

Biomedical Engineering

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Core Faculty Profile

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Research Interests

Bioartificial organ systems, Cell delivery and transplantation, Tissue engineering

Selected Publications

1. Nanoporous biodegradable elastomers. R. Hoshi, S. Behl, and G.A. Ameer. **Advanced Materials**, Vol 21, pp 188-192, 2009.
2. Role of nanocomposites in bone regeneration. **Cover and Featured Article**. M. Rogel, H. Qiu, and G.A. Ameer. **Journal of Mat. Chem.**, Vol 18, pp 4233 – 4241, 2008.
3. Characterization of porcine circulating progenitor cells: Towards a functional endothelium. J. Allen, S. Khan, M. Concepcion-Serrano, and G.A. Ameer. **Tissue Engineering**, vol 14, pp 183-194, 2008.
4. A new strategy to characterize the extent of reaction of thermoset elastomers. A. Webb, J. Yang, G.A. Ameer. **Journal of Polymer Science Part A: Polymer Chemistry**, vol 46 pp 1318-1328, 2008.
5. In vitro characterization of a compliant biodegradable scaffold with a novel bioreactor system. A. Webb, B.D. Macrie, A.S. Ray, J.E. Russo, A.M. Siegel, M. Glucksberg, and G.A. Ameer. **Annals of Biomed Eng.**, Vol 35, pp 1357-1367, 2007.
6. A biodegradable vascularizing membrane: A feasibility study. A. Kaushiva, V. Turzhitsky, M. Darmoc, V. Backman and G.A. Ameer. **Acta Biomaterialia**, vol 3, pp 631-642, 2007.
7. Circulating progenitor cells as an effective source to functional endothelialization of NaOH-treated poly(epsilon-caprolactone) films. M. Concepcion-Serrano, R. Pagani, G.A. Ameer, PhD; M. Vallet-Regí, M.T. Portoles. **Journal of Biomedical Materials Research: Part A., In Press**
8. Biodegradable poly(diols citrate) nanocomposite elastomers for soft tissue engineering. A. Webb, V. Kumar, and G.A. Ameer. **Journal of Materials Chemistry**, vol 17, pp 900-906, 2007.
9. Hemocompatibility evaluation of poly(1,8 octanediol citrate) *in vitro* for vascular tissue engineering. D. Motlagh, J. Allen, J. Yang, R. Hoshi, K.Y. Liu, and G.A. Ameer. **Journal of Biomedical Materials Research: Part A**, vol 82A, pp 907-916, 2007.
10. Spectroscopic translation of cell-material interactions. J. Allen, Y. Liu, Y. Kim, V. Turzhitsky, V. Backman and G.A. Ameer. **Biomaterials**, vol 28, pp 162-174, 2007.
11. Engineering sub-100 nm multilayer nanoshells. X. Xia, Y. Liu, V. Backman and G.A. Ameer. **Nanotechnology**, vol 17, pp 5435-5440, 2006.
12. A novel citric acid-based poly(diols citrate)-hydroxyapatite composite for orthopaedic implants. H. Qiu, J. Yang, P. Kodali, J. Koh, and G.A. Ameer. **Biomaterials**, vol 27, pp 5845-5854, 2006.
13. Mechanical interlocking of engineered cartilage to an underlying polymeric substrate:

- Towards a biohybrid cartilage tissue equivalent. L. Romito and G.A. Ameer. **Annals of Biomed. Eng.**, vol 34, pp 737-747, 2006.
14. Modulating ePTFE vascular graft host response via citric acid-based biodegradable elastomers. J. Yang, D. Motlagh, J. Allen, A. Webb, M. Kibbe, O. Aalami, M. Kapadia, T. Carroll, and G.A. Ameer. **Advanced Materials**, vol 18, 1493-1498, 2006.
 15. Hemocompatibility evaluation of poly(glycerol-sebacate) in vitro for vascular tissue engineering. D. Motlagh, J. Yang, K.Y. Lui, A. Webb, and G.A. Ameer. **Biomaterials**, vol 27, pp 4315-4324, 2006.
 16. A new biodegradable polyester elastomer for cartilage tissue engineering. Y. Kang, J. Yang, S. Khan, L. Anissian, and G.A. Ameer. **Journal of Biomedical Materials Research: Part A**. vol 77A pp331-339, 2006.
 17. Synthesis and evaluation of novel biodegradable elastomeric polyesters. J. Yang, A. Webb, S. Pickerill, G. Hageman and G.A. Ameer. **Biomaterials**, vol 27, pp 1889-1898, 2006.
 18. Biomechanical properties of vaginal versus abdominal surgical wound healing in a rabbit model. Y. Abramov, A. Webb, J. Miller, A. Alshahrour, S. Botros, R. Goldberg, G.A. Ameer and P. Sand. **Am J Obstet Gynecol.**, vol 194, pp 1472-1477, 2006.
 19. A novel biphasic elastomeric scaffold for small-diameter blood vessel tissue engineering. J. Yang, D. Motlagh, A. Webb and G.A. Ameer. **Tissue Engineering**, vol 11, pp 1876-1886, 2005.
 20. Assessment of the stability of an immunoadsorbent for the removal of b2-microglobulin from blood. C. Daniels, E. Woolverton, S. Sprague, and G.A. Ameer. **Blood Purification**, vol 23 pp 287-297, 2005.
 21. Optimal design of structured nanospheres for ultra sharp light scattering resonances as molecular imaging multilabels. K. Chen, Y. Liu, G.A. Ameer, and V. Backman. **Journal of Biomedical Optics**, 10(2), 024005, 1-6 (2005).
 22. Biodegradable Polyester Elastomers in Tissue Engineering. A. Webb, J. Yang, and G.A. Ameer. **Expert Opinion on Biological Therapy**, vol 4, no. 6, pp 801 - 812, 2004.
 23. Novel citric acid-based biodegradable elastomers for tissue engineering. J. Yang, A. Webb, and G.A. Ameer. **Advanced Materials**, vol 16, pp 511-516, 2004.
 24. Single-Chain Antibody Fragment-Based Adsorbent for the Extracorporeal Removal of microglobulin from Blood. E.A. Grovender, B. Kellogg, J. Singh, D. Blom, H. Ploegh, D. Wittrup, R. Langer and G.A. Ameer. **Kidney International**, vol 65 pp 310-322, 2004.
 25. A Tough Biodegradable Elastomer. Y. Wang, G.A. Ameer, B.J. Sheppard, and R. Langer. **Nature Biotechnology**, vol 20(6), pp 587-591, 2002.
 26. A Biodegradable Composite Scaffold for Cell Transplantation. G.A. Ameer, T.A. Mahmood, and R. Langer. **Journal of Orthopaedic Research**, vol 20(1), pp 16-19, 2002.
 27. Immunoadsorption Model for a Fluidized-Bed Blood Detoxification Device. E.A. Grovender, C.L. Cooney, R. Langer, and G.A. Ameer. **AIChE Journal**, vol 48(10) pp 2357-2365, 2002.
 28. A Novel Immunoadsorption Device for Removing b2microglobulin from Whole Blood. G.A. Ameer, E.A. Grovender, D. Ting, H. Ploegh, W. Owen, M. Rupnik, and R. Langer. **Kidney International**, vol 59, pp 1544-1550, 2001.
 29. Modalities for the Removal of b2microglobulin from Blood. G.A. Ameer. **Seminars in Dialysis**, vol. 14(2), pp 103-106, 2001.
 30. Cell-killing Potential of a Water-Soluble Radical Initiator. G.A. Ameer, E.T. Crumpler, and R.Langer. **International Journal of Cancer**, vol 93(6), pp 875-879, 2001.
 31. Modeling the Mixing Behaviour of a Novel Fluidized Extracorporeal Immunoadsorber. E.A. Grovender, C.L. Cooney, R. Langer and G.A. Ameer. **Chemical Engineering Science**, 56(18), pp 5437-5441, 2001.
 32. Ex Vivo Evaluation of a Taylor-Couette Flow, Immobilized Heparinase I Device for Clinical Application. G.A. Ameer, G. Barabino, R. Sasisekharan, C.L. Cooney, W. Hmon, and R. Langer. **Proceedings of the National Academy of Sciences, USA**, vol. 96, pp 2350-2355, 1999.

Selected Awards/Honors

1. Northwestern University Drew Senyei, MD Translational Research Award, 2006.
2. [American Heart Association Established Investigator Award, 2006.](#)
3. [National Science Foundation CAREER Award: Biodegradable elastomeric composite scaffolds for ligament reconstruction, 2006.](#)
4. [Illinois Institute of Regenerative Medicine: Stem cell-based vascular tissue engineering Award, 2006.](#)

5. Wallace H. Coulter Early Career Translational Research Award, 2005.
6. Invitee to the National Academy of Engineering's 10th Annual Frontiers in Engineering Symposium, 2004.
7. Arnold and Mabel Beckman Foundation Young Investigator Award, 2004-2007.
8. American Immigration Law Foundation Immigrant Achievement Award, 2004.
9. Elected to Technology Review Magazine's top 100 Young Innovators in the world, 2003.
10. American Heart Association Scientist Development Grant, 2002.
11. National Kidney Foundation Young Investigator Award, 2002.

Patents

Transdermal Thermal Polymerization (U.S. patent #7,097,855 issued 08-2006) G.A. Ameer, E.T. Crumpler, and R. Langer

Multidimensional Elastic Light Scattering (Application #11/261,452) V. Backman, H. Roy, R. Wali, Y. Kim, Y. Liu, J. Yang, J. Allen, A. Webb, and G.A. Ameer.

Apparatus for Treating Whole Blood (U.S. Patent #6099730 issued 08-2000) G. A. Ameer, R. Langer, M. Rupnik, H. Ploegh, and E. Grovender.

Cell Delivery Using Controllable Degradable Mesh-Gel Constructs (U.S. Patent #6699470 issued 03-2004) G. A. Ameer and R. Langer.

Biodegradable Polymer (Application # 601340432, US and International, pending) Y. Wang, G. A. Ameer, and R. Langer

Biodegradable Elastomers for Tissue Engineering (Pending) J. Yang, A. Webb, and G.A. Ameer.

Functionalizing Medical Implants: A Tissue Engineering Approach (Pending) J. Yang and G.A. Ameer.

A Novel(diol-co-citrate) Hydroxyapatite Composite for Clinical Fixation Devices (Pending) ,J. Yang, H. Qiu, and G.A. Ameer.

Receptor-Based Blood Detoxification System (Pending) C. Daniels, S. Sprague, and G.A. Ameer.



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