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Technology Transfer

PATH TO A NEW ECONOMY

This November, knowledge can be Arizona's ticket to profitable growth.

In the upcoming election, voters can support the establishment of a knowledge-based economy in Arizona by amending the state's Constitution. As outlined by the governor in her 2003 State of the State Address, voter approval of the proposed constitutional amendment—Proposition 102—promises to bring to Arizona the high-paying jobs; the non-cyclical, non-polluting industries; and the capital investments of knowledge-based industries such as biotechnology, information technology and nanotechnology.¹

This article provides an overview of the knowledge-based economy and the current and proposed constitutional sections that affect it.

GROWING AN ECONOMY

A knowledge-based economy arises from the commercialization of useful applications developed from scientific research. Though the specific actors and their relationships in such an economy can vary dramatically, a key participant in Arizona will be its state universities, which are gov-

erned by the Arizona Board of Regents.²

Typically, scientific research is conducted without a profit motive in a university, where hard costs such as research facilities are financed by the state, and soft costs such as salaries are financed by federal research grants.³ The results of this scientific research are then transformed into a profit-producing product by a for-profit company, where the costs of the commercialization process are borne by its investors.⁴ The relationship between the university and the for-profit company involves the university licensing (i.e., transferring) its scientific research results (i.e., technology) to the company in what is known as a "technology transfer."⁵

MEASURING OUR PROGRESS

To date, Arizona has been less than successful in establishing a knowledge-based economy. Although success in this regard can be measured by numerous factors, two effective tests for success are the number of patent applications filed by a university to protect its scientific research results and the licensing revenue received by a university from the successful commercialization

of its technology.

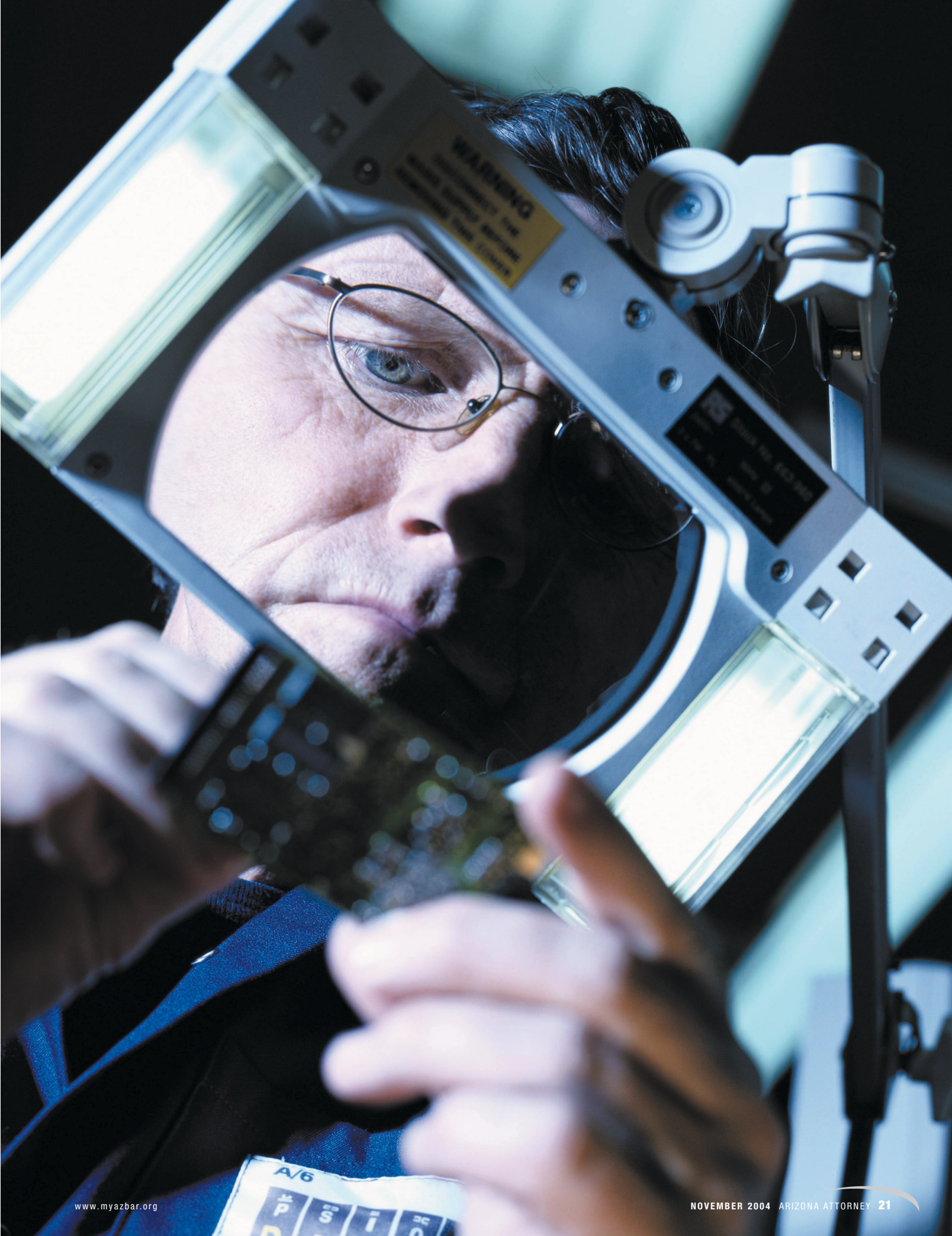
On the scientific research issue, in 2003, Arizona State University filed 132 U.S. patent applications, the University of Arizona filed 74, and Northern Arizona University filed 4.⁶ In the same year, by contrast, the University of Washington filed 123 U.S. patent applications, and the University of California system filed 874.⁷

Regarding commercialization, in 2003, Arizona State University and the University of Arizona each received approximately \$1 million in licensing revenue, and Northern Arizona University received none.⁸ In contrast, the University of Washington in 2003 received more than \$17 million in licensing revenue, and the University of California system received more than \$81 million.⁹ This demonstrates that although Arizona is relatively successful in the area of scientific research, it has been less than successful in the commercialization process.

Why is that the case?

OBSTACLES TO SUCCESS

The commercialization process in Arizona has been lackluster, in part, because its uni-



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versities are constitutionally prohibited from accepting an ownership interest (i.e., equity) in a company in exchange for a technology transfer. More specifically, Article IX, Section 7, of the Arizona Constitution provides as follows:

Neither the state, nor any county, city, town, municipality, or other subdivision of the state shall ever give or loan its credit in the aid of, or make any donation or grant, by subsidy or otherwise, to any individual, association, or corporation, or become a subscriber to, or a shareholder in, any company or corporation, or become a joint owner with any person, company, or corporation, except as to such ownerships as may accrue to the state by operation or provision of law or as authorized by law solely for investment of the monies in the various funds of the state.

This section contains two distinct constitutional prohibitions.¹⁰

- Arizona is prohibited from becoming a stockholder in any company, which would include a company seeking to commercialize the technology of Arizona universities.
- Arizona is prohibited from giving special advantage to a company at the public expense.

The second prohibition, known as the “gift prohibition,” has been judicially interpreted to mean that the public benefit received cannot be “so inequitable and unreasonable” in relationship to the public assets expended “that it amounts to an abuse of discretion.”¹¹ In some circumstances, this prohibition would prohibit Arizona from exchanging equity in a company for a technology transfer because it is often extremely difficult to establish a value for a company’s equity.¹²

EQUITY EXCHANGES CRITICAL

The exchange of equity for a technology transfer is a critical component of the commercialization process. More specifically, in the knowledge-based economy, the equity

that is exchanged for the technology transfer replaces the initial license fee that is paid under a traditional patent license agreement. This replacement is critical for establishing a knowledge-based economy because it is the industry norm.¹³

Furthermore, the exchange of equity for a technology transfer avoids the extremely difficult task of valuing the technology before the transfer, which would have to be done to set an initial patent license fee.¹⁴

Finally, the exchange of equity for a technology transfer is mutually beneficial for both the university and the company. From the company perspective, the exchange allows it to allocate its typically limited financial resources to the commercialization process as opposed to the payment of an initial patent license fee.¹⁵ From the university perspective, the exchange allows it to participate in the typically skyrocketing valuation of the equity of the company if the commercialization process is successful.¹⁶

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PROPOSED LANGUAGE

The proposed constitutional amendment, which will entirely replace the current Article IX, Section 7, will in part allow Arizona universities to exchange equity in a company for a technology transfer.¹⁷ The proposed new section would provide as follows:

- Neither the state, nor any county, city, town, municipality or other subdivision of the state shall ever:
1. Give or loan its credit in the aid of, or make any donation or grant, by subsidy or otherwise,

to any individual, association or corporation.

2. Become a subscriber to, or shareholder in, any company or corporation, or become a joint owner with any person, company or corporation, except:
 - (a) For ownerships and securities that are obtained solely for investment as authorized by law in direct consideration for the license or transfer of an interest in technology or intellectual property created or acquired by the Arizona Board of Regents and institutions under its jurisdiction.
 - (b) For ownership that may accrue to the state by operation or provision of law.
 - (c) As authorized by law solely for investment of the monies in the various funds of the state.

This proposed provision will leave unchanged the current gift and stock prohibitions, which were adopted to prevent “extravagant dissipation of public funds.”¹⁸ But the revision would allow Arizona universities, through the Arizona Board of Regents, to exchange equity in a company for a technology transfer. It would exempt the Board of Regents from the current stock prohibition by allowing it to exchange “ownerships and securities” in a company for a transfer of “technology and intellectual property.”¹⁹ Furthermore, this proposed provision would exempt the Board of Regents from the current gift prohibition by allowing it to accept equity in a company as “direct consideration” for a technology transfer.

Finally, the “authorized by law” provision would incorporate the proposed statutory framework of the technology transfer system for Arizona.²⁰ Through that system, Arizona can establish its public policy in the knowledge-based economy on issues such as retention within the state of the jobs and companies created from the commercialization process.²¹

OTHER APPROACHES

There are alternatives to amending Article IX, Section 7, in order to establish a




knowledge-based economy in Arizona. For example, both Washington and California have constitutional prohibitions that are similar to those found in Arizona.²² Both states employ similar state agency approaches to avoid their respective constitutional prohibitions.²³ Based on a legislative finding of public purpose, the equity received in exchange for a technology transfer in Washington is vested with its state universities and in California with its Board of Regents.²⁴ Should the proposed constitutional amendment be approved, the effectiveness of these alternative approaches in Arizona will be an issue only for academic debate.

And even if the Washington and

California approaches ultimately would be held constitutional in Arizona, the constitutional uncertainty that presently exists is itself a barrier to the establishment of a knowledge-based economy. This is because the commercialization process requires a substantial and sustained commitment by the investors in the companies that will commercialize the technology.

For example, in the biotechnology industry, development of a new human drug on average costs approximately \$802 million and takes more than 14 years.²⁵ Though these investors are willing to assume the risks of the commercialization process, they would not willingly assume the risk of protracted litigation

regarding the constitutionality of the technology transfer system.²⁶ Voter approval of the proposed constitutional amendment would eliminate this risk.

In conclusion, the proposed amendment to the Constitution of the State of Arizona is a good one. It would facilitate the establishment of a knowledge-based economy in Arizona, which has been inhibited in part because the Constitution prohibits Arizona's universities from effectively commercializing their technology. Passage of the proposed amendment would allow Arizona universities to successfully commercialize their technology and, therefore, bring to Arizona the high-paying jobs, more profitable industries and larger capital investments. 

endnotes

1. State of the State Address, 46th Leg., 1st Reg. Sess. (Ariz. 2003).
2. Battelle Memorial Inst., *Platform For Progress: Arizona's Bioscience Roadmap* 27 (Dec. 2002).
3. See 35 U.S.C. § 200; Morrison Inst. for Pub. Policy at Ariz. State Univ., *Seeds of Prosperity: Public Investment in Science and Technology Research* 5 (April 2003); CAPITALIZING ON NEW NEEDS AND NEW OPPORTUNITIES: GOVERNMENT-INDUSTRY PARTNERSHIPS IN BIOTECHNOLOGY AND INFORMATION TECHNOLOGIES 60 (Charles W. Wessner ed., 2001).
4. See *Active Lipid Dev. Partners Ltd. v. Commissioner*, T.C. Memo 1991-522, 62 TCM (CCH) 1046 (T.C. 1991); BRYAN BERGERON & PAUL CHAN, BIOTECH INDUSTRY: A GLOBAL, ECONOMIC AND FINANCING OVERVIEW 205-12 (2004).
5. Ariz. Bd. of Regents, Policy 6-909.10, ¶ B (6, 7) (Mar. 2001); see 15 U.S.C. § 3710(a); CAL. GOV'T CODE § 13994(i); MICHAEL J. MALINOWSKI, BIOTECHNOLOGY: LAW, BUSINESS AND REGULATION § 1.05[A] (1999).
6. Ariz. Bd. of Regents, Meeting Minutes (Jan. 22-23, 2004) (Presentation of the Ann. Rep. on Technology Transfer at Ariz. State Univ., the Ann. Rep. on Technology Transfer at Northern Ariz. Univ., and the Ann. Rep. on Technology Transfer at the Univ. of Ariz. for Fiscal Year 2003).
7. Univ. of Wash., *UW TechTransfer FY2003 Annual Report* 16, 24 (2004); Univ. of Cal., *UC Technology Transfer 2003 Annual Report* 16, 20 (2003).
8. *Id.*
9. *Id.*

10. *State v. Northwestern Mut. Ins. Co.*, 340 P.2d 200, 201 (Ariz. 1959); David E. Pinsky, *State Constitutional Limitations on Public Industrial Financing: An Historical and Economic Approach*, 111 U. PA. L. REV. 265, 278 (Jan. 1963).
11. *Wistuber v. Paradise Valley Unified Sch. Dist.*, 687 P.2d 354, 357 (Ariz. 1984) (quoting *Tempe v. Pilot Properties*, 527 P.2d 515, 522 (Ariz. Ct. App. 1974)).
12. Aris Persidis & Garry E. Menzel, *Biotechnology Valuation*, 15 NATURE BIOTECHNOLOGY 813 (Aug. 1997); MALINOWSKI, *supra* note 5, § 4.05[A][3].
13. RICHARD W. OLIVER, THE COMING BIOTECH AGE: THE BUSINESS OF BIO-MATERIALS 205 (2000).
14. See Gary P. Pisano, *Using Equity Participation to Support Exchange: Evidence From the Biotechnology Industry*, 5 J. L. ECON. & ORG. 109, 111 (Spring 1989).
15. See OLIVER, *supra* note 13, at 194.
16. See ALICE M. SAPIENZA & DIANA STORK, LEADING BIOTECHNOLOGY ALLIANCES 61 (2001).
17. H.C.R. 2028, 46th Leg., 1st Reg. Sess. (Ariz. 2003).
18. *Day v. Buckeye Water Conservation & Drainage Dist.*, 237 P. 636, 638 (Ariz. 1925) (quoting *Thaanum v. Bynum Irrigation Dist.*, 232 P. 528, 530 (Mont. 1925)).
19. See *Kotterman v. Killian*, 972 P.2d 606, 621, ¶ 54 (Ariz. 1999).
20. H.B. 2403, 46th Leg., 1st Reg. Sess. (Ariz. 2003).
21. See WASH. REV. CODE § 28B.20.289(3)(d) (2004); CAL. GOV'T CODE § 13994.1(d) (2004); Annette Kleiser, *Building Economy*

22. *Through Technology Transfer: University of Washington Start-Ups* 7 CASRIP PUBL'N SERIES: RECONCILING INT'L INTELLECTUAL PROPERTY 127, 128 (2001); see also ICF Consulting, *California's Future: It Starts Here; UC's Contributions to Economic Growth, Health, and Culture* 4-1 (Mar. 2003); Univ. of Wash., *Fueling Our State's Economic Future* 6 (Fall 2002).
22. WASH. CONST. art. VIII, §§ 5, 7; WASH. CONST. art. XII, § 9; CAL. CONST. art. XVI, § 6.
23. WASH. REV. CODE § 28B.20.285 (2004); CAL. GOV'T CODE § 13994(a) (2004); Robert C. Miller, *The University Office of Technology Transfer: The United States* 5 CASRIP SYMPOSIUM PUBL'N SERIES 66, 67 (July 2000).
24. WASH. REV. CODE § 28B.20.283 (2004); 4 UNIVERSITY OF WASHINGTON HANDBOOK § 7(1)(H) (Oct. 27, 2003); *Guidelines on Accepting and Managing Equity When Licensing University Technology*, BUS. & FIN. BULLETIN G-44, ¶ IV(F)(2) (Cal., Feb. 15, 2002); see A.B. 1246, 1993 Reg. Sess., Ch. 446, § 4.5 (Cal. 1993), *repealed* by A.B. 1757, 2003 Reg. Sess., Ch. 229, § 1.8 (Cal. 2003).
25. Joseph A. DiMasi et al., *The Price of Innovation: New Estimates of Drug Development Costs*, 22 J. HEALTH ECON. 151, 167, fig. 2 (2003); Joseph A. DiMasi, *New Drug Development in the United States from 1963 to 1999*, 69 CLINICAL PHARMACOLOGY & THERAPEUTICS 286, 292, fig. 5 (May 2001).
26. *California Legislature Joint Committee on Science and Technology: Hearing on Technology Transfer* 20 (Mar. 18, 1988); GEORGE WOLFF, THE BIOTECH INVESTOR'S BIBLE 67 (2001).