

Georgios Skretas, PhD**Contact
Information**

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Biotechnology
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**Professional
Experience**

- October 2009 – Present** **NATIONAL HELLENIC RESEARCH FOUNDATION, Institute of
Biology, Medicinal Chemistry and Biotechnology**
Lecturer in Research
- May 2006 – June 2009** **THE UNIVERSITY OF TEXAS AT AUSTIN, Institute for
Cellular and Molecular Biology, Austin – Texas, USA**
Post-Doctoral Research Associate
- October 2005 – May 2006** **PRINCETON UNIVERSITY, Department of Chemical
Engineering, Princeton – New Jersey, USA**
Post-Doctoral Research Associate
- January 1995 – April 1998** **NATIONAL HELLENIC RESEARCH FOUNDATION, Institute of
Organic and Pharmaceutical Chemistry**
Research Assistant

**Educational
Background**

- 2001 – 2006** **Ph.D. in Chemical Engineering
(Specific Area: Biotechnology)**
Princeton University, Princeton – New Jersey, USA
- 1999 – 2001** **Master's degree in Chemical Engineering
(Specific Area: Computational Materials Science/
Computational Biophysics)**
Princeton University, Princeton – New Jersey, USA
- 1993 – 1998** **Bachelor's degree in Chemical Engineering
(Emphasis: Food Science and Biotechnology)**
National Technical University of Athens, Athens, Greece

**Awards and
Distinctions**

- 2012-2015** "ARISTEIA" Award – General Secretariat of Research and
Technology
- 2011-2015** Marie Curie Fellowship – FP7 PEOPLE International Re-
integration Grant

- 2004 William R. Schowalter Award (Princeton University, USA)
 2004 Winner of Best Presentation (18th Mid-Atlantic Biochem. Eng. Consortium, Rutgers University, USA)

Scientific Work

Author of fourteen peer-reviewed journal articles
 Author of one peer-reviewed book chapter
 Inventor of one issued USA Patent
 Presenter of fourteen oral conference presentations
 Presenter of five invited seminar presentations
 Presenter of nine poster conference presentations

*For details
 please see below

Teaching Experience

2009-2012 **NATIONAL HELLENIC RESEARCH FOUNDATION**

Principal Supervisor of three (3) PhD candidates, and five (5) undergraduate research assistants

March 2012 **UNIVERSITY OF BELGRADE, Faculty of Chemistry, Belgrade, Serbia**

Guest Lecturer

Course: "Molecular Biotechnology"

October 2011 **ÖREBRO UNIVERSITY, School of Science and Technology, Örebro Life Science Centre, Örebro, Sweden**

Guest Instructor

Course: "Workshop on Systems Biology"

January 2004 – May 2004 **PRINCETON UNIVERSITY, Department of Chemical Engineering, Princeton –New Jersey, USA**

Teaching Assistant (with Profs. J. Benziger & J. D. Carbeck)

Course: "Chemical Engineering Laboratory"

September 2003 – January 2004 **PRINCETON UNIVERSITY, Department of Chemical Engineering, Princeton – New Jersey, USA**

Teaching Assistant (with Prof. David W. Wood)

Course: "An Introduction to the Principles of Chemical Engineering"

January 2001 – May 2001 **PRINCETON UNIVERSITY, Department of Chemical Engineering, Princeton –New Jersey, USA**

Teaching Assistant (with Prof. J. D. Carbeck)

Course: "Chemical Reaction Engineering"

Languages

- English** Fluent (Certificate of Proficiency in English – Cambridge, USA Resident for ten (10) years)
German Very good (Kleines Deutsches Sprachdiplom, Goethe Institut)
Spanish Basic spoken and written
Greek Native

PUBLICATIONS IN SCIENTIFIC JOURNALS AND BOOKS:

14. Skretas, G.*, Makino, T.*, Varadarajan, N., Pogson, M., and Georgiou, G. 2012. Multi-copy genes that enhance the yield of mammalian G protein-coupled receptors in *Escherichia coli*. *Metabolic Engineering*. In press

* Equal contribution

13. Makino, T.*, Skretas, G.* and Georgiou, G. 2011. Strain engineering for improved expression of recombinant proteins in bacteria. *Microbial Cell Factories*. 10(1):32

* Equal contribution

**** Characterized as "Highly Accessed"**

12. Makino, T.*, Skretas, G.*, Kang, T.H., and Georgiou, G. 2011. Comprehensive engineering of *Escherichia coli* for enhanced expression of IgG antibodies. *Metabolic Engineering*. 13(2):241-51.

* Equal contribution

11. Skretas, G., and Georgiou, G. 2010. Simple genetic selection protocol for isolation of overexpressed genes that enhance accumulation of membrane-integrated human G protein-coupled receptors in *Escherichia coli*. *Applied and Environmental Microbiology*. 76(17) : 5852-9

10. Skretas, G., Carroll, S., DeFrees, S., Schwartz, M., Johnson, K.F., and Georgiou., G. 2009. Expression of active human sialyltransferase ST6GalNAcI in *Escherichia coli*. *Microbial Cell Factories*. 8 : 50

9. Skretas, G., and Georgiou., G. 2009. Genetic analysis of G protein-coupled receptor expression in *Escherichia coli*: Inhibitory role of DnaJ on the membrane integration of the human central cannabinoid receptor, *Biotechnology and Bioengineering*. 102(2) : 357-367

*** "Editors' choice" article**

8. Skretas, G., and Georgiou, G. 2008. Engineering G protein-coupled receptor expression in bacteria. *Proceedings of the National Academy of Sciences USA*. 105(39) : 14747-14748

7. Link, A.J., Skretas, G., Strauch, E.-M., Chari, N.S., and Georgiou, G. 2008. Efficient production of membrane-integrated and detergent-soluble G protein-coupled receptors in *Escherichia coli*. *Protein Science*. 17(10) : 1857-63

6. Gillies, A., Skretas, G., and Wood, D.W. 2008. Engineering systems for detection and discovery of nuclear hormone-like compounds. *Biotechnology Progress*. 24 : 8-16

5. Skretas, G.*, Meligova, A., Villalonga-Barber, C., Mitsiou, D.J., Alexis, M.N., Micha-Screttas, M., Steele, B.R., Screttas, C.G., and Wood, D.W. 2007. Engineered chimeric enzymes as facile tools for pharmaceutical discovery: Construction of simple bacterial screens for the detection, discovery and assessment of estrogen receptor modulators. *Journal of the American Chemical Society*. 129 : 8443-8457

*** Corresponding author****** This work has been featured in a number of press releases:**

<http://www.sciencedaily.com/releases/2007/07/070718163719.htm>

<http://www.princeton.edu/engineering/news/publications/equad-news/s07/articles/foh.xml?id=559>

<http://it.moldova.org/news/engineered-e-coli-may-lead-to-new-drugs-59688-eng.html>

http://news.webindia123.com/news/ar_showdetails.asp?id=707200081&cat=&n_date=20070720

4. Skretas, G., and Wood, D.W. 2005. Rapid detection of subtype-selective nuclear hormone receptor binding with bacterial genetic selection. *Applied and Environmental Microbiology*. 71: 8995-8997

3. Skretas, G., and Wood, D.W. 2005. A bacterial biosensor of endocrine modulators. *Journal of Molecular Biology*. 349: 464-474.

***Selected as an Article of Outstanding Interest by "Faculty of 1000"**

2. Skretas, G., and Wood, D.W. 2005. Regulation of protein activity with small-molecule-controlled inteins. *Protein Science*. 14: 523-532.
1. Theologitis M., Screttas G.C., Raptis S.G. and Papadopoulos, M.G. 1999. The polarizability and hyperpolarizability of tetrakis(phenylethynyl)ethene and several of its lithiated derivatives. *International Journal of Quantum Chemistry*. 72: 177-187.

BOOK CHAPTERS:

1. Wood, D.W., and Skretas, G. 2005. Intein reporter and selection systems. In *Homing endonucleases and inteins*. (eds. M. Belfort, V. Derbyshire, B.L. Stoddard, and D.W. Wood). Springer.

PUBLICATIONS IN CONFERENCE PROCEEDINGS:

1. Papadopoulos, M.G., Screttas, G.C., Raptis, S.G., and Theologitis, M.M., 1999. The non-linear optical properties of some lithium containing Derivatives. *Proceedings SPIE*. 3623, 270-278.

MONOGRAPHS:

1. Skretas, G. 2006. PhD Thesis. Engineering protein-based molecular switches: In vivo regulation of protein activity and the construction of simple biosensors. Department of Chemical Engineering - Princeton University, HHA

PATENTS:

1. Wood, D.W. and Skretas, G. Bacterial ligand-binding sensor. United States Patent 7592144

BIBLIOMETRIC INDICES:

- Number of publication in peer-reviewed journals: 14
- Number of citations: 118
- Hirsch factor (H-factor): 7

INVITED PRESENTATIONS:

5. October 2011. "Directed Evolution of Small-Molecule Cancer Therapeutics". 4th Swedish-Hellenic Life Sciences Conference & Course on Systems Biology. National Hellenic research Foundation, Athens, Greece.
4. December 2007. "Engineering *Escherichia coli* for high-level expression of (eukaryotic) integral membrane proteins". Institute of Molecular Biology and Biotechnology - FORTH, Heraklion, Crete, Greece.
3. April 2006. "Engineering protein-based molecular switches: In vivo regulation of protein activity and the construction of simple biosensors". Laboratory of Biotechnology, Department of Chemical Engineering, National Technical University of Athens, Athens, Greece.
2. January 2006. "Engineering protein-based molecular switches: In vivo regulation of protein activity and the construction of simple biosensors". Institute of Chemical Engineering and High-Temperature Chemical Processes, Patras, Greece.
1. January 2005. "Engineering protein-based molecular switches: In vivo regulation of protein activity and the construction of simple biosensors". Department of Chemical Engineering, Princeton University, USA.

CONFERENCE PRESENTATIONS:

- 23.** Skretas, G. 2011. Engineered bacteria for the detection, discovery, and assessment of human hormones. (Oral). 2nd Faculty of Chemistry - University of Belgrade ERA Workshop, Belgrade, Serbia. October 18-19.
- 22.** Skretas, G., Meligova, A., Villalonga-Barber, C., Mitsiou, D.J., Alexis, M.N., Micha-Screttas, M., Steele, B.R., Screttas, C.G., and Wood, D.W. 2010. Engineered bacteria for the discovery and assessment of human endocrine modulators (Poster). 3^o Swedish-Greek Conference in Life Sciences. Athens, March 25-27.
- 21.** Makino, T.*, Skretas, G.*, and Georgiou, G. 2010. Genetic Optimization of G-Protein Coupled Receptor Expression in *Escherichia coli* (Oral). ACS National Meeting, San Francisco, California, USA, March 21-25.
* Equal contribution
- 20.** Skretas G., and Wood, D.W. 2009. Construction of simple bacterial hormone sensing systems based on engineered allosteric enzymes (Oral). MicroBiokosmos. Athens, December 11-13.
- 19.** Makino, T.*, Skretas, G.*, and Georgiou, G. 2009 Strain Engineering for Enhanced Expression of IgG in *Escherichia coli* Using High Throughput Screening (Oral). 20th Annual IBC Conference on Antibody Engineering. San Diego, USA, December 6 - December 10
* Equal contribution
- 18.** Skretas, G., and Georgiou, G. 2008 Genetic analysis of G protein-coupled receptor expression in *Escherichia coli* (Poster). AIChE 2008 National Meeting, Philadelphia, Pennsylvania, USA, November 16-November 21
- 17.** Skretas, G., Varadarajan, N., and Georgiou, G. 2008 Genetic engineering of *Escherichia coli* for high-level expression of integral membrane proteins (Poster). AIChE 2008 National Meeting, Philadelphia, Pennsylvania, USA, November 16-November 21
- 16.** Skretas, G., Link, A.J., and Georgiou, G. 2008 Genetic analysis of heterologous membrane protein expression in *Escherichia coli* (Oral). Microbial Genetics and Genomics V, Cassis, France, May 16-19.
- 15.** Skretas, G., and Wood, D.W. 2005 An engineered chimeric enzyme for use in drug sensing, discovery and development (Oral). AIChE 2005 National Meeting, Cincinnati, Ohio, USA, October 30-November 4.
- 14.** Skretas, G., and Wood, D.W. 2004 Ligand-induced protein Splicing: a general way of achieving post-translational regulation of protein activity in vivo (Oral). AIChE 2005 National Meeting, Cincinnati, Ohio, USA, October 30 - November 4.
- 13.** Skretas, G., and Wood, D.W. 2005 Construction of simple in vivo drug screening systems (Oral). 18th Mid-Atlantic Biochemical Engineering Consortium, Rutgers University, Rutgers, New Jersey, USA, April 8.
- 12.** Skretas, G., and Wood, D.W. 2005 Engineering hormone-sensitive bacteria (Oral). 229th ACS National Meeting, San Diego, California, USA, March 13-17.
- 11.** Skretas, G., and Wood, D.W. 2005 Post-translational regulation of protein activity with small-molecule-controlled peptide splicing (Oral). 229th ACS National Meeting, San Diego, California, USA, March 13-17.
- 10.** Skretas, G., and Wood, D.W. 2004 Evolution of allosteric protein switches and biosensors (Oral). Evolution at Princeton Symposium, Princeton University, Princeton, New Jersey, USA, December 13.
- 9.** Skretas, G., and Wood, D.W. 2004 Engineering hormone-sensitive bacteria for efficient drug screening (Oral). AIChE 2004 National Meeting, Austin, Texas, USA, November 7-12.
- 8.** Skretas, G., and Wood, D.W. 2004 Controlling protein function with peptide splicing (Oral). AIChE 2004 National Meeting, Austin, Texas, USA, November 7-12.
- 7.** Skretas, G., and Wood, D.W. 2004 Development of generic molecular protein switches (Poster). First International Meeting on Synthetic Biology, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA, June 10-12.

6. Skretas, G., and Wood, D.W. 2004 Engineering hormone-sensitive bacteria: A step further towards efficient drug screening (Poster). 17th Mid-Atlantic Biochemical Engineering Consortium, University of Maryland Baltimore County, March 22.

***Award for Best Presentation.**

5. Skretas, G., and Wood, D.W. 2003 Generating small-molecule-controlled inteins for applications in biotechnology (Oral). AIChE 2003 National Meeting, Austin, Texas, USA, November 16-21.

4. Skretas, G., Duggan, H.C., and Wood, D.W. 2003 A novel screening/selection system for protein splicing (Poster). AIChE 2003 National Meeting, San Francisco, California, USA November 16-21.

3. Skretas, G., and Wood, D.W. 2003 Generating small-molecule-controlled inteins for applications in biotechnology (Poster). 16th Mid-Atlantic Biochemical Engineering Consortium, University of Maryland at College Park, College Park, Maryland, USA, March 14.

2. Skretas, G., and Wood, D.W. 2003 Generating small-molecule-controlled inteins for biotechnology applications (Poster). Vaccine Bioprocess Engineering Symposium, Merck Research Laboratories, West Point, Pennsylvania, USA, March 7.

1. Papadopoulos, M.G., Skretas, G., Raptis, S.G., Theologitis M.M. 1999 Nonlinear optical properties of lithium-containing derivatives (Oral). SPIE Photonics West, San Jose, California, USA, January 23-29.

RESEARCH INTERESTS:

- Directed protein evolution
- Evolution of small molecules with therapeutic properties against protein folding diseases (Alzheimer's disease, cancer, etc.)
- Engineering of enzymes for industrial applications
- Synthetic Biology
- Genetic engineering of microorganisms for the production of high added value products
- Protein-based molecular switches
- Genetic selection systems
- High-throughput screening
- Microbial genetic engineering for enhanced recombinant membrane protein production
- Engineering the physiology of industrially important bacterial strains
- Development of biosensors of protein conformations/dynamics
- Biosensors for the discovery of novel natural/synthetic hormone agonists and antagonists for therapeutics and nutraceuticals

PARTICIPATION IN FUNDED RESEARCH PROGRAMS:

9. **2012-2015.** General Secretariat of Research and Technology - "ARISTEIA" Award. Project Acronym: "NEUROTHERAPY". Coordinator: Dr Georgios Skretas. Budget: 240.000 €. NHRF Budget: 209.376 €.

8. **2012-2015.** Ministry of Education, Lifelong Learning, and Religious Affairs - Program "Thalis". Project Acronym: "CYCLIPAD". Coordinator: Dr. Efstathios Gonos. Budget: 600.000 €. NHRF Budget: 291.850 €.

7. **2011-2015.** FP7 European Union Cooperation Program KBBE-2010.3.5-04 - Microbial diversity and metagenomic mining for biotechnological innovation. Project Acronym: "HotZyme". Coordinator: Prof. Xu Peng, University of Copenhagen, Denmark. Total budget: 5,518,544 €. NHRF budget (through the National Technical University of Athens): € 386,298. [[Link](#)]

6. **2011-2015.** European Union FP7 Marie Curie International Reintegration Grant. Project Acronym: "DEVOCAT". Coordinator: Dr. Soterios Kyrtopoulos. Marie Curie Fellow: Dr. Georgios Skretas. Total budget: € 100,000. NHRF budget: € 100,000. [[Link](#)]
5. **2011-2015.** General Secretariat of Research and Technology (Greece) Cooperation Program - Large Scale Cooperative Projects. Project title: Project Acronym: "DAMP". Coordinator: Prof. Nektarios Aligiannis. Total budget: 1,412,000 €. NHRF budget: € 297,000.
4. **2006-2008.** Neose Technologies Inc. Project title: "In vitro Glycosylation of Bacterial Proteins". Coordinator: Prof. George Georgiou, University of Texas at Austin, USA. Budget: \$ 206,630.
3. **2004 - 2009.** United States of America National Institute of Health R01 (GM069872). Project title: "Genetic Analysis of the *Escherichia coli* Tat Pathway". Coordinator: Prof. George Georgiou, University of Texas at Austin, USA. Budget: \$ 642,797.
2. **2004-2009.** United States National Science Foundation CAREER Award (BES-0348220). Project title: "Protein Switches for Biotechnology. Generate and apply allosteric intein switches to biosensing and protein purification". Coordinator: Prof. David W. Wood, Princeton University, USA. Budget: \$ 400,000.
1. **2004 - 2007.** United States Army Research Office Small Research Grant (W911NF-04-1-0056). Project title: "A General Expression System for the Production of Self-Purifying Proteins" Coordinator: Prof. David W. Wood, Princeton University, USA. Budget: \$ 250,000.

SCIENTIFIC COLLABORATORS:

- Prof. George Georgiou, Department of Chemical Engineering, The University of Texas at Austin, USA
- Prof. David W. Wood, Department of Chemical and Biomolecular Engineering, Ohio State University, USA
- Prof. Xu Peng, Department of Biology, University of Copenhagen, Denmark
- Prof. Fragiskos N. Kolisis, Department of Chemical Engineering, National Technical University of Athens, Greece
- Prof. Leandros Skaltsounis, Department of Pharmacognosy, National & Kapodistrian University of Athens, Greece
- Prof. Nektarios Aligiannis, Department of Pharmacognosy, National & Kapodistrian University of Athens, Greece
- Prof. Spiros Efthimiopoulos, Department of Biology, National & Kapodistrian University of Athens, Greece
- Dr. Konstantinos Vekrellis, Institute of Biomedical Research, Academy of Athens, Greece
- Prof. Andreas Papapetropoulos, Department of Pharmacology, University of Patras, Greece
- Prof. Dimitris Hatzinikolaou, Department of Biology, National & Kapodistrian University of Athens, Greece
- Prof. Olga Igglesi-Markopoulou, Department of Chemical Engineering, National Technical University of Athens, Greece
- Dr. Maria Pelecanou, Institute of Biology, Research Centre "Demokritos", Greece
- Prof. Marigoula Margarity, Department of Biology, University of Patras, Greece
- Dr. Spiros Georgopoulos, Institute of Biomedical Research, Academy of Athens, Greece

- Dr. Michael N. Alexis, Institute of Biology, Medicinal Chemistry and Biotechnology, National Hellenic Research Foundation
- Dr. Aristoteles Chatziioannou, Institute of Biology, Medicinal Chemistry and Biotechnology, National Hellenic Research Foundation

OTHER ACTIVITIES:

- **MEMBER OF SCIENTIFIC SOCIETIES:**

1. American Institute of Chemical Engineers (AIChE)
2. American Chemical Society (ACS)

- **REVIEWER OF SCIENTIFIC JOURNALS:**

1. Proceedings of the National Academy of Sciences USA
2. Journal of the American Chemical Society
3. Biotechnology & Bioengineering
4. Protein Expression & Purification
5. Current Topics in Medicinal Chemistry
6. BBA - Biomembranes

- **EVALUATOR FOR RESEARCH GRANTS:**

1. **2010.** Proposal evaluator. Ministry of Education, Lifelong Learning, and Religion - Praxis: "Supporting New Enterprises for Research Activities and Technological Advancement".

- **ORGANIZATION OF WORKSHOPS AND SEMINARS:**

1. **2011 - 2012.** Member of the Organizing Committee of the Annual Seminar Series of the Institute of Biology, Medicinal Chemistry and Biotechnology.
2. **October 2011.** Member of the Organizing Committee of the 4th Swedish-Hellenic Life Sciences Conference & Course on Systems Biology; Athens, Greece.
3. **2010 - 2011.** Member of the Organizing Committee of the Annual Seminar Series of the Institute of Biological Research and Biotechnology.