

Researcher Andrés García Recognized as Top Biomaterials Scientist

Georgia Institute of Technology

García honored in two ways by the biomaterials community.

Andrés J. García, a faculty member at the Georgia Institute of Technology, has been named the 2012 recipient of the Clemson Award for Basic Research from the Society for Biomaterials. This national award is given to an outstanding community member who has demonstrated significant contributions to and understanding of the interaction of materials with tissues within a biological environment.

"I am truly honored by this award and recognition," said García, who is a Woodruff Professor in the George W. Woodruff School of Mechanical Engineering at Georgia Tech. "The Society for Biomaterials has had a huge impact in my scientific and professional career and I am delighted to join past awardees from our community. I am also proud to represent my great colleagues along with past and present trainees from Georgia Tech who have contributed to this recognition."

The Society for Biomaterials is the oldest scientific organization in the field of biomaterials and has a mission of encouraging, fostering, promoting and advancing education, and research and development, in biomaterials science. The society has grown to more than 2,000 members since its inception in 1974.

"García is an outstanding recipient of this award," said Buddy Ratner, Ph.D., professor of bioengineering and chemical engineering at the University of Washington, who recommended García for the Clemson award. "His strong commitment to polymeric biomaterials and to the modern biology of healing and regeneration, coupled with a fine intelligence, a charismatic personality and super-charged energy, has propelled his career and technical impact to the top of the discipline."

In addition to this award, the society announced that a pioneering publication by García was one of twenty-five articles selected as part of a special virtual edition of the *Journal of Biomedical Materials Research* celebrating the 100th volume of the journal. The criteria for inclusion of a paper in the special issue was the identification of articles that, in their time, were considered novel, original, state-of-the-art, ground-breaking, and opened new areas of biomaterials research.

García's work established the paradigm that cell response to material properties could be mediated by protein adsorption. This research established an experimental framework to analyze adhesive mechanisms controlling cell-surface interactions and provided a general strategy for surface-directed control of adsorbed protein

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activity to manipulate cell function in biomaterial and biotechnology applications. This finding established a new strategy to direct cellular responses to biomaterials and has broad application to the engineering of materials to elicit specific biological responses.

The article, "Surface Chemistry Modulates Fibronectin Conformation and Directs Integrin Binding and Specificity to Control Cell Adhesion," was co-authored by collaborator David M. Collard, a professor in the School of Chemistry and Biochemistry at Georgia Tech, and by Benjamin G. Keselowsky, who was then a graduate student in the García laboratory. Keselowsky is now an associate professor at the University of Florida.

García's research program focuses on engineering biomaterials that promote tissue repair and healing; quantitative analyses of mechanisms regulating cell adhesive forces; and cell-based therapies for regenerative medicine. These integrated cellular engineering strategies have provided new insights into mechanisms regulating cell-material interactions and established new approaches for the rational design of biomaterials and cell-delivery vehicles for regenerative medicine applications, including bone repair, vascularization and inflammation.

His laboratory's research has led to advances across many areas of regenerative medicine including applications related to the bone and cartilage, angiogenesis, neurogenesis, inflammation, and implant integration with tissues.

García has co-authored papers in leading biomaterials, tissue engineering, and cell biology journals as well as several patents and invention disclosures. He has received several distinctions throughout his successful career, including the NSF CAREER Award, Arthritis Investigator Award, Georgia Tech's CETL/BP Junior Faculty Teaching Excellence Award, Young Investigator Award from the Society for Biomaterials, Petit Institute Above and Beyond Award and Georgia Tech's Outstanding Interdisciplinary Activities Award.

Currently García serves as chair of the Interdisciplinary Bioengineering Graduate Program at Georgia Tech. He is also the director of a NIH/NIGMS biotechnology training grant on cell and tissue engineering. He serves on the editorial boards of leading biomaterial and regenerative medicine journals as well as NIH and NSF review panels. García has been recognized as a top Latino educator by the Society of Hispanic Professional Engineers and has been elected a Fellow of Biomaterials Science and Engineering by the International Union of Societies of Biomaterials Science and Engineering.

García joined Georgia Tech as assistant professor in 1998. He received a B.S. in mechanical engineering with honors from Cornell University in 1991. He received M.S.E. in 1992 and Ph.D. in 1996 in bioengineering from the University of Pennsylvania.

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