

Efstratios Stratikos, PhD



Associate Professor

LABORATORY OF BIOCHEMISTRY, CHEMISTRY DEPARTMENT, NKUA

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Google scholar: [link](#) (3889 citations, h-index=35, i-index=74)

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EDUCATION

1989-1994 Undergraduate Degree in Chemistry, NKUA.

1994-1999 PhD in Biochemistry, Department of Biochemistry and Molecular Biology, University of Illinois at Chicago, Chicago, IL, USA. Title of PhD Thesis: "Structural analysis of the Serpin-Protease complex"

RESEARCH FIELDS

Biochemistry Chemical Biology Immunology Structural Biology Biophysics

EDUCATIONAL EXPERIENCE

UNDERGRADUATE COURSES

- Biochemistry I, Chemistry department, National and Kapodistrian University of Athens, Greece (3rd year course, Spring semester)
- Biochemistry II, Chemistry department, National and Kapodistrian University of Athens, Greece (4th year course, Winter semester)

GRADUATE COURSES

- Graduate Lectures for Master's degree in Biochemistry, NKUA, Chemistry Department
- Graduate Lectures for Master's degree in Clinical Biochemistry and Molecular Diagnostics, NKUA, Chemistry and Biology Departments
- Graduate Lectures for Master's degree in Physiology, NKUA Medical School
- Graduate Lectures for Master's degree in Cosmetology and Skin Pharmacology, Department of Pharmacy, NKUA

DISCRIMINATIONS / SCHOLARSHIPS

- 2014 Academy of Athens, Achilleas and Ekaterini Dionysopoulou Award
- 2016 Discovery Fast Track Challenge award from GlaxoSmithKline

RESEARCH GRANTS

- 2001-2004 Helen Hay Whitney Postdoctoral Grant (fellow)
- 2004-2006 The Medical Foundation Postdoctoral Grant (fellow).
- 2006-2007 Marie-Curie European Reintegration Grant "ERAP1" (PI)
- 2007-2008 NCSR Demokritos "Demoerevna" grant award (PI)

- 2007-2009 European STREP Grant “HDLomics” (team member)
- 2007-2008 “Empeirikion” institution Research grant (co-PI)
- 2010-2011 Hellenic Rheumatology Society Research grant (co-PI)
- 2010-2011 Hellenic Society of Lipidology and Atherosclerosis Research Grant (co-PI)
- 2011-2012 Hellenic Society for Atherosclerosis Research Grant (co-PI)
- 2012-2014 Greek Secretariat for R&T, postdoctoral training grant “Immunoreg” (co-supervisor)
- 2012-2015 Greek Secretariat for R&T, “Thalis” network project grant “HDL bio-therapies” (co-PI)
- 2012-2015 Greek Secretariat for R&T, “Aristeia” excellence grant no. 986 (coordinator)
- 2012-2013 Hellenic Society of Lipidology and Atherosclerosis Award (co-PI)
- 2013-2016 Greek Secretariat for R&T action “Funding retained ERC proposals” grant no. ERC-14 (coordinator)
- 2013-2014 Hellenic Rheumatology Society Research grant (co-PI)
- 2013-2016 Greek Secretariat for R&T action “Greece-France collaboration” grant no. HIAP (coordinator)
- 2016-2019 Harry J. Lloyd Charitable Trust Award «Modulating neoantigen epitope generation for melanoma immunotherapy» (coordinator)
- 2019-2021 Funding for proposal “Structure-based discovery of novel modulators of Insulin-Regulated aminopeptidase” as part of the action “Support of researchers with emphasis in young researchers”, Ministry of Education, (coordinator and supervisor)
- 2020-2022 Greek Secretariat for R&T action “Research-Create-Innovate”, grand “New therapies aiming to improve the atheroprotective and immunomodulatory properties of high-density lipoprotein (HDL) for the treatment of autoimmune and cardiovascular diseases” (team member)
- 2018-2023 GlaxoSmithKline research award for preclinical development of compounds with pharmaceutical interest (coordinator)
- 2021-2025 H2020-MSCA-ITN-2020, CAPSTONE, “Training experts in antigen processing to deliver new drug prototypes for cancer and autoimmune diseases” (PI for NCSR)

REVIEWER OF SCIENTIFIC JOURNALS

Reviewer in over 40 international peer review journals, such as: *Nature Chemical Biology*, *Cancer Research*, *Journal of American Chemical Society*, *Frontiers in Immunology*, *Journal of Medicinal Chemistry*, *eLife*, *Annals of Rheumatic Diseases*, *Journal of Immunology*, *EBiomedicine*, *European Journal of Immunology*, *Arthritis & Rheumatology* and others

EDITOR OF BOOKS AND SPECIAL VOLUMES

Associate Editor, *Frontiers Immunology*, *Frontiers in Chemical Biology*, *International Journal of Molecular Sciences*
 Guest Editor, Special issues in *Frontiers*, *Human Immunology* and *Journal of Molecular Sciences*.

PATENTS

- “A fluorogenic method for the measurement of the activity of aminopeptidases that display specificity for the sequence of their peptide-substrates”, Efstratios Stratikos and Irini Evnouchidou, Patent no. GR1006859 (2010)
- “3,4-diamino benzoic acid derivatives as selective inhibitors of endoplasmic reticulum aminopeptidase 1, 2 (ERAP1, ERAP2) and insulin-regulated aminopeptidase (IRAP) and uses thereof”, Patent no. GR1008348 (2014)
- “Phoshinic pseudopeptide derivatives for potent inhibition of aminopeptidases of the oxytocinase subfamily of M1 aminopeptidases”, Patent no. GR1008310 (2014).

ADDITIONAL INFORMATION

Invited presentations to international conferences and/or advanced schools

- July 2021, 13th European Biophysics Conference, Vienna, Austria, “Molecular mechanisms of antigenic peptide generation”
- September 2020, 7th Annual Congress of the European Society for Translational Medicine on Covid-19 (EUSTM-2020) by European Society for Translational Medicine (Virtual), “Generation of SARS-CoV-2 S1 spike glycoprotein putative antigenic epitopes in vitro by intracellular aminopeptidases”

- May 30th, 2019, 10th Antigen Processing and Presentation EMBO Workshop, Paris, France, "High-resolution crystal structures of ER aminopeptidase 1 with bound antigenic peptides precursor analogues"
- December 13th, 2018, 2nd Annual meeting on Cancer Biology and New molecules in Cancer Therapeutics, "Modulating antigen processing for cancer immunotherapy"
- May 30th, 2017, Salamanca, Spain, 9th Antigen processing and presentation, EMBO workshop, "Structure and conformational changes of Insulin-Regulated Aminopeptidase"
- August 29th, 2017, Paris, France, IRAP 2017 International Symposium, "Inhibitor-induced conformational changes of IRAP"
- September 28th, 2017, Loutraki, Corinth, Greece, 17th International Conference on Progress in Vaccination Against Cancer, "Modulating intracellular antigen processing for enhancing tumor antigenicity"
- April 28th, 2016, Paris, France, 50th annual scientific meeting of the European Society for Clinical Investigation, "Editing the immunopeptidome using a potent ER aminopeptidase 1 inhibitor"
- September 15th, 2015, Uppsala University, Sweden, IRAP 2015 International Symposium, "Crystal Structure of Insulin-Regulated Aminopeptidase with Bound Substrate Analogue: Insight on Antigenic Epitope Precursor Recognition and Processing"
- April 11-13, 2014, Shanghai, China, The International Genetics of Ankylosing Spondylitis Consortium (IGAS) annual meeting, "Molecular mechanisms behind the effects of disease-associated ERAP1 and ERAP2 SNPs on the activity of the enzyme"
- June 6, 2013, Fukuoka University, Japan, "Apolipoprotein E Hereditary Mutations and Lipoprotein Glomerulopathy", invited presentation as part of the World Congress of Nephrology Satellite Meeting "Kidney and Lipids".
- April 2nd 2010, Cargese, Corsica, France, 6th International Antigen Processing and Presentation Workshop, "PLAP efficiently generates mature antigenic peptides in vitro but in patterns distinct from ERAP1"

Organization of international conferences

- July 13th, 2016, Cancer Immunotherapy workshop, in the context of the 4th Hellenic Forum for Science Technology and Innovation, Athens, Greece
- October 2018, Patras, Greece, 9th International Conference of the Hellenic Crystallographic Association
- October 2019, Naflpio, Greece, "IRAP 2019", International Symposium
- October 2020, Athens, Greece, 10th International Conference of the Hellenic Crystallographic Association
- October 2022, Athens, Greece, Co-organizer, Scientific Workshop on Protein structure/function, MSC-ITN "CAPSTONE"

Evaluator for Grants and Scholaships:

- European Commission H2020/Joint Undertakings
- U.S.-Israel Bi-national Science Foundation
- Qatar National Research Fund
- Dipartimento per la formazione superiore e per la Ricerca, Italy
- Agence nationale de la recherche, France
- National Science Center, Poland
- Czech Science Foundation
- Austrian Science Fund
- Hellenic Foundation of Research and Innovation
- Hellenic Institution for State Fellowships
- Ministry of Education continuing education programme

Supervision of doctoral theses:

- Irini Evnouchidou (2008-2012)
- Dimitra Georgiadou (2008-2013)
- Efthalia Zervoudi (2012-2016)
- Athanasios Stamogiannos (2012-2016)
- Despoina Koumantou (2015-2019)
- George Mavridis (2017-2021)
- Ioannis Temponeras (2019-2023)
- Martha Nikopaschou (2022-)
- Galateia Georgaki (2022-)

Supervision of graduate students (M.S.):

- Irini Evnouchidou (2006-2008)
- Dimitra Georgiadou (2006-2008)
- Efthalia Zervoudi (2010-2012)
- Despoina Koumantou (2012-2014)
- Effimia Sikeridou (2016-2017)
- Ioannis Temponeras (2021-2023)

Supervision of undergraduate students (Diploma Thesis):

- Evgenia Oikonomidou (2012)
- Danai Koftori (2015-2016)
- Veronica Cherdyntseva (2016)
- Christos Velesiotis (2016)
- Daphne Loukopoulou (2017)
- Athanasios Emmanouilidis (2021)
- Angelos Savva (2022)
- Myrto Trakada (2022)
- Maria Manoli (2023)
- Anna Kanavou (2023)
- Nikolaos Melios
- Kristian Verdi

SELECTED PUBLICATIONS (of 94 in total)

Full list (PubMed): <https://pubmed.ncbi.nlm.nih.gov/?term=stratikos&sort=pubdate&size=100>

Full list (Google Scholar): <https://scholar.google.gr/citations?hl=en&user=f1Lnvf8AAAAJ>

[Distinct modulation of cellular immunopeptidome by the allosteric regulatory site of ER aminopeptidase 1](#)

Temponeras I, Samiotaki M, Koumantou D, Nikopaschou M, Kuiper JJ, Panayotou G, **Stratikos E***

Eur J Immunol **2023**, May 3:e2350449. doi: 10.1002/eji.202350449

[Discovery of Selective Nanomolar Inhibitors for Insulin- Regulated Aminopeptidase Based on \$\alpha\$ -Hydroxy- \$\beta\$ -Amino Acid Derivatives of Bestatin](#)

Vourloumis D, Mavridis I, Athanasoulis A, Temponeras I, Koumantou S, Giastas P, Mpakali A, Magrioti V, Leib J, van Ender P, **Stratikos E*** and Papakyriakou A*

J Med Chem, **2022**, Jul 14. doi: 10.1021/acs.jmedchem.2c00904

[Allotypic variation in antigen processing controls antigenic peptide generation from SARS-CoV-2 S1 Spike Glycoprotein](#)

Stamatakis G, Samiotaki M, Temponeras I, Panayotou G, **Stratikos E.***

J Biol Chem, **2021**, Oct 21:101329. doi: 10.1016/j.jbc.2021.101329.

[Conformational dynamics linked to domain closure and substrate binding explain the ERAP1 allosteric regulation mechanism](#)

Maben Z, Arya R, Georgiadis D, **Stratikos E**, Stern LJ.

Nature Communications, **2021**, Sep 6;12(1):5302. doi: 10.1038/s41467-021-25564-w.

[Common allotypes of ER aminopeptidase 1 have substrate-dependent and highly variable enzymatic properties](#)

Hutchinson JP, Temponeras I, Kuiper J, Cortes A, Korczynska J, Kitchen S and **Stratikos E***

J Biol Chem. **2021 Jan-Jun;296:100443**. doi: **10.1016/j.jbc.2021.100443**

[A systematic re-examination of processing of MHCI-bound antigenic peptide precursors by ER aminopeptidase 1.](#)

Mavridis G, Arya R, Domnick A, Zoidakis J, Makridakis M, Vlahou A, Mpakali A, Lelis A, Georgiadis D, Tampé R, Papakyriakou A, Stern LJ, **Stratikos E***. (Editor's Choice, [Cover](#))

J Biol Chem. **2020** Mar 17. pii: jbc.RA120.012976. doi: 10.1074/jbc.RA120.012976.

[Targeting the regulatory site of ER aminopeptidase 1 leads to the discovery of a natural product modulator of antigen presentation.](#)

Liddle J, Hutchinson JP, Kitchen S, Rowland P, Neu M, Cecconie T, Holmes DS, Jones EJ, Korczynska J, Koumantou D, Lea J, Nickels LA, Pemberton M, Phillipou A, Schneck JL, Sheehan H, Tinworth CP, Uings I, Wojno-Picon J, Young RJ, **Stratikos E***.

J Med Chem. **2020** Feb 28. doi: 10.1021/acs.jmedchem.9b02123.

[Mechanism for antigenic peptide selection by ER aminopeptidase 1.](#)

Giastas P#, Mpakali A#, Papakyriakou A, Lelis A, Kokkala P, Neu M, Rowland P, Liddle J, Georgiadis D and **Stratikos E***.

PNAS **2019**, December 16, 2019 <https://doi.org/10.1073/pnas.1912070116>.

[Editing the immunopeptidome of melanoma cells using a potent inhibitor of Endoplasmic Reticulum aminopeptidase.](#)

Koumantou D, Barnea E, Martin-Esteban A, Maben A, Papakyriakou A, Mpakali A, Kokkala P, Pratsinis H, Georgiadis D, Stern LJ, Admon A and **Stratikos E***

Cancer Immunol Immunother **2019**, Jun 20. doi: 10.1007/s00262-019-02358-0.

[Ligand-induced conformational change of Insulin-regulated aminopeptidase: insights on catalytic mechanism and active site plasticity.](#)

Mpakali A, Saridakis E, Harlos K, Zhao Y, Kokkala P, Georgiadis D, Giastas P, Papakyriakou A, **Stratikos E***

J Med Chem. **2017** Mar 22. doi: 10.1021/acs.jmedchem.6b01890

[Structural basis for antigenic peptide recognition and processing by ER aminopeptidase 2.](#)

Mpakali A, Giastas P, Mathioudakis N, Mavridis IM, Saridakis E*, **Stratikos E***.

J Biol Chem. 2015 Sep 17. pii: jbc.M115.685909.

[A rationally designed inhibitor targeting antigen-trimming aminopeptidases enhances antigen presentation and cytotoxic T-cell responses.](#)

Zervoudi E, Saridakis E, Birtley JR, Seregin S., Reeves E, Kokkala P, Aldhamen YA, Amalfitano A, Mavridis IM, James E, Georgiadis D* and **Stratikos E***.

Proc Natl Acad Sci USA, **2013** Dec 3;110(49):19890-5.