BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Andrés José García	Regents' Professor Woodruff School of Mechanical Engineering Georgia Institute of Technology
eRA COMMONS USER NAME (credential, e.g., agency login) ANDRESGARCIA	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Cornell University, Ithaca, NY	B.S.	9/87-5/91	Mechanical Engineering
University of Pennsylvania, Philadelphia, PA	M.S.E.	9/91-12/92	Bioengineering
University of Pennsylvania, Philadelphia, PA	Ph.D.	9/91-12/96	Bioengineering
University of Pennsylvania, Philadelphia, PA	Post-Doc	12/96-8/98	Cell & Molecular Biol.

A. Personal Statement

Prof. García has considerable expertise in analyses of cell adhesive forces and mechanotransduction, cell-biomaterial interactions and the engineering of biomaterials (including biofunctional hydrogels) to control cell delivery and engraftment and tissue repair, including bone repair, therapeutic vascularization, pancreatic islet delivery for the treatment of diabetes, and inflammation and infection.

B. Positions and Honors

Positions and Employment

1998-2004 Assistant Professor, Mechanical Engineering, Georgia Inst. Technology
2004-2008 Associate Professor, Mechanical Engineering, Georgia Inst. Technology
2008-present Professor, Mechanical Engineering, Georgia Inst. Technology
Petit Inst. for Bioengineering & Bioscience; Biomedical Engineering, Georgia Tech/Emory Univ
Chair, Interdisciplinary Graduate Bioengineering Program, Georgia Inst. Technology
6-7/2004 Visiting Professor, Laboratoire de Biomatériaux et Polymères de Spécialité, Univ. Paris XIII
6/2007 Visiting Professor, Universitat Politècnica de Catalunya, Barcelona

Other Experience and Professional Memberships

NASA Panel on Smart Materials (1999); NIH Special Study Section, Tissue Engineering (1999); NIH Special Study Section, BRP (2000); NSF Panel, Nanoscale Modeling (2000); NIH Minority Biomedical Research Study Section (2000); NSF Panel, Nanoscale Exploratory Research (2001); NIH SBIR Study Section (2001); NSF Panel, CAREER (2001, 2003); NSF Panel, Biomedical Engineering Systems (2003); NIH Study Section, Bioanalytical Engineering & Chemistry (2003); NSF Panel, PIRE (2007); NSF Panel, IGERT (2008); NIH Study Section, Skeletal Biology, Structure & Regeneration (2005-2011, 2012); NSF Panel, Biomaterials (2012)
Reviewer: *Adv Funct Mater, Adv Mater, Biochemistry, Biomaterials, Biophys J, FASEB J, Gene Ther, J Amer Chem Soc, J Biomat Sci–Polym Ed, J Biol Chem, J Biomed Mater Res, J Cell Sci, Langmuir, Nature Biotechnol, Nature Mater, Mol Biol Cell, Biotech Prog, PNAS, Stem Cells*
Editorial Boards: *Biomaterials*; *Colloids Surf B Biointerfaces*; *J Biomed Mater Res A* (Associate Editor)*; J Tissue Eng Regen Med*

Honors

National Science Foundation Graduate Fellowship (1991-94); Ford Foundation Dissertation (1995-96) and Post-Doctoral (1997-98) Fellowships; Arthritis Investigator Award (2000-05); NSF CAREER Award (2001-06); CETL/BP Junior Faculty Teaching Excellence Award, Georgia Inst. Technology (2002); Young Investigator Award, Society for Biomaterials (2004); Woodruff Faculty Fellow, Woodruff School of Mechanical Engineering, Georgia Inst. Technology (2006-2010); Fellow, American Institute for Medical and Biological Engineering (2007); Outstanding Interdisciplinary Activities Award, Georgia Inst. Technology (2009); Hyundai Professor of Excellence, Georgia Inst. Technology (2011); Fellow of Biomaterials Science and Engineering, International Union of Societies of Biomaterials Science and Engineering (2012); Clemson Award for Basic Science, Society

for Biomaterials (2012); Woodruff Professorship, Woodruff School of Mechanical Engineering, Georgia Inst. Technology (2012); Fellow, AAAS (2012); Regents' Professor, Georgia Inst. Technology (2013).

C. Selected Peer-reviewed Publications (Selected from >140 peer-reviewed publications, 51 h-index)

1. Keselowsky BG, Collard DM, García AJ. Integrin binding specificity regulates biomaterial surface chemistry effects on cell differentiation. *Proc Natl Acad Sci USA* 2005; 102:5953-7. PMID: 15827122.
2. Gallant ND, Michael KE, García AJ. Cell adhesion strengthening: contributions of adhesive area, integrin binding, and focal adhesion assembly. *Mol Biol Cell* 2005; 16:4329-40. PMID: 16000373.
3. Reyes CD, Petrie TA, Burns KL, Schwartz Z, García AJ. Biomolecular surface coating to enhance orthopaedic tissue healing and integration. *Biomaterials* 2007; 28:3228-35. PMID: 17448533.
4. Petrie TA, Raynor JE, Reyes CD, Burns KL, Collard DM, García AJ. The effect of integrin-specific bioactive coatings on tissue healing and implant osseointegration. *Biomaterials* 2008; 29:2849-57. PMID: 18406458.
5. Phillips JE, Burns KL, Le Doux JM, Guldberg RE, García AJ. Engineering graded tissue interfaces. *Proc Natl Acad Sci USA* 2008; 105:12170-5. PMID: 18719120.
6. Michael KE, Dumbauld DW, Burns KL, Hanks SK, García AJ. Focal adhesion kinase modulates cell adhesion strengthening via integrin activation. *Mol Biol Cell* 2009; 20:2508-19. PMID: 19297531.
7. Phelps EA, Landázuri N, Thulé PM, Taylor WR, García AJ. Bioartificial matrices for therapeutic vascularization. *Proc Natl Acad Sci USA* 2010; 107:3323-8. PMID: 20080569.
8. Wojtowicz AM, Shekaran A, Oest ME, Dupont KM, Templeman KL, Hutmacher DW, Guldberg RE, García AJ. Coating of biomaterial scaffolds with the collagen-mimetic peptide GFOGER for bone defect repair. *Biomaterials* 2010; 31:2574-82. PMID: 20056517.
9. Petrie TA, Raynor JE, Dumbauld DW, Lee TT, Jagtap S, Templeman KL, Collard DM, García AJ. Multivalent integrin-specific ligands enhance tissue healing and biomaterial integration. *Sci Transl Med* 2010; 2:45ra60. PMID: 20720217.
10. Selvam S, Kundu K, Templeman KL, Murthy N, García AJ. Minimally invasive, longitudinal monitoring of biomaterial-associated inflammation by fluorescence imaging. *Biomaterials* 2011; 32:7785-92. PMID: 21813173.
11. Phelps EA, Enemchukwu NO, Fiore VF, Sy JC, Murthy N, Sulchek TA, Barker TH, García AJ. Maleimide cross-linked bioactive PEG hydrogel exhibits improved reaction kinetics and cross-linking for cell encapsulation and in situ delivery. *Adv Mater* 2012; 24:64-70. PMID: 22174081.
12. Coyer SR, Singh A, Dumbauld DW, Calderwood DA, Craig SW, Delamarche E, García AJ. Nanopatterning reveals an ECM area threshold for focal adhesion assembly and force transmission that is regulated by integrin activation and cytoskeleton tension. *J Cell Sci* 2012; 125:5110-23. PMID: 22899715.
13. Singh A, Suri S, Lee T, Chilton JM, Cooke MT, Chen W, Fu J, Stice SL, Lu H, McDevitt TC, García AJ. Adhesion strength-based, label-free isolation of human pluripotent stem cells. *Nat Methods* 2013; 10:438-44. PMID: 23563795.
14. Phelps EA, Headen DM, Taylor WR, Thulé PM, García AJ. Vasculogenic bio-synthetic hydrogel for enhancement of pancreatic islet engraftment and function in type 1 diabetes. *Biomaterials* 2013; 34:4602-11. PMID: 23541111.
15. Dumbauld DW, Lee TT, Singh A, Scrimgeour J, Gersbach CA, Zamir EA, Fu J, Chen CS, Curtis JE, Craig SW, García AJ. How vinculin regulates force transmission. *Proc Natl Acad Sci USA* 2013; 110:9788-93. PMID: 23716647.

D. Research Support

NIH R01 GM065918-09 García (PI) 08/01/08-07/31/13
Focal Adhesions in Cell Adhesion Strengthening
The goal is to conduct a functional analysis of nanoscale structure of focal adhesion on cell adhesion strengthening. RENEWAL PENDING
Role: PI

NIH T32 GM008433-21 García (PI) 07/01/12-06/30/17
Cell and Tissue Engineering Training Program
The goal is to establish a training program for pre-doctoral students on cellular and tissue engineering.
Role: PI

NSF DMR-0909002 García (PI) 09/01/09-12/31/13

Materials World Network: Dynamic Materials with Triggerable Adhesion Motifs
The goal is to engineer photo-triggerable materials to dynamically present and/or release bioadhesive motifs via the use of UV-labile caged ligands
Role: PI

NIH R21 AI094624-01A1 García (PI) 07/01/11-06/30/14
Imaging Biomaterial-Associated Inflammation
Goal: Develop fluorescent probes to image device-associated inflammation and infection.
Role: PI.

NSF CBET 0939511 Kamm (PI) 09/01/10-08/31/14
Engineered Hydrogels for Contractile Cellular Machines, sub-project to NSF Science and Technology Center: Emergent Behaviors of Integrated Cellular Systems
Goal: Engineer hydrogels directing self-assembly and alignment of myocytes to form contractile actuator units.
Role: co-I.

NIH DP3 DK094346 Yoon (PI) 10/01/11-09/01/14
Cell therapy for diabetic peripheral neurovascular complications
Goal: Synthesize hydrogels for delivery of iPSC for vascularization.
Role: co-I.

Arthritis Foundation García (PI) 02/01/12-01/30/14
IL-1Ra-Tethered Nanoparticles to Treat Joint Inflammation and OA
Goal: Synthesize self-assembling nanoparticles for intra-articular delivery of anti-inflammatory agents.
Role: PI.

NIH R01 AR062368 García (PI) 08/01/12-07/31/17
Hydrogels for hMSC delivery & engraftment
Goals: Engineer biofunctional hydrogels to promote stem cell engraftment and bone repair.
Role: PI.

NIH R01 AR062920 García (PI) 08/01/12-07/31/17
Osseo-reparative, integrin-specific materials
Goals: Engineer bioadhesive materials to improve screw-bone integration and repair of non-healing segmental defects.
Role: PI.

NIH R43 NS080407 Chilton, ArunA Biomedical (PI) 09/01/12-08/30/14
Adhesion signature-based, label free isolation of pluripotent stem cell derived neural cells
Goals: Characterize the ‘adhesive signature’ of neural progenitor cell and parental cell populations and implement microfluidics-based systems to purify specific neural progenitor populations.
Role: PI of academic subcontract.

JDRF 17-2013-277 García (PI) 02/01/13-01/30/14
Dual Layer Hydrogels for Islet Encapsulation, Engraftment and Function
Goals: To enhance allogenic islet engraftment, survival, and function via dual layer engineered polyethylene glycol maleimide hydrogels to a) shield transplanted cells from the host immune system and b) enhance engraftment and vascularization of the shielded islets with a vascular-inductive synthetic matrix.
Role: PI.