Novel Therapeutic for Cancer
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Jim Heitner
Licensing Associate

Emory OTT Breakfast Club
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Dr. Ken Bernstein, MD
Professor of Pathology and Laboratory Medicine

Cardio/Nephro Pathology
20+ Years research on ACE, ACE inhibitors, blood pressure, hypertension
100+ Papers

“Cardiovascular disease claims more lives each year than the next 5 leading causes of death combined.”
A therapeutic product development platform based on an unexpected, yet immunologically fundamental discovery with the potential to yield novel and highly effective approaches to treating and preventing:

- Cancer
- Infection
- Inflammation
- Autoimmune Disorders
- Tissue Transplant Rejection
Overexpression of ACE in Macrophage

Diagram showing the angiotensin pathway with ACE (angiotensin-converting enzyme) and its effects on various peptides and receptors. 

Key points:
- Formation of Angiotensin I from Angiotensinogen by Renin cleavage.
- Conversion of Angiotensin I to Angiotensin II by ACE.
- Angiotensin II interacts with AT1 and AT2 receptors.
- AT1 receptors mediate vasoconstriction, endothelin production, superoxide production, sympathetic activation, aldosterone release, sodium and water retention, and cellular growth.
- AT2 receptors mediate vasodilation, inhibit cellular growth, apoptosis, NO production, prostaglandin production, and production of other endothelial derived vasodilators.

Image: Activated macrophage phagocytosing bacteria. (Image courtesy of Pepeles Kruezel)
ACE 10/10 mice -- B16-F10 melanoma
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B16-F10 Melanoma

Tumor Volume (mm³)

Day 11       Day 14

10/10 10/10 WT WT

ACE 10/10 Mice
Transgenic mice -- B16-F10 melanoma

WT          KO
Intratumor injection of macrophages

Wild type macrophages

Modified macrophages
Intellectual Property

PCT Application Filed 5/19/2006 (based on provisional)
Claims include:

- Sequence
- Vectors (Gene, Cell, Organism)
- Methods of Treatment, etc.

Broad IP Foundation
Emory University
Office of Technology Transfer

Competition

- Angiogenesis:
  - EntreMed
  - Santaris
  - Genentech

- Macrophages:
  - Introgen
  - Proneuron
  - AMRAD

- Other: Literature focuses on ACE-inhibition.

Entirely Novel Approach
R & D Status

- Results are clear and unexpected but mechanism not yet known.
  1. Over-expression of ACE specifically in macrophages clearly makes a mouse resistant to transplanted melanoma
  2. Immunity is transferable with Bone Marrow transplant
  3. Immunity involves T-Cell activation.
  4. Immunity against more than Cancer. (Murine viral meningitis)

- Next Step:
  1. Useful in humans?
  2. Productization?
     - Deliverable: Better Understanding of Mechanism

How does it work?????