Missouri Life Sciences Summit
Panel on Biomedical Tissue Engineering
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CREATING A HEALTH CARE BUSINESS FROM UNIVERSITY RESEARCH

BY

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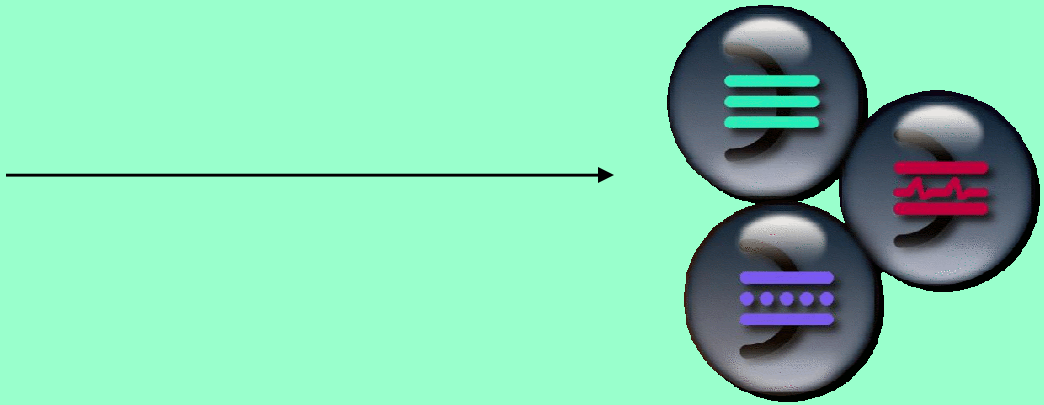
&
MO-SCI CORP.



Consortium for Bone and Tissue Repair and Regeneration (CBTRR)

Joint MS&T/UMKC center to research and develop advanced biomaterials, biosensors, and biointerfaces for the repair and regeneration of traumatized bone and tissues

MISSOURI S&T

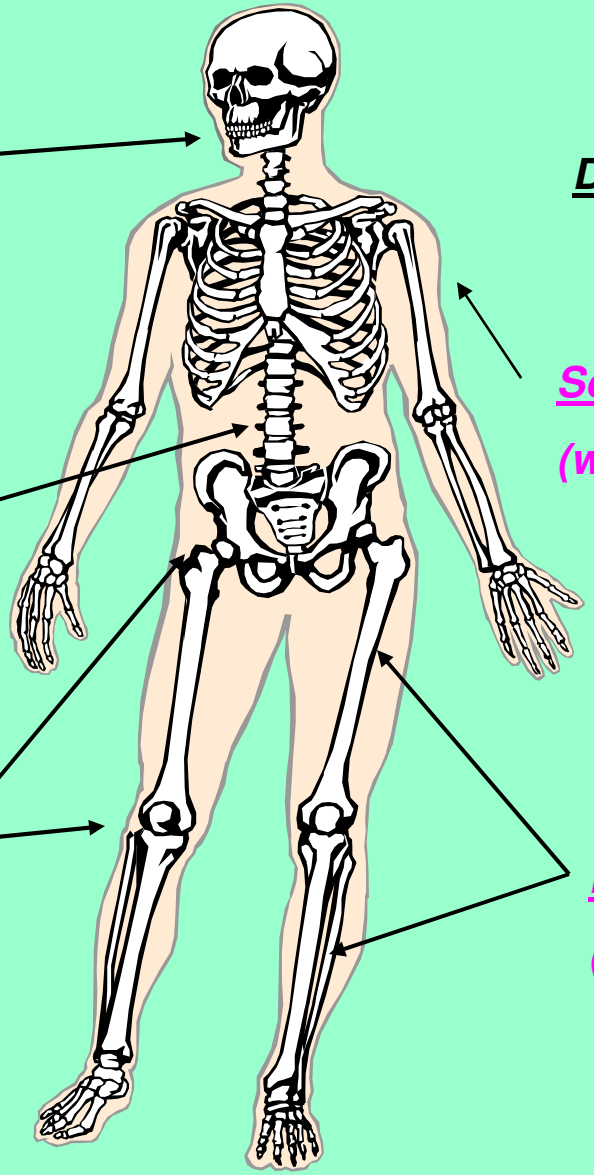
UMKC
UNIVERSITY OF MISSOURI
KANSAS CITY
SCHOOL OF DENTISTRY

Uses of Bioinert, Bioactive & Biocompatible Glasses

Dental Implants/Repair

(caps, crowns, veneers)

Drug Delivery



Soft Tissue Repair

(wounds, clotting)

Destroying Malignant Tumors

(liver, kidney, brain, other)

Joint Repair/replacement

(hip, knee)

Bone Repair

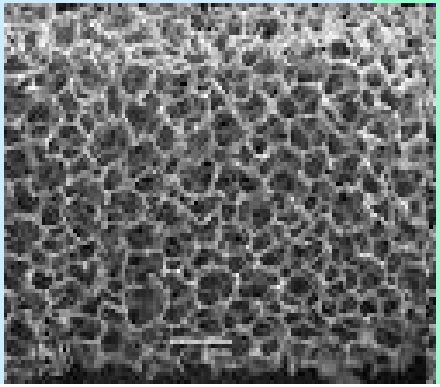
(trauma, disease)

The Magic of Bioactive Glass

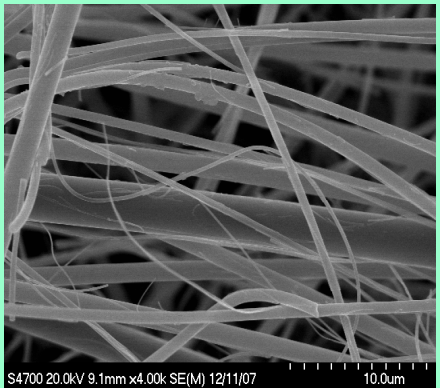
Bioactive glass reacts in the body and bonds strongly to hard and soft tissue

Powders

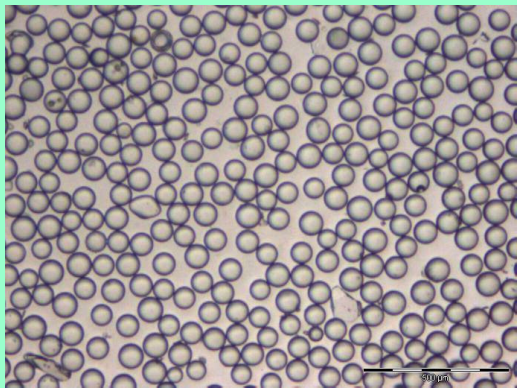
Scaffolds



Fibers



Microspheres/beads



University of Missouri
Four Missions

- *Teaching --- transfer of knowledge*
- *Research --- discovery of new knowledge*
- *Service --- helping others*
- *Economic development --- creating wealth from knowledge*

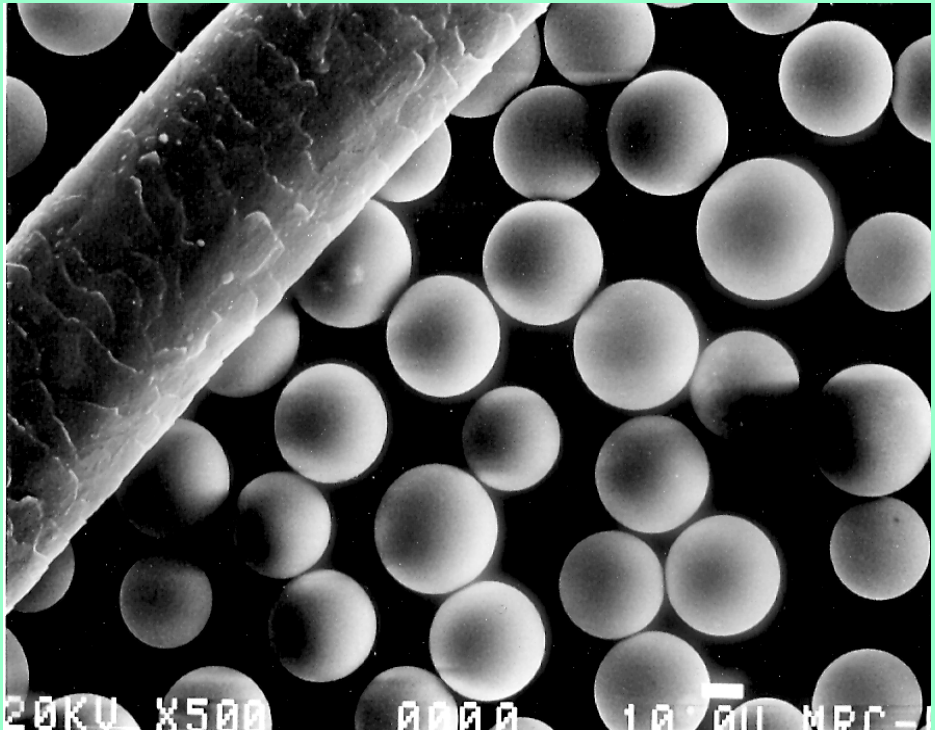
A Case Study

Factors and events that were important to creating a successful business from life science technology that was spun off from university research--

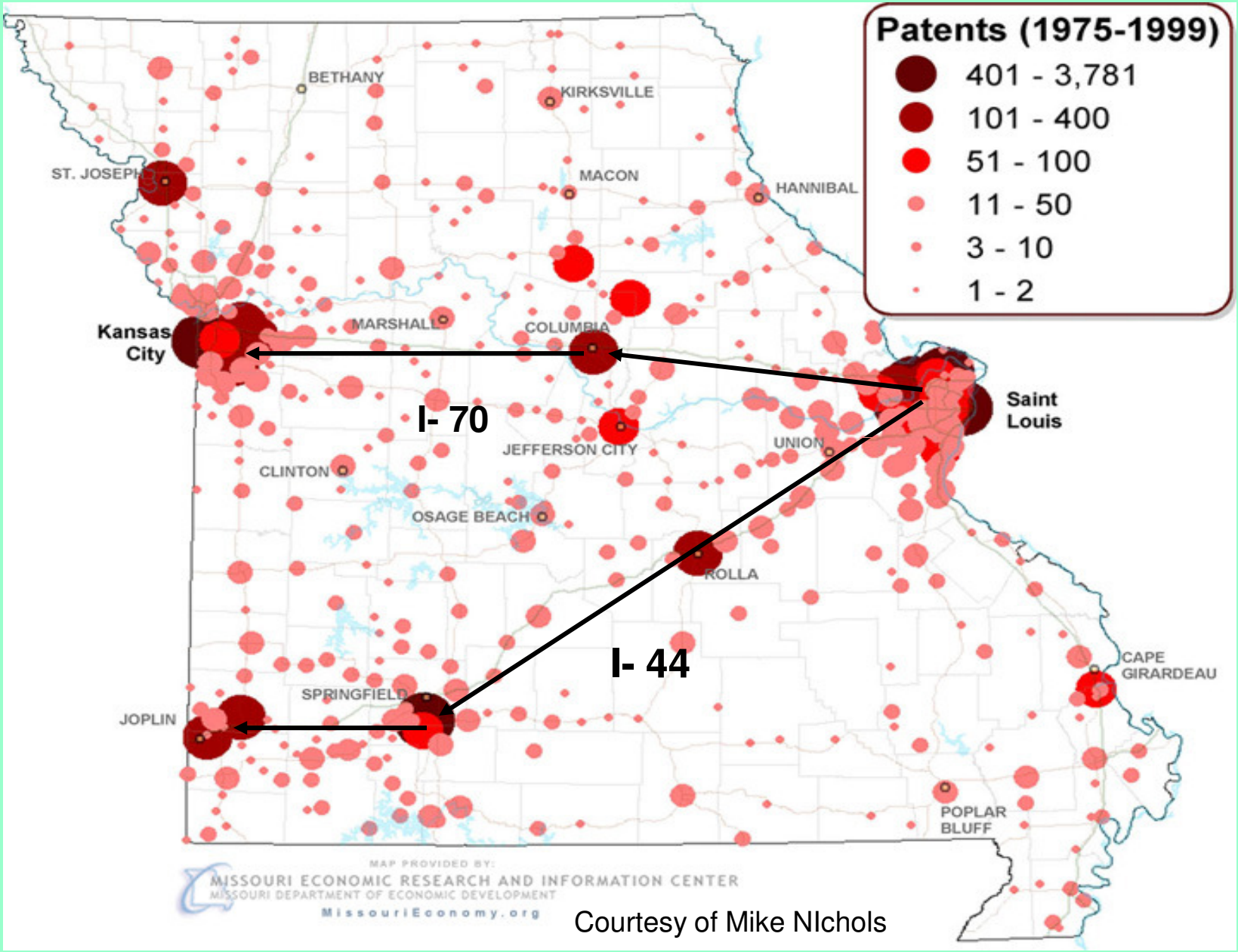
MO-SCI Corp----founded in 1984, Rolla MO

Created to manufacture products for the health care industry---

glass microspheres for treating liver cancer
TheraSphere™



Patents issued in Missouri



Courtesy of Mike NIchols

Factors important to the formation and early survival of MO-SCI Corp.

- State funded incubator program----shared facilities reduces start up expense
- University (MS&T)----receptive to aiding industry, fosters economic development by encouraging spin offs, labs & needed equipment available
- Available personnel & surroundings receptive to entrepreneurs
- Small Business Innovative Research (SBIR) program----important source of income

Profiles of Entrepreneurs in Incubators*

Personal traits	Male, 35-40 yrs old, 17 yr of formal education
Location of business	Near personal and family ties: lived in area for 17 yr
Source of financing	>75% from personal funds, mortgage, borrowed from friends & family; <25% from banks or venture capital
Business Experience	No formal training or experience; no written business plan
Marketing	Done by owner, "seat of pants" analysis
Government assistance	Wary; too much paper work

* J.R. Mullin and J.H. Armstrong, "Profile: Prospective Tenants for Business Incubators," Landuse, Inc. Hadley, Ma, 1987

INGREDIENTS FOR A SUCCESSFUL START UP

Supportive environment for entrepreneurs

Private Sector---Government---University

Everyone has a financial stake

Founders---University---Others

Plan for generating income

Dedication

hard work---long hours---luck

Being an entrepreneur can be a lot of fun

Hdqs of MO-SCI Corp in Rolla MO

- A new company
- 35 new jobs
- More than 950 customers in 40 countries
- Direct economic benefit to MO
  - >>> royalties paid to UM
  - >>> irradiation fees paid to UM
  - >>> new research dollars to MO
  - >>> new healthcare products produced in MO

Health care products made by MO-SCI

--- TheraSphere™
--- microspheres for blood typing
--- glass fillers for dental composites
--- bioactive glasses for bone repair
--- antimicrobial glasses for catheters

The Federal SBIR Program

- Established to help small businesses compete for government research funds
- Federal agencies must set aside a part of their research budget for small business
- Agencies request proposals from small businesses---competitive awards
- Phase I, 6 to 9 months, $60K to $100K
- Phase II, up to 2 yrs, $200K to $300K/yr
- Phase III, commercialization

Benefits of SBIR Program to MO-SCI

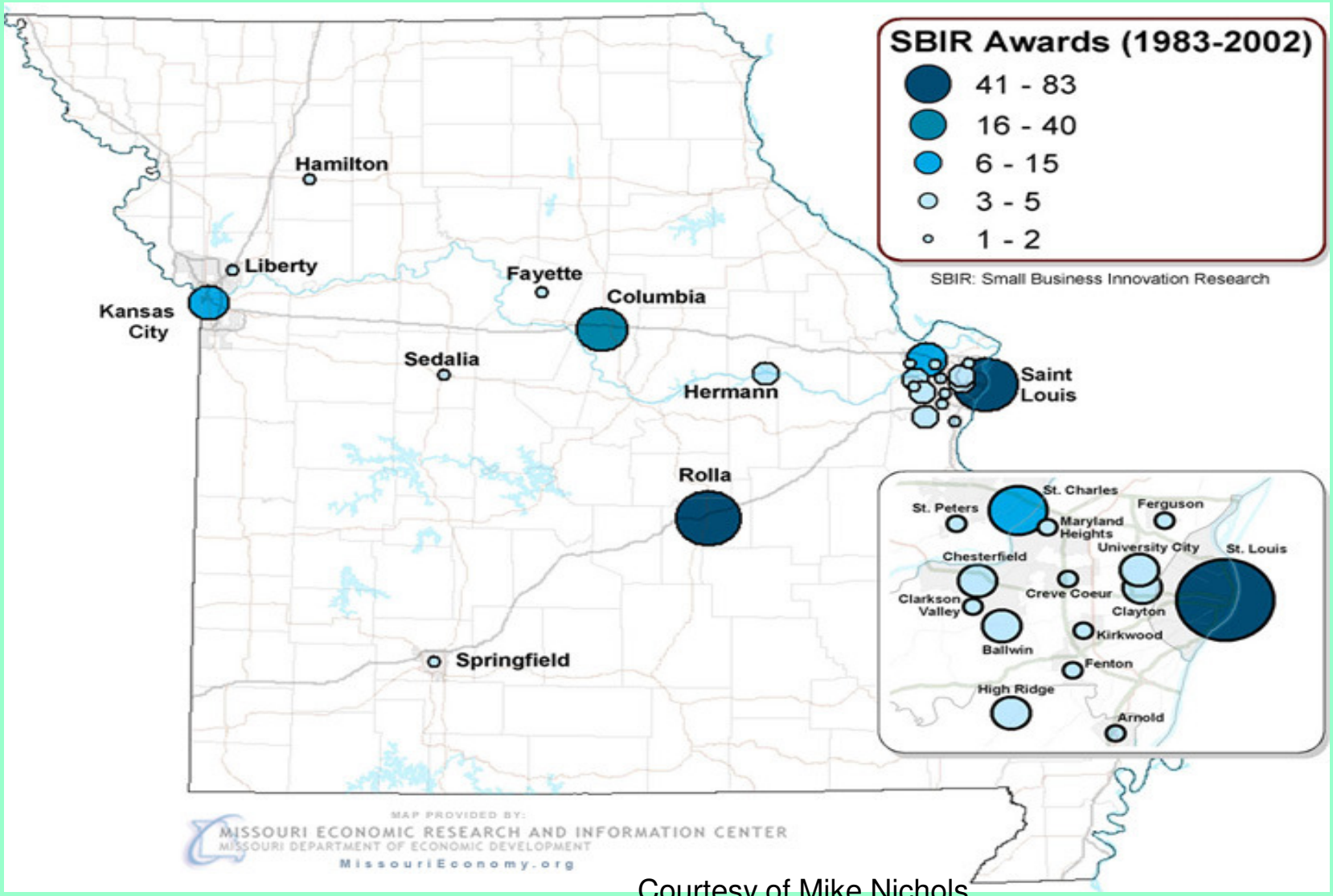
Provided a important source of income during initial start up (financially difficult period).

Enabled MO-SCI to perform important research/acquire equipment that otherwise couldn't be afforded.

Research performed under the SBIR Program has/is leading to new products.

Kept research an important business interest.

Small Business Innovation Research (SBIR) Awards in Missouri—1983-2002



Courtesy of Mike Nichols