UCDAVIS INNOVATIONACCESS

Connecting research to market

# Harnessing University Innovation for Economic Development

*Alan B. Bennett, Ph.D.*

# Why do universities get involved in technology transfer?

Government alone has never developed the new advances in medicines and technology that become commercial products. For that, our country relies on the private sector. The purpose of… *technology transfer ….* is to spur the interaction between public and private research so that patients and the public would receive the benefits of innovative science sooner.

For every $1 spent in government research on a project, at least $10 of industry development will be needed to bring a product to market.

***Birch Bayh and Bob Dole, Washington Post, April 2002***

# Focus on intellectual property

# How do universities manage intellectual property?

## Bayh-Dole Act – 25 years old

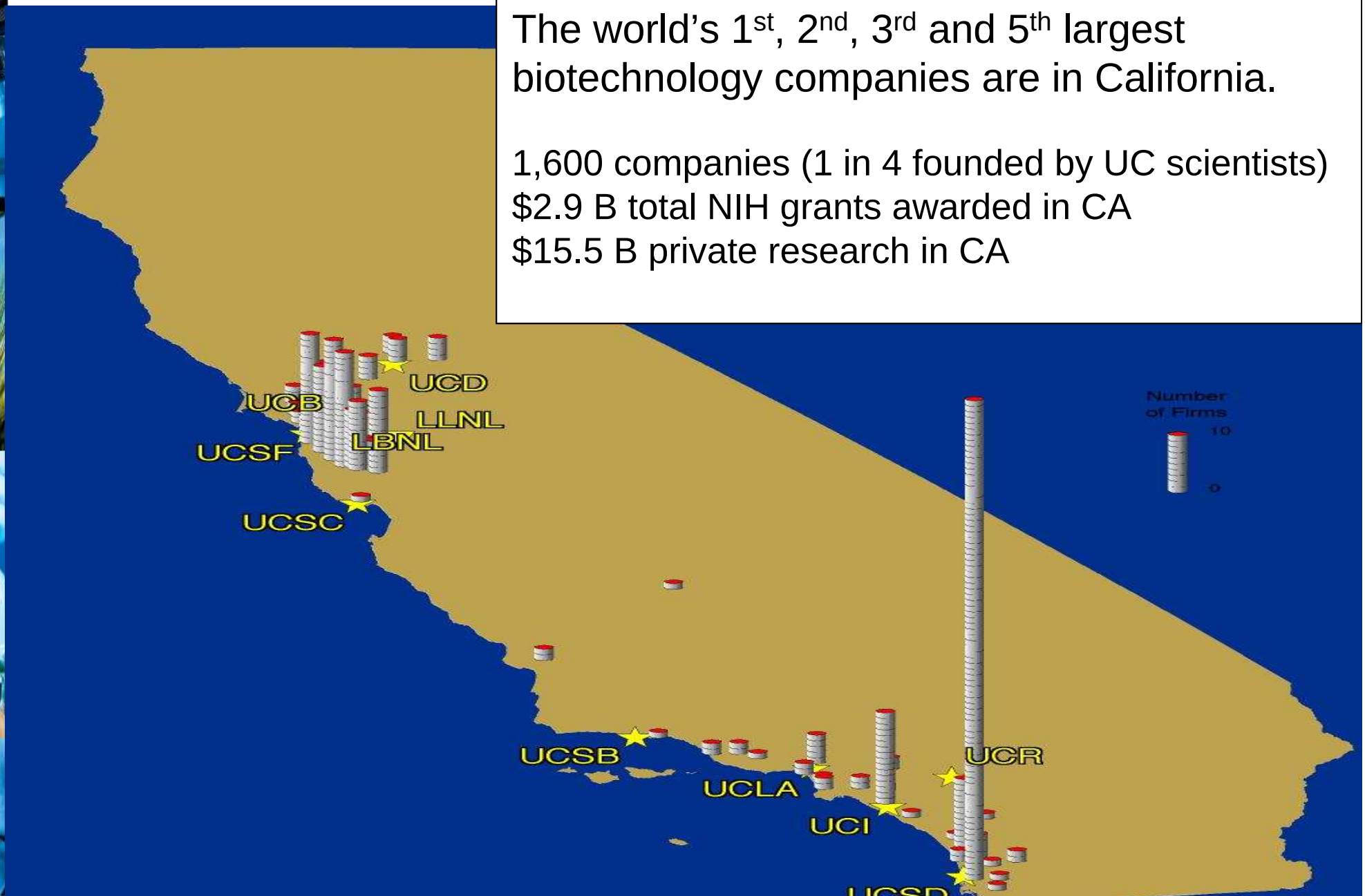
- ✓ ***Universities <u>may</u> elect title to inventions developed through Federal funding***
- ✓ ***Universities <u>must</u> file patents on inventions they elect***
- ✓ ***University <u>must</u> have written agreements with faculty and staff requiring disclosure and assignment of inventions***
- ✓ ***University <u>must</u> share a portion of revenue with inventors***
- ✓ ***Excess revenue <u>must</u> support research and education***
- ✓ ***Government <u>retains</u> non-exclusive license to the invention***
- ✓ ***Government <u>retains</u> march-in rights***
- ✓ ***Requirement for substantial US manufacture***

1. Created clarity about IP ownership
2. Localized licensing of IP near researcher/inventor
3. Created incentives to build technology transfer infrastructure

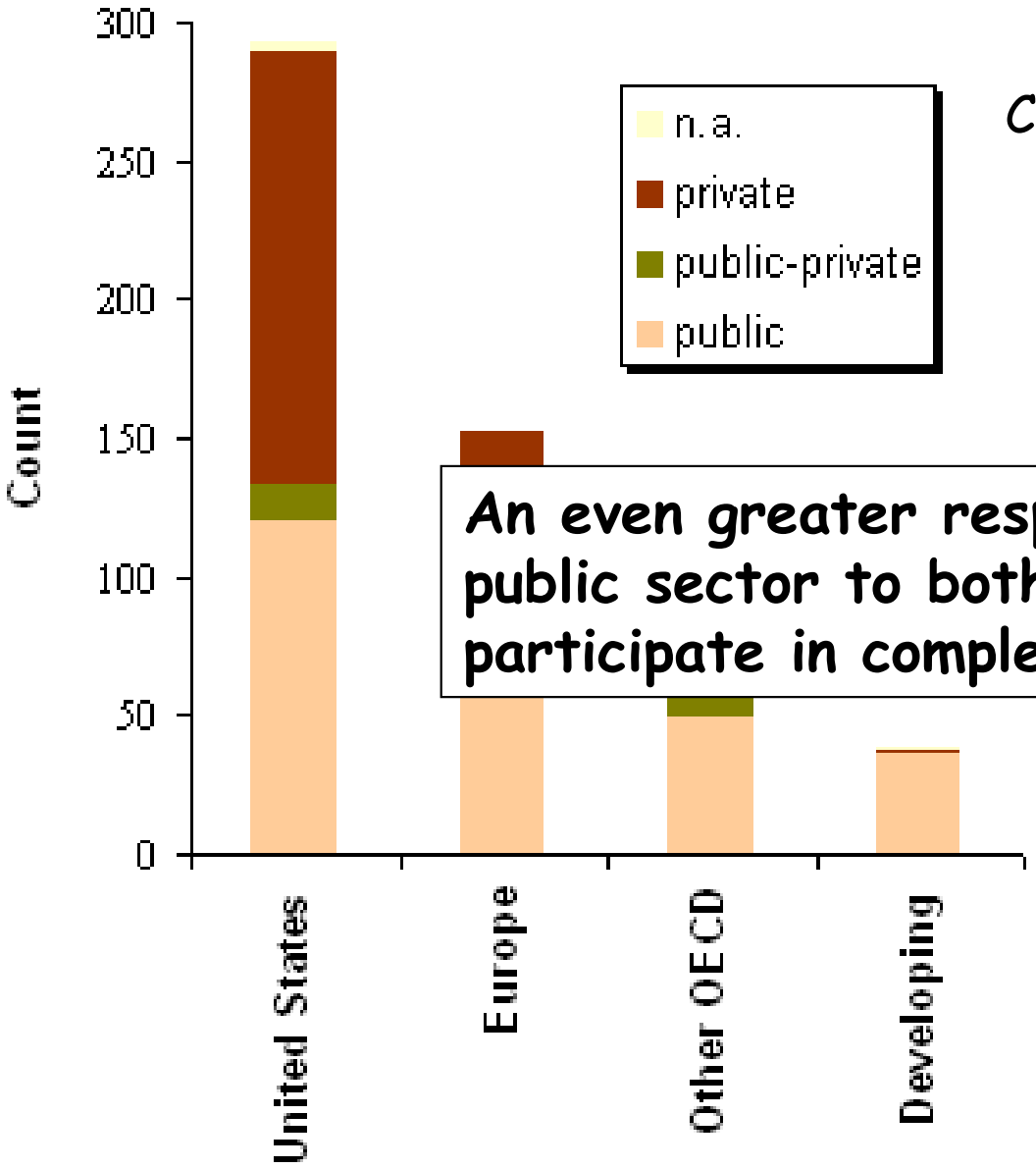
# University research supports regional and national economic development

The world's 1st, 2nd, 3rd and 5th largest biotechnology companies are in California.

1,600 companies (1 in 4 founded by UC scientists)
$2.9 B total NIH grants awarded in CA
$15.5 B private research in CA



## Outside the US and Europe there is little private sector innovation activity.




Chile 2004 – 82% of R&D is public

**An even greater responsibility for the public sector to both initiate and participate in completing the R&D pipeline**

Infrastructure to support technology transfer and industry collaborations

**Strong research base**

Networks with business development resources – legal, investment

Culture supporting innovation in the university and faculty

# A lo mismo tiempo

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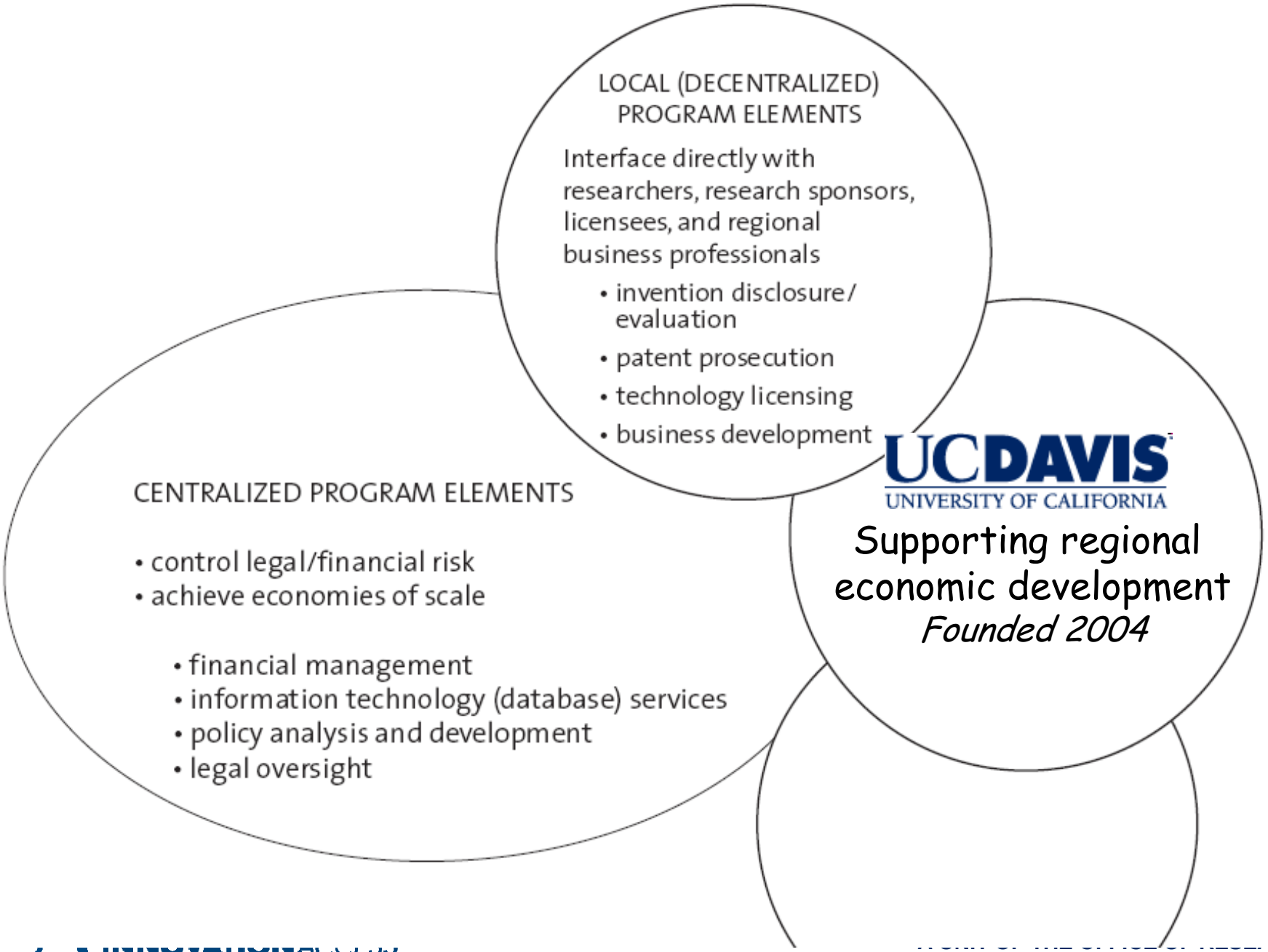
A UNIT OF THE OFFICE OF RESEARCH

# UNIVERSITY OF CALIFORNIA

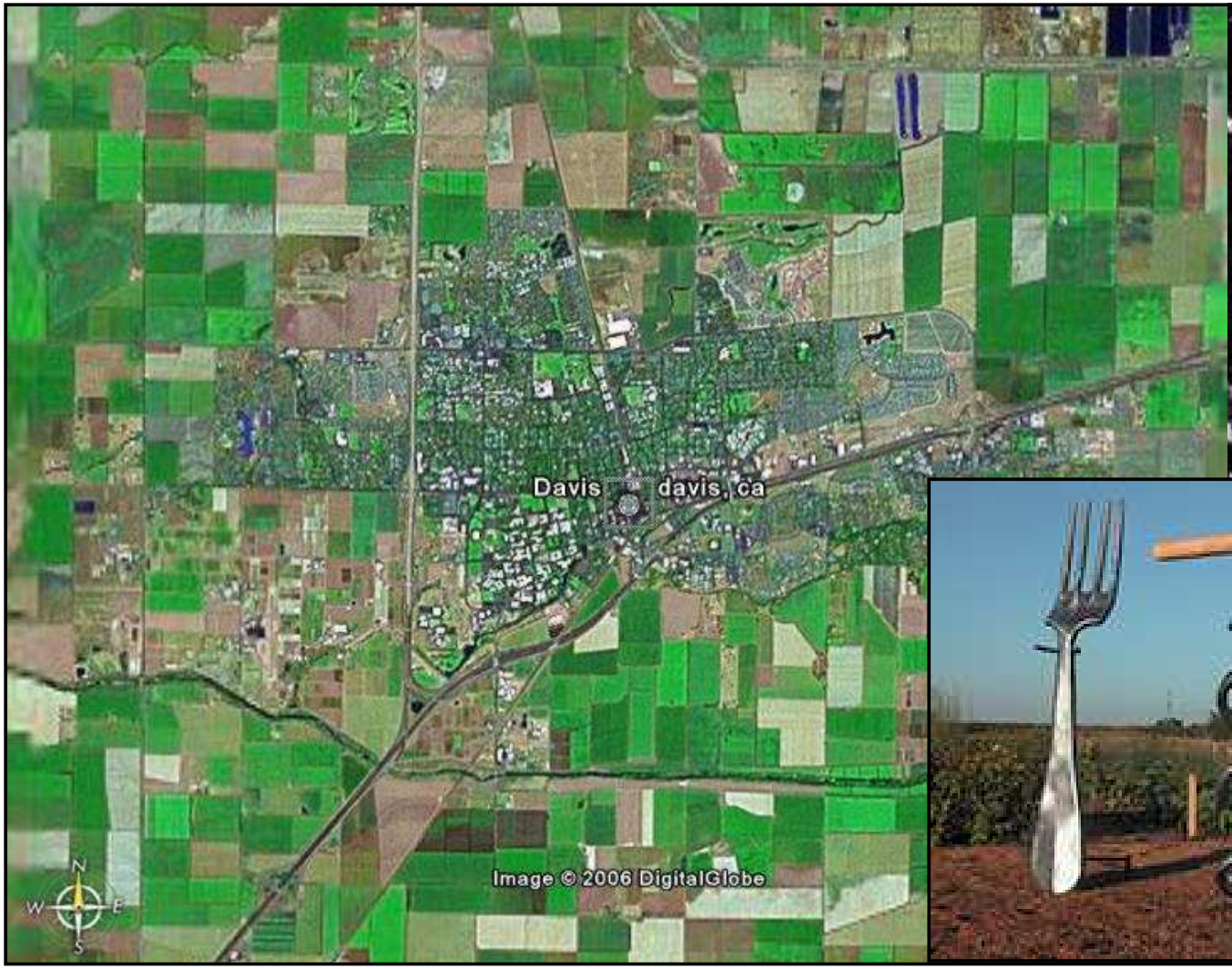

UCDAVIS INNOVATIONACCESS

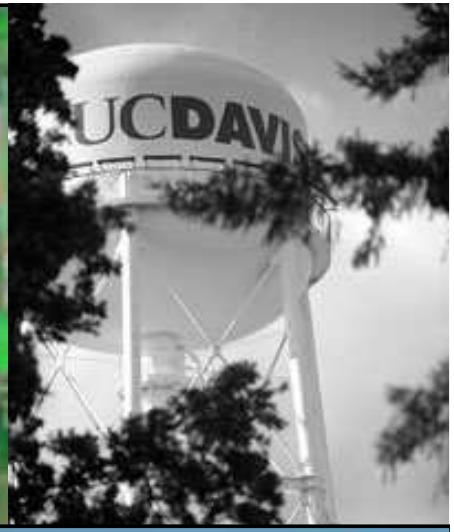
A UNIT OF THE OFFICE OF RESEARCH

## Figure 2: Schematic of the Functional Division of Program Elements in a Distributed Institutional Network for Technology Transfer



# UC Davis – from its roots

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# The most comprehensive UC campus

**College of Agricultural and Environmental Sciences**

**College of Biological Sciences**

**College of Engineering**

**College of Letters and Science**

Division of Humanities, Arts and Cultural Studies
Division of Mathematical and Physical Sciences
Division of Social Sciences

**4 Colleges**

**5 Professional Schools**

**Plus National Primate Center**

**Graduate School of Management**

**School of Education**

**School of Law**

**School of Medicine**

**School of Veterinary Medicine**

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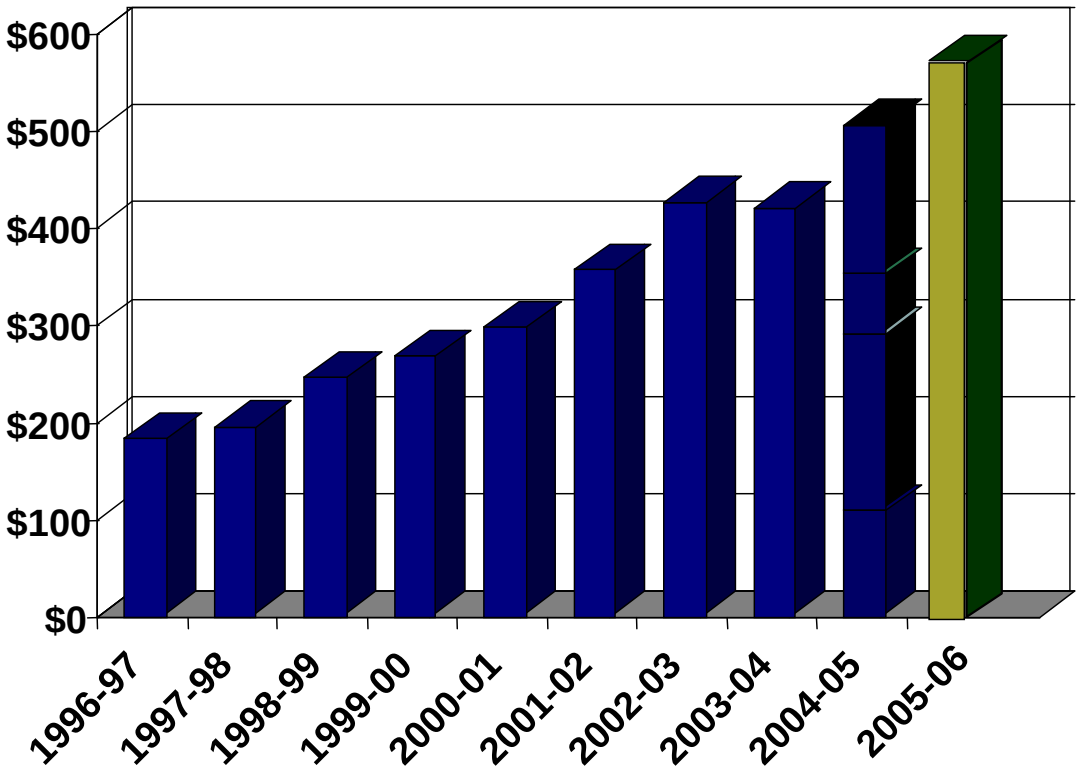
# Research Funding 1996-2006

| | *in millions* |
|---|---|
| FY 1996-97 | **$183.6** |
| FY 1997-98 | **$195.5** |
| FY 1998-99 | **$246.3** |
| FY 1999-00 | **$268.6** |
| FY 2000-01 | **$298.3** |
| FY 2001-02 | **$356.9** |
| FY 2002-03 | **$426.3** |
| FY 2003-04 | **$420.7** |
| FY 2004-05 | **$505.3** |
| FY 2005-06 | **$544.0** |

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# Deliberate and strategic IP management to identify best innovative path

*Founded 2004*

UCDAVIS INNOVATIONACCESS

**Technology Transfer Services (lawyers and scientists)**

**Business Development Services (MBAs and entrepreneurs)**

UCDAVIS INNOVATIONACCESS

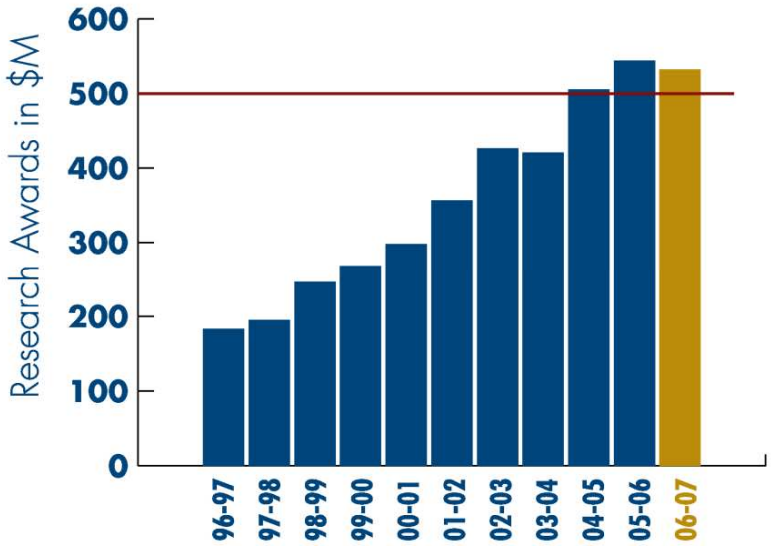
Infrastructure to support technology transfer and industry collaborations

**Strong research base**

Networks with business development resources – legal, investment

Culture supporting innovation in the university and faculty

# Infrastructure to manage existing intellectual property assets (technology transfer office)




## UC Davis Strawberry Licensing Program

- 75% marketshare of California production
- #1 in marketshare of worldwide commercial production

**Faculty: Dr. Douglas Shaw and Dr. Kirk Larson**

ient knowledge technology innovation intellect discovery

Created a culture supporting innovation in the university, in the faculty and graduate students

**448 New Inventions**
**224 New Licenses**
**$27.6M in Licensing Income**

**since 2004**


**EFFICIENT DRIVETRAINS, INC.**

**UC DAVIS STARTUP**

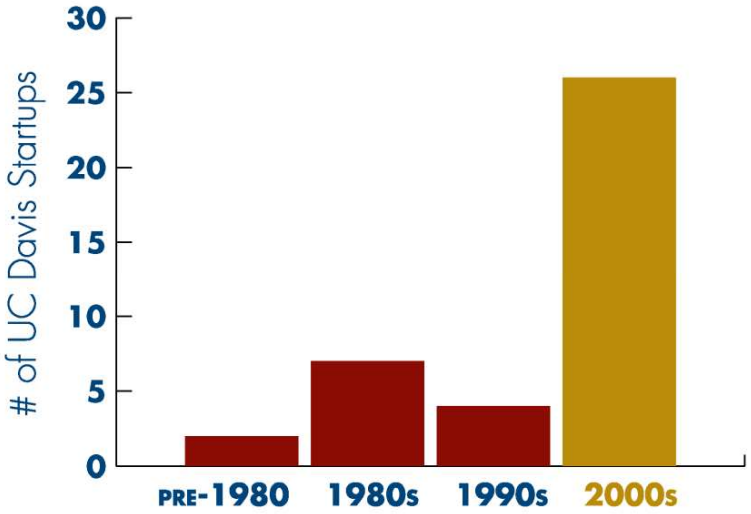
**DRIVETRAIN TECHNOLOGIES FOR PLUG-IN HYBRIDS, HYBRIDS AND CONVENTIONAL AUTOMOBILES**

**FACULTY FOUNDER: DR. ANDREW FRANK**

**YEAR INCORPORATED: 2007**

**FUNDING STATUS: RAISING FUNDING**

Developed networks with business development resources – legal, investment and entrepreneurship




**20+ Startups**
**$62M+ in Funding since 2004**

**SYNAPSENSE, INC.**

**UC DAVIS STARTUP**

**A LEADING PROVIDER OF COMPLETE WIRELESS INSTRUMENTATION SOLUTIONS**

**FACULTY FOUNDER: DR. RAJU PANDEY**

**YEAR INCORPORATED: 2006**

**FUNDING STATUS: $10M IN SERIES B**

# Supporting Entrepreneurship

## Recent UC Davis Startups

**Airmid, Inc.**

*autoimmune therapeutics*

**Arête Therapeutics, Inc.**

*anti-inflammatory/anti-hypertensive drug*

**Pediatric Bioscience, Inc.**

*diagnostic and therapeutic treatment for autism*

**SynapSense, Inc.**

*wireless sensor network technologies*

**Mutant Logic, Inc.**

*software for semiconductor design*

**Hill Engineering, LLC**

*advanced aeronautical engineering for aircraft*

**mxPlay, Inc.**

*dynamic surround sound*

**XeraSys**

*Earthquake prediction*

# Supporting Entrepreneurship

## Recent UC Davis Startups

**Madison Avenue Management Co**

*NMR testing of wine in situ*

**Q1 Nanosystems**

*nanotechnology for solar applications*

**Stratovan, Inc.**

*3-D imaging software medical and other imaging applications*

**Glycometrix, Inc.**

*diagnostic markers for ovarian cancer*

**Advanced Luminescence, Inc.**

*new lighting designs*

**High Merit Thermoelectric**

*advanced thermoelectric material*

**Mesolytics**

*handheld diagnostic device for medical point-of-care*

**Immunotox, Inc.**

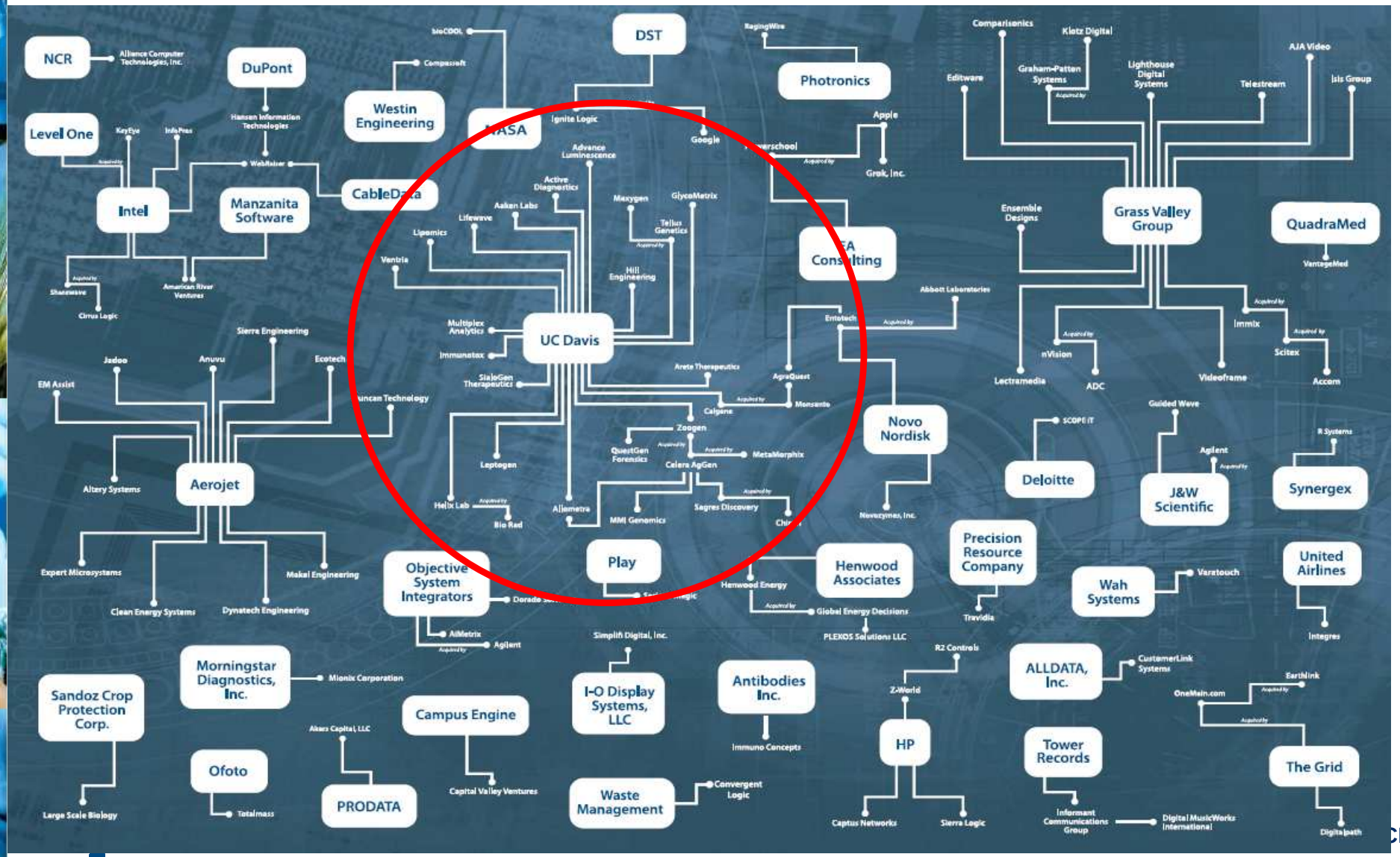
*neurological disorder therapeutic*

**RF Biocidics**

*food safety*

# Supporting Entrepreneurship

## The beginnings of a technology cluster



UCDAVIS INNOVATIONACCESS

Infrastructure to support technology transfer and industry collaborations

**Strong research base**

Networks with business development resources – legal, investment

Culture supporting innovation in the university and faculty

# Strong research base

## *Research incentives*

Professional recognition/advancement
Adequate financial support

## *Investment in new faculty hiring – 70 FTE*

Targeted towards strategic educational and economic sectors

- **Climate Change**
- **Foods for Health**
- **Energy for the Future**
- **Stem Cells and Bioethics**
- **Computational Exploitation of Biological Networks**

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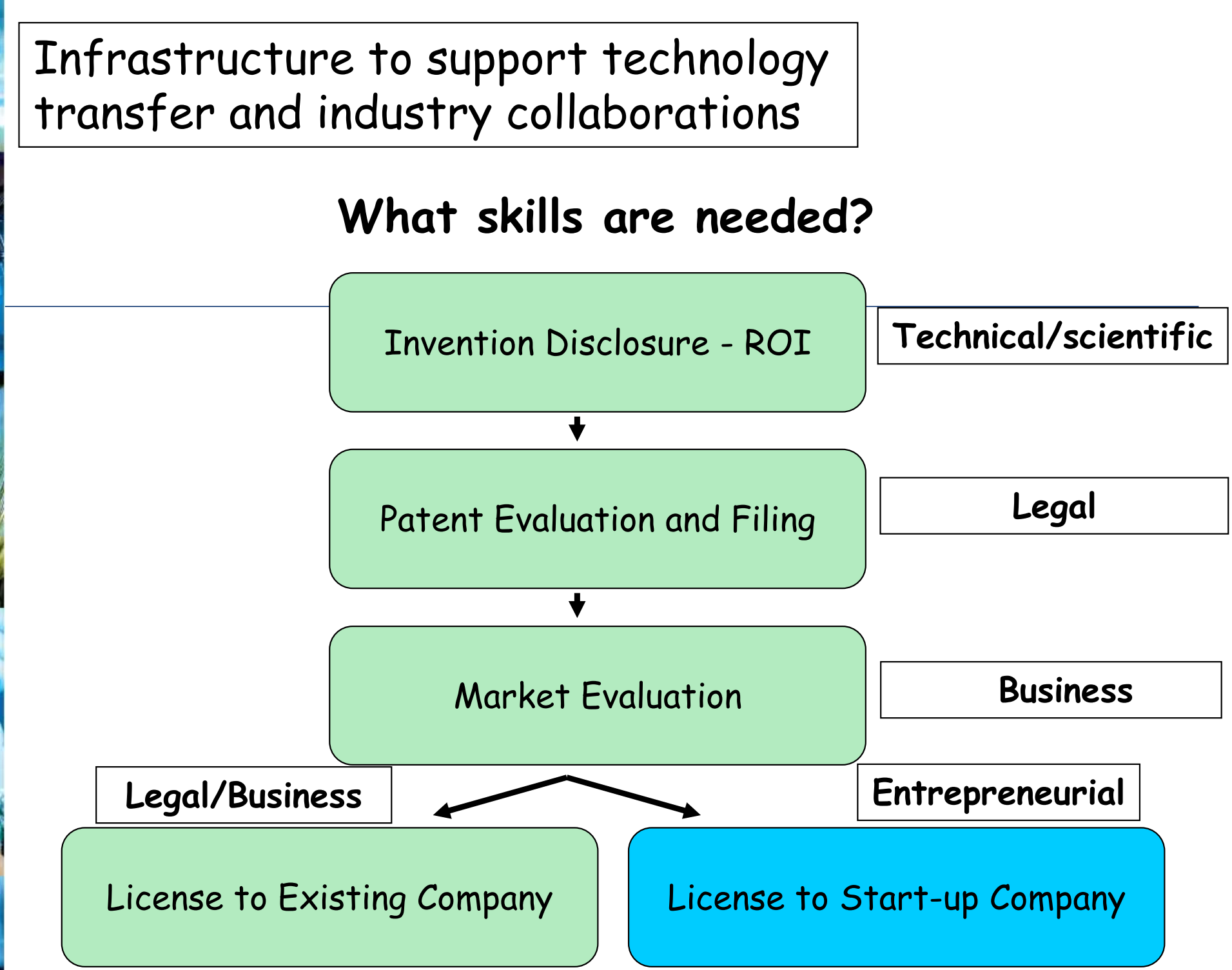
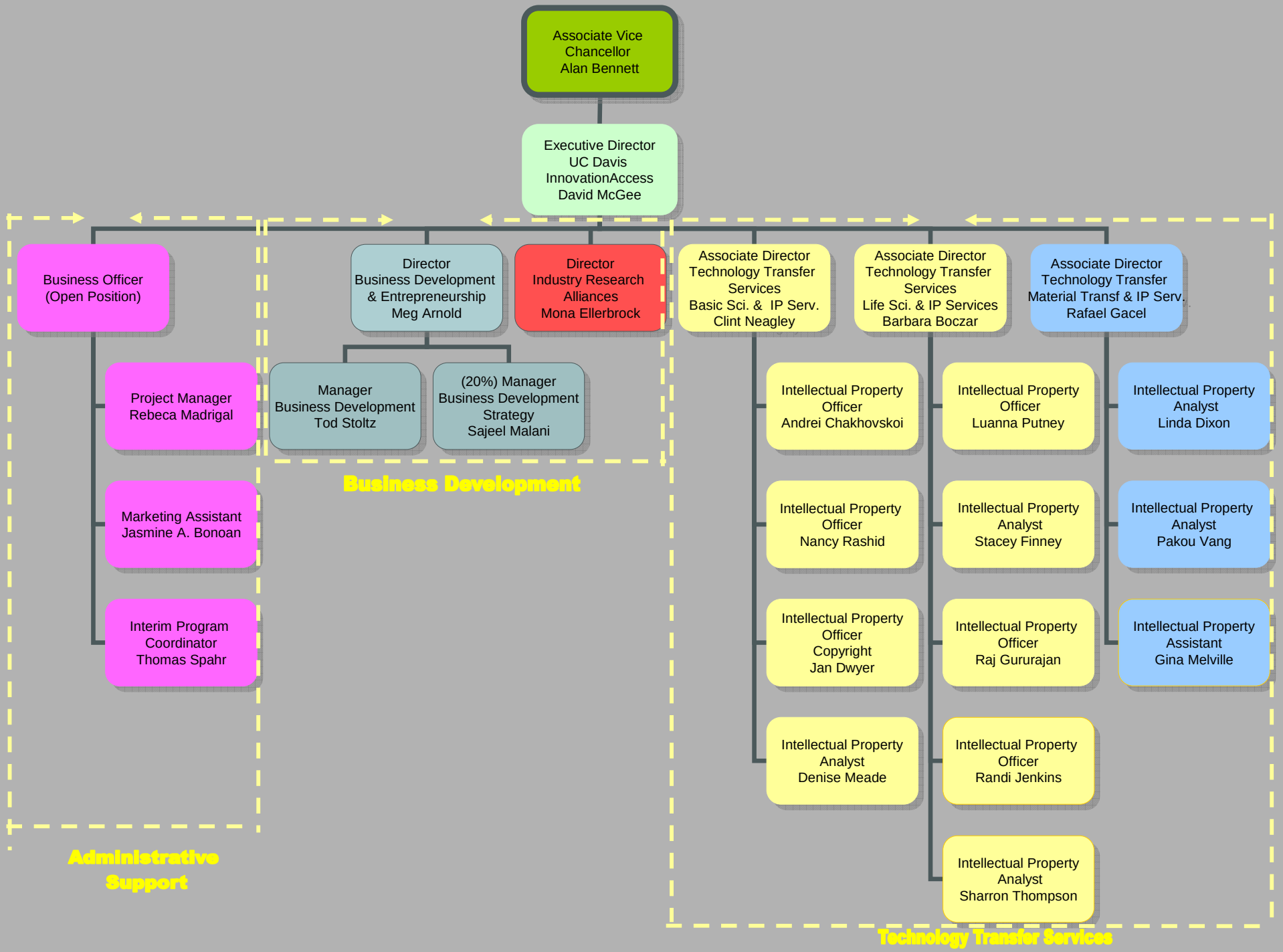
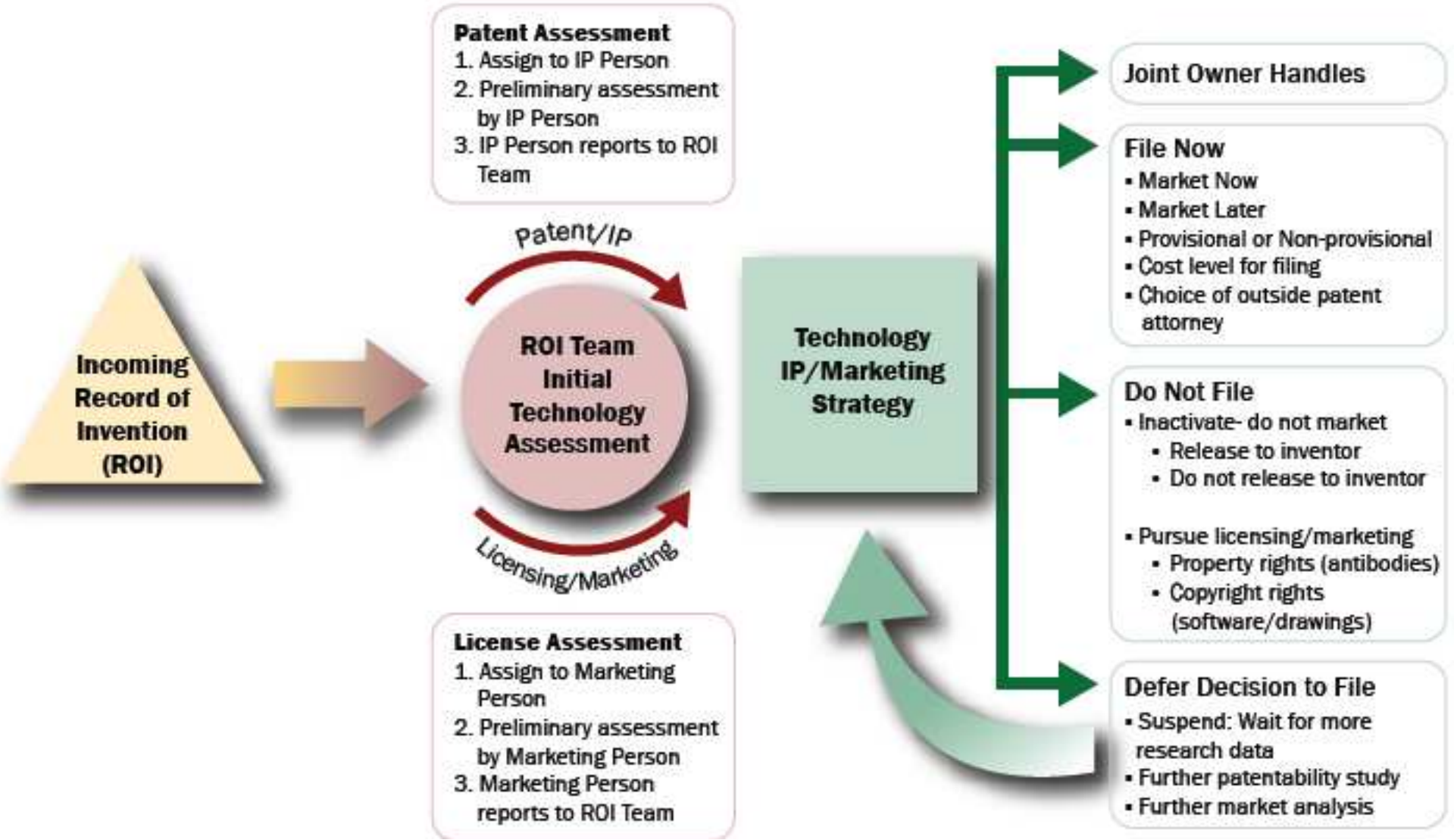
# Infrastructure to support technology transfer and industry collaborations

## What skills are needed?




Associate Vice Chancellor
Alan Bennett
Executive Director
UC Davis InnovationAccess
David McGee
Business Officer
(Open Position)
Director
Business Development & Entrepreneurship
Meg Arnold
Director
Industry Research Alliances
Mona Ellerbrock
Associate Director
Technology Transfer Services
Basic Sci. & IP Serv.
Clint Neagley
Associate Director
Technology Transfer Services
Life Sci. & IP Services
Barbara Boczar
Associate Director
Technology Transfer
Material Transf & IP Serv.
Rafael Gacel
Project Manager
Rebeca Madrigal
Manager
Business Development
Tod Stoltz
(20%) Manager
Business Development Strategy
Sajeel Malani
Intellectual Property Officer
Andrei Chakhovskoi
Intellectual Property Officer
Luanna Putney
Intellectual Property Analyst
Linda Dixon
Business Development
Marketing Assistant
Jasmine A. Bonoan
Intellectual Property Officer
Nancy Rashid
Intellectual Property Analyst
Stacey Finney
Intellectual Property Analyst
Pakou Vang
Interim Program Coordinator
Thomas Spahr
Intellectual Property Officer
Copyright
Jan Dwyer
Intellectual Property Officer
Raj Gururajan
Intellectual Property Assistant
Gina Melville
Intellectual Property Analyst
Denise Meade
Intellectual Property Officer
Randi Jenkins
Intellectual Property Analyst
Sharron Thompson
Administrative Support
Technology Transfer Services

# Intellectual property protection, management and marketing: The decision-making process



## Section 7: Contracts and Agreements to Support Partnerships

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Infrastructure to support technology transfer and industry collaborations

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Culture supporting innovation in the university and faculty

UNIVERSITY OF CALIFORNIA

# *leadership counts*

**“California's economic rise is closely tied to the rise of its research universities. New industries have been invented, new products have been developed and new medical techniques have been invented to both save lives and enhance their quality.”**

***President Atkinson***

**“Our mission is education, research, and public service.**

**Technology transfer is a vehicle that helps us do all three. It boosts research support. It creates internships and educational opportunities for our students. It stimulates the regional economy. And hopefully, it benefits society.” *Chancellor Dynes***

# Campus "Events" – 15 to 20 per year

**Info Sessions** Monthly panel discussions focused on topics of interest to entrepreneurs

**Biz 4 Academics** Briefings on business topics relevant to entrepreneurs - created a peer-oriented environment for faculty

**Office Hours** One-on-one mentoring sessions on specific topics.

**Springboard Mentoring** Mentoring program where a company would be matched with a mentor to provide guidance.

**Little Bang** Annual poster competition with a specific focus on encouraging graduate students in the sciences and engineering to form teams with MBAs.

**Entrepefest** Annual invitation-only networking event to bridge academia, industry, and the investor communities. Attendance between 125 and 400.

**Life Science Summits** Major one-day sector-focused conferences

.

**SBIR Seminars** One-day seminars focused on writing successful SBIR grant applications.

**Monthly newsletter**

# High profile examples of success and campus recognition – i.e. Entrepreneur of the year

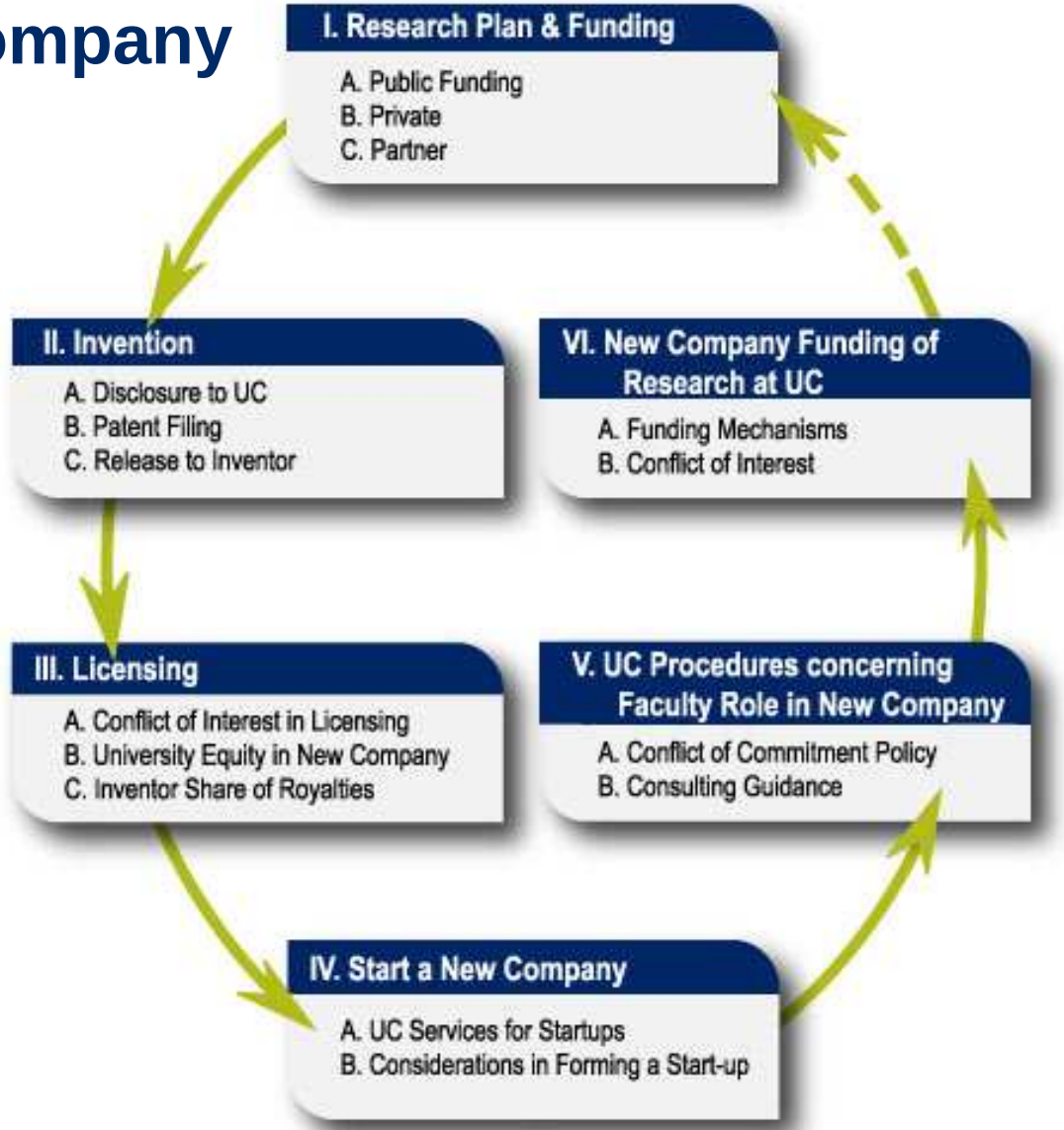
**UNIAX - Founded 1993**
**DuPont acquisition, >$50 M Oct. 2000,**

**Conducting polymers**

**2000: Uniax founder, Alan Heeger, shares Nobel Prize**

# Supporting Entrepreneurship

## Faculty Roadmap for a Start-up Company




http://www.innovationaccess.ucdavis.edu/home.cfm?id=OVC,23,1728,1718,1276

# Supporting Entrepreneurship

- **Translational Technology Grant Program (UC Davis Health System)**
  - funding for research having near-term human healthcare commercial applications
- **UC Davis Center for Entrepreneurship (Graduate School of Management)**
  - certification program in entrepreneurialism for PhD/Post-doc and MBA students
- **Business Plan Competitions (Little Bang and Big Bang!)**
  - Prize pools >$40,000, with a focus on entrepreneurship among researchers
- **Commercialization analysis, networking, introductions, business plan support**

# Supporting Entrepreneurship


Green Technology Entrepreneurship Academy
July 7 - 11, 2008

# Supporting Entrepreneurship

UCDAVIS
CENTER FOR ENTREPRENEURSHIP

Contact

Objectives | Programs | Resources | Calendar | Community

## Programs

The Business Development Programs build bridges from scientific discovery to business applications.

Barry Klein, *Vice Chancellor, UC Davis*

Overview

**Business Development Certificate**

MGT 298 - Course Site

UC Entrepreneurship Academy

Green Technology Entrepreneurship Academy

Sustainable Enterprise Speaker Series

Big Bang & Little Bang

Frequently Asked Questions

**Apply >**
Email completed applications or questions to busdev@gsm.ucdavis.edu

### Business Development Certificate Program 2008/09 Program Applications Now Available

Applications for 2008-09 due Friday, June 20th.

Meet some of our Fellows.

**Business Development Fellows 2007 - 08**
*Back to Front (L - R): Valery Ngassam, Siva Gunda, Lucas Actis-Goretta, Emine Gunhan, Ebrima Ceesay, Gabriel Paulino, Cristina Tcheyan, Diana Mejia*

UCDAVIS INNOVATIONACCESS

Infrastructure to support technology transfer and industry collaborations

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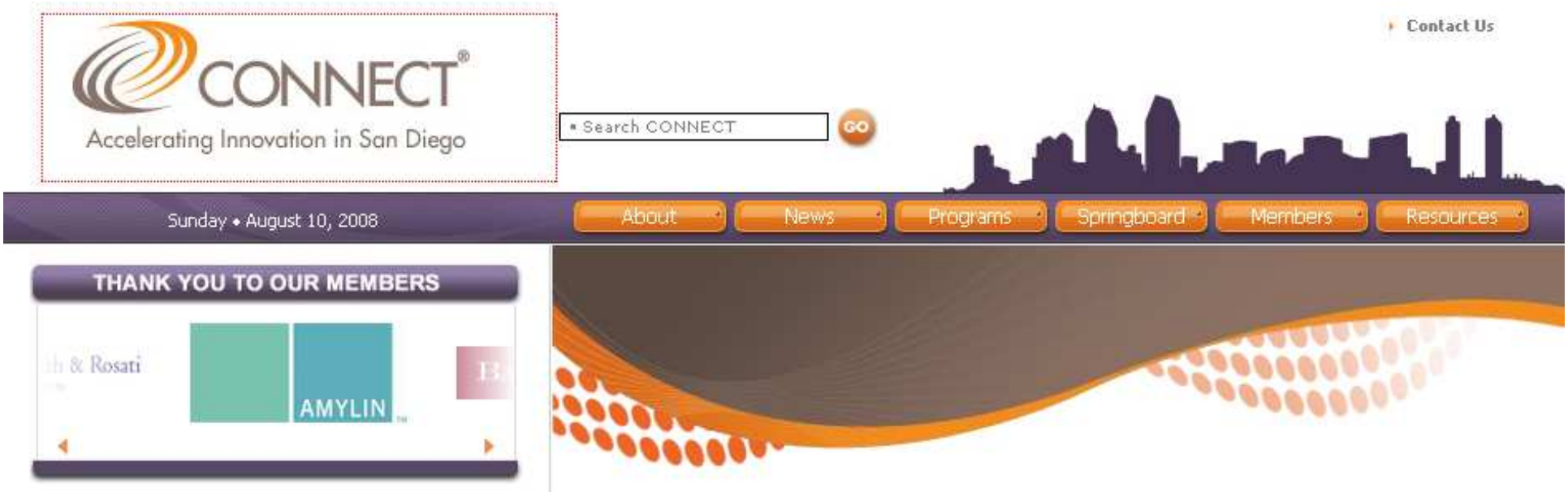
UCDAVIS CONNECT®
Technology Business Development

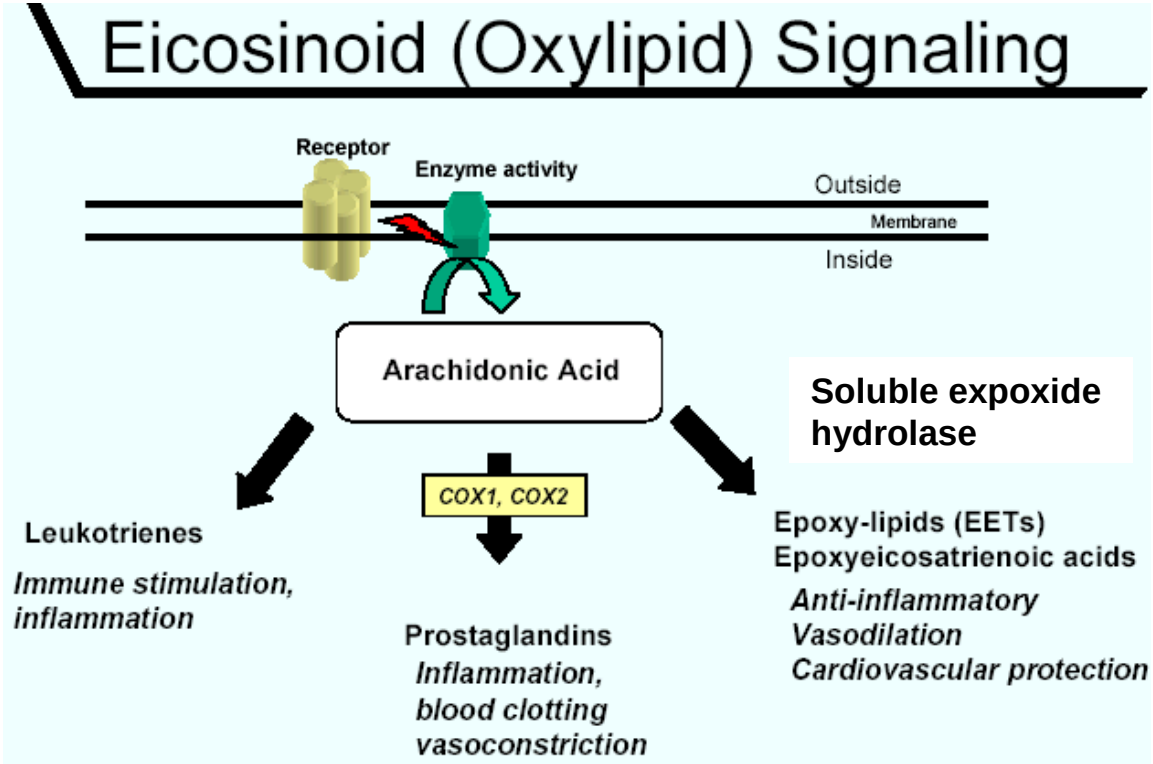
# Modeled after San Diego CONNECT




Industry members
Board of Directors to guide effective programs
Networking, events, introductions, regional culture

# *research diversity driving innovation*

# research diversity driving innovation




***Celebrex, Vioxx***

Patent portfolio

Patent No. 5,445,956
Patent No. 5,955,496
Patent No. 6,150,415
Patent No. 6,103,665
Patent No. 6,531,506

Target claims
Protein claims
Assay claims
Biomarker claims
Therapy claims

ARÊTE THERAPEUTICS

ABOUT US DEVELOPMENT DISCOVERY NEWS INVESTORS CAREERS CONTACT









**Latest News**

## Welcome to Arête Therapeutics

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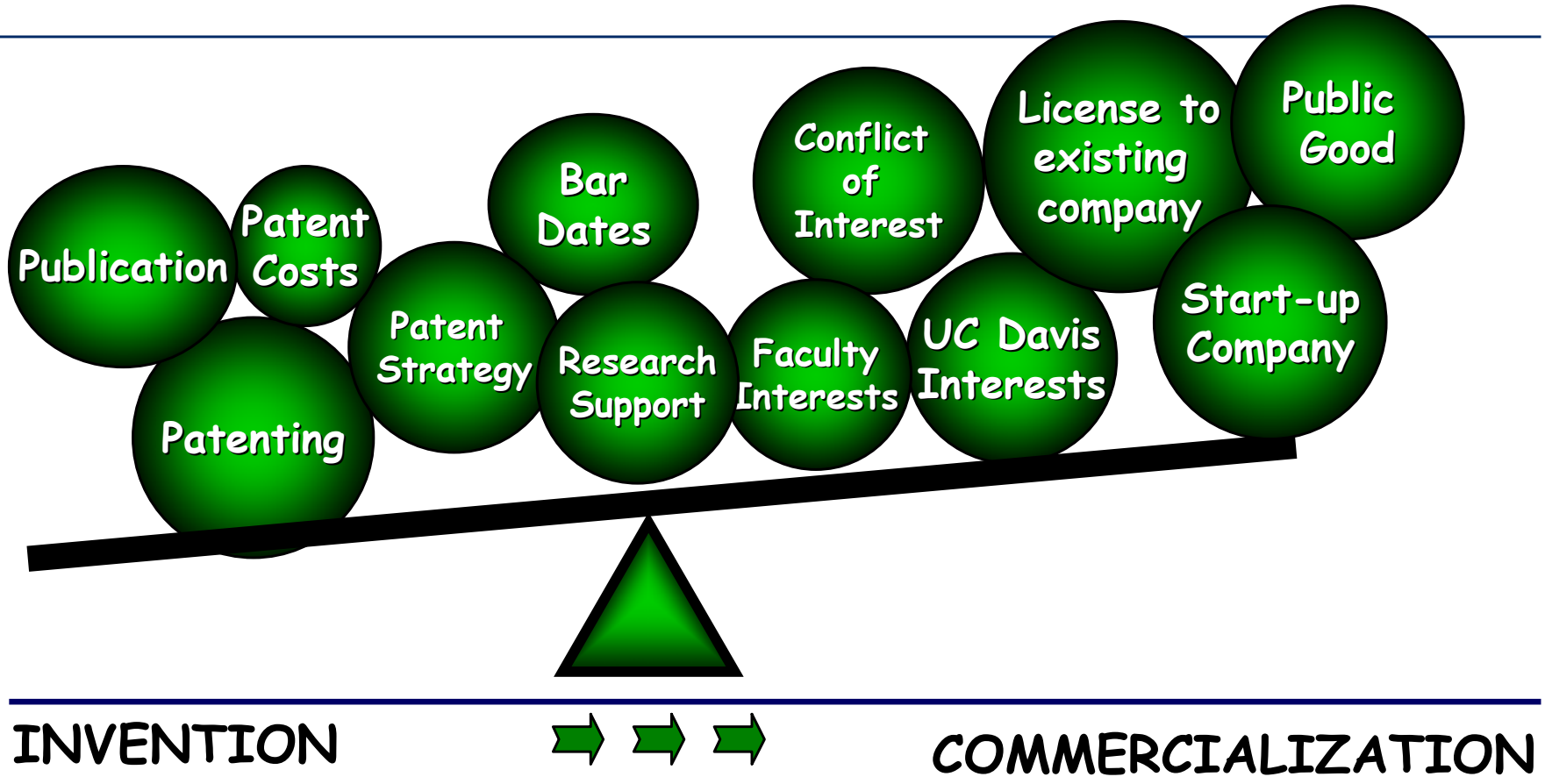
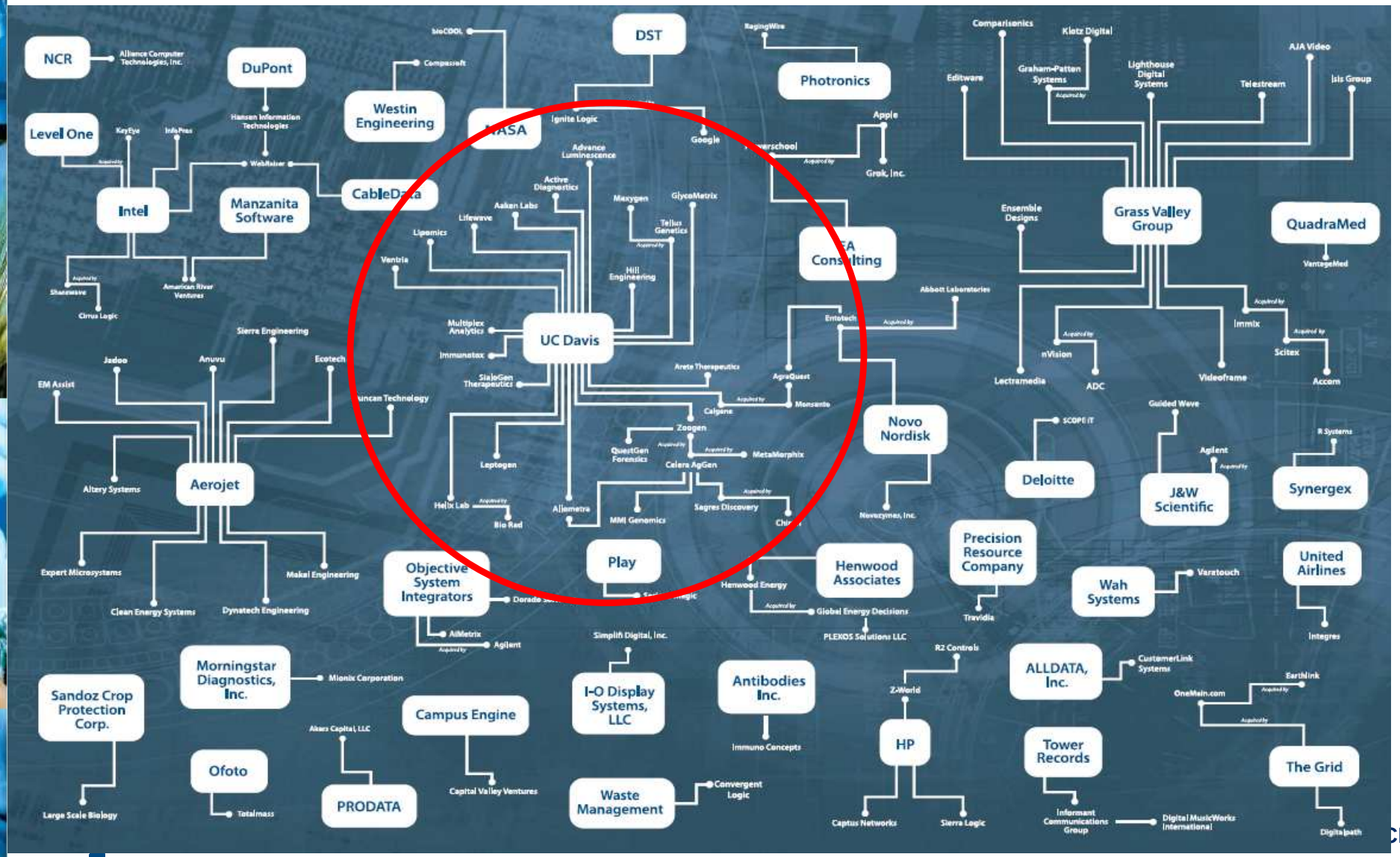
# Innovation strategies for the university are not easy…..



# But can work …..


NCR
Alliance Computer Technologies, Inc.
DuPont
Hansen Information Technologies
Westin Engineering
Compassoft
InoCOOL
DST
RagingWire
Photronics
Level One
KeyEye
InfoPress
WebMaster
NASA
Ignite Logic
Google
Apple
Grok, Inc.
Intel
Manzanita Software
CableData
Active Diagnostics
Maxygen
GlycoMetrix
Aaken Labs
Lifewave
Tellus Genetics
Lipomics
Ventria
Hill Engineering
Advance Luminescence
Shareware
Cirrus Logic
American River Ventures
Multiplex Analytics
Immunatox
SialoGen Therapeutics
UC Davis
Arete Therapeutics
AgraQuest
Monsanto
Calgene
Zoogen
QuestGen Forensics
MetaMorphix
Celera AgGen
Leptogen
Helix Lab
Bio Rad
Allemetra
MMI Genomics
Segres Discovery
Abbott Laboratories
Emtotech
Novo Nordisk
Novozymes, Inc.
Sierra Engineering
Jadoo
Anuvu
Ecotech
EM Assist
Altery Systems
Aerojet
Expert Microsystems
Clean Energy Systems
Dynatech Engineering
Makai Engineering
Objective System Integrators
AllMetrix
Agilent
Play
Henwood Energy
Henwood Associates
Global Energy Decisions
PLEXOS Solutions LLC
Precision Resource Company
Travidia
Wah Systems
Varatouch
United Airlines
Integres
Comparisonics
Klotz Digital
AJA Video
Editware
Graham-Patten Systems
Lighthouse Digital Systems
Telestream
Isis Group
Ensemble Designs
Grass Valley Group
QuadraMed
VantageMed
Immix
Scitex
Accom
nVision
ADC
Lectramedia
Videoframe
Guided Wave
Agilent
J&W Scientific
R Systems
Synergex
SCOPE IT
Deloitte
Simplifi Digital, Inc.
I-O Display Systems, LLC
Antibodies Inc.
Immuno Concepts
R2 Controls
Z-World
HP
Captus Networks
Sierra Logic
ALLDATA, Inc.
CustomerLink Systems
EarthLink
OneMain.com
The Grid
Tower Records
Informant Communications Group
Digital MusicWorks International
Digitalpath
Morningstar Diagnostics, Inc.
Mionix Corporation
Sandoz Crop Protection Corp.
Large Scale Biology
Ofoto
Totalmass
Alaska Capital, LLC
PRODATA
Campus Engine
Capital Valley Ventures
Waste Management
Convergent Logic

UCDAVIS
INNOVATIONACCESS
Connecting research to market

**Alan B. Bennett, Ph.D.**
*abbennett@ucdavis.edu*

# How do universities manage intellectual property?

## UC Patent Policy

- Mandatory Invention Disclosure
- Inventor Assignment of Title to UC
- Distribution of Net Income*
  - Inventor Receives 35%
  - Campus Research Fund Receives 15%
  - Remaining 50% to General Pool at Inventor's Campus/Lab

UNIVERSITY OF CALIFORNIA

# university patent leader

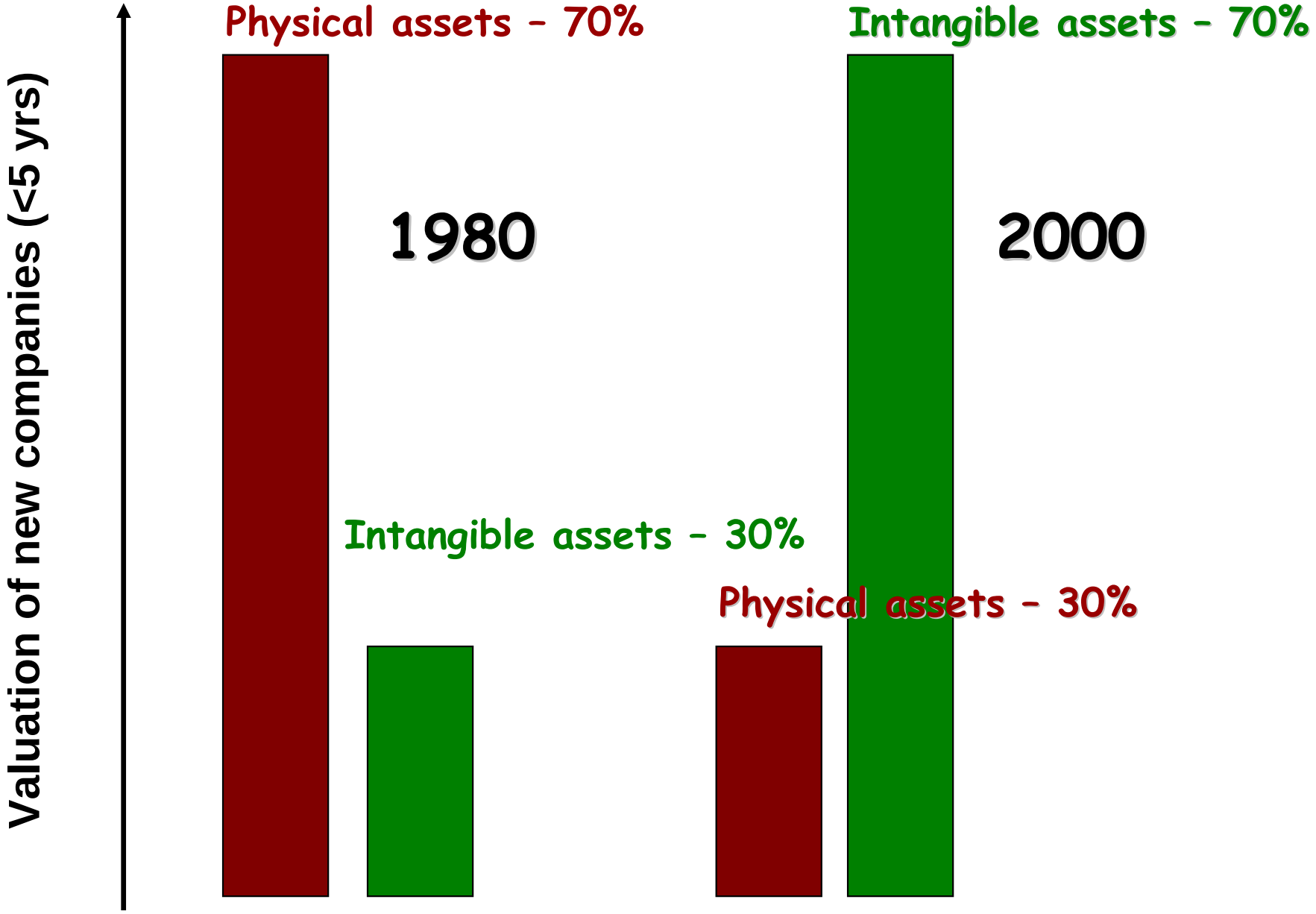
## Patents Issued (USPTO) - 2003

- 1. IBM 3,439
- 5. Hewlett-Packard/Compaq 1,763
- 9. Sony 1,354
- 22. Honda 686
- 34 Microsoft Corp. 499

- 36. Regents of University of California 464

- 39. Nortel Networks 436
- 50. US Navy 366

# Increasing importance of intellectual property

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