference Number of the Grant: Short-term fellowships

Funding Agency and Funding Scheme: EMBO (two 3-months fellowships), IBRO Return Home fellowship, NENS Exchange Grant

Amount of grant for the Team: 25.000€

Start date and end date of the grant: 2022-2025

H. Publications 2022-2025

1. Zota I, Calogeropoulou T, Chanoumidou K, Charalampopoulos I, Gravanis A. (2025) [Synthetic microneurotrophins: Neurotrophin receptors for therapeutics of neurodegenerative diseases.](#) Br J Pharmacol. Oct;182(19):4466-4489. Review.
2. Kokkali M, Karali K, Thanou E, Papadopoulou MA, Zota I, Tsimpolis A, Efstathopoulos P, Calogeropoulou T, Li KW, Sidiropoulou K, Gravanis A, Charalampopoulos I. (2025) [Multimodal beneficial effects of BNN27, a nerve growth factor synthetic mimetic, in the 5xFAD mouse model of Alzheimer's disease.](#) Mol Psychiatry. 30(6):2265-2283.
3. Zota I, Chanoumidou K, Gravanis A, Charalampopoulos I. (2024) [Stimulating myelin restoration with BDNF: a promising therapeutic approach for Alzheimer's disease.](#) Front Cell Neurosci. Sep 2;18:1422130. Review.
4. Le Menuet D, Charalampopoulos IN, Cunningham RL, Kalafatakis K, Nalvarte I. (2024) [Editorial: Steroid receptors in neuron and glia.](#) Front Endocrinol (Lausanne). Aug 14;15:1472908.
5. Charou D, Rogdakis T, Latorrata A, Valcarcel M, Papadogiannis V, Athanasiou C, Tsengenesis A, Papadopoulou MA, Lypitkas D, Lavigne MD, Katsila T, Wade RC, Cader MZ, Calogeropoulou T, Gravanis A, Charalampopoulos I. (2024) [Comprehensive characterization of the neurogenic and neuroprotective action of a novel TrkB agonist using mouse and human stem cell models of Alzheimer's disease.](#) Stem Cell Res Ther. Jul 6;15(1):200.
6. Tsimpolis A, Kalafatakis K, Charalampopoulos I. (2024) [Recent advances in the crosstalk between the brain-derived neurotrophic factor and glucocorticoids.](#) Front Endocrinol (Lausanne). Apr 5;15:1362573. Review.
7. Antonijevic M, Charou D, Davis A, Curel T, Valcarcel M, Ramos I, Villacé P, Claeysen S, Dallemagne P, Gravanis A, Charalampopoulos I, Rochais C. (2024) [Development of Pleiotropic TrkB and 5-HT₄ Receptor Ligands as Neuroprotective Agents.](#) Molecules. Jan 19;29(2):515.
8. Zota I, Chanoumidou K, Charalampopoulos I, Gravanis A. (2024) [Dynamics of myelin deficits in the 5xFAD mouse model for Alzheimer's disease and the protective role of BDNF.](#) Glia. Apr;72(4):809-827.

9. Narducci D, Charou D, Rogdakis T, Zota I, Bafiti V, Zervou M, Katsila T, Gravanis A, Prousis KC, Charalampopoulos I, Calogeropoulou T. (2023) [A quest for the stereo-electronic requirements for selective agonism for the neurotrophin receptors TrkA and TrkB in 17-spirocyclic-dehydroepiandrosterone derivatives.](#) Front Mol Neurosci. Sep 28;16:1244133.
10. Giaccio P, Charou D, Diakaki DI, Chita A, Gravanis A, Charalampopoulos I, Roussis V, Ioannou E. (2023) [Butanolides and Butenolides from a Marine-Derived *Streptomyces* sp. Exert Neuroprotective Activity through Activation of the TrkB Neurotrophin Receptor.](#) Mar Drugs. Aug 25;21(9):465.
11. Papadopoulou MA, Rogdakis T, Charou D, Peteinareli M, Ntarntani K, Gravanis A, Chanoumidou K, Charalampopoulos I. (2023) [Neurotrophin Analog ENT-A044 Activates the p75 Neurotrophin Receptor, Regulating Neuronal Survival in a Cell Context-Dependent Manner.](#) Int J Mol Sci. Jul 20;24(14):11683.
12. Thanou E, Koopmans F, Pita-Illobre D, Klaassen RV, Özer B, Charalampopoulos I, Smit AB, Li KW. (2023) [Suspension TRAPping Filter \(sTRAP\) Sample Preparation for Quantitative Proteomics in the Low µg Input Range Using a Plasmid DNA Micro-Spin Column: Analysis of the Hippocampus from the 5xFAD Alzheimer's Disease Mouse Model.](#) Cells. Apr 25;12(9):1242
13. Kannavou M, Karali K, Katsila T, Siapi E, Marazioti A, Klepetsanis P, Calogeropoulou T, Charalampopoulos I, Antimisariis SG. (2023) [Development and Comparative In Vitro and In Vivo Study of BNN27 Mucoadhesive Liposomes and Nanoemulsions for Nose-to-Brain Delivery.](#) Pharmaceutics. Jan 27;15(2):419.
14. Georgelou K, Saridaki EA, Karali K, Papagiannaki A, Charalampopoulos I, Gravanis A, Tzeranis DS. (2023) [Microneurotrophin BNN27 Reduces Astrogliosis and Increases Density of Neurons and Implanted Neural Stem Cell-Derived Cells after Spinal Cord Injury.](#) Biomedicines. Apr 13;11(4):1170.
15. Tsimpolis A, Kokkali M, Logothetis A, Kalafatakis K, Charalampopoulos I. (2022) [Biphasic Response of Astrocytic Brain-Derived Neurotrophic Factor Expression following Corticosterone Stimulation.](#) Biomolecules. Sep 18;12(9):1322.
16. Antonijevic M, Charou D, Ramos I, Valcarcel M, Gravanis A, Villace P, Callizot N, Since M, Dallemagne P, Charalampopoulos I, Rochais C. (2023) [Design, synthesis and biological characterization of novel activators of the TrkB neurotrophin receptor.](#) Eur J Med Chem. Feb 15;248:115111.
17. Yilmaz C, Rogdakis T, Latorrata A, Thanou E, Karadima E, Papadimitriou E, Siapi E, Li KW, Katsila T, Calogeropoulou T, Charalampopoulos I, Alexaki VI. (2022) [ENT-A010, a Novel Steroid Derivative, Displays Neuroprotective Functions and Modulates Microglial Responses.](#) Biomolecules. Mar 9;12(3):424.
18. Rogdakis T, Charou D, Latorrata A, Papadimitriou E, Tsengenesis A, Athanasiou C, Papadopoulou M, Chalikiopoulou C, Katsila T, Ramos I, Prousis KC, Wade RC, Sidiropoulou K, Calogeropoulou T, Gravanis A, Charalampopoulos I. (2022) [Development and Biological Characterization of a Novel Selective TrkA Agonist with Neuroprotective Properties against Amyloid Toxicity.](#) Biomedicines. Mar 6;10(3):614.

Pre-prints.

1. Chanoumidou K., Zota I., Papadopoulou MA., Konstantinou C., Tsimpolis A., Tsagliotis E., Tziortziou M., Ntarntani K., Grünwald A., Lavigne MD., Gravanis A., Charalampopoulos I. [Targeting p75NTR activity alleviates the neurotoxic effect of high glucose on iPSC-derived dopaminergic neurons.](#), 2025, under review.
2. Papadopoulou MA, Chanoumidou K., Peteinareli M., Tsaglioti E., Michalaki K., Lavigne MD, Charalampopoulos I. [p75 Neurotrophin Receptor Shapes the Dynamics of Adult Hippocampal Neurogenesis in Alzheimer's Disease.](#) 2025, under review