

**Nicholas C. Pashos**

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**EDUCATION****Tulane University; School of Science and Engineering**

Ph.D. Candidate (in progress): Bioinnovation

New Orleans, LA  
2012-current

**Drexel University; School of Biomedical Engineering, Science & Health Systems**

Bachelor of Science: Biomedical Engineering

Concentration: Biomaterials and Tissue Engineering

Philadelphia, PA  
June, 2011

**RESEARCH EXPERIENCE****Tulane University; Center for Stem Cell Research and Regenerative Medicine**

Graduate Student / NSF IGERT Fellow

New Orleans, LA  
Aug, 2012 to present

- Development and optimization of the generation and cellularization of biologically derived biocompatible whole Nipple—Areolar Complex (NAC) scaffolds for application in total NAC regeneration. Cultured, expanded, and utilized bone-marrow and adipose derived stem cells, and keratinocytes, from human and rhesus macaque to experimentally reconstitute the NAC scaffolds that provide a bioactive cell attachment surface onto which cells were able attach and be cultured under dynamic cell culture conditions.

**Massachusetts General Hospital; Department of Neurology**

Research Technician II

Boston, MA  
Sept, 2011 to July 2012

- Evaluation of potential biomarkers for Huntington's Disease in blood Buffy Coats and plasma. Assist in troubleshooting of ELISAs and optimization of assay parameters. Frequent mathematical analysis of collected data using Prism and trained on Alpha Technology based sandwich immunoassays.

**Drexel University; School of Biomedical Engineering, Science & Health Systems**

Undergraduate Research Assistant/Student Tackling Advanced Research (STAR) Scholar

Philadelphia, PA  
June, 2007 to June, 2011

- Production of scaffolds for encapsulation of genetically engineered fibroblasts expressing neurotrophic factors in biocompatible and biodegradable hydrogels for the repair of spinal cord injury. After implantation of encapsulated cells in mice, we demonstrated sustained release from scaffold of the neurotrophic factors. Also, maintained fibroblast cell cultures and conducted Live/Dead cell viability assays.
- Senior Design Project: Scaffold development via freeze-casting of biocompatible and biodegradable hydrogel for guided neurite growth. *In vitro* assessment of the guided neurite growth was performed with whole dorsal root ganglia (DRG) isolated from chicken embryos. Immunofluorescence was performed for evaluation of neurite extension of DRG studies.

**University of Crete, School of Medicine**

Undergraduate Research Intern/ Vidalakis Cretan Scholar

Heraklion, Crete, Greece  
April, 2009 to Sept, 2009

- Assisted in analysis of the intramuscular fatty acid content of meat products and assessed nutritional and dietary means of altering the fat content.

**Drexel University College of Medicine**

Summer Undergraduate Research Fellow

Philadelphia, PA  
June, 2008 to Sept, 2008

- Expressed and purified a novel antiemetic for the treatment of chemotherapy induced nausea and Post-Operative Nausea and Vomiting (PONV). Performed the subcloning of the conotoxin for the production of N-terminal fusions to different leader sequences that would mediate secretion of the protein in the periplasm. Also performed a large scale production of the recombinant protein, purified it by immobilized metal affinity chromatography and assessed its solubility.

**PATENTS**

**Pashos, Nicholas C.**, and Bunnell, Bruce A. "Surgical grafts for replacing the nipple and areola or damaged epidermis" PCT/US2015/058527. Tulane University, assignee. PCT Patent Application. 2015

**Pashos, Nicholas C.**, and Bunnell, Bruce A. "A biocompatible device for nipple and areola replacement." 62/212,846. Tulane University, assignee. Provisional Patent Application. 2015

**Pashos, Nicholas C.**, and Bunnell, Bruce A. "A biocompatible device for nipple and areola replacement." 62/073,719. Tulane University, assignee. Provisional Patent Application. 2014

**Pashos, Nicholas C.**, and Dashti C. Derek. "An Apparatus For The Application Of Lubricants And Methods Of Use For The Same." 61/901,576. Tulane University, assignee. Provisional Patent. 2014.

## **PUBLICATIONS**

- Nicholas C. Pashos**, Michelle E. Scarritt, Zachary R. Eagle, Jeffery M. Gimble, Abigail Chaffin, Bruce A. Bunnell, "A Tissue Engineering Approach to Nipple—Areolar Complex Reconstruction," *Plastic and Reconstructive Surgery* (Submitted 2015)
- Michelle E. Scarritt, **Nicholas C. Pashos**, Jessica M. Motherwell, Zachary R. Eagle, Brian J. Burkett, Ashley N. Gregory, Ricardo Mostany, Daniel J. Weiss, Diego F. Alvarez, and Bruce A. Bunnell, "Vascular Recellularization Of Rat Lung Scaffolds Requires Passive Gravity Perfusion Of Segment Specific Pulmonary Endothelial Cells" *Science Translational Medicine* (Submitted 2015)
- Ryan W. Bonvillain, Michelle E. Scarritt, **Nicholas C. Pashos**, Deborah E. Sullivan, Aline M. Betancourt, Fern Tsien, Ayesha P. Umrigar, and Bruce A. Bunnell, "Rhesus Macaque Lungs Harbor Tissue-resident Multipotent Mesenchymal Stromal Cells That Are Capable of Growth On Decellularized Rhesus Lung Scaffolds: Implications for a Pre-clinical Non-human Primate Model for Pulmonary Tissue Engineering" *Cell and Gene Therapy Insights* (Submitted 2015)
- Michelle E. Scarritt, **Nicholas C. Pashos** and Bruce A. Bunnell. "A Review Of Cellularization Strategies For Tissue Engineering Of Whole Organs." *Front. Bioeng. Biotechnol.*, Feb. 2015
- Ryan W. Bonvillain, Michelle E. Scarritt, **Nicholas C. Pashos**, Jacques P. Mayeux, Christopher L. Meshberger, Aline M. Betancourt, Deborah E. Sullivan, and Bruce A. Bunnell. "Non-human Primate Lung Decellularization and Recellularization Using a Specialized Large-organ Bioreactor." *J. Vis. Exp.* In Press 2013
- Shanbhag, Mihir S., Justin D. Lathia, Mohamed R. Mugha, Nicola L. Francis, **Nicholas Pashos**, Mark P. Mattson, and Margaret A. Wheatley. "Neural Progenitor Cells Grown on Hydrogel Surfaces Respond to the Product of the Transgene of Encapsulated Genetically Engineered Fibroblasts." *Biomacromolecules*. Nov. 2010.

## **RESEARCH HONORS AND AWARDS**

- *Innovation-CORPS Grant Recipient*, National Science Foundation (**NSF**); \$50,000 2015
- *BioChallenge, First Place*, New Orleans BioInnovation Center 2015
- *Novel Technology Challenge, semi-finalist award*, Technology Transfer Office; Tulane University 2015
- *Novel Technology Challenge, semi-finalist award*, Technology Transfer Office; Tulane University 2014
- *Stage 1 E-Team Program Grant Recipient*; VentureWell (Formerly NCIIA) 2014
- *Special Recognition for Outstanding Contributions to Post Market Surveillance*, Food and Drug Administration (**FDA**), Office of Surveillance and Biometrics 2013
- *Integrative Graduate Education and Research Traineeship (IGERT) Fellowship*; **NSF**; Tulane University 2012-current
- *Innovation and Partnership Award*, School of Biomedical Engineering; Drexel University 2011
- *First Place, Senior Design Competition*, School of Biomedical Engineering; Drexel University 2011
- *First Place, Research Poster Competition*; ISPE, Delaware Valley Pharmaceutical meeting 2010
- *Vidalakis Cretan Scholars Award*; Drexel University 2009
- *Biomedical Engineering Research Abroad Award*; School of Biomedical Engineering, Drexel University 2009
- *Honorable Mention; Discovery Day Poster Competition*, Drexel University College of Medicine 2008
- *Summer Undergraduate Research Fellowship (SURF)*, Drexel University College of Medicine 2008
- *Outstanding Student Service Award*; School of Biomedical Engineering; Drexel University 2008
- *Students Tackling Advanced Research (STAR) Scholar*, Pennoni Honors College, Drexel University 2007

## **POSTER PRESENTATIONS**

- Pashos N**, Scarritt, M, Chaffin, A, Gimble, J., Bunnell, B., "A Tissue Engineered Nipple—Areolar Complex," *American Society of Gene & Cell Therapy*, **New Orleans, LA** May, 2015
- Engineering and Regenerative Medicine International Society, World Congress* **Boston, MA** Sept, 2015
- Gulf Coast Intellectual Property Association; Infinity Science Center at Stennis* **Pearlington, MS** Nov, 2015
- Pashos N**, Dashti, D, Karolina K, Bonvillian R, Betancourt A, Bunnell B "Regenerating Organs Using Stem Cells and Biomaterials". *NSF, IGERT National Research Competition*, **IGERT.org** April, 2013
- Pashos N**, Boldt M, Kain M, Neafsey J, McGath J, Francis N, Wegst U, Wheatley M "Freeze-cast of Biodegradable and Biocompatible Hydrogel for Guided Neurite Growth" *Northeast Bioengineering Conference*, **Troy, NY** April, 2011
- Pashos N**, Shanbhag M, Wheatley M.; "Mechanical Properties of Biodegradable and Biocompatible Hydrogel Scaffolds" *International Society of Pharmaceutical Engineers, Delaware Valley Exhibition* **Philadelphia, PA** Feb, 2011
- International Society of Pharmaceutical Engineers, Annual Meeting* **Orlando, FL** Nov, 2010
- International Society of Pharmaceutical Engineers, Delaware Valley Chapter* **Philadelphia, PA** April, 2010
- Posters on the Hill: Council of Undergraduate Research/American Chemical Society* **Washington, D.C.** April, 2009

\*1 of the 60 undergraduate students nationally selected for participation