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Fred Allen, Ph.D.

Education:

- Post-Doc.Bioengineering. MIT, Cambridge , MA
- PhD. Bioengineering.University of Pennsylvania , Philadelphia , PA
- MSSE. Electrical Engineering. Villanova University , Villanova , PA
- SBEE. Electric Engineering. MIT, Cambridge , MA

Research Area

Orthopaedic and Vascular Cellular Tissue Engineering
Tissue Engineering, Cell Engineering, Angiogenesis, Orthopedics, Bone Remodeling, Wound Healing, Mechanotransduction, Signal Transduction, Cell Adhesion, Cell Migration.

Research Details

Investigating the interrelationship of angiogenesis and osteogenesis in the development, remodeling and wound repair of bone. Specifically studying the roles of cell adhesion and cell migration at the blood-bone interface and the influence of environmental signaling on these cellular functions.

Positions and Honours:

Aug 1984 – July 1990	Technical Staff, General Electric Company, Aerospace Business Group, Valley Forge, PA
Sept 1996 – May 1997	Instructor, University of Pennsylvania, Dept. of Bioengineering, Philadelphia , PA
Aug 1997 – Dec 1998	NIH Postdoctoral Fellow, MIT Division of Bioengineering and Environmental Health, Cambridge , MA
Jan 1999 – Aug 2000	Postdoctoral Fellow, NIDCR Harvard/MIT Training Grant Program in Biomaterials, Harvard U. School of Dental Medicine and MIT Division of Bioengineering and Environmental Health, Cambridge MA
Sept 2000 – Present	Assistant Professor, Drexel University , School of Biomedical Engineering , Science and Health Systems, Philadelphia , PA

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Other Honours and Professional Membership:

1984-1988	Edison Engineering Program, General Electric Company
1989-present	IEEE Engineering in Medicine and Biology (EMBS)
1990-1994	Undergraduate Academic Coaching Fellowship, UPENN
1994-1996	William Fontaine Fellowship, UPENN
1994-1996	NIH Pre-doctoral Traineeship, UPENN
1997	National Society of Black Engineers Outstanding Achievement, UPENN
1997	Lance R. Collins Award, Black Graduate & Professional Student Assoc, UPENN
1999-present	ASME Bioengineering Division

Selected peer-reviewed publications (in chronological order)

1. Hung , CT , Allen, FD, Pollack, SR, and Brighton , CT : What is the role of convective current density in the real-time calcium response of cultured bone cells to fluid flow? *J. Biomechanics* , 29(11):1403-1409, 1996.

2. Hung , CT , Allen, FD, Pollack, SR, and Brighton CT : Intracellular Ca 2+ stores and extracellular Ca 2+ are required in the [Ca 2+] i response of bone cells experiencing fluid flow. *J. Biomechanics* , 29(11): 1411-1417,1996.

3. Allen, FD, Hung , CT , Pollack, SR, and Brighton CT : Comparison of the [Ca 2+] i response of cultured primary, MC3T3-E1 and ROS 17/2.8 osteoblast-like cells to fluid flow. *Cellular Eng.* , 1:117-124, Summer 1996.

4. Hung , CT , Allen, FD, Pollack, SR, Attia, ET, Hannafin, JA, and Torzilli , PA : Medial collateral and anterior cruciate ligament fibroblasts exhibit different [Ca 2+] i responses to fluid flow. *Cell Signal* , December 9(8):587-594, 1997.

5. Hung , CT , Allen, FD, Mansfield, KD, and Shapiro, IM: Extracellular ATP modulates [Ca 2+] i in retinoic acid-treated embryonic chondrocytes. *Am. J. Physiol.* , May 272(5 Pt 1):C1611-C1617, 1997.

6. Gupta, R, Allen, FD, Tan, V, Bozentka, DJ, Bora, FW, and Osterman , AL : The effect of shear stress on fibroblasts derived from Dupuytren's tissue and normal palmar fascia. J. Hand Surg. - American, 23A:(5)945-950, Sep. 1998.

7. Lauffenburger, DA, Ware MF, Allen, FD, and Wells, A: Shaping Up for Shipping Out: PLC g Signaling of Morphology Changes in EGF-stimulated Fibroblast Migration, *Cell Motility and the Cytoskeleton,* 44:227- 233, 1999.

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Selected peer-reviewed publications (in chronological order) *continued*

8. Allen, FD, Hung, CT, Pollack, SR, and Brighton, CT : Serum modulates the intracellular calcium response of primary cultured bone cells to shear flow, *J. Biomechanics,* 33(12):1585- 15 91 , Nov. 2000 .

9. Allen, FD, Asnes, CF, Chang, P, Elson, EL, Lauffenburger, DA, Wells, A: Epidermal growth factor induces acute matrix contraction and subsequent calpain-modulated relaxation, *Wound Repair and Regeneration* , *10* (1):67-76, Jan-Feb 2002 .

10. Amir Rezvan, Fred D. Allen and Peter I. Lelkes, Steady Unidirectional Laminar Flow Inhibits Monolayer Formation by Human and Rat Microvascular Endothelial Cells, *Endothelium* , 11:1-6, 2004.

11. Akihiro Iwabu, Kirsty Smith, Fred Allen, Douglas A. Lauffenburger and Alan Wells, EGF induces fibroblast contractility and motility via PKC g ñ dependent pathway, *JBC* , April/May, 2004.