

VASSILIS KARAGEORGIU

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AREAS OF RESEARCH INTEREST

- Biomedical Engineering, Tissue Engineering, Biomaterials, Drug Delivery

EDUCATION

- Ph. D., Chemical and Biological Engineering, August 2004, Tufts University, MA, USA
Field of studies: Tissue Engineering, Biomaterials, Drug Delivery
Thesis title: “Bioinductive Protein-Based Scaffolds for Human Bone Marrow Stromal Cells Differentiation”
- Diploma, Chemical Engineering, March 1998, Aristotle University of Thessaloniki, Thessaloniki, Greece (GPA 8/10)
Thesis title: “Determination of Copolymer Molecular Weight Using Gel Permeation Chromatography (GPC) and Viscometry”

TEACHING EXPERIENCE

**TECHNOLOGICAL EDUCATIONAL INSTITUTE OF THESSALONIKI,
THESSALONIKI, GREECE**

Department Of Food Technology

Professor of Applications

Jun. 2010 – present

Lecturing the course Food Engineering II and instructing in the labs of Food Engineering II, Food Processing I and Food Processing II

**TECHNOLOGICAL EDUCATIONAL INSTITUTE OF THESSALONIKI,
THESSALONIKI, GREECE**

Department Of Food Technology

Scientific Collaborator

Oct. 2005 – present

Lecturing the course Food Engineering I.

UNIVERSITY OF NEW YORK IN SKOPJE, SKOPJE, FYROM

Department of Business Administration

Assistant Professor

Oct. 2005 – Sep. 2006

Lecturing the courses Calculus I, Calculus II, College Algebra, College Trigonometry.

TUFTS UNIVERSITY, MEDFORD, USA

Department of Chemical and Biological Engineering

Teaching Assistant

Aug. 1998 – Aug. 2004

Teaching experience in classroom lectures and laboratory experiments as part of the course of Biotechnology Processing Projects Laboratory. Trained new graduate students to lab policies and procedures. Supervised undergraduate student thesis research.

RESEARCH EXPERIENCE

CENTRE FOR RESEARCH AND TECHNOLOGY – HELLAS, THESSALONIKI, GREECE

Chemical Process Engineering Research Institute

Collaborating Researcher

Sep. 2006 – May 2010

Participating in the IP research project Nanoscale Functionalities for Targeted Delivery of Biopharmaceutics (NANO(BIOPHARMACEUTICS)) funded by the European Union. Synthesis of functionalized PLGA nanoparticles for delivery of protein/peptide drugs and vaccines via the pulmonary, oral and nasal administration routes. Development of *in vitro* models for the transport of synthesized nanocarriers across epithelial barriers. Toxicological assessment of synthesized carriers. Research experience in protein encapsulation in nanoparticles, analytical techniques, cell culturing, *in vitro* experiments, atomic force microscopy (AFM). Experience in writing proposals for research grants. Supervised undergraduate student diploma thesis research.

TUFTS UNIVERSITY, MEDFORD, USA

Department of Chemical and Biological Engineering

Research Assistant

Aug. 1998 – Aug. 2004

Research in the area of Tissue Engineering, Biomaterials and Drug Delivery. Studied silk as a potential biomaterial for mesenchymal stem cell differentiation and bone regeneration both in films and porous scaffolds. Immobilized bone morphogenetic protein-2 (BMP-2) on silk films and used porous silk scaffolds as BMP-2 delivery system. Research funded by National Science Foundation (NSF) and National Institute of Health (NIH). Experience in surface chemistry, cell culture, analytical techniques, X-ray photoelectron spectroscopy, *in vitro* and some *in vivo* experiments. Responsible for maintaining the Tissue Engineering laboratory of the Chemical and Biological Engineering and Biomedical Engineering Departments.

AWARDS AND DISTINCTIONS

- The article «Porosity of 3D Biomaterial Scaffolds and Osteogenesis» in Biomaterials, Volume 26, Issue 27, Pages 5474-5491 (2005), cited 237 times, was 4th in the list of most cited publications in the field of Chemical Engineering for the years 2005 – 2009 according to the SCOPUS scientific database (<http://info.scopus.com/topcited/>)
- Outstanding Graduate Researcher in Engineering Award, Graduate School of Arts & Sciences and School of Engineering, Tufts University, April 2004

SKILLS

- **Languages:** Greek (native speaker)
English - perfect (Certificate of Proficiency in English, University of Cambridge)
French - perfect (Diplôme d' Etudes Françaises 2^e Degré, Université de Paris-Sorbonne, Paris IV)
- **Computers:** Windows, Mac OS, MS Office, SPSS

PUBLICATIONS IN PEER REVIEWED JOURNALS

Times cited: 1508

1. O. Kammona, A. H. Alexopoulos, P. Karakosta, K. Kotti, **V. Karageorgiou**, C. Kiparissides: Nanocarrier aided nasal vaccination: An experimental and computational approach. *Industrial and Engineering Chemistry Research* (accepted)
2. C. Patronidou, P. Karakosta, K. Kotti, O. Kammona, **V. Karageorgiou**, C. Kiparissides: PLGA nanocarriers for systemic and lymphatic oral delivery of proteins and peptides. *Journal of Controlled Release* 132: e5-e6 (2008)
3. C. Kirker-Head, **V. Karageorgiou**, S. Hofmann, R. Fajardo, H. P. Merkle, M. Hilbe, B. Rechenberg, J. McCool, L. Abrahamsen, D. L. Kaplan, L. Meinel: BMP-Silk Composite Matrices Heal Critically Sized Femoral Defects. *Bone* 41: 247–255 (2007)
4. E. Bini, C. W. P. Foo, J. Huang, **V. Karageorgiou**, B. Kitchel, D. L. Kaplan: RGD-functionalized bioengineered spider dragline silk biomaterial. *Biomacromolecules* 7: 3139-3145 (2006)
5. T. Kardestuncer, M.-B. McCarthy, **V. Karageorgiou**, D. L. Kaplan, G. Gronowicz: RGD-tethered silk substrate stimulates the differentiation of human tendon cells. *Clinical Orthopaedics and Related Research* 448: 234-239 (2006)
6. **V. Karageorgiou**, M. Tomkins, R. Fajardo, L. Meinel, B. Snyder, K. Wade, J. Chen, G. Vunjak-Novakovic, D. L. Kaplan: Porous silk fibroin 3-D scaffolds for delivery of bone morphogenetic protein-2 *in vitro* and *in vivo*. *Journal of Biomedical Materials Research A* 78: 324-334 (2006)
7. H.-J. Jin, J. Park, **V. Karageorgiou**, U.-J. Kim, R. Valluzzi, D. L. Kaplan: Water-stable silk films with reduced beta-sheet content. *Advanced Functional Materials* 15: 1241-1247 (2005)
8. **V. Karageorgiou** and D. L. Kaplan: Porosity of 3-D biomaterial scaffolds and osteogenesis. *Biomaterials* 26: 5474-5491 (2005)
9. L. Meinel, S. Hofmann, **V. Karageorgiou**, C. Kirker-Head, J. McCool, G. Gronowicz, L. Zichner, R. Langer, G. Vunjak-Novakovic, D. L. Kaplan: The inflammatory responses to silk films *in vitro* and *in vivo*. *Biomaterials* 26: 147-155 (2005)
10. L. Meinel, S. Hofmann, **V. Karageorgiou**, L. Zichner, R. Langer, D. L. Kaplan, G. Vunjak-Novakovic: Engineering cartilage-like tissue using human mesenchymal stem cells and silk protein scaffolds. *Biotechnology and Bioengineering* 88: 379-391 (2004)
11. **V. Karageorgiou**, L. Meinel, S. Hofmann, A. Malhotra, V. Volloch, D. L. Kaplan: Bone morphogenetic protein-2 decorated fibroin films induce osteogenic differentiation of human bone marrow stromal cells. *Journal of Biomedical Materials Research A* 71: 528-537 (2004)
12. L. Meinel, **V. Karageorgiou**, S. Hofmann, R. Fajardo, B. Snyder, C. Li, L. Zichner, R. Langer, G. Vunjak-Novakovic, D. L. Kaplan: Engineering bone-like tissue using human bone marrow stem cells in silk scaffolds. *Journal of Biomedical Materials Research* 71A: 25-34 (2004)

13. H.-J. Jin, J. Chen, **V. Karageorgiou**, G. H. Altman, D. L. Kaplan: Human bone marrow stromal cell responses on electrospun silk fibroin mats. *Biomaterials* 25: 1039-1047 (2004)
14. L. Meinel, **V. Karageorgiou**, R. Fajardo, B. Snyder, V. Shinde-Patil, L. Zichner, D. L. Kaplan, R. Langer, G. Vunjak-Novakovic: Bone tissue engineering using human mesenchymal stem cells; effects of scaffold material and medium flow. *Annals of Biomedical Engineering* 32: 112-122 (2003)
15. J. Chen, G. H. Altman, **V. Karageorgiou**, R. Horan, A. Collette, V. Volloch, T. Colabro, D. L. Kaplan: Human bone marrow stromal cell and ligament fibroblast responses on RGD-modified silk fibers. *Journal of Biomedical Materials Research* 67A: 559-570 (2003)
16. B. Panilaitis, G. H. Altman, J. Chen, H.-J. Jin, **V. Karageorgiou**, D. L. Kaplan: Macrophage responses to silk. *Biomaterials* 24: 3079-3085 (2003)

PUBLICATIONS IN BOOKS AND TECHNICAL REPORTS

1. C. Kiparissides, O. Kammona, **V. Karageorgiou**: Nanotechnology: Challenges in targeted administration of therapeutic biomolecules. Honorary volume for Emeritus Professor Vassilis Papageorgiou of the Aristotle University of Thessaloniki (in press)

PUBLICATIONS IN CONFERENCE PROCEEDINGS

1. K. Kotti, **V. Karageorgiou**, O. Kammona, C. Kiparissides: Synthesis of PLGA nanocarriers for nasal vaccination. 10th European Biological Inorganic Chemistry Conference (EUROBIC10), Thessaloniki, Greece, June 22-26, 2010
2. K. Kotti, **V. Karageorgiou**, O. Kammona, C. Kiparissides: Synthesis of PLGA nanocarriers for nasal vaccination. 7th World Meeting on Pharmaceutics, Biopharmaceutics and Pharmaceutical Technology, Valletta, Malta, March 8-11, 2010
3. C. Patronidou, P. Karakosta, K. Kotti, O. Kammona, **V. Karageorgiou**, C. Kiparissides: Synthesis of functionalized nanocarriers for oral and pulmonary delivery of protein and peptide drugs. *International Conference on Nanomedicine*, Porto Carras Grand Resort, Chalkidiki, Greece, September 9-11, 2007
4. H.-J. Jin, J. Chen, **V. Karageorgiou**, G. H. Altman, D. L. Kaplan: Human Bone Marrow Stem Cell Responses on Electrospun *Bombyx Mori* Silk Fibroin. SYMPOSIUM C Bio-Inspired Nanoscale Hybrid Systems, Boston, USA, December 2 - 4, 2002

ΣΥΝΕΔΡΙΑ

1. C. Kiparissides, O. Kammona, **V. Karageorgiou**: Nanotechnology challenges in targeted delivery of biopharmaceutics. 8th Southeast European Congress on Xenobiotic Metabolism and Toxicity (XeMeT 2010), Thessaloniki, Greece, October 1-5, 2010
2. K. Kotti, **V. Karageorgiou**, C. Patronidou, O. Kammona, C. Kiparissides: Synthesis of PLGA nanocarriers for lymphatic nasal delivery of proteins. AICHe 2009 Annual Meeting, Nashville, USA, November 8-13, 2009
3. K. Kotti, **V. Karageorgiou**, C. Patronidou, O. Kammona, C. Kiparissides: Synthesis of PLGA nanoparticles for lymphatic nasal delivery of proteins. 6th International Conference on Nanosciences and Nanotechnologies (NN09), Physics Department, Aristotle University of Thessaloniki, Thessaloniki, Greece, July 13-15, 2009
4. B. Cerda, Ch. Sevrin, C. Patronidou, K. Kotti, O. Kammona **V. Karageorgiou**, C. Kiparissides, Ch. Grandfils: Activation of the complement by PLGA nanoparticles. EuroNanoMedicine 2009, Bled, Slovenia, September 28-30, 2009

5. K. Kotti, **V. Karageorgiou**, C. Patronidou, O. Kammona, C. Kiparissides: Synthesis of PLGA nanocarriers for nasal vaccination. EuroNanoMedicine 2009, Bled, Slovenia, September 28-30, 2009
6. K. Kotti, **V. Karageorgiou**, C. Patronidou, O. Kammona, C. Kiparissides: PLGA nanocarriers for nasal vaccination. 36th Annual Meeting of the Controlled Release Society, Copenhagen, Denmark, July 18-22, 2009
7. Ch. Sevrin, B. Cerda, C. Patronidou, K. Kotti, O. Kammona **V. Karageorgiou**, C. Kiparissides, Ch. Grandfils: Activation of the complement by PLGA nanoparticles : An in vitro study, Biomedica 2009, Liège, Belgium, April 1-2, 2009
8. C. Patronidou, P. Karakosta, K. Kotti, O. Kammona, **V. Karageorgiou**, C. Kiparissides: Functionalized PLGA Nanoparticles for Protein Delivery. *1st International Conference from Nanoparticles & Nanomaterials to Nanodevices & Nanosystems, 1st IC4N 2008*, Chalkidiki, Greece, June 16-18, 2008
5. C. Patronidou, P. Karakosta, K. Kotti, O. Kammona, **V. Karageorgiou**, C. Kiparissides: PLGA Nanocarriers for Systemic and Lymphatic Oral Delivery of Proteins and Peptides. *10th European Symposium on Controlled Drug Delivery, ESCDD 2008*, Noordwijk aan Zee, The Netherlands, April 2-4, 2008
6. A. Alexopoulos, **V. Karageorgiou**, O. Kammona, P. Karakosta, C. Kiparissides: Pulmonary Drug Delivery: A Modeling Perspective. *International Conference on Nanomedicine*, Porto Carras Grand Resort, Chalkidiki, Greece, September 9-11, 2007
7. C. Patronidou, P. Karakosta, K. Kotti, O. Kammona, **V. Karageorgiou**, C. Kiparissides: Functionalized Nanocarriers for Oral and Pulmonary Delivery of Proteins and Peptides. *4th International Workshop on Nanosciences and Nanotechnologies (NN07)*, Physics Department, Aristotle University of Thessaloniki, Thessaloniki, Greece, July 16-18, 2007
8. L. Meinel, S. Hofmann, **V. Karageorgiou**, H. P. Merkle, D. Kaplan: Silk and collagen films are bio-equivalent an in vitro and in vivo evaluation of inflammatory responses. *International Meeting on Pharmaceutics, Biopharmaceutics and Pharmaceutical Technology*, Nuremberg, Germany, March 15-18, 2004
9. K. Wade, L. Meinel, **V. Karageorgiou**, Q. Tu, J. Tang, D.L. Kaplan, J. Chen, S. Hofmann: Calvarial Wound Healing Using Silk Scaffolds with Marrow Stem Cells. *The IADR/AADR/CADR 82nd General Session*, Honolulu, USA, March 10-13, 2004
10. L. Meinel, S. Hofmann, **V. Karageorgiou**, H. P. Merkle, D. Kaplan: Silk and collagen films are bio-equivalent an in vitro and in vivo evaluation of inflammatory responses. *Pharma-Day 2004*, Center of Pharmaceutical Sciences Basel-Zuerich, Zuerich, Switzerland, February 5, 2004
11. **V. Karageorgiou** and D. L. Kaplan: Surface Decorated Fibroin Films to Induce Differentiation towards an Osteoblastic Lineage in Bone Marrow Stromal Cells. *3rd International Silk Conference*, Montreal, Canada, June 17-19, 2003
12. L. Meinel, S. Hofmann, **V. Karageorgiou**, H. P. Merkle, D. Kaplan: Silk and collagen films are bio-equivalent an in vitro and in vivo evaluation of inflammatory responses. *3rd International Silk Conference*, Montreal, Canada, June 17-19, 2003
13. H.-J. Jin, J. Chen, **V. Karageorgiou**, G. H. Altman, D. L. Kaplan: Human Bone Marrow Stem Cell Responses on Electrospun *Bombyx Mori* Silk Fibroin. SYMPOSIUM C Bio-Inspired Nanoscale Hybrid Systems, Boston, USA, December 2 - 4, 2002