

Role of University Tech Transfer Office

Opportunities/ Challenges in
Commercialization of Plants Varieties in the
APEC Region

Ho Chi Minh City, Viet Nam
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University of California

A Ten Campus System with Broad Impact in Science and Innovation

Research Investment

\$3.35 Billion

~26,000 Publications

in Life and Health Sciences

10 campuses; all research-intensive

17,000 faculty
220,000 students

System-wide policies & legal oversight

Largely decentralized decision-making



1,776 Invention Disclosures

4,118 Active US Patents

61 Start-up Companies Formed

Economic Impact

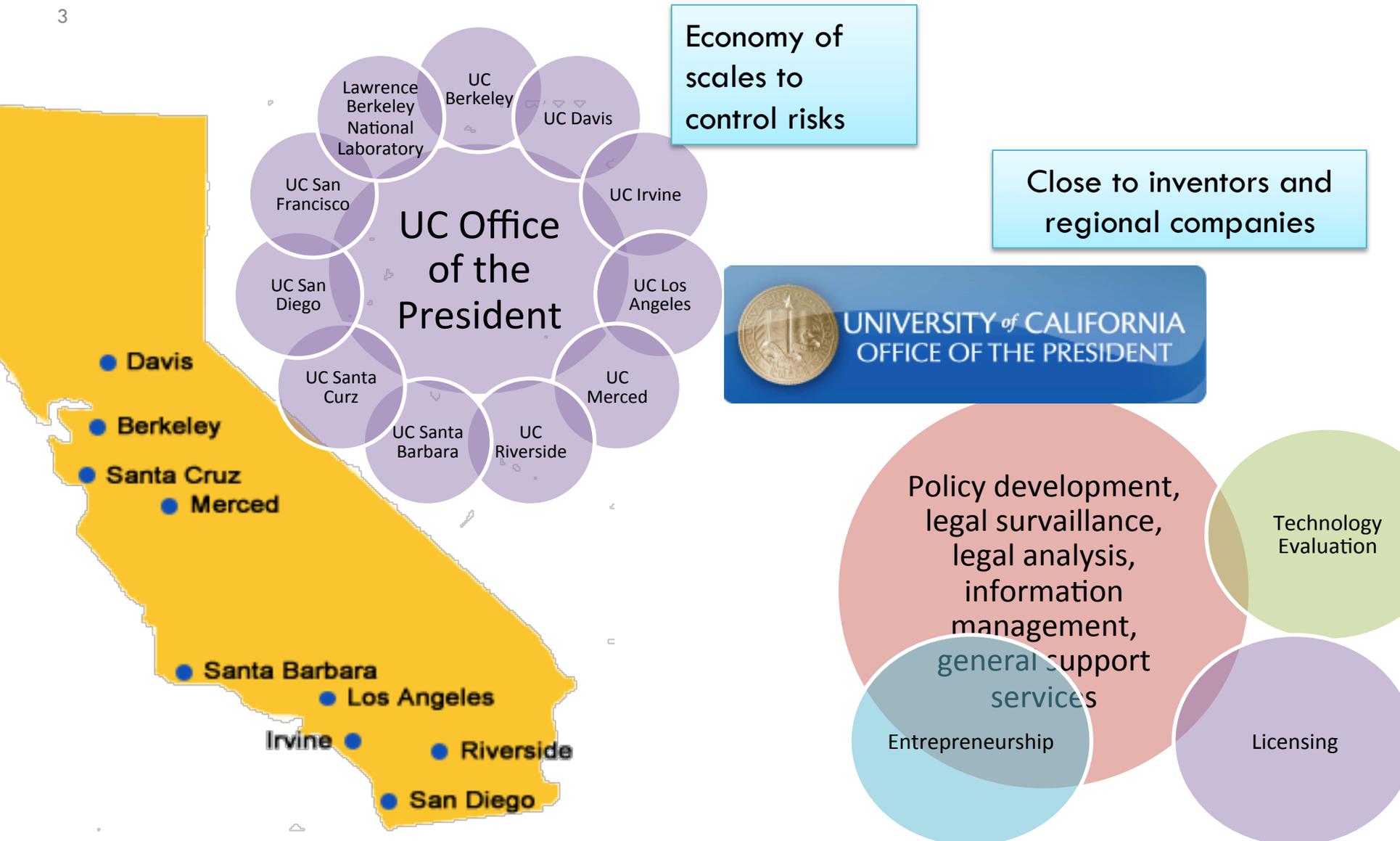
\$46.3 Billion
~430,000 jobs

\$119.2 Million

in Licensing Revenue - 2012

Technology Transfer Program is De-Centralized in the University of California

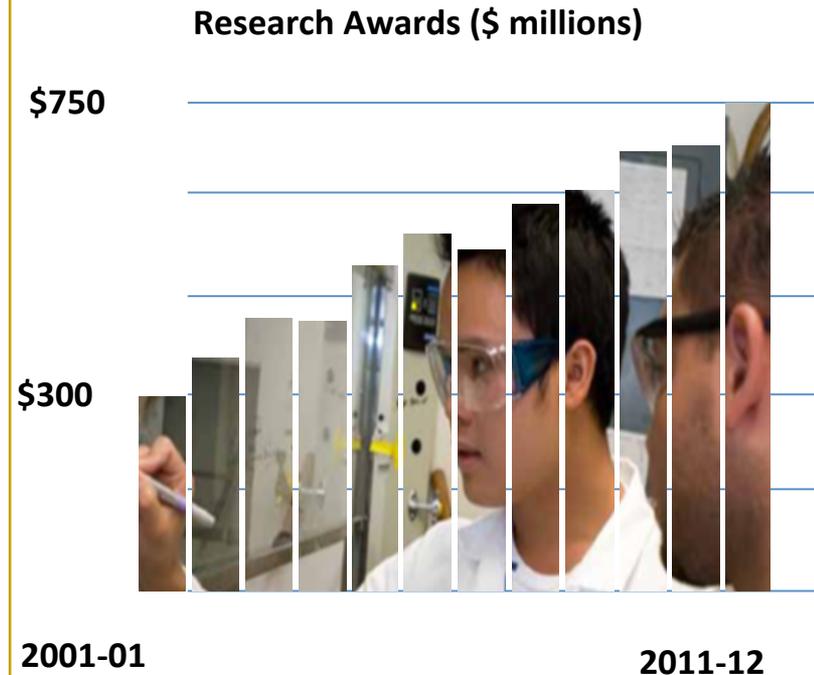
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University of California, Davis – from its roots

- Ranked **7th** among public research universities nation-wide
- **5th** among U.S. universities in the number of international scholars (“Open Doors 2010 Report on International Educational Exchange” by the Institute of International Education)
- **1st** among universities in teaching and research in **Agricultural and Forestry** (QS World University Rankings)

- **1. University of California, Davis**
- 2. Wageningen University
- 3. Cornell University
- 4. University of Wisconsin, Madison
- 5. Texas A&M University



The Public Intellectual Property Resource for Agriculture



- Enable **technologies** developed in the public sector to have the **broadest possible impact** in society by facilitating intellectual property management tools to **navigate the landscape of IPRs** to accomplish successful **technology transfer for public benefit.**
- Organization created by the Rockefeller and McKnight Foundations in 2004.

CAPACITY BUILDING & TRAINING PROGRAMS: IP Management & Tech Transfer to Promote Innovation



- **Workshops: IP protection, management & valuation, negotiation & licensing strategies**
- **Institutional needs assessments & commercialization capacities**
- **Institutional IP Policy support: revision of policies and personnel training**
- **Technology Commercialization Strategy: National/International IP Protection & Freedom-to-Operate (FTO) Analysis**

Licensing Academy: Intellectual Property and Technology Transfer™

Monday June 19, 2017 – Friday June 30, 2017

**7 programs
(2011 – 2017) with 275+
participants from 50+
countries**

“Very educational program, one of the best that I have taken. All aspects were very well thought out and combined; instruction, logistics, social aspects...”

“Course was fantastic from professional and personal points of view...”

“Overall a good program with the appropriate experts giving the lectures.”



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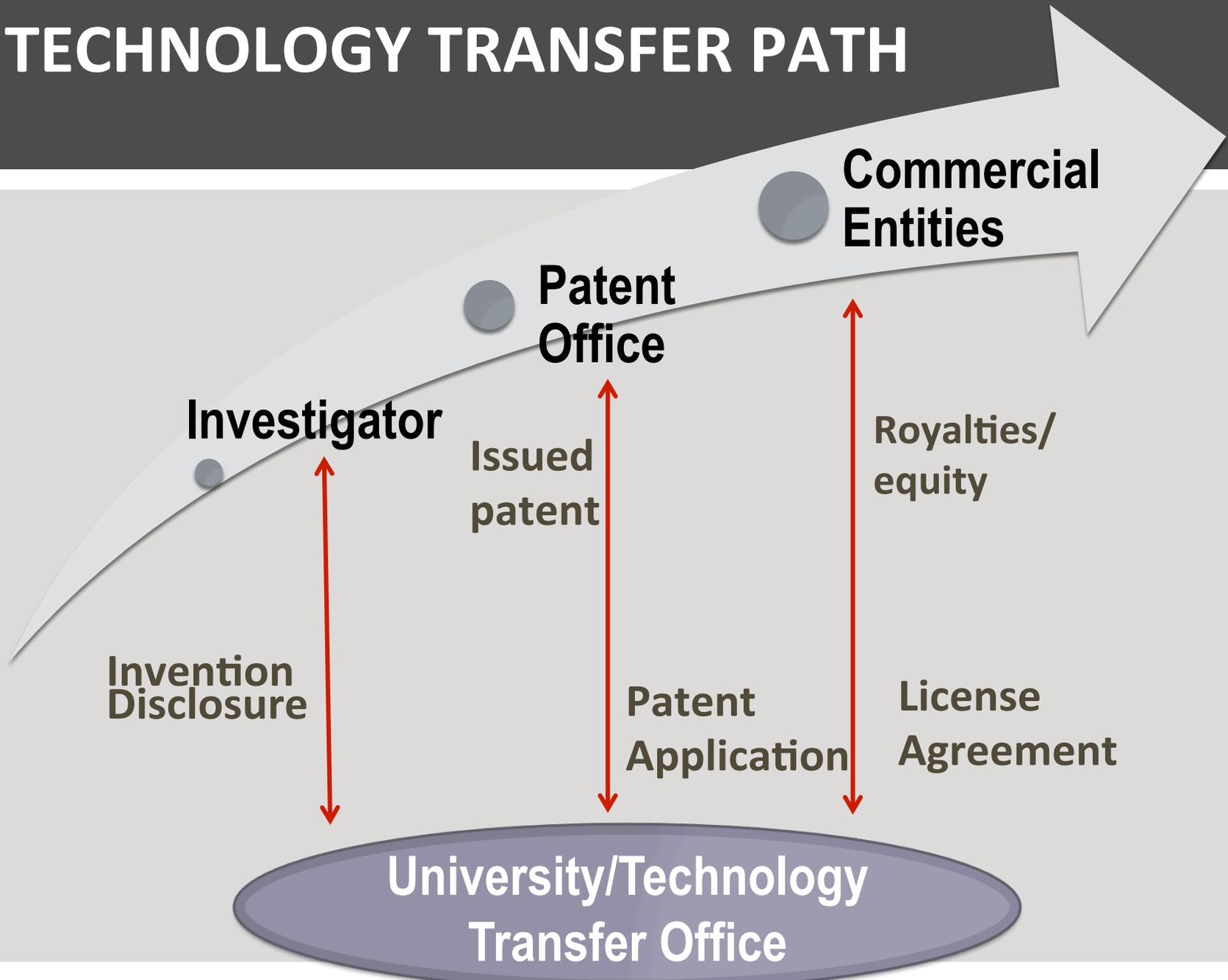
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UNIVERSITY TECHNOLOGY TRANSFER – IP COMMERCIALIZATION STRATEGY



TECHNOLOGY TRANSFER PATH



PUBLIC INSTITUTIONS CAN BE A SOURCE OF

Innovation

Business
Development

Regional Economic
Development

What are the requirements

- Strong research base
- **Legal and policy framework to manage IP**
- A culture of innovation - *committed institutional leadership*
- Technology transfer infrastructure
- Business development networks

LEGAL FRAMEWORK TO MANAGE IP



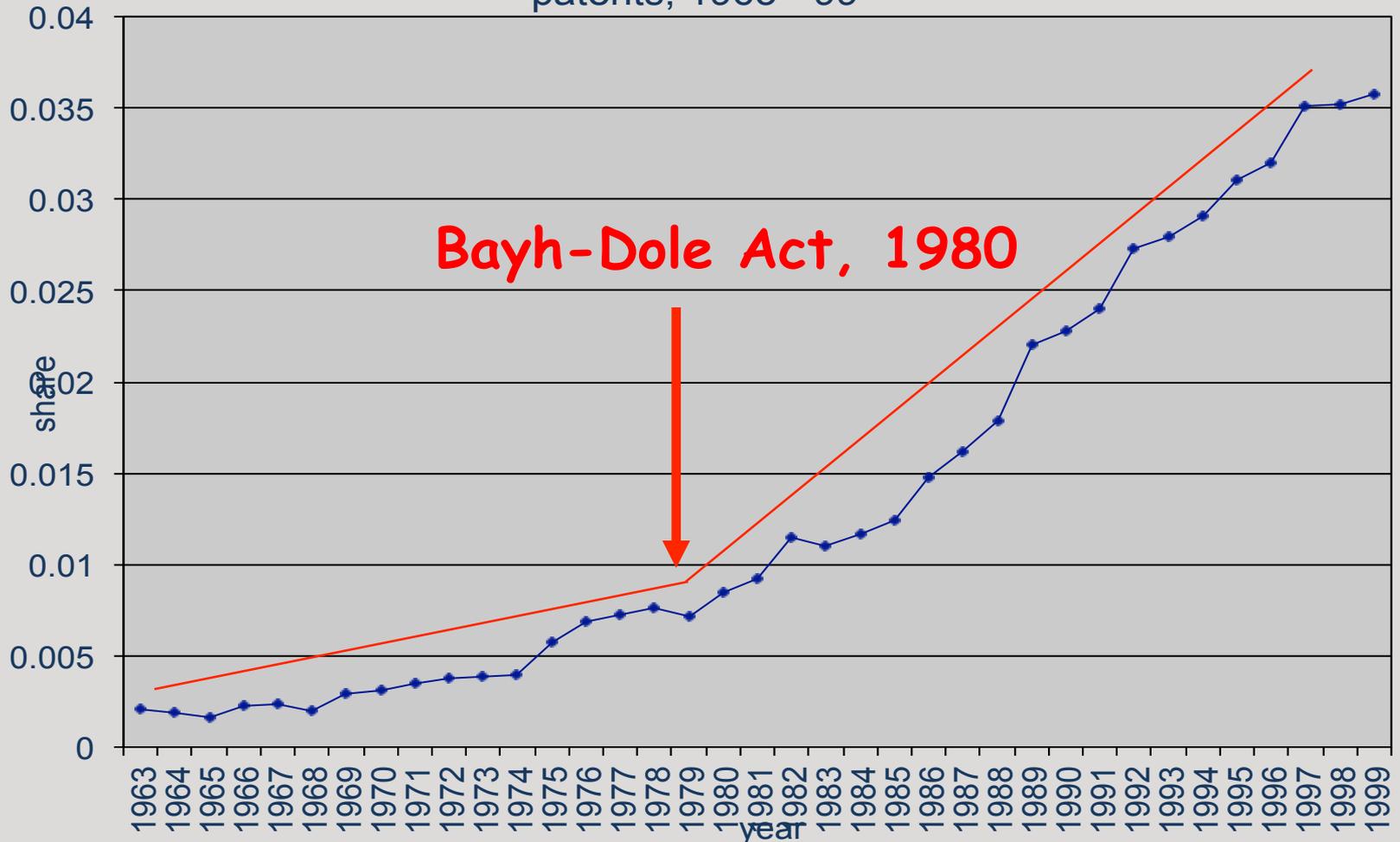
1. Created clarity about IP ownership
2. Localized licensing of IP near researcher/inventor
3. Created incentives to build technology transfer infrastructure

Focus on Intellectual Property

Bayh-Dole act (1980) allows institutions to patent discoveries made with public funds

PATENTS OWNED BY UNIVERSITIES IN RELATION TO TOTAL PATENTS IN US

US research univ. patents % of all domestic-assignee US patents, 1963 - 99



Legal Framework to Manage IP

Bayh-Dole Act > 30 years



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

IP POLICY

UNIVERSITY OF CALIFORNIA (1997)



Obligation to Disclose Inventions

Ownership of Intellectual Property Rights - Inventor assigns property to UC

Distribution of the net profits *

- Inventor receives 35%
- Campus research program receives 15%
- Remaining 50% is divided between the Campus / Department / laboratory of the Inventor

INFRASTRUCTURE TO SUPPORT TECHNOLOGY TRANSFER AND INDUSTRY COLLABORATIONS

Deliberate and strategic IP management to identify best innovative path



Technology Transfer Services
(lawyers and scientists)

Business Development Services
(MBAs and entrepreneurs)



Staff of 22 for a research base of >750 M

UC DAVIS STRAWBERRY LICENSING PROGRAM - LEADER IN CALIFORNIA & WORLD

- **Strawberry Industry in California: \$2.2 B**
 - Represent 75% California production
- **Leader, position #1, global level**
- **In 25 years, Spanish Strawberry Industry grew up to \$1B**
 - Transfer of varieties & know-how
 - 70-90% UC Davis varieties



LICENSING PROGRAM OBJECTIVES

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D. France
Strawberry Grower
Santa Maria, CA

- Benefit California industry with development of new varieties
- IP Protection -US & Global
- Create a global licensing system in production areas
- Provide funds to continue selection of new varieties

VARIETY IMPROVEMENT COMPONENTS

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- Yield
- Transport and shelf life
- Pick speed – labor 50% of total operating costs – plant type
- Disease resistance
- Production windows
- Appearance and flavor

IP PROTECTION STRATEGY WORLDWIDE

20

- US - Plant Patent
- Ex-US – UPOV PBR where available
- 20 – 25 countries per variety
- 560 active strawberry IP filings

(12) **United States Plant Patent**
Shaw et al.

(10) Patent No.: **US PP16,228 P3**
(45) Date of Patent: **Jan. 31, 2006**

(54) **STRAWBERRY PLANT NAMED 'ALBION'**

(50) Latin Name: *Fragaria ananassa* Duch.
Varietal Denomination: Albion

(75) Inventors: **Douglas V. Shaw, Davis, CA (US);
Kirk D. Larson, Irvine, CA (US)**

(73) Assignee: **The Regents of the University of
California, Oakland, CA (US)**



STRATEGY WORLDWIDE – ONLY TERRITORIES WITH ROBUST PLANT IP PROTECTION



Representative PBR filings for UC Davis strawberry varieties

Argentina	PBR
Australia	PBR
Belarus	PBR
Brazil	PBR
Canada	PBR
Chile	PBR
China	PBR
Colombia	PBR
Ecuador	PBR
EU	PBR
Israel	PBR
Japan	PBR
Jordan	PBR
Mexico	PBR
Morocco	PBR
New Zealand	PBR
Peru	PBR
Republic of Korea	PBR
South Africa	PBR
Switzerland	PBR
Tunisia	PBR
Turkey	PBR
Uruguay	PBR



WORLDWIDE FRUIT PRODUCTION UC VARIETIES - EXAMPLES

22



Watsonville/Salinas

- Albany, WA, Australia
- Coastal Portugal
- UK
- South Island, NZ

Central and S. Coast

- Mediterranean basin
- Western Cape, SA
- Perth, WA, Australia
- Auckland, NZ
- Baja California, MX

LICENSING STRATEGIES

Domestic Market – US/Canada

- **Direct** licence with nurseries
- Non-exclusive terms
 - propagation of plants
 - sell to fruit producers
 - sell to licensed propagators
- Reduced royalties in California
- Provide funds to continue selection of new varieties

International Markets

- **Direct** licence with Master licensees- not a nursery or grower
- Exclusive terms
 - By territory
 - Sublicense nurseries
 - Control unauthorized propagation
 - Royalty-share with UC
- Higher royalties

Royalty Structure

World

\$ 16 per 1000 plants
~\$3.4M Royalties

United States

\$ 9 per 1000 plants
~\$ 100,000 Royalties

California

\$8 per 1000 plants
~ \$ 3.2 M Royalties

Licensing Program Anually \$8-1
Managed by 2.5 FTE



The image features a vertical banner on the left side. At the top of the banner, the acronym 'PIPRA' is displayed in a large, light-colored font. Below the text, there is a photograph of two hands shaking, symbolizing a partnership or agreement. The background of the banner is light and textured.

Promote **public-private partnerships** and the strategic management of intellectual property

Accelerate the transfer of **public sector research ...**

... towards the **private sector** for **development and commercialization.**

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PRINCIPAL COMPONENTS OF AN INSTITUTIONAL IP POLICY

1. Ownership

- Inventor or university
- government or company providing research funds
- public domain

2. Obligations of researchers/employees

- obligation to disclose before publication
- assignment ownership to employer/institution
- obligation to assist in evaluation and patenting
- obligation to report conflict of interest

3. Obligations of the institutions

- obligation to manage IP effectively and transparently
- obligation to pay patenting costs
- obligation to share revenue (or not)
- obligation to: support institutional mission

4. Conflict of interests & Commitment

Technology Commercialization

GOAL: Commercialization of a public good

CHALLENGE: Find investors & private partners

