
MATTHEOS A.G. KOFFAS

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Education

- 1994-2000 **Ph.D., in Chemical Engineering**, Massachusetts Institute of Technology, Cambridge, MA.
Dissertation: *Metabolic engineering of Corynebacterium glutamicum for amino acid production improvement*
Advisor: Professor Gregory Stephanopoulos
- 1989-1994 **Diploma in Engineering (with University Honors), Department of Chemical Engineering**, National Technical University, Athens, Greece.

Professional Experience

- 2013-present **Career Development Associate Professor**, Department of Biological Sciences, Rensselaer Polytechnic Institute.
- 2011-present **Career Development Associate Professor**, Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute.
- 2008-2010 **Associate Professor**, Department of Chemical Engineering and Biological Engineering; University at Buffalo, The State University of New York.

- 2002-2008 **Assistant Professor**, Department of Chemical Engineering and Biological Engineering; University at Buffalo, The State University of New York.
- 2001 – 2002 **Visiting Research Scientist**, DuPont Central Research and Development; Experimental Station; Wilmington, DE.
- 2000 **Post-Doctoral Fellow**, Massachusetts Institute of Technology; Department of Chemical Engineering; Cambridge, MA.
- 1994-2000 **Research Assistant**, Massachusetts Institute of Technology; Department of Chemical Engineering; Cambridge, MA (with the exception of Fall 1997 when I was appointed as **Teaching Assistant**).

Honors and Awards

- **Member, Scientific Board, Chromadex Inc.** (2007- onwards)
- **Member, Scientific Board, Firstwave Technologies Inc.** (2007-2010)
- **Member of the Editorial Board, *Current Opinion in Biotechnology***, (2011-onwards)
- **Associate Editor of *Metabolic Engineering Communications*** (2014-present)
- **Associate Editor of *BMC Plant Biology***, (2012-present)
- **Associate Editor of *Biotechnology and Bioprocess Engineering***, (2011-2014)
- **Member of the Editorial Board, *Frontiers in Synthetic Biology*** (2013-onwards)
- **Member of the Editorial Board, *World Journal of Pharmacology***, (2011-onwards)
- **Member of the Editorial Board, *Open Biotechnology Journal*** (2007-onwards)
- **Interdisciplinary Research and Development Fund award**, University at Buffalo.
- **Best Academic Poster Award**, Engineering Conferences International conference on “Natural Products Discovery and Production:New Challenges, New Opportunities”, Santa Fe, New Mexico, June 4th-8th 2006.
- **Promising Young Inventor Award** State University of New York, 2005.
- **Independent Research and Creative Activities Fund award**, November 2003.

Professional Memberships

- American Institute of Chemical Engineers (AIChE)
- Society for Biological Engineering (SBE)
- American Society of Microbiology (ASM)

- Technical Chamber of Greece, Registered Professional Engineer

Professional Activities

- Chair of the 2015 International Conference of Biological Engineering Biannual meeting
- Guest Editor of the Food Biotechnology 2014 issue of *Current Opinion in Biotechnology*.
- Vice-Chair of Division 15c, American Institute of Chemical Engineers.
- Chair of the session “Advances in fermentation and biological conversion” at the 2010 AIChE Annual meeting (Salt Lake City UT, November 2010).
- Co-Chair of the session “Biobased Fuels and Chemicals II” at the 2010 AIChE annual meeting (Salt Lake City UT, November 2010).
- Co-Chair of the session “Advances in Metabolic Engineering and Bioinformatics II-Computational” at the 2010 AIChE annual meeting (Salt Lake City, UT, November 2010)
- Chair of the session “Advances in biocatalysis and biosynthesis II” at the 2010 AIChE annual meeting (Salt Lake City, UT, November 2010).
- Chair of the of the new Session on Metabolic Engineering for Tissues and Organs at the Annual Meeting of the American Institute of Chemical Engineers (Salt Lake City UT, November 2007).
- Co-Chair of session “High throughput systems for bioengineering applications” at the 2006 AIChE Annual Meeting (San Francisco CA, November 2006).
- Chair of the new session “Engineering metabolic networks toward the production of novel products” Annual meeting of the Society for Industrial Microbiology (Baltimore MD, July-August 2006).
- Coordinator of the session of “New process for the development of natural foods”, BioWorld Congress, (Toronto, Canada, July 2006).
- Member of the Scientific Advisory Committee of the Engineering Conference International (ECI) conference “Metabolic Engineering VI: from recDNA towards engineering Biological Systems” (Leeuwenhorst. Noordwijkerhout, The Netherlands, October 2006).

- Editor of the **Special Issue on *Evolutionary Metabolic Engineering*** (volume 7, issue 1, March 2005) of the Journal *Metabolic Engineering*.
- Served as a panelist (twice) for the National Science Foundation (Division of Biomedical Engineering) for unsolicited proposals in December of 2005 and December of 2006.
- Served as a panelist for the NSF CBET CAREER panel in November of 2008 and September 2013.
- Served as a panelist for the NSF CBET unsolicited proposals in December of 2009, May 2011, November 2011.
- Served as a panelist for the DoE Funding Opportunity Announcement “Genomic Science and Technology for Energy and the Environment Review: Microbial and Plant Processes for Bioenergy” held in Washington DC in November of 2010.
- Served as a reviewer by the Department of Energy for Funding Opportunity Announcement DE-PS02-06ER64304 which solicited proposals to establish three GTL Bioenergy Research Centers. Each Center was funded \$125 million over five years: \$25 million in the first year for start-up costs and up to \$25 million per year for operations during the subsequent four years. These three centers are expected to lead the U.S. research on alternative fuels and biofuels.
- Served as a panelist for the ARPA-E inaugural \$150 million funding opportunity in September of 2009.
- Invited by the Department of Energy (DOE) Advanced Research Projects – Agency (ARPA-E) and Program Manager Dr. Eric Toone to participate in the ARPA-E Direct-Solar Fuel Technologies workshop in October 2009. The goal of the workshop was to bring together thought-leaders from distinct science communities to collectively develop new ideas and identify the most promising R&D pathways to capture and utilize solar energy for the production of infrastructure-compatible, organic high-energy transportation fuels.
- Served twice as external reviewer for the Austrian Science Foundation, “Elise-Richter-Programme”. Review started in December of 2005 and was completed in February of 2006, February 2008 and February 2011.
- Served as external reviewer for the Israeli Ministry of Agriculture, February of 2006.

- Served as external reviewer for the Portuguese Foundation for Science and Technology, April 2012.
- Served as external reviewer for the Luxembourg National Research Fund, November of 2011.
- Served as external reviewer for the “Systems Biology of Microorganisms” (SysMO). SysMO is a European transnational funding and research initiative on "Systems Biology of Microorganisms". The goal pursued by SysMO is to record and describe the dynamic molecular processes going on in unicellular microorganisms in a comprehensive way and to present these processes in the form of computerized mathematical models. Systems biology will raise biomedical and biotechnological research to a new quality level and contribute markedly to progress in understanding. Pooling European research capacities and know-how in this field will set the trend in international competition. SysMO is financed by the partner countries Austria, Germany, The Netherlands, Norway, United Kingdom and Spain. They have issued a joint call in August/September 2005 and provide funding for transnational projects.
- Served as a member of the SYBERC National Science Foundation ERC center at the University of California, Berkeley, March 2011 and March 2012.
- Served as a panelist at the National Science Foundation CBET unsolicited proposals panels in May of 2011 and November 2011.
- Participated as a Panelist in Phase I SBIR/STTR review panel on Renewable Fuels by NSF (Program Director Prakash Balan). (February 1st 2012)
- Participated as a Panelist in Phase II SBIR/STTR review panel on Synthetic Biology by NSF (Program Director Ruth Shuman) (January 31st 2012)
- Participated as an Onsite Reviewer of the NSF ERC Center on Synthetic Biology at UC Berkeley (SynBERC) in March 28th-30th 2012.
- Participated as a virtual panelist on the NSF SEP (Sustainable Energy Program) Virtual Panel B--P121585 (Program Director Ram Gupta).
- Participated as a Panelist in Phase I SBIR/STTR review panel on Synthetic Biology by NSF (Program Director Ruth Shuman) (August 14th 2012).
- Participated as a Panelist in Phase II SBIR/STTR review panel on Biobased Chemicals by NSF (Program Director Prakash Balan) (August 15th 2012).

- Participated as an Onsite Reviewer of the Department of Energy 2012 BioEnergy Science Center (BESC) Year 5 Renewal Review at Oak Ridge National Lab (October 30th- November 1st 2012, Program Director Todd Anderson).
- Reviewer for the 2014 US Department of Energy Frontier Research Centers (EFRC) February of 2014.
- Participated as a virtual panelist on the NIH ZRG1 F04-K (09) Fellowship: Chemistry, Biochemistry, Biophysics, and Bioengineering on March 20th, 2012. (I was invited to serve on the same panel in Bethesda, MD, in November of 2012 but I had to decline due to other commitments).
- Participated as a virtual panelist on the NIH ZRG1 IMST-K(14)B Study Section for Cell, Computational, and Molecular Biology SBIR/STTRs (September 30th 2012, Study Section Director Allen Richon).
- Reviewer of manuscripts for scientific Journals, including
 - *Science*
 - *Nature Biotechnology*
 - *Proceedings of the National Academy of Sciences (U.S.)*
 - *Plant Science*
 - *Applied and Environmental Microbiology*
 - *Physiologia Plantarum*
 - *Applied Microbiology and Biotechnology*
 - *Biocatalysis and Biotransformation*
 - *Metabolic Engineering*
 - *Biotechnology and Bioengineering*
 - *Tissue Engineering*
 - *Trends in Biotechnology*
 - *Organic Letters*
 - *Biotechnology and Applied Biochemistry*
 - *Molecular Pharmaceutics*
 - *Journal of Bacteriology*
 - *Mutation Research*
 - *Current Microbiology*
 - *Journal of Agricultural and Food Chemistry*
 - *Journal of Biotechnology*
 - *Biotechnology Progress*
 - *Phytochemistry*

- *Biofouling*
- *Trends in Plant Science*
- *BMC Biotechnology*
- *Journal of Food Science and Technology*
- *Gene*
- *Microbial Cell Factories*
- *PLoS ONE*
- *ACS Chemical Biology*
- *ACS Synthetic Biology*

Service to the University

- Member of the Center for Biotechnology Space Committee, Rensselaer Polytechnic Institute (2011-present).
- Member of the Chemical and Biological Engineering Graduate Studies committee (2012-present).
- Member of the Chemical and Biological Engineering New Faculty Search Committee (2012-present).
- Organized the prospective graduate student visit to the Department of Chemical and Biological Engineering in March of 2012 and March 2014.
- I participated in the Summer@Rensselaer's High School Research program in the summer of 2012 hosting one high-school student.
- Faculty Advisor for the Society for Biological Engineering division of the AIChE student chapter of the University at Buffalo (2006- 2010).
- Member of the Library Committee for the School of Engineering, University at Buffalo (Spring 2005- present).
- Member of the Chemical Engineering, Departmental Safety Committee, University at Buffalo (2003-2006)
- Chair of the Department of Chemical Engineering Safety Committee, University at Buffalo (2010)
- Member of the University at Buffalo, Dean of Engineering Committee for Research (2009-2010)
- Member of the University's Biosafety Committee (2008-present)
- Marshal of the Commencement Ceremony, 2006.
- Member of the judging committee for the Sigma Xi Undergraduate Symposium (2006).
- Member in multiple graduate student M.S. and Ph.D. committees

<i>Student Name</i>	<i>Degree</i>	<i>Department</i>	<i>Thesis Advisor(s)</i>
Dhananjay Marathe	Ph.D.	Chem.&Biol. Eng.	Sriram Neelamegham

Dan Kehoe	Ph.D.	Chem.&Biol. Eng.	Manolis Tzanakakis
Bharat Bajaj	Ph.D.	Chem.&Biol. Eng.	Stelios Andreadis
Pedro Lei	Ph.D.	Chem.&Biol. Eng.	Stelios Andreadis
Gang Liu	Ph.D.	Chem.&Biol. Eng.	Sriram Neelamegham
Lye Lock	Ph.D.	Chem.&Biol. Eng.	Manolis Tzanakakis
Xiao Zhihua	Ph.D.	Chem.&Biol. Eng.	Sriram Neelamegham
Piyush Koria	Ph.D.	Chem.&Biol. Eng.	Stelios Andreadis
Raju Singh	Ph.D.	Chem.&Biol. Eng.	Stelios Andreadis
Hyungjoon Cho	M.S.	Chem.&Biol. Eng.	Sheldon Park
Jun Tian	PhD	Chem.&Biol. Eng.	Stelios Andreadis
Adam Bower	Masters	Chem.&Biol. Eng.	Cynthia Collins

Community Service

- I participated in the 2005 BEAM/SEAS Honors Research Summer Program. This is a collaboration program between the Buffalo-area Engineering Awareness for Minorities (BEAM) and the School of Engineering at UB that aims at providing 10-12 academically talented minority high school students an introduction to engineering research. Within this program, I supervised Mr. Brian Harper, a 12th grade student from Hutch Tech H.S. for 4 weeks in the summer of 2005.
- I have offered research assistantships to 3 high school students from the greater Buffalo area:
 - Antonina Mokiyeenko (Fall Semester of 2005)
 - Karen Lillie (summer of 2005)
 - Yiannis Mountziaris (Fall Semester of 2006 and Spring Semester of 2007)

Courses Taught

- **Metabolic Engineering, CHME4868/6868**, Spring of 2013
- **Chemical Engineering Senior Lab**, Spring of 2012
- **Chemical Process Dynamics and Control, CPDC4030**, (required undergraduate course, 3 credits) Fall of 2011, Fall of 2012
- **Chemical Engineering Design, CE307**, (required undergraduate course, 3 credit hours) Fall of 2004, 2005, 2006, 2007, 2008.
- **Process Control, CE434**, (required course, 3 credit hours) Fall of 2009.
- **Product Design, CE404** (co-instructor, required course, 3 credit hours), Fall of 2009.

- **Advanced Process Control, CE444**, (elective undergraduate course, 3 credit hours). The course has a laboratory component as well (1 credit hour). Co-taught it in the Spring of 2003 with Prof. Michael Ryan and then taught it by myself in the Spring Semesters of 2004, 2005, 2006, 2007 and 2008.
- **Materials Science and Corrosion, CE433/534**, (undergraduate course, 3 credit hours). Fall 2005
- **Materials Science and Corrosion, CE433L** (laboratory, 1 credit hour) Fall 2005
- **Metabolic Engineering, CE508**, (elective, exclusively graduate course, 3 credit hours) Fall of 2002, 2003, 2004, 2005, 2006, 2007, 2010.
- **Internship/Practicum, CE496** (Spring 2009).
- **EAS 230 Computer Programming**, Spring 2010.
- **Chemical Engineering Laboratory**, Fall 2010.

Students Graduated- Degrees Conferred

- **Dr Effendi Leonard**: Doctor of Philosophy, University at Buffalo, the State University of New York, June 2007.
Thesis title: *Robust microbial fabrication of plant pharmaceuticals: complexities and solutions*
Current position: Senior Research Scientist, Bio-Architecture Laboratories.
- **Dr. Yajun Yan**: Doctor of Philosophy, University at Buffalo, the State University of New York, June 2008.
Thesis title: “Metabolic engineering of plant pigment biosynthesis in *Escherichia coli* and *Saccharomyces cerevisiae*”
Current position: Assistant Professor, Department of Chemical Engineering, University of Georgia.
- **Dr. Joseph Chemler**: Doctor of Philosophy, University at Buffalo, the State University of New York, August 2009
Thesis title: “Engineering non-natural polyphenols derivatives with applications in type II diabetes and obesity treatments”
Current position: Post-doctoral fellow, University of Michigan, Department of Chemical Engineering.
- **Dr. Zacchary Fowler**: Doctor of Philosophy, University at Buffalo, the State University of New York, August 2010
Thesis title: “Design of optimal phenotypes for efficient plant secondary metabolite biosynthesis in microorganisms” PhD expected in the Summer of 2010.
Current position: Research Scientist at Praxair.
- **Dr Ryan Lim**. Doctor of Philosophy, University at Buffalo, the State University of New York, May 2011
Thesis title: “Development of methodologies for the efficient functional expression of P450 monooxygenases in microorganisms”.

Current position: Postdoctoral Associate at MIT, Department of Chemical Engineering.

- **Zhen Li:** Masters of Science, University at Buffalo, the State University of New York, May 2008
Thesis title: “Identification of knock-out targets for optimal plant pigment biosynthesis in *Escherichia coli*”.
Current position: Ms Li was offered a technician position in Jim Liao’s laboratory. She opted not to work.
- **Amruta Bedekar:** Masters of Science, University at Buffalo, the State University of New York, December 2008
Thesis title: “Use of riboswitches for regulating gene expression in *Escherichia coli*”
Current position: Genomatica
- **Ramanan Sekar:** Masters of Science, University at Buffalo, the State University of New York, August 2009
Thesis title: “Identification of optimal genotypes for improved malonyl-CoA availability in *Escherichia coli*”
Current position: PhD student at the Georgia Institute of Technology, Department of Chemical Engineering.
- **Ashish Pravinbhai Chitalia:** Masters of Engineering, University at Buffalo, The State University of New York, December 2008
Thesis title: “Development of *Escherichia coli* fermentation methodologies for isoflavonoids large production”
Current Postion: Cunnigham Manufacturer’s Representative Inc., Houston TX.
- **Hsiying Gloria Chu:** Masters of Engineering, University at Buffalo, The State University of New York, December 2007
Thesis title: “Development of constrained-based modeling of diazotroph *Azospirillum brasilense*:
Current Postion: Procter and Gamble, NJ.
- **Phan Nee Saw:** Masters of Science, University at Buffalo, the State University of New York, September 2007.
Thesis title: *Recycling acetate for improving flavanone production from Escherichia coli.*
Current position: Research Scientist, MEWAH Group, Singapore.
- **William Gikandi:** Masters of Science, University at Buffalo, The State University of New York, September 2006.
Thesis title: *Optimization based frameworks and search methodologies for the analysis and redesign of the Escherichia coli metabolic network.*
- **Karan Prakash Shah:** Masters of Science, University at Buffalo, the State University of New York, December 2009
Thesis title: “Use of antisense RNA for controlling gene expression in *Saccharomyces cerevisiae*”
- **Sriram Ramamoorthi:** Masters of Science, University at Buffalo, the State University of New York, May 2011

Thesis title: “Antimicrobial and antifungal properties of non-natural flavanones”.

Current position: PhD Candidate, Department of Chemical Engineering, Rensselaer Polytechnic Institute.

- **Sankaranarayanan Venkiteswaran:** Masters of Science, University at Buffalo, the State University of New York, May 2011.
Thesis title: “Antimicrobial and antifungal properties of non-natural catechins”.
- **Lynn Wong:** Masters of Science, University at Buffalo, the State University of New York, May 2011.
Thesis title: “Engineering resveratrol biosynthesis in microorganisms”.
Current Position: Manus Biochemicals, Cambridge MA
- **Adam Krol:** Masters of Engineering, University at Buffalo, The State University of New York, August 2006.
Thesis title: *Optimization of malonyl-CoA availability in E. coli through heterologous gene expression.*
Current position: Law School Student, University at Buffalo, The State University of New York.
- **Christopher Renzi:** Masters of Engineering, University at Buffalo, The State University of New York.
Thesis title: *Optimization of flavanone production in Escherichia coli through inhibition of fatty acid biosynthesis.*
Current position: Research Scientist, Fermentation Process Development, AMRI (formerly Albany Molecular Research).
- **Dr Peng Xu:** PhD, Rensselaer Polytechnic Institute
Thesis title: “Enhancement of malonyl-CoA flux in *Escherichia coli*”
Current position: Postdoctoral associate, Massachusetts Institute of Technology, Department of Chemical and Biological Engineering

Current Group members

- **Dr Eun Ji Joo** “Anthocyanin biosynthesis in *E.coli*” Post-doctoral associate
- **Namita Bhan:** “Development of knockout mutants in yeast for enhancing malonyl-CoA availability”.
- **Brady Cress:** “Metabolic engineering of heparosan biosynthesis in *Escherichia coli*”
- **Andrew Jones:** “Free fatty acid biosynthesis in *E.coli*”
- **Wenqin He:** “Chondroitin biosynthesis in *E.coli* K4”
- **Jacob Eanglander:** “Expression of human heparin biosynthetic enzymes in *Bacillus subtilis*”
- **Omer Duhan Toparlak:** “Yeast genome engineering using rDNA sequences”

Students Honors and Awards

- AIChE Food, Pharmaceuticals and Bioengineering Division Graduate Student Posters Award (2010) to **Hila Dvora** & Mattheos Koffas “Strategies for Increasing Anthocyanin Production in *Escherichia coli* by Improving UDP-Glucose Bioavailability”
- Best poster presentation award, Graduate Research Symposium, University at Buffalo (2007) to **Zachary Fowler** & Mattheos Koffas, “Redirecting carbon utilization in *Escherichia coli* by metabolic network tuning”
- **Mark Diamond Research Grant**, Graduate Student Association, University at Buffalo, to Hila Dvora (2010)
- **Mark Diamond Research Grant**, Graduate Student Association, University at Buffalo, to Yajun Yan (2007)
- **Mark Diamond Research Grant**, Graduate Student Association, University at Buffalo, to Joseph Chemler (2007)
- **Mark Diamond Research Grant**, Graduate Student Association, University at Buffalo, to Zachary Fowler (2007)
- **Mark Diamond Research Grant**, Graduate Student Association, University at Buffalo, to Zhen Li (2007)
- **Mark Diamond Research Grant**, Graduate Student Association, University at Buffalo, to Effendi Leonard (2006)

Past and Current Undergraduate Research Assistants

<i>Student Name</i>	<i>Degree</i>	<i>Department</i>	<i>Institute</i>	<i>Dates</i>
				Spring 2003
Thomas Agbanyo	B.S.	Chem&Biol Eng	U.B.	
Kok Hong Lim	B.S.	Chem&Biol Eng	U.B.	Fall 2003, Fall 2004
Eric Caruana	B.S.	Chem&Biol Eng	U.B.	Spring 2004- Summer 2004
Ee-Ee Koh	B.S.	Chem&Biol Eng	U.B.	Fall 2004
Sei Fei Tan	B.S.	Chem&Biol Eng	U.B.	Spring 2004
Sergei Denisovich	B.S.	Chem&Biol Eng	U.B.	Spring 2004
Abhijeet Kohli	B.S.	Chem&Biol Eng	U.B.	Summer 2004
Jeffery Kraska	B.S.	Chem&Biol Eng	U.B.	Fall 2005
Gloria Chu	B.S.	Chem&Biol Eng	U.B.	Fall 2005, Spring 2006
Stacy Pustulka	B.S.	Chem&Biol Eng	U.B.	Fall 2006
				Spring 2008, Fall 2008,
Kyle McHugh	B.S.	Chem&Biol Eng	U.B.	Spring 2009
James Brennan	B.S.	Chemical Eng.	Cornell University	Summer 2007
Ryan Tomko	B.S.	Chem.&Biol. Eng.	U.B.	Fall 2007
Ellen Cardone	B.S.	Chem.&Biol. Eng.	U.B.	Fall 2007
Wei Seang Ooi	B.S.	Chem.& Biol. Eng.	U.B.	Fall 2004
Michelle Halvarson	B.S.	Chem.&Biol. Eng.	U.B.	Fall 2005
Lynn Wong	B.S.	Chem.&Biol. Eng.	U.B.	Spring 2008, Fall 2008,

Alex Buffone	B.S.	Chem.&Biol. Eng.	U.B.	Spring 2009
Thomas Taft	B.S.	Chem.&Biol. Eng.	U.B.	Summer 2006
Kristi Schroeder	B.S.	Chem.&Biol. Eng.	RPI	Spring 2007
Qin Gu	B.S.	Chem.&Biol. Eng.	RPI	Spring 2011-Fall 2012
Katherine Woychek	B.S.	Chem.&Biol. Eng.	RPI	Spring 2011-Fall 2012
Kyle Doce	B.S.	Chem.&Biol. Eng.	RPI	Spring 2012-Fall 2012
Ray Parker	B.S.	Chem.&Biol. Eng.	RPI	Spring 2013-
Water Fielding	B.S.	Chem.&Biol. Eng.	RPI	Spring 2013-
Omar Khalidi	B.S.	Chem.&Biol. Eng.	RPI	Summer 2011
Erin Dikeman	B.S.	Chem.&Biol. Eng.	RPI	Spring 2011-Fall 2012
Anthony Esposito	B.S.	Chem.&Biol. Eng.	RPI	Fall 2011-present
Michael De Boer	B.S.	Chem. & Biol. Eng.	RPI	Fall 2011-Summer 2012
Mark Toppel	B.S.	Chem.&Biol. Eng.	RPI	Spring 2012
Zachary Greene	B.S.	Chem.&Biol. Eng.	RPI	Spring 2012
Brandon Mader	B.S.	Chem.&Biol. Eng.	RPI	Spring 2012-Fall 2012
Ganon Dubay	B.S.	Chem.&Biol. Eng.	RPI	Spring 2013
				Spring 2011-Spring 2012
Jessica Stieglitz	B.S.	Chem.&Biol. Eng.	RPI	Spring 2014-present
Matthew Lebovich	B.S.	Chem.&Biol. Eng.	RPI	Spring 2014-present
Camilo Duque	B.S.	Chem. & Biol. Eng.	RPI	Spring 2014-present

Refereed Publications

1. Zhang, H.J.; Fan, X.G.; Qiu, X.L.; Zhang, Q.X.; Wang, W.Y.; Li, S.X.; Deng, L.H.; **Koffas, M.A.G.**; Wei, D.S.; Yuan, Q.P.; "A novel cleaning process for industrial production of xylose in pilot scale from corncob by using screw-steam-explosive extruder" *Bioprocess and Biosystems Engineering*, [epub ahead of print]
2. Mora-Pale, M.; Sanchez-Rodriguez, S.P.; Linhardt, R.J.; Dordick, J.S.; **Koffas, M.A.G.** "Biochemical strategies for enhancing the in vivo production of natural products with pharmaceutical potential" *Current Opinion in Biotechnology* 2014 Feb; 25:86-94
3. Cress, B.F.; Englaender, J.A.; He, W.; Kasper, D.; Linhardt, R.J.; **Koffas, M.A.G.**; "Masquerading microbial pathogens: capsular polysaccharides mimic host-tissue molecules" *FEMS Microbiology Reviews* 2013 Dec 26 [epub ahead of print]
4. Xu, P.; Wang, W.; Li, L.; Bhan, N.; Zhang, F.; **Koffas, M.A.G.** " Design and kinetic analysis of a hybrid promoter-regulator system for malonyl-CoA sensing in *Escherichia coli*" *ACS Chemical Biology* 2014 Feb. 21; 9(2):451-8

5. Xu, P.; **Koffas, M.A.G.** “Assembly of Multi-Gene pathways and combinatorial pathway libraries through ePathBrick vectors” *Methods in Molecular Biology* 2013; 1073: 107-129
6. Wang, W.; Englaender, J.A.; Xu, P.; Mehta, K.K.; Suwan, J.; Dordick, J.; Zhang, F.; Yuan, Q.; Linhardt, R.J.; **Koffas, M.A.G.** “Expression of low endotoxin 3-O-sulfotransferase in *Bacillus subtilis* and *Bacillus megaterium*” *Applied Biochemistry and Biotechnology* 2013 Aug 4 [Epub ahead of print]
7. Xu, P.; Gu, Q.; Wang, W.; Wong, L.; Bower, A.; Collins, C.; **Koffas, M.A.G.**; “Modular optimization of multi-gene pathways for fatty acids production in *E.coli*” *Nature Communications* [available on line: DOI:10.1038/ncomms2425]
8. Mora-Pale, M.; Linhardt, R.; Dordick, J.; **Koffas, M.A.G.**; “Metabolic engineering and in vitro biosynthesis of phytochemicals and non-natural analogues” *Plant Science* 2013 Sept; 210: 10-24.
9. Bhan, N.; Xu, P.; **Koffas, M.A.G.**; “Pathway and protein engineering approaches to produce novel and commodity small molecules” *Current Opinion in Biotechnology* [accepted]
10. Cress, B.; Linhardt, R.; **Koffas, M.A.G.**; “Draft Genome Sequence of *Escherichia coli* Strain Nissle 1917 (Serovar O6:K5:H1)” *Genome Announcements*, 2013 Feb 28; 1(2);
11. Cress, B.; Linhardt, R.; **Koffas, M.A.G.**; “Draft Genome Sequence of *Escherichia coli* Strain ATCC #23502 (Serovar O5:K4(L):H4)” *Genome Announcements*, 2013 Feb 28; 1(2)
12. Cress, B.; Barquera, B.; **Koffas, M.A.G.**; “Draft Genome Sequence of *Pseudoalteromonas luteoviolacea* Strain B (ATCC #29581)” *Genome Announcements*, 2013 Feb 28; 1(2)
13. Cress, B.; Linhardt, R.; **Koffas, M.A.G.**; “Draft Genome Sequence of *Escherichia coli* Strain ATCC #23506 (Serovar O10:K5(L):H4)” *Genome Announcements*, 2013 Feb 28; 1(2)
14. Xu, P.; Bhan, N.; **Koffas, M.A.G.**; “Engineering plant metabolism into microbes: from systems biology to synthetic biology” *Current Opinion in Biotechnology*, 2012, Sept. 14.
15. Bhan, N.; Xu, P.; Khalidi, O.; **Koffas, M.A.G.**; “Redirecting carbon flux into malonyl-CoA to improve resveratrol titers: Proof of concept for genetic interventions predicted by OptForce computational framework” *Chemical Engineering Science*, [epub ahead of print]

16. Xu, P.; Vansiri, A.; Bhan, N.; **Koffas, M.A.G.**; “ePathBrick: a synthetic biology platform for engineering metabolic pathways in *E.coli*” *ACS Synthetic Biology* (2012), 1(7), 256-266.
17. Malla, S.; **Koffas, M.A.G.**; Kazlauskas, R.J.; Kim, B.G. “Production of 7-O-methyl aromadendrin, a medicinally valuable flavonoid, in *Escherichia coli*” *Applied and Environmental Microbiology*. 2012 Feb; 78(3): 684-94.
18. Fowler, Z.L.; Shah, K.; Panepinto, J.C.; Jacobs, A.; **Koffas, M.A.G.** “Development of non-natural flavanones as antimicrobial agents” *PLoS One* 2011; 6(10): e25681.
19. Xu, P.; Ranganathan, S.; Fowler, Z.L.; Maranas, C.D.; **Koffas, M.A.G.** “Genome-scale metabolic modeling results in minimal interventions that cooperatively force carbon flux towards malonyl-CoA” *Metabolic Engineering*, 2011 Sep; 13(5):578-87.
20. Lim, G.-C.; Fowler, Z.L.; Hueller T.; Schaffer S.; **Koffas MAG.**”High-yield resveratrol production in engineered *Escherichia coli*” *Applied and Environmental Microbiology*, 2011 May; 77(10):3451-60.
21. Fowler, Z.; Baron, C.; Panepinto, J.; **Koffas, M.A.G.** “Melanization of flavonoids by fungal and bacterial laccases” *Yeast*, 2011 Mar; 28(3); 181-188.
22. Santos C.M.; **Koffas M.A.G.**; Stephanopoulos, G. ; “Optimization of a heterologous pathway for the production of flavonoids from glucose” *Metabolic Engineering*, 2011 Jul; 13(4):392-400.
23. Chemler, J.A.; Lim, C.-G.; Daiss, J.L.; **Koffas, M.A.G.**; “A versatile microbial system for biosynthesis of novel polyphenols with altered estrogen receptor binding activity” *Chemistry & Biology*, 2010 Apr 23;17(4):392-401
24. Xu, P.; **Koffas, M.A.G.**; “Use of *E. coli* for the synthesis of alternative fuels” *Biofuels* May 2010, Vol. 1, No. 3, Pages 493-504.
25. Chemler, J.A.; Fowler, Z.L.; *McHugh, K.P.*; **Koffas, M.A.G.**; “Improving NADPH availability for natural product biosynthesis in *Escherichia coli* by metabolic engineering” *Metabolic Engineering*, (2009), [Epub ahead of print]
26. Fowler, Z.L.; Gikandi, W.W.; **Koffas, M.A.G.**; “ Increased malonyl coenzyme A biosynthesis by tuning the *Escherichia coli* metabolic network and its application to flavanone production” *Applied and Environmental Microbiology*, (2009), 75(18), 5831-9

27. Fowler, Z.L.; **Koffas, M.A.G.**; “Biosynthesis and biotechnological production of flavanones: current state and perspectives” *Applied Microbiology and Biotechnology* (2009), 83 (5): 799-808.
28. **Koffas, M.A.G.** “Expanding the repertoire of biofuel alternatives through metabolic pathway evolution” *Proceedings of the National Academy of Sciences* (2009), 106(4), 965-966
29. Chemler, J.A.; **Koffas, M.A.G.**; “Metabolic engineering for plant natural product biosynthesis in microbes”. *Current Opinion in Biotechnology* (2008), 19(6): 597-605.
30. Leonard, E.; Yan, Y.; Fowler, Z.L.; Li, Z.; Lim, C.-G.; Lim, K.-H.; **Koffas, M.A.G.**; “ Strain improvement of recombinant *Escherichia coli* for efficient production of plant flavonoids” *Molecular Pharmaceutics* 2008 Mar-Apr; 5(2): 257-265.
31. Leonard, E.; Yan, Y.; Chemler, J.A.; Matern, U.; Martens, S.; **Koffas, M.A.G.** (2008); “Characterization of dihydroflavonol 4-reductases for recombinant plant pigment biosynthesis applications” *Biocatalysis & Biotransformation* 2008; 26(3): 243-251
32. Yan, Y.; Li, Z.; **Koffas, M.A.G.** (2007); “High yield anthocyanin biosynthesis in engineered *Escherichia coli*” *Biotechnology & Bioengineering*, (2008), 100(1): 126-140
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34. Leonard, E.; **Koffas, M.A.G.** (2007); “Engineering of artificial plant cytochrome P450 enzymes for synthesis of isoflavones by *Escherichia coli*.” *Applied and Environmental Microbiology* 73(22):7246-51.
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36. Leonard, E.; Lim, K.-H.; Shaw, P.-N.; **Koffas, M.A.G.** (2007); “Engineering central metabolic Pathways for high-level flavonoid production in *Escherichia coli*” *Applied and Environmental Microbiology* 73(12):3877-86.
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39. Leonard, E.; Yan, Y.; **Koffas, M.A.G.** (2006); "Functional expression of a P450 flavonoid hydroxylase for the biosynthesis of plant-specific hydroxylated flavonols in *Escherichia coli*" *Metabolic Engineering* 8(2): 172-181.
40. Leonard, E.; Yan, Y.; *Lim, K.H.*; **Koffas, M.A.G.** (2005); "Investigation of two distinct flavone synthases for plant-specific flavone biosynthesis in *Saccharomyces cerevisiae*" *Applied and Environmental Microbiology*, 71(12): 8241-8248.
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42. Leonard, E.; Chemler, J.; *Lim K. H.*; **Koffas, M.A.G.** (2006); "Expression of a soluble flavone synthase allows the biosynthesis of phytoestrogen derivatives in *Escherichia coli*". *Applied Microbiology and Biotechnology*, 70(1):85-91.
43. Yan, Y.; Chemler, J.; Huang, L.; Martens, S.; **Koffas, M. A.** (2005); "Metabolic Engineering of anthocyanin biosynthesis in *Escherichia coli*". *Applied and Environmental Microbiology*. 71(7): 3617- 3623.
44. **Koffas, M.A.** and DelCardayre, S (2005). "Evolutionary Metabolic Engineering". *Metabolic Engineering* 7(1): 1-3.
45. **Koffas, M.A.**, Stephanopoulos, G. (2005); "Strain improvement by metabolic engineering: lysine production as a case study for systems biology". *Current Opinion in Biotechnology* 16(3):361-366. **(15 total citations)**.
46. **Koffas, M.A.G.**; Jung, G.Y. and Stephanopoulos, G. (2003) "Engineering metabolism and product formation in *Corynebacterium glutamicum* by coordinated gene overexpression" *Metabolic Engineering*, 5 (1), 32-41.
47. **Koffas, M.A.G.**; Jung, G.Y.; Aon, J.C. and Stephanopoulos, G. (2002); "Effect of pyruvate carboxylase overexpression on the physiology of *Corynebacterium glutamicum*" *Applied and Environmental Microbiology*, 68 (11), 5422-5428.
48. **Koffas, M.A.G.**; Roberge, C.M.; Lee, K. and Stephanopoulos, G. (1999); "Metabolic Engineering", *Annual Review of Biomedical Engineering*, 1, 535-557.
49. **Koffas, M.A.G.**; Ramamoorthi, R.; Pine, W.A.; Sinskey, A.J. and Stephanopoulos, G. (1998); "Sequence of the *Corynebacterium glutamicum*

pyruvate carboxylase gene”, *Applied Microbiology and Biotechnology*, 50 (3), 346-352.

Book Chapters

(underlined names denote graduate students in the PI's laboratory)

1. Xu, P.; **Koffas, M.A.G.**; “ePathbrick: A synthetic biology platform for engineering metabolic pathways in E coli” in *Methods in Molecular Biology: Synthetic Biology* [submitted] (invited)
2. Chemler, J.A.; Fowler, Z.; Leonard, E.; **Koffas, M.A.G.** 2009. Trends in microbial synthesis of natural products and biofuels” (invited) In Eric Toone, (ed.) *Advances in Enzymology* 76; 151-217
3. Fowler, Z.; Leonard, E.; **Koffas, M.A.G.** 2009. Biosynthesis of essential building blocks. (invited) In C. Smolke (ed.), *Metabolic Engineering* CRC Press.
4. Fowler, Z.; **Koffas, M.A.G.** 2009. Microbial biosynthesis of fine chemicals. (invited) In C. Smolke (ed.), *Metabolic Engineering* CRC Press.
5. Chemler, J.; Leonard, E.; **Koffas, M.A.G.** 2007. Flavonoid biotransformations in microorganisms.(invited) In K. Gould, K. Davies and C. Winefield (ed.), *Anthocyanins: life's colourful solutions*, Springer.
6. Leonard, E., Z. L. Fowler, and **Koffas, M. A. G.** 2007. *Metabolic Engineering*, p. 301-359. In M. Al-Rubeai and M. Fussener (ed.), *Systems Biology*, vol. 5. 645 Springer, London.
7. Bedekar, A.; Shah, K.; **Koffas, M.A.G.** 2010. Natural Products for Type II Diabetes treatment. In *Advances in Applied Microbiology* 71C; 21-73.
8. Lim, C.-G., **Koffas, M.A.G.** 2010. Bioavailability and Recent advances in the bioactivity of flavonoid and stilbene compounds. In Li Ping (ed.) *Plant Natural Products in Drug Discovery*, Current Organic Chemistry (manuscript in press).
9. Bhan, N.; **Koffas, M.A.G.**; “Non-natural isoflavonoids” in *Polyphenols in Health and Disease: Volumes 1 and 2* edited by Ronald Ross Watson, Victor R. Preedy, and Sherma Zibadi.
10. Dvora, H.; **Koffas, M.A.G.**; “Microbial production of flavonoids and terpenoids” in *Microbial Production of Food Ingredients, Enzymes and Nutraceuticals*, edited by Ioannis Giavasis, Brian McNeil, David Archer and Linda Harvey.

11. Cress, B.; Linhardt, B.; **Koffas, M.A.G.**; “Isoflavonoid production by genetically engineered microorganisms” in Handbook of Natural Products-Phytochemistry, Botany, Metabolism, edited by K.G. Ramawat, J.M. Merillon and M. Henry.
12. Joo, E.-J.; Cress, B.; **Koffas M.A.G.**; “Using recombinant microorganisms for the synthesis and modification of flavonoids and stilbenes” *Polyphenols in human health and disease* Ronald Ross Watson, Victor R. Preedy and Sherma Zibadi .2013 v. 1; pages 483-448

Other Publications (Electronic, refereed)

NCBI (National Center for Biological Information) is a public electronic database, maintained by the National Institutes of Health, that contains biological information in the form of (among others) DNA, RNA, protein and genome sequences. After an Investigator submits a sequence, in the form of a report, to NCBI, it is evaluated by NCBI scientists before being accepted and published online.

Underlined names below denote graduate students working in the PI’s laboratory.

1. E. Leonard, Y. Kohara, T. Shin-i, S. Sugano, D. Thierry-Mieg, Y. Suzuki and **M.A.G. Koffas**, “*Caenorhabditis elegans* biotin protein ligase, holocarboxylase synthetase (62.5 kD) alternative variant d (bpl-1), complete mRNA”, NCBI Report (Accession Number AY601658), 4/26/2004.
2. E. Leonard, Y. Kohara, T. Shin-i, M. Sienkiewicz, D. Thierry-Mieg, J. Thierry-Mieg and **M. A. G. Koffas**, “*Caenorhabditis elegans* biotin protein ligase, holocarboxylase synthetase (62.5 kD) alternative variant b (bpl-1), complete mRNA”, NCBI Report (Accession Number AY601656), 4/26/2004.
3. E. Leonard, Y. Kohara, S. Sugano, D. Thierry-Mieg, J. Thierry-Mieg and **M.A.G. Koffas**, “*Caenorhabditis elegans* biotin protein ligase, holocarboxylase synthetase (70.9 kD) alternative variant c (bpl-1), complete mRNA”, NCBI Report (Accession Number AY601657), 4/26/2004

Patents

(underlining denotes graduate students working in the PI’s laboratory)

1. **Koffas, M.A.G.** Leonard, E.; Yan, Y.; Chemler, J.; “Production of flavonoids by recombinant microorganisms”. Patent Exclusively licensed by Chromadex Inc.
2. **Koffas, M.A.G.**, Leonard, E.; ““Design and Construction of Cytochrome-P450 Isoflavone Synthase Chimeras for Plant Isoflavone Productions for *Escherichia coli*” Patent Application (unpublished as of yet) Serial number 60/925,640

3. **Koffas, M.A.G., Fowler, Z.L., Gikandi, W.** “Malonyl-CoA overproduction strains” Patent Disclosure R-6284
4. **Koffas, M.A.G.;** Odom, J.M.; Shenzle, A.; “Production of feed using a denitrifying methanotrophic bacterial strain”, US6958222(B2), DuPont De Nemours CR&D.
5. **Koffas, M.A.G.;** Odom, J.M.; Shenzle, A.; “High growth methanotrophic bacterial strain *Methylomonas 16a*” WO0220728, DuPont De Nemours CR&D.
6. **Koffas, M.A.G.;** Norton, K.; Odom, J.M.; Ye, R.W.; “Methanotrophic carbon metabolism pathway genes and enzymes” WO0220796, DuPont De Nemours CR&D.
7. **Koffas, M.A.G.;** Odom, J.M.; Wang, S.; Wang, T.; Ye, R.W.; “Genes encoding polysaccharide production” WO0220797, DuPont De Nemours CR&D.
8. Cheng, Q.; **Koffas, M.A.G.;** Norton, K.; Odom, J.M.; Picataggio, S.K.; Rouviere, P.E.; Schenzle, A.; Tomb, J.-F.; “Genes involved in isoprenoid compound production” WO0220733, DuPont De Nemours CR&D.
9. DiCosimo, D.; **Koffas, M.A.G.;** Wang, S.; “Production of cyclic terpenoids” WO0220815, DuPont De Nemours CR&D.
10. Brzostowicz, P.C.; Cheng, Q.; DiCosimo, D.J.; **Koffas, M.A.G.;** Miller, E.S.; Odom, J.M.; Picataggio, S.K.; Rouviere, P.E.; “Carotenoid production from a single carbon substrate” WO0218617, DuPont De Nemours CR&D.
11. Stephanopoulos, G.; Santos, C.; **Koffas, M.A.G.;** “Metabolically engineered *Escherichia coli* for the production of flavonoids from glucose”, WO 2011140344, US 20120034661

Presentations given by the PI (* marks poster presentations)

(list does not include presentations given by the PI's students).

1. Society for Industrial Microbiology Annual Meeting, August 2013, San Diego CA, “Engineering static and dynamic tuning of malonyl-CoA derived biosynthesis in microorganisms”
2. Gordon Research Conference on Plant Metabolic Engineering, July 2013, Waterville Valley NH, “Engineering static and dynamic tuning of malonyl-CoA derived biosynthesis in microorganisms”

3. ACS BIOT Annual Meeting, April 2013, New Orleans “Integrated computational and experimental studies for the overproduction of fatty acids and polyphenols in *E.coli*”
4. ForchumCentrum Julich, International Biotechnology Day “Engineering plant secondary metabolite biosynthesis in microorganisms” Julich, Germany, October 5th 2012. ***Keynote Lecture.***
5. Gordon Research Conference on Plant Metabolic Engineering “Plant secondary metabolite biosynthesis in recombinant microorganisms”. Waterville Valley Resort, NH, July 24th-July 28th 2011 (invited)
6. 241st American Chemical Society National Meeting. “Engineering flavonoid biosynthesis in recombinant microorganisms”. March 27-31st 2011, Anaheim, CA.(invited)
7. 3rd International Conference on Drug Discovery and Metabolism. “Engineering flavonoid biosynthesis in recombinant microorganisms” February 7th-10th 2011, Dubai, UAE. (invited)
8. Society for Biological Engineering 3rd conference on Biomolecular Engineering. “Engineering flavonoid biosynthesis in recombinant microorganisms” January 16th-19th 2011, San Francisco, CA.
9. The Commemorative International Symposium for the 50th Anniversary of the Korean Society for Applied Biological Chemistry “Engineering the synthesis of plant polyphenols in microorganisms” ***Koffas M.A.G.*** August 25-27 2010, Gyengjou, Korea.
10. ACS National Meeting “Engineering flavonoid biosynthesis in microorganisms” ***Koffas, M.A.G.*** August 15th-20th 2009, Washington, DC.
11. Society for Industrial Microbiology Annual Meeting “Enhancing precursor availability for efficient natural product biosynthesis in *E. coli*” ***Koffas, M.A.G.*** July 26th-30th 2009, Toronto, ON.
12. Society for Industrial Microbiology Annual Meeting “Rational engineering of plant polyphenol biosynthesis in *Escherichia coli*” ***Koffas, M.A.G.*** July 26th-30th 2009, Toronto, ON.
13. ECI Biochemical Engineering XVI “Engineering Plant Secondary Metabolite Biosynthesis in Microorganisms” ***Koffas, M.A.G.*** July 5th-July 9th 2009, Burlington, VT.
14. Natural Products Discovery and Production II: Celebrating the Successes of Traditional and Novel Culture Sources (ECI Conference) “Biosynthesis of plant

- polyphenols in recombinant microorganisms”. **Koffas, M.A.G.** June 22-27 2008, Whistler, BC, Canada. (invited)
15. 2007 AIChE Annual Meeting “Combinatorial synthesis of plant polyphenols and their application in diabetes and obesity treatment”. **Koffas, M.A.G.** November 4th-9th, Salt Lake City, UT.
 16. 2007 AIChE Annual Meeting “Fabrication of anti-obesity stilbene analogues using engineered microbial platforms: structure-function properties towards inhibition of digestive enzymes”. **Koffas, M.A.G.** November 4th-9th, Salt Lake City UT.
 17. 234th ACS National Meeting “Synthesis of anti-obesity stilbene derivatives using engineered microbial biocatalysts: Structure-function analysis of α -glucosidase inhibition potency. **Koffas, M.A.G.** August 19th-23rd 2007, Boston, MA.
 18. 234th ACS National Meeting “Metabolic engineering of natural and unnatural flavonoid biosynthesis in microorganisms and their application for diabetes treatments” **Koffas, M.A.G.** August 19th-23rd 2007, Boston, MA.
 19. Society for Industrial Microbiology Annual Meeting “A systems biology approach for plant secondary metabolite optimization in microorganisms” **Koffas, M.A.G.** July 29th-August 3rd 2007, Denver CO. (invited)
 20. Society for Industrial Microbiology Annual Meeting “Pathway optimization strategies for plant secondary metabolite biosynthesis in microorganisms” **Koffas, M.A.G.** July 29th-August 3rd 2007, Denver CO. (invited)
 21. 3rd Panhellenic Scientific Congress on Biotechnology and Food Technology “Optimization strategies for plant secondary metabolite biosynthesis in microorganisms” **Koffas, M.A.G.** Athens, Greece, 3/29/2007 [plenary speaker].(invited)
 22. AIChE Annual Meeting, “Engineering of synthetic cytochrome P450s for plant estrogen isoflavone biosynthesis from *Escherichia coli*” Leonard, E.; **Koffas, M.A.G.** San Francisco CA, 11/14/2006.
 23. AIChE Annual Meeting, “Natural and unnatural flavonoid biosynthesis and their insulinotropic properties in pancreatic beta cells” Leonard, E.; Chemler, J.; Lock, L.T.; **Koffas, M.A.G.**; Tzanakakis, E.S. San Francisco CA, 11/15/2006.
 24. American Chemical Society annual meeting “Metabolic engineering of flavonoid biosynthesis in microorganisms” **Koffas, M.A.G.** September 10th-14th, San Francisco, CA. (invited)
 25. XXIII International Conference on Polyphenols “Metabolic Engineering of flavonoid biosynthesis in microorganisms” **Koffas, M.A.G.** August 22-25 2006, Winnipeg, Canada.

26. Society for Industrial Microbiology Annual Meeting “Metabolic Engineering of plant polyphenols in microorganisms” **Koffas, M.A.G.** July 30th- August 3rd 2006, Baltimore MD. (invited)
27. Institute of Food Technologists Annual Meeting “Metabolic Engineering of flavonoid biosynthesis from microorganisms” **Koffas, M.A.G.** June 24th-28th 2006, Orlando, FL. (invited)
28. Natural Products Discovery and Production: New Challenges, New Opportunities “Metabolic Engineering of flavonoid biosynthesis in microorganisms” **Koffas, M.A.G.** June 4th-8th 2006, Santa Fe, NM.*
29. American Society of Microbiology Annual Meeting 2006 “Metabolic engineering of flavonoid biosynthesis in microorganisms”, Leonard, E.; **Koffas, M.A.G.** Orlando, FL*.
30. DuPont Central Research and Development “Metabolic Engineering of Flavonoid Biosynthesis in microorganisms”. **Koffas, M.A.G** May 12th 2006, Wilmington, DE. (invited)
31. 4th International Workshop on Anthocyanins “Metabolic Engineering of Flavonoid Biosynthesis in microorganisms”. **Koffas, M.A.G** February 14th-17th, 2006, Rotorua, New Zealand. (invited)
32. American Institute of Chemical Engineers Annual Meeting, section for Protein Engineering. “Engineering microorganisms for plant estrogen production”. **Koffas, M.A.G** Cincinnati, OH. November 2005.
33. American Institute of Chemical Engineers Annual Meeting, section for Advances in Metabolic Engineering and Bioinformatics: From Prokaryotes to Eukaryotes. “Biosynthesis of Plant-Specific Flavanols and Anthocyanins in *Escherichia coli*”. **Koffas, M.A.G** Cincinnati, OH. November 2005.
34. Engineering Flavonol and Flavone Biosynthesis in *Saccharomyces cerevisiae* and *Escherichia coli*. Leonard, E.; **Koffas, M.A.G.** Gordon Research Conference on Plant Metabolic Engineering. Tilton, NH. July 10-15 2005*.
35. Engineering Isoflavone and Flavanone Biosynthesis in *Saccharomyces cerevisiae*. Yan, Y.; **Koffas, M.A.G.** Gordon Research Conference on Applied and Environmental Microbiology. New London, CT. July 24-29 2005*.
36. Engineering Anthocyanin and Flavan-3-ol Biosynthesis in *Escherichia coli*. Chemler, J.; **Koffas, M.A.G.** Gordon research Conference on Natural Products. Gordon Research Conference on Natural Products. Tilton, NH. July 24-29 2005*.

37. Metabolic Engineering of Flavonoid Biosynthesis in *Saccharomyces cerevisiae* and *Escherichia coli*. **Koffas, M.A.G.** The World Congress on Industrial Biotechnology and Bioprocessing. Orlando, Florida, April 20-22, 2005. (invited)
38. American Chemical Society Annual Meeting, section for Metabolic Engineering. "Engineering the Flavonoid Biosynthetic Network in *Escherichia coli*." **Koffas, M.A.G.** San Diego, CA, March 2005. (invited)
39. American Institute of Chemical Engineers Annual Meeting, section for Protein Engineering. "Production of anthocyanins from *Escherichia coli* containing an artificial gene cluster". **Koffas, M.A.G.** Austin, TX, November 2004.
40. American Institute of Chemical Engineers Annual Meeting, section for Protein Engineering. "Biochemical Characterization of Dihydroflavonol 4-Reductase from plant and microbial species". **Koffas, M.A.G.** Austin TX, November 2004.
41. Metabolic Engineering V: Genome to product. "Metabolic engineering of flavonoid biosynthesis in *Escherichia coli*". **Koffas, M.A.G.** Lake Tahoe, CA, September 2004*.
42. Metabolic Engineering V: Genome to product. "Biochemical characterization of dihydroflavonol 4-reductase from plant and microbial species". **Koffas, M.A.G.** Lake Tahoe, CA, September 2004*.
43. XXII International Conference on Polyphenols. "Biochemical characterization of dihydroflavonol 4-reductase from plant and microbial species". Leonard, E.; Martens, S.; **Koffas, M.A.G.** Helsinki, Finland, August 2004*.
44. Gordon Research Conference on Biocatalysis. "Metabolic engineering of anthocyanin biosynthesis in *Escherichia coli*". Yan, Y.; **Koffas, M.A.G.** Meiden, NH, July 2004*.
45. Society for Industrial Microbiology Annual Meeting. "Resolution of multiple formaldehyde assimilatory networks encoded in the genome of the obligate methanotroph *Methylomonas* sp. 16a" Odom, J. M.; **Koffas, M.A.G.** Minneapolis, MN, August 2003.
46. American Institute of Chemical Engineers Annual Meeting. "Elucidation of the Central Carbon Metabolism of strain *Methylomonas* 16a" **Koffas, M.A.G.** Indianapolis, IN, November 2002.
47. 2nd ASM and TIGR Conference on Microbial Genomes. "Genomic Analysis of Central Carbon Metabolism in the obligate Methanotroph *Methylomonas* 16a" Odom, J. M.; **Koffas, M.A.G.** Las Vegas, Nevada February 2002.
48. Metabolic Engineering III. "Metabolic Engineering of *Corynebacterium glutamicum* for amino acid production improvement" **Koffas, M.A.G.**; Stephanopoulos, G. Colorado Springs, Colorado, October 2000*.

49. American Institute of Chemical Engineers Annual Meeting. "Expression of Anaplerotic pathways in *Corynebacterium glutamicum* for aminoacid production". **Koffas, M.A.G.**; Stephanopoulos, G. Dallas, TX, October 1999.
50. Gordon Research Conference on Applied and Environmental Microbiology. "Investigation of the role of biotin in aminoacid production" **Koffas, M.A.G.**; Stephanopoulos, G. New London, CT, July 1999*
51. American Institute of Chemical Engineers Annual Meeting "Investigation of the role of biotin in amino acid production" **Koffas, M.A.G.**; Stephanopoulos, G. Los Angeles, California, November 1997.

Lectures (since starting as a Faculty)

1. University of North Carolina at Greensboro, Department of Chemistry and Biochemistry, March 7th 2013 "Engineering static and dynamic control of carbon fluxes in microorganisms"
2. Carleton University, Department of Biology, November 29th 2013 "Engineering static and dynamic control of carbon fluxes in microorganisms"
3. Hong Kong University of Science and Technology, Hong Kong, P.R. of China, Department of Chemical Engineering, July 5th 2013 "Engineering static and dynamic control of carbon fluxes in microorganisms"
4. Shanghai University of Traditional Chinese Medicine, Shanghai, P.R. of China, Department of Chemical Engineering, July 2nd 2013 "Engineering static and dynamic control of carbon fluxes in microorganisms"
5. Jiangnan University, Wuxi, P.R. of China, Department of Chemical Engineering, July 1st 2013 "Engineering static and dynamic control of carbon fluxes in microorganisms"
6. Tsinghua University, Beijing, P.R. China, Department of Chemical Engineering, June 24th 2013 "Engineering static and dynamic control of carbon fluxes in microorganisms"
7. Beijing University of Chemical Technology, P.R. China, Department of Chemical Engineering, June 25th 2013 "Engineering static and dynamic control of carbon fluxes in microorganisms"
8. Symrise Central Research and Development "Engineering plant secondary metabolite biosynthesis in microorganisms" Holzminden, Germany, October 4th 2012 [invited].

9. SUNY-ESF Department of Chemistry “Engineering phytochemicals and biofuels in recombinant microorganisms” SUNY-ESF seminar series, November 9th 2012 [invited]
10. “Plant secondary metabolite biosynthesis in recombinant *E.coli*” LS9, South San Francisco, March 27th 2012.
11. “Anthocyanin biosynthesis in recombinant *E.coli*” UC Davis/Mars workshop on natural colorants, June 21st 2011.
12. “Plant secondary metabolite biosynthesis in microorganisms”, University of Massachusetts at Amherst, March 5th 2010.
13. “Plant secondary metabolite biosynthesis in microorganisms”, Renselaer Polytechnic Institute, Department of Chemical Engineering, September 25th 2009.
14. “Plant secondary metabolite biosynthesis in microorganisms”, Cornell University, Department of Food Science and Technology, April 15th 2009.
15. “Engineering plant secondary metabolite biosynthesis in microorganisms” Brock University, Department of Biological Sciences, St. Catharine’s, ON, Canada, 10/24/2008
16. “Strategies for optimizing plant secondary metabolite biosynthesis” Columbia University, joint Presentation at the Department of Chemical Engineering and Department of Chemistry, New York, NY, 06/16/2008.
17. “Strategies for optimizing plant secondary metabolite biosynthesis” University of Massachusetts at Amherst, Department of Chemical Engineering, Amherst, MA, 03/04/2008.
18. “Optimization strategies for plant secondary metabolite biosynthesis in microorganisms” California Institute of Technology, Department of Chemistry and Chemical Engineering, Pasadena, CA, 03/15/2007.
19. “Pathway Optimization Strategies for Secondary Metabolites in Unicellular Organisms” Department of Chemistry Organic Chemistry series, University at Buffalo, 01/31/2007.
20. “Metabolic Engineering: a holistic approach to biocatalysis and industrial microbiology”. University at Buffalo, Department of Microbiology and Immunology, May 2003.