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**BORN IN THE LAB, PROVEN IN THE MARKET:
GATORADE’S IMPACT ON U.S. IP POLICY & RESEARCH
INNOVATION**

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I. INTRODUCTION

“Is it in you?”¹ advertisements for sports beverage Gatorade² once asked consumers.³ Taken in its most literal sense, *it* refers to the product, a thirst-quenching carbohydrate-electrolyte solution⁴ that comes in flavors such as “Lemon-Lime,” “Frost Glacier Freeze,” and “Frost Tropical Mango.”⁵ But the slogan is also rhetorical. *It* is the drive, passion, tenacity, and competitive spirit⁶ present in the world’s greatest athletes, who invariably drink Gatorade.⁷ If consumers want to compete like these athletes do, if they want to “be like Mike,”⁸ then they would benefit from drinking Gatorade as well.

Some can appropriate the slogan in other ways to suggest that listeners are missing some of the Gatorade “magic”⁹: “Is it in you?” the

¹ IS IT IN YOU?, Registration No. 2,300,671.

² Gatorade “is considered the quintessential” “traditional sports beverage . . . designed primarily for rehydration.” Michael B. Williams et al., *Effects of Recovery Beverages on Glycogen Restoration and Endurance Exercise Performance*, 17.1 J. OF STRENGTH & CONDITIONING RESEARCH 12, 13–14 (2003). Chemically, it is a “carbohydrate-electrolyte solution” with other ingredients. Ben Desbrow et al., *Carbohydrate-electrolyte Feedings and 1h Time Trial Cycling Performance*, 14 INT’L J. SPORT NUTRITION & EXERCISE METABOLISM 541, 544 (2004).

³ See DARREN ROVELL, *FIRST IN THIRST: HOW GATORADE TURNED THE SCIENCE OF SWEAT INTO A CULTURAL PHENOMENON* 160 (2006) (describing the “Is it in you” slogan and advertising campaign); see also *Gatorade Commercial – Is It In You*, YOUTUBE, at 0:59 (Nov. 19, 2007), <https://www.youtube.com/watch?v=P77OZBCcsyc> (on-screen text). Gatorade began using “Is it in you?” in 1999, see ROVELL, *supra* note 3, at 160, but it appears that the brand no longer actively uses the phrase as a slogan, see GATORADE, <http://gatorade.com> (last visited Apr. 19, 2020). But see *supra* note 1 (active trademark registration for IS IT IN YOU? indicated as LIVE by USPTO).

⁴ See Desbrow, *supra* note 2, at 544.

⁵ *Your Flavor*, GATORADE, <https://www.gatorade.com/hydration/thirst-quencher> (last visited June 30, 2020).

⁶ *Id.*; see also ROVELL, *supra* note 3, at 160 (“[‘Is It In You?’] was a double entendre that was asking consumers if they had the will in them to battle on the playing field and then if they had the product in them. The double meaning was driven home further by the athletes in the commercial sweating the color of Gatorade’s flavors.”).

⁷ See, e.g., *infra* note 143 (former NBA player Jerry West); see ROVELL, *supra* note 3, at 4 (U.S. Olympic swimmer Michael Phelps); see *infra* note 289 (former NBA basketball player Michael Jordan).

⁸ “Mike” refers to Michael Jordan, a renowned NBA basketball player and subject of a famous Gatorade ad campaign in the 1990s. See *infra* Part VI; see also ROVELL, *supra* note 3, at 107 (jingle lyrics); *Be Like Mike Gatorade Commercial (ORIGINAL)*, YOUTUBE (Oct. 23, 2006), https://www.youtube.com/watch?v=b0AGiq9j_Ak. See generally ROVELL, *supra* note 3, at 105–15.

⁹ See ESPN FILMS, *The Sweat Solution*, SEC, at 1:00 (Feb. 25, 2015), <https://www.secsports.com/article/12212716/sweat-solution> [hereinafter *Sweat Solution*] (“We felt like we had a magic elixir”); *id.* at 13:50 (“We thought it was magic.”) (quoting former UF football player George Dean, referring to an early iteration of Gatorade).

University of Florida may ask universities across the United States, referring to the millions of dollars in royalties generated for the University by Gatorade.¹⁰ “Is it in you?,” the inventors of Gatorade may ask other research scientists, referring to the ingenuity required to solve the problem of fainting football players¹¹ and translate it into a beverage empire.¹² “Is it in you?,” the United States of America may ask itself and other countries, referring to the nation’s willingness to fund basic research¹³ and reform intellectual property¹⁴ policy to foster scientific, industrial, and economic competitiveness.¹⁵

¹⁰ As of 2015, Gatorade had generated more than \$250 million for the University of Florida. Joseph Kays, *Innovation Turns 50: Gatorade Changed UF Forever*, EXPLORE: RES. AT U. FLA. (June 29, 2015), <http://explore.research.ufl.edu/innovation-turns-50.html> (EXPLORE is a publication of the UF Office of Research). See also *infra* Part VII.

¹¹ See *infra* Part II.

¹² See *infra* Part VI.

¹³ “Basic research” (also called “fundamental research”) is “experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.” *Higher Education Research And Development Survey: FY 2019*, NAT’L SCI. F. (2019), <https://www.nsf.gov/statistics/srvyherd/surveys/srvyherd-2019.pdf> [hereinafter *HERD Survey*]; see also Rebecca S. Eisenberg, *Public Research and Private Development: Patents and Technology Transfer in Government-Sponsored Research*, 82 VA. L. REV. 1663, 1721 (1996) (“The university, by its very nature, is oriented to basic and fundamental research as integral part of its education process.”) (quoting *1 Government Patent Policies: Institutional Patent Agreements: Hearings Before the Subcomm. on Monopoly & Anticompetitive Activities of the S. Select Comm. on Small Bus.*, 95th Cong. 306-07 (1978) (statement of Thomas F. Jones, V.P., MIT)). In comparison, “applied research” is “original investigation undertaken in order to acquire new knowledge. It is directed primarily towards a specific, practical aim or objective.” *HERD Survey*, *supra* note 13. Unless specifically stated otherwise, allusions to “research” mean “R&D” in the technical sense. See *infra* note 29.

¹⁴ Intellectual property (or IP) is a legal scheme that provides its owners rights “over the creations of their minds,” usually in the form of an “exclusive right over the use of [their] creation.” *What Are Intellectual Property Rights?*, WTO, https://www.wto.org/english/tratop_e/trips_e/intell_e.htm (last visited Apr. 28, 2020). The four main forms of IP in the U.S. are patents, copyrights, trademarks, and trade secrets. See James A. Dobkin, *Patent Policy in Government Research & Development Contracts*, 53 VA. L. REV. 564, 568 n.26 (1967). A patent is the exclusive right to practice an invention. See 35 U.S.C. § 101 (2018) (“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor . . .”); *id.* § 271 (“[W]hoever without authority makes, uses, offers to sell, or sells any patented invention . . . infringes the patent.”). Although this article discusses research innovations broadly and technology transfer concerns much more than patents, see *infra* note 27 (defining “research innovations”), the Bayh-Dole Act focuses on potentially patentable inventions, see *infra* note 248 (defining “subject invention”).

¹⁵ See *infra* Parts V, VII; see also *infra* note 449.

Water, salts, and glucose may have been the original recipe for the Gatorade solution,¹⁶ but the recipe for Gatorade's success was much more complex. The dramatic, compelling, and convoluted tale of how this "lime-green liquid with . . . strange attributes and an unfamiliar taste"¹⁷ began as a humble university experiment¹⁸ and became a licensed market powerhouse¹⁹ is both partly responsible for and the most instructive example of successful "technology transfer,"²⁰ "the process of getting ideas from lab to markets"²¹—or, more pithily,

¹⁶ See ROVELL, *supra* note 3, at 18 ("The doctors had to concoct a solution—water enhanced with sodium and potassium—that would move through the body quickly to maintain fluid and salt balance during workouts. The Doctors then added a mildly sweet simple [glucose] to immediately raise the players' blood sugar and provide them with that extra energy boost."); see also Composition of Matter for Limiting Dehydration and Fatigue During Periods of Physical Exertion, G.B. Patent No. 1,252,781, at 4 1. 3 (filed Jan. 16, 1969) (describing a solution of sodium chloride, monosodium phosphate, sodium bicarbonate, potassium chloride, monopotassium phosphate, citric acid, calcium cyclamate, glucose, sucrose, and orange flavoring); *Sweat Solution*, *supra* note 9, at 7:30 (co-inventor of Gatorade, Dr. Robert Cade, discussing the inclusion of glucose).

¹⁷ Gilbert Rogin, *The Bottle and the Babe*, SPORTS ILLUSTRATED (July 1, 1968), <https://www.si.com/vault/1968/07/01/612190/the-bottle-and-the-babe>.

¹⁸ See *infra* Part II.

¹⁹ See *infra* Parts III, VI.

²⁰ For a definition of "technology transfer," see *infra* note 21. Technology transfer is commonly shortened to "tech transfer." See, e.g., *What is the Technology Transfer Process?*, ASS'N OF U. TECH. MANAGERS (AUTM), <https://autm.net/about-tech-transfer/what-is-tech-transfer> (last visited Apr. 19, 2020). Of note, "technology transfer" is in some ways a misnomer, as it is about the transfer of much more than technology—but rather knowledge more broadly, particularly creative works and innovations. See, e.g., STANFORD UNIV. OFFICE OF TECH. LICENSING, CREATOR'S GUIDE TO COMMERCIALIZING COPYRIGHTED WORK 6 (2015) [hereinafter STANFORD CREATOR'S GUIDE], https://otl.stanford.edu/sites/g/files/sbiybj10286/f/otl_copyright_guide.pdf ("Stanford owns copyright to creative works subject to sponsored research agreements and other contracts."); see *infra* note 21 ("knowledge transfers"). Accordingly, many universities have rebranded their tech transfer offices to convey this diversity of purpose. See, e.g., *About Us*, U.C. SAN DIEGO OFF. OF INNOVATION & COMMERCIALIZATION, <https://innovation.ucsd.edu/about-us/> (last visited Apr. 29, 2020); *About Us*, GA. TECH OFF. OF INDUSTRY ENGAGEMENT, <https://industry.gatech.edu/about-us> (last visited Apr. 29, 2020); *About*, INNOVATION & NEW VENTURES: NW., <https://www.invo.northwestern.edu/about/index.html> (last visited Apr. 29, 2020).

²¹ Linda Williams, *Academia Wises up on Patents*, L.A. TIMES (Mar. 16, 1990), <https://www.latimes.com/archives/la-xpm-1990-03-16-mn-282-story.html>. This definition handily encompasses most definitions of tech transfer, although there is a near-infinite number of definitions and descriptions of varying detail in literature and public discourse. E.g., Donald S. Siegel et al., *Toward a Model of the Effective Transfer of Scientific Knowledge from Academicians to Practitioners*, 21 J. OF ENGINEERING & TECH. MGMT. 115, 116 (2004) ("The role of the [tech transfer office] is to facilitate commercial knowledge transfers through the licensing to industry of inventions or other forms of intellectual property resulting from university research.").

“turning ideas into impact.”²² Gatorade not only launched the sports beverage industry,²³ but sparked one of the most inspired pieces of legislation in the past fifty years,²⁴ helping the United States retain its industrial and technological eminence through the end of the twentieth century.²⁵

This article is a study of Gatorade’s success, lessons, and impacts on U.S. intellectual property and research²⁶ innovation²⁷ policy. The

Though it precedes the widespread use of the term, the regulations adjacent to the Bayh-Dole Act present one suitable definition of “technology transfer”: the “utilization of inventions arising from . . . research or development.” Bayh-Dole Act, 37 CFR § 404.2 (2019) (“[The Bayh-Dole Act] established today’s tech-transfer framework,” Zach Kyle, *Technology Transfer: A Special Report*, IDAHO STATESMAN (June 25, 2015), <http://legacy.idahostatesman.com/techtransfer/index.html>). *But see* Barry Bozeman, *Technology Transfer and Public Policy: A Review of Research and Theory*, 29 RES. POL’Y 627, 630 (2000) (“[T]echnology transfer is defined in many different ways . . . the search for a canonical definition [of technology transfer] is futile.”). For more on the mechanics of this process, see *infra* note 215.

²² *About: What is Technology Transfer?*, RES.: SAN DIEGO ST. U. TECH. TRANSFER OFF., <https://research.sdsu.edu/tto/about> (last visited Apr. 24, 2020). Ideally, tech transfer in the university context benefits the public interest. *See* NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., *MANAGING UNIVERSITY INTELLECTUAL PROPERTY IN THE PUBLIC INTEREST* 60 (Stephen A. Merrill & Anne-Marie Mazza eds., 2011) (“The first goal of university technology transfer involving IP is the expeditious and wide dissemination of university-generated technology for the public good.”); STANFORD UNIV. ET AL., *IN THE PUBLIC INTEREST: NINE POINTS TO CONSIDER IN LICENSING UNIVERSITY TECHNOLOGY 1* (Mar. 6, 2007) [hereinafter *STANFORD, NINE POINTS*], <https://otl.stanford.edu/documents/whitepaper-10.pdf> (“In the end, we hope to foster thoughtful approaches and encourage creative solutions to complex problems that may arise when universities license technologies in the public interest and for society’s benefit.”).

²³ *See infra* note 356 and accompanying text.

²⁴ *See infra* Part V.

²⁵ *See infra* Part VII.

²⁶ For an expansive definition of research in the context of this article, see *supra* note 13.

²⁷ (n.) “Something newly introduced” or “the act of introducing something new.” *Innovation*, AM. HERITAGE DICTIONARY, <https://ahdictionary.com/word/search.html?q=Innovation> (last visited Apr. 29, 2020). The term “innovation” has become much more prevalent over the last few decades, perhaps to reflect that “creating” new things is more than “inventing.” *C.f.* Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts, and Cooperative Agreements (commonly cited as the “Bayh-Dole Act”), 37 C.F.R. § 401.2(c) (2019) (“any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code . . .”). This trend has been reflected by usage of the terms “innovation” and “invention” in tech transfer names, *see supra* note 20, books, *see* GOOGLE NGRAM VIEWER, <https://books.google.com/ngrams> (search “innovation, invention”) (last visited Apr. 29, 2020) (showing “innovation” becoming more prevalent than “invention” in about 1972), and on the internet. *See* GOOGLE TRENDS, <https://trends.google.com/trends/explore?date=all&geo=US&q=innovation,invention> (last visited Apr. 29, 2020) (showing “innovation becoming more prevalent

history of Gatorade is more than a tale of a commercially successful research invention,²⁸ but a dramatic story about inventor ingenuity, colorful characters, institutional imagination, market appetite, motivation to reform, obscure legal mechanisms, and envious imitators. In sum, the Gatorade saga is a parable about the interplay between the United States' massive R&D²⁹ apparatus, thoughtful IP policy, and economic competitiveness in the developed world.

Parts II and III of this article will explain how Gatorade was “born in the lab”³⁰ thanks to a handful of faculty scientists at the University of Florida,³¹ was “proven on the field,”³² and quickly became a soft drink sensation.³³ Part IV will delve into the heated litigation that followed Gatorade's creation, as the inventors, industrial partners, government, and university clashed for the revenue created by the beverage.³⁴ Then Part V will explain how the controversy surrounding the Gatorade

than “invention” in roughly 2012). Although usage of “innovation” has become so mundane as to dilute its meaning to almost nothing, *see* Baregheh et al., *Towards A Multidisciplinary Definition of Innovation*, 47 MGMT. DECISION 1323, 1323 (2009), this article will endeavor to use the two definitions above. *See supra* note 27.

²⁸ “The term invention means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code . . .” 37 C.F.R. § 401.2(c). This article will use the term “research invention” to denote an invention conceived or first reduced to practice in the performance of R&D activity— analogous to a “subject invention” as defined in the Bayh-Dole Act, but broader, as a research invention need not result from a funding agreement. *See infra* note 253 (defining “subject invention”). “Research innovation” is anything newly created in the performance of R&D activity, or the act of creating something new through R&D activities. *See supra* note 27 (defining “innovation”).

²⁹ “Research and Development (R&D) . . . is creative and systematic work undertaken in order to increase the stock of knowledge—including knowledge of humankind, culture, and society—and to devise new applications of available knowledge. R&D covers three activities . . . basic research, applied research, and experimental development.” *HERD Survey, supra* note 13. Unless stated otherwise, allusions to “research” mean “R&D” in the technical sense.

³⁰ *Born in the Lab*, GATORADE STORE, <https://gatoradeshop.co.nz/pages/born-in-the-lab> (last visited Apr. 19, 2020); *Heritage*, GATORADE, <http://www.gatorade.com.mx/company/heritage> (last visited Apr. 19, 2020); *see also* Karen Dooley, *Celebrating the Gatorade Legacy at the University of Florida*, FLA. PHYSICIAN: UF C. OF MED. (May 19, 2016), <https://floridaphysician.med.ufl.edu/2016/05/19/celebrating-the-gatorade-legacy-at-the-university-of-florida/>. Although Gatorade no longer appears to actively use “born in the lab” as a slogan, *see infra* note 32, the brand still actively touts its laboratory heritage. *See, e.g., Thirst Quencher, supra* note 2 (“Over 50 years in the making, it’s the most scientifically researched and game-tested way to replace the electrolytes you lost in sweat.”).

³¹ *Heritage, supra* note 30.

³² *See* TESTED IN THE LAB PROVEN ON THE FIELD, Registration No. 3,202,040; *Heritage, supra* note 30.

³³ *See infra* Parts II-III.

³⁴ *See infra* Part IV.

litigation initiated policy reform and eventually the Bayh-Dole Act,³⁵ a landmark piece of legislation that overhauled the framework of intellectual property and R&D in the United States.³⁶ Parts VI and VII will detail how Gatorade proved itself in the market over fifty years and provided lessons for other universities in their own tech transfer operations. Finally, Part VIII will describe the benefits universities realize from conducting R&D and commercializing research innovations, despite considerable challenges associated with finding the next Gatorade.³⁷

II. BORN IN THE LAB: FAINTING IN FLORIDA & THE DEVELOPMENT OF GATORADE

The University of Florida³⁸ is a public research university located in Gainesville, Florida.³⁹ The university appropriately nicknamed its athletic teams the Gators⁴⁰ in light of the fact that Florida is the state of residence for over one million American alligators.⁴¹ In the mid-1960s, the University of Florida had a competitive collegiate football team,⁴² albeit one struggling to distinguish itself in the Southeastern Conference (SEC) then led by the University of Alabama.⁴³

³⁵ Pub. L. No. 96-517, 94 Stat. 3015 (1980) (codified as amended at 37 C.F.R. § 401 (2019)).

³⁶ See *infra* Part V.

³⁷ See *infra* Part VII.

³⁸ Frequently referred to throughout this article as “the university,” “Florida,” or “UF.”

³⁹ *History*, U. FLA., <https://www.ufl.edu/about/history/> (last visited Mar. 30, 2020).

⁴⁰ Hereinafter the article may refer to the UF football team as “the Gators.”

⁴¹ See *History*, *supra* note 39; *The Birth of a Nickname*, FLA. TIMES-UNION (Aug. 2, 1948), reprinted in FLA. GATORS, https://floridagators.com/sports/2015/12/10/_overview_p_name.aspx; *American Crocodile & Alligator*, DEFENDERS OF WILDLIFE, <https://defenders.org/wildlife/american-crocodile-and-alligator> (last visited Mar. 30, 2020) (“Roughly 1.25 million alligators live in the state of Florida.”).

⁴² In 53 seasons from 1911 through 1965, the UF football team won 8 or more games only 5 times, none of which were in the 5 most recent seasons. Entering 1966, the only bowl game UF had won was the Gator Bowl, and it had never won the SEC championship since the league’s inception in 1933. *Florida Gators School History*, C. FOOTBALL AT SPORTS-REFERENCE [hereinafter SPORTS-REFERENCE], <https://www.sports-reference.com/cfb/schools/florida/> (last visited Apr. 20, 2020); *Southeastern Conference*, SPORTS-REFERENCE, <https://www.sports-reference.com/cfb/conferences/sec/> (last visited Apr. 20, 2020); see also ROVELL, *supra* note 3, at 27 (“At the time [of the mid-1960s], Florida was by no means a dominant team in the SEC.”).

⁴³ Entering 1966, the University of Alabama football team had earned at least a share of 8 SEC championships, had won 10 or more games in 3 of the past 5 seasons, and had been recognized as national champions in 1961, 1964, and 1965. *Southeastern Conference*, SPORTS-REFERENCE, <https://www.sports-reference.com/cfb/conferences/sec/> (last visited Apr. 20, 2020); *Alabama Crimson Tide School History*, SPORTS-

Until the advent of Gatorade, the conventional wisdom in college football was that water was not only unnecessary, but a sign of weakness.⁴⁴ While that mentality may be atavistic and regressive by modern standards,⁴⁵ water *is* an imperfect hydrator—the body does not absorb water as quickly as needed,⁴⁶ which causes bloating,⁴⁷ cramping,⁴⁸ and shortages in vital nutrients and bodily fluids.⁴⁹ The state-of-the-art alternative to drinking water was sucking on salt tablets.⁵⁰

In August 1965,⁵¹ the sweltering Florida climate⁵² hobbled the Gators: the heat led to the hospitalization of more than 20 players in a matter of days.⁵³ At the time, assistant football coach Dewayne Douglas

REFERENCE, <https://www.sports-reference.com/cfb/schools/alabama/> (last visited Apr. 20, 2020); *College Football National Champions & Seasons*, SPORTS-REFERENCE, <https://www.sports-reference.com/cfb/years/> (last visited Apr. 20, 2020).

⁴⁴ See ROVELL, *supra* note 3, at 13 (“At most college programs at the time, even water wasn’t readily available. One school of thought was that dehydration would toughen up players.”); *Sweat Solution*, *supra* note 9, at 4:00 (“There was a thought by most coaches that water deprivation was the way to go.”) (quoting Chip Hinton, University of Florida linebacker). See generally *Sweat Solution*, *supra* note 9, at 4:00–5:00.

⁴⁵ See ROVELL, *supra* note 3, at 13 (“[T]he machismo attitude that had been pervasive in sports was actually hurting the performance of teams”).

⁴⁶ See Rogin, *supra* note 17 (“The problem is that water is absorbed at a fairly slow rate.”); see also *infra* notes 45, 73, 463.

⁴⁷ See Rogin, *supra* note 17; *Sweat Solution*, *supra* note 9, at 7:00 (“When you guzzled water, you became bloated because it wasn’t absorbed very quickly into your body.”) (quoting UF tight end Jim Yarbrough); see also *infra* notes 74–83.

⁴⁸ See *Sweat Solution*, *supra* note 9, at 7:15 (“You wouldn’t play as well; you’d slow down, because you would actually have cramping issues.”) (quoting Chip Hinton).

⁴⁹ See *infra* notes 62–67.

⁵⁰ See Rogin, *supra* note 17 (“It has been accepted practice to give football players salt tablets to compensate for the loss of sodium . . .”).

⁵¹ See Rogin, *supra* note 17 (“1965, . . . was particularly hot and humid, there were twice as many such fatalities [as the annual average]”). *Sweat Solution*, *supra* note 9, at 4:45.

⁵² The mean max normal temperature in the Gainesville area in August is 90.2 °F. NOWData, *Monthly Climate Normals, Gainesville Area, FL*, NAT’L WEATHER SERV. FORECAST OFF., <https://w2.weather.gov/climate/xmacis.php?wfo=jax>; see also *Sweat Solution*, *supra* note 9, at 0:45 (“There’s always that threat of dying.”) (quoting UF wide receiver George Peek); *id.* at 0:30 (“I don’t believe there’s any hotter place in the world than Florida Field on a Saturday afternoon.”) (quoting Gene Peek); *id.* at 0:40 (“I remember being dead-tired after warmups.”) (quoting UF Heisman winning quarterback Steve Spurrier).

⁵³ *Sweat Solution*, *supra* note 9, at 5:00 (“We put 20 some odd football players in the infirmary over the weekend for serious dehydration.”) (quoting Dr. Shires, quoting Dewayne Douglas, UF ass’t football coach and Sec. Officer, Shands Hospital). See generally ROVELL, *supra* note 3, at 10–41 (regarding the discovery and initial development of Gatorade).

was also working as a security officer at the University of Florida's Shands Hospital.⁵⁴ Douglas approached his occasional coffee buddy, Dr. Robert Cade,⁵⁵ and his medical colleagues, seeking a solution to the Gators' severe dehydration problem.⁵⁶ As an associate professor of medicine working in the University's renal division,⁵⁷ Dr. Cade was working under a research grant from the Department of Health, Education, and Welfare (HEW)⁵⁸ in addition to his teaching and other medical center duties.⁵⁹ Dr. Cade—an eccentric⁶⁰ dilettante⁶¹ known for his Friday afternoon mixology sessions in the lab⁶²—was unable to resist the temptation to craft a concoction to combat the epidemic of fainting players on Florida's football team.⁶³

⁵⁴ *Sweat Solution*, *supra* note 9, at 4:50 (Julie Douglas, daughter of Dewayne Douglas).

⁵⁵ *Id.* (“It wasn’t uncommon for [Dewayne Douglas] to have coffee with Dr. Cade and his colleagues.”) (quoting Julie Douglas).

⁵⁶ *Id.* (“We were having lunch and he said, . . . ‘We got to do something.’”) (referring to the “serious dehydration” of players) (quoting Dr. Shires, quoting Dewayne Douglas).

⁵⁷ Or, as Dr. Cade called it, “the wee-wee lab.” Rogin, *supra* note 17 (quoting Dr. Cade describing his role as head of the Renal and Electrolyte Division); *see also* ROVELL, *supra* note 3, at 9 (describing Dr. Cade as an “associate professor of medicine who specialized in kidney disease.”).

⁵⁸ *See infra* note 163 (discussion on HEW).

⁵⁹ *See infra* Part IV.

⁶⁰ *See* ROVELL, *supra* note 3, at 66 (describing Cade as “a typical eccentric”); Rogin, *supra* note 17 (describing Dr. Cade as “lovably eccentric”) (quoting one of Dr. Cade’s interns); *see also* Op-Ed, *The Gator Fumble Over Royalty from Gatorade*, Ocala Star-Banner, Aug. 11, 1972, at 4A [hereinafter *Gator Fumble*] (describing Dr. Cade as “effervescent”); *e.g.*, ROVELL, *supra* note 3, at 69 (describing Dr. Cade arguing that the government’s alleged ownership over Gatorade was “involuntary servitude” and “a violation of the Constitution”); Rogin, *supra* note 17 (discussing Dr. Cade allegedly getting arrested for riding his bike while intoxicated and being pulled over for speeding on his bicycle).

⁶¹ *E.g.*, Rogin, *supra* note 17 (Dr. Cade’s alcoholic-beverage mixing lessons, poetry recitations, D-average in high school, and violin playing); *see also, e.g.*, Dave Curtis, *Making a Splash*, ORLANDO SENTINEL (Apr. 14, 2007), http://articles.orlandosentinel.com/2007-04-14/sports/GATORADE14_1_gatorade-cade-uf (Dr. Cade’s collection of Studebakers); *Sweat Solution*, *supra* note 9, at 2:55 (Dr. Cade’s breeding of roses); *see infra* note 393 (Dr. Cade’s variety of inventions in addition to Gatorade).

⁶² *See Sweat Solution*, *supra* note 9, at 2:00 (“Every Friday afternoon he would mix up an alcoholic beverage using lab alcohol to get students and house officers to come to the laboratory and talk about kidney disease.”) (quoting Dr. Shires).

⁶³ *Sweat Solution*, *supra* note 9, at 5:20 (“He had the idea that there was some drink or some solution to this dehydration problem.”) (quoting UF head football coach Ray Graves); *id.* (“We said, ‘We’d love to study the team and see if there’s any way we might impact positively on them.’”) (quoting Dr. Shires, quoting himself and his colleagues) (5:30); *id.* (“I give all credit to Bob, Bob said, ‘Let’s see if we can do it.’”) (quoting Dr. Shires, quoting Dr. Cade).

Cade and his colleagues, including Dr. Dana Shires, Dr. James Free, and Dr. Alejandro de Quesada,⁶⁴ performed tests on a brave group of guinea-pig Gators to determine what changes their bodies endured during the strain of football practice in the unforgiving Florida heat, particularly the loss of electrolytes.⁶⁵ The players, some of whom were shedding as many as 20 pounds during practice,⁶⁶ were losing water, blood volume, sugar, potassium, and sodium through their sweat,⁶⁷ nearly to the point of passing out.⁶⁸ The depletion of these bodily elements during practices and games was catastrophic.⁶⁹

Focusing on the lost electrolytes,⁷⁰ Dr. Cade and his team devised a solution of water,⁷¹ glucose,⁷² sodium,⁷³ and potassium⁷⁴ to replenish what the players were losing during practice—and to do it faster than

⁶⁴ See ROVELL, *supra* note 3, at 15; *Heritage*, *supra* note 30.

⁶⁵ See generally *Sweat Solution*, *supra* note 9, at 5:45-7:30; see also *id.* at 6:25 (“We designed a study in which we would measure the loss of electrolytes and fluids while they were exercising.”) (quoting Dr. Shires); *id.* at 6:55 (“We measured as many electrolytes as we could measure before and after.”) (quoting Dr. Free).

⁶⁶ *Compare Sweat Solution*, *supra* note 9, at 6:55 (quoting Dr. Shires), with *infra* note 136 (Kansas City Chiefs’ Jerry Mays).

⁶⁷ See ROVELL, *supra* note 3, at 16 (“Throughout the two-hour practice . . . [the two players tested] had lost about 25 percent of their total body sodium, an amount that could have been lethally dangerous.”); Rogin, *supra* note 17 (“[T]here is a marked decrease in extracellular fluid and plasma volumes [during football practice].”); *id.* (“Football players don’t [urinate during practice], because they are volume depleted and the kidney is conserving water and salt in a battle to maintain blood volume.”); *id.* (“[T]he vital substances lost in perspiration [include] water, sodium, [and] potassium.”).

⁶⁸ See ROVELL, *supra* note 3, at 17 (“Dehydration can cause headaches, dizziness, and muscle cramps, with heat stroke being the most extreme result.”).

⁶⁹ See Kays, *supra* note 10 (“The players’ electrolytes were completely out of balance, their blood sugar was low and their total blood volume was low. The impact on the body of this upheaval in chemistry was profound.”).

⁷⁰ *Sweat Solution*, *supra* note 9, at 7:55 (“His hypothesis was, if he could put electrolytes into the athlete, that the performance because of the increased electrolytes would improve. And that was really revolutionary for the time.”) (quoting Chip Hinton). Electrolytes are salt solutions. See Rogin, *supra* note 17; e.g., *id.* (potassium chloride).

⁷¹ See Rogin, *supra* note 17.

⁷² See *id.*; *Sweat Solution*, *supra* note 9, at 7:27–7:38 (“Glucose is a simple sugar . . . when that comes into the intestine, glucose just goes right on through, and it carries other things with it, like water.”) (quoting Dr. Cade).

⁷³ See Rogin, *supra* note 17.

⁷⁴ See ROVELL, *supra* note 3, at 18; see also Rogin, *supra* note 17 (describing that Gatorade contained water plus glucose, sodium bicarbonate, sodium orthophosphate, potassium orthophosphate and potassium chloride).

water⁷⁵ without bloating.⁷⁶ But the scientists had to overcome a few design challenges to make an ingestible beverage. For one, the first batch of the concoction tasted “putrid.”⁷⁷ Put another way, it tasted “like piss.”⁷⁸ For another problem, the glucose initially “turned into rock” rather than dissolving in water.⁷⁹

It was not likely the Florida scientists⁸⁰ were going to learn about the positive effects of their soft cocktail if the football players were unable to stomach it,⁸¹ so Dr. Cade’s wife suggested that the doctors add lemon juice.⁸² The scientists experienced some product challenges implementing this suggestion, ultimately settling on a terpene-free lemon extract.⁸³ While unlikely to be imbibed for purely gustatory

⁷⁵ See Rogin, *supra* note 17 (“Gatorade is a beverage which quenches thirst, replaces the vital substances lost in perspiration—water, sodium, potassium—and is absorbed considerably faster than water.”); *id.* (“However, if sodium and potassium salts are added the absorption rate is enhanced. The addition of glucose further speeds up absorption.”); Williams, *supra* note 21 (“But Cade first asked his department at the university to develop and patent his idea for a liquid that when consumed entered the blood stream about 10 times faster than water.”).

⁷⁶ See Rogin, *supra* note 17 (“It can be consumed ad libitum in large amounts (up to six quarts during a football or basketball game) without causing any sensation of fullness and without electrolyte abnormalities.”) (quoting Dr. Cade). Compare *id.* (“If I had that much water in me [instead of Gatorade] I couldn’t walk, let alone run.”) (quoting Los Angeles Lakers guard Jerry West), with *Sweat Solution*, *supra* note 9, at 8:10–8:12 (“You could guzzle it and not get bloated.”).

⁷⁷ Rogin, *supra* note 17 (“unflavored Gatorade tastes like salt water”); see also *Sweat Solution*, *supra* note 9, at 9:30–9:31 (quoting Gene Peek); *id.* at 9:34–9:35 (“Guys were spitting it out.”) (quoting Jim Yarbrough); *id.* at 9:41–9:42 (“It tasted horrible.”) (quoting UF defensive back Allen Trammell); *id.* at 9:52–9:53 (“It tasted awful”) (quoting Mary Cade, wife of Dr. Robert Cade).

⁷⁸ ROVELL, *supra* note 3, at 22 (quoting UF offensive lineman Larry Gagner).

⁷⁹ See, e.g., Rogin, *supra* note 17 (“Worse yet were their attempts to dissolve glucose. ‘We poured water on it and it turned into rock,’ he recalls.”) (quoting Dr. Cade).

⁸⁰ The article will generically refer to Dr. Cade and his team as “the scientists,” “the creators,” or “the inventors.” See *Sweat Solution*, *supra* note 9, at 10:12–10:17 (“So a team of scientists developed something my hot and sweaty boys *could* drink during the game.”) (quoting footage of UF head football coach Ray Graves) (emphasis added); *id.* at 5:51–5:54 (“Dr. Cade to us was more of a scientist than a doctor.”) (quoting Jim Yarbrough).

⁸¹ See Rogin, *supra* note 17 (“Gatorade won’t work unless the athletes are willing to drink it . . .”).

⁸² See Kays, *supra* note 10 (“By all accounts, the first batch tasted so bad none of the scientists could stomach it, but when Cade’s wife suggested adding lemon juice, the drink that would soon become known as Gatorade was born.”); *Sweat Solution*, *supra* note 9, at 9:58–10:03 (“When he came home [Dr. Cade] asked me, ‘What could you do with it,’ and I said, ‘How about lemon?’”) (quoting Mary Cade).

⁸³ See Rogin, *supra* note 17. Squeezing lemons caused what Dr. Cade called “lemon-squeezers’ cramp,” so the scientists tried Rea-Lemon, a product that made the

reasons, the players tolerated the beverage.⁸⁴ Within weeks, the freshmen players drinking the creation during practices developed an affinity for it.⁸⁵

III. PROVEN ON THE FIELD: A GROWING REPUTATION & EARLY COMMERCIALIZATION EFFORTS

At the start,⁸⁶ Gators head football coach Ray Graves was unwilling to let Dr. Cade and his team conduct experiments on his own varsity team.⁸⁷ The scientists' breakthrough occurred during the so-called "Toilet Bowl"—a weekly scrimmage between the freshmen and the B team (the second unit behind the starters)⁸⁸—during which the freshmen drank the scientists' prototyped beverage while the B team did not.⁸⁹ Down 13–0 at halftime against a team of more mature and experienced players,⁹⁰ the freshmen reversed their fortunes in the second half to win

solution tasted like turpentine due to the terpenes in lemons. *Id.* Dr. Cade ultimately found a terpene-free lemon extract that happened to be sourced in Frostproof, FL. *Id.*

⁸⁴ *Sweat Solution*, *supra* note 9, at 10:08–10:10 ("Believe it or not, the lemon juice helped.") (quoting Chip Hinton); *see also* ROVELL, *supra* note 3, at 46 ("We knew it would never be Coca-Cola . . .") (quoting Stokely-Van Camp chemist June Davis).

⁸⁵ *See Sweat Solution*, *supra* note 9, at 8:04–8:10 ("Within six weeks we were giving stuff we would mix up to the freshman, and they were loving it.") (quoting Gatorade co-inventor Dr. Shires); *id.* at 8:10–8:12 ("You could guzzle it and not get bloated.") (8:25 mark) (quoting Jim Yarbrough).

⁸⁶ *See id.* at 5:48–5:49 ("They said it was an experiment") (quoting Jim Yarbrough).

⁸⁷ *See id.* at 8:36–8:39 ("Ten freshmen players underwent the initial testing."); *id.* at 5:28–5:32 ("Start out maybe with the freshmen and the B team. I'm not going to start out with the varsity.") (quoting UF head football coach Ray Graves); *id.* at 5:33–5:36 ("Keep your hands off my varsity,' that's a direct quote.") (quoting Dr. Shires, quoting Coach Graves).

⁸⁸ *See* ROVELL, *supra* note 3, at 19; *Sweat Solution*, *supra* note 9, at 8:43–8:47. *See generally id.* at 8:43–9:26. It is ironic that the Toilet Bowl would be won in part thanks to an early iteration of Gatorade that has been remarked to have tasted like "toilet bowl cleaner." ROVELL, *supra* note 3, at 18 ("[T]he first drink tasted much like toilet bowl cleaner.") (attributed to Dr. Shires).

⁸⁹ *See Sweat Solution*, *supra* note 9, at 8:59–9:01.

⁹⁰ *See* ROVELL, *supra* note 3, at 19 ("Even though the freshmen usually had more raw talent, the B team was always favored thanks to having more experience and size."); *Sweat Solution*, *supra* note 9, at 9:04–9:06 ("We weren't supposed to have a chance.") (quoting George Dean).

the exhibition game⁹¹ by virtue of their endurance—a difference they attributed to the scientists’ concoction.⁹²

Since their creation demonstrated some merit in its “real first test,”⁹³ the scientists’ miracle electrolyte solution needed a name. The creators brainstormed a handful of names for the beverage, including Cade’s Cola and Cade’s Ade.⁹⁴ But creator Dr. James Free blurted out the name that stuck: Gatorade.⁹⁵ The team rejected Gator-Aid—as the seemingly trivial homophonic difference may have impacted whether the beverage required regulatory approval.⁹⁶

Despite continuing skepticism from head coach Graves,⁹⁷ one of the convinced coaches covertly had the doctors prepare a batch to be on the sidelines one fall Saturday for Florida’s game against LSU.⁹⁸ With Gatorade spontaneously appearing on their sideline,⁹⁹ the Gators defeated the fifth-ranked LSU Tigers 14–7.¹⁰⁰ The Gators would

⁹¹ See ROVELL, *supra* note 3, at 19 (“[T]he second half was owned by the freshmen. They scored touchdown after touchdown and didn’t give up a point” after halftime.); *Sweat Solution*, *supra* note 9, at 9:11–9:12 (“The freshmen whipped their ass.”) (quoting Dr. Shires).

⁹² See ROVELL, *supra* note 3, at 20 (“The freshman apparently didn’t tire out like the B team did . . .”); *id.* (“Gatorade definitely helped . . . I remember feeling the lift it gave me after I drank it.”) (quoting UF quarterback Larry Rentz); *Sweat Solution*, *supra* note 9, at 9:08–9:10 (“They got tired, and we [the freshmen] didn’t.”) (quoting George Dean).

⁹³ *Sweat Solution*, *supra* note 9, at 8:55–8:57 (referring to the Toilet Bowl) (quoting Chip Hinton).

⁹⁴ See ROVELL, *supra* note 3, at 23. The doctors rejected Gatorade homonym Gator-Aid, as it implied a medicinal use that may require clinical testing. *See id.*

⁹⁵ *See id.* at 23. UF’s football team had the nickname “Gators.” *See the Birth of a Nickname*, *supra* note 41. “-ade” is a suffix denoting “a sweetened beverage of: limeade.” *See -ade*, AM. HERITAGE DICTIONARY, <https://ahdictionary.com/word/search.html?q=-ade> (last visited July 9, 2020). The scientists’ use of “-ade” may be incorrect, at least in the literal sense, as the beverage is not literally derived from alligators. But it is arguably correct in the metaphorical sense (as in, “a sweetened beverage [made] of the figurative perspiration and ingenuity of the Gators.”) or using an alternate definition. *See -ade*, DICTIONARY.COM, <https://www.dictionary.com/browse/-ade?s=t> (last visited July 9, 2020) (“a noun suffix indicating a drink made of a particular fruit, normally a citrus: lemonade.”); *see also* *Sweat Solution*, *supra* note 9, at 10:48–10:57 (“My thoughts went to, well, it’s a fluid. A fluid like lemonade. It’s to help the Gators, what about ‘Gator-ade.’”) (quoting Dr. Free).

⁹⁶ *See* ROVELL, *supra* note 3, at 23.

⁹⁷ *See id.* at 20 (“Though the concoction seemed to help [the freshmen in the Toilet Bowl], Graves was still hesitant and was not convinced that it worked.”).

⁹⁸ *See id.* at 20–21; Rogin, *supra* note 17 (“when it was first served in a game (UF vs. LSU in 1965)”).

⁹⁹ *See* ROVELL, *supra* note 3, at 21 (“The first time, it just kind of showed up on the sidelines.”) (quoting UF defensive tackle Doug Splane); *id.* (“[Head trainer Jim] Cunningham was convinced and ordered a batch of Gatorade for the varsity team, unbeknownst to Coach Graves.”).

¹⁰⁰ *See id.* at 21–22.

continue to finish the 1965 season 7–4, earning Florida its first Sugar Bowl appearance.¹⁰¹

The following season,¹⁰² Gatorade had its first signature moment: the Florida Gators came from behind after trailing at halftime, defeating the Auburn Tigers 30–27 in Gainesville on a game-winning field goal and improving to a 7–0 record on the season.¹⁰³ Throughout the 1966 season, the University of Florida football team earned a reputation for finishing strong in the second half,¹⁰⁴ on its way to one of the best seasons in program history.¹⁰⁵ Like any good origin story, anecdotes of Gatorade’s effectiveness spread quickly, and before long the whole country knew the legend of Gatorade,¹⁰⁶ its reputation surpassing any actual proof of its ability to give players superior endurance.¹⁰⁷ After Florida’s 27–12 victory over Georgia Tech in the 1967 Orange Bowl,¹⁰⁸ Yellow Jackets Coach Bobby Dodd said, “We didn’t have Gatorade. That made the difference.”¹⁰⁹

¹⁰¹ See *Florida Gators School History*, *supra* note 42.

¹⁰² The Gators drank Gatorade throughout the 1966 season. See *Sweat Solution*, *supra* note 9, at 12:36–12:39 (subtitle).

¹⁰³ See ROVELL, *supra* note 3, at 29.

¹⁰⁴ See Rogin, *supra* note 17 (“Since 1965, when the Florida football team began drinking Gatorade, it has outscored its opponents in the second half by 379–221; in the first half the totals are 290–204.”); ROVELL, *supra* note 3, at 27 (“Florida [] proved to be a better team in the second half of the 1966 season.”); *Sweat Solution*, *supra* note 9, at 13:03–13:08 (“As it turned out, throughout the year, we managed to win in the fourth quarter.”) (quoting Chip Hinton).

¹⁰⁵ The Florida Gators started the season 7–0, finished 9–2, and earned Florida’s first Orange Bowl victory. See *Florida Gators School History*, *supra* note 42.

¹⁰⁶ E.g., ROVELL, *supra* note 3, at 30–31 (contributing to Gatorade’s reputation was an apocryphal tale about a group of “thugs” in trucks who forced Florida’s Gatorade truck off the road on the way to Jacksonville before a game against the University of Georgia Bulldogs).

¹⁰⁷ See Rogin, *supra* note 17 (“I’d like to think Gatorade gives me more stamina and endurance. . . . I can’t prove it, but as long as I feel it does me some good I’ll continue to drink it.”) (quoting Los Angeles Lakers forward Elgin Baylor); *Sweat Solution*, *supra* note 9, at 13:09–13:21 (“Now I don’t know how much of that was [quarterback] Steve Spurrier’s ability to beat them in the fourth quarter and how much was Gatorade. But, we thought it was Gatorade—and I guess that was half the war.”) (quoting Chip Hinton). *But see* Rogin, *supra* note 17 (“Preliminary observations suggest that Gatorade . . . enables an athlete to perform at a higher level for a longer period of time . . .”).

¹⁰⁸ *1966 Florida Gators Schedule and Results*, SPORTS-REFERENCE, <https://www.sports-reference.com/cfb/schools/florida/1966-schedule.html> (last visited July 9, 2020).

¹⁰⁹ Rogin, *supra* note 17.

At first, the inventors did not see the market potential for the beverage they had created.¹¹⁰ But before the 1966 season,¹¹¹ Dr. Cade had approached the University of Florida with a proposition: For \$10,000, the university could own Gatorade and a substantial portion of the royalties that could come with it.¹¹² The University declined because of “doubts about its patentability, development costs, and market potential.”¹¹³

But as the inventors began to understand the market potential of Gatorade, they sought alternative avenues of commercialization.¹¹⁴ Without the means to undertake development, production, sales, marketing, and distribution themselves,¹¹⁵ early efforts to monetize Gatorade produced meager returns.¹¹⁶ Then, in the spring of 1966, an internist in the kidney clinic with Dr. Cade and Dr. Shires named Kent Bradley took a job at Indiana University Medical School.¹¹⁷ Through a series of fortuitous social collisions while at Indiana,¹¹⁸ Bradley introduced Gatorade to management at Stokely-Van Camp (Stokely),¹¹⁹

¹¹⁰ *Sweat Solution*, *supra* note 9, at 15:18–15:31 (“We thought of it as something for athletes who would use it during a game. . . . We didn’t even think of marketing it to the general public.”) (quoting Dr. Cade).

¹¹¹ See ROVELL, *supra* note 3, at 25.

¹¹² Darren Rovell, *Royalties for Gatorade Trust Surpass \$1 Billion*, ESPN (Oct. 1, 2015), http://espn.go.com/college-football/story/_/id/13789009/royalties-gatorade-inventors-surpass-1-billion (“Cade offered the product in its entirety to the university’s head of sponsored research in 1966 in exchange for \$10,000.”); see also ROVELL, *supra* note 3, at 26; Williams, *supra* note 21 (“But Cade first asked his department at the university to develop and patent his idea . . . He was turned down.”).

¹¹³ Bruce Galphin, *Gatorade’s Creator Threatened with Suit*, WASH. POST, reprinted in TUSCALOOSA NEWS, July 10, 1970, at 5; see also ROVELL, *supra* note 3, at 26 (“[H]e was concerned that he would get fired if it didn’t work.”) (quoting Dr. Robert Cade, alluding to UF’s head of sponsored research).

¹¹⁴ See ROVELL, *supra* note 3, at 36.

¹¹⁵ See ROVELL, *supra* note 3, at 37 (“[Dr. Cade] was happy that people were so excited about the product, but finding someone who would take on the responsibility of making and selling it was a different proposition.”); *id.* (“We were kind of discouraged. . . . None of us really had the money to support it.”) (quoting Gatorade co-inventor Dr. de Quesada).

¹¹⁶ See *id.* at 36–39 (detailing high schools’ lack of reliability in paying Dr. Cade for Gatorade and the small sums paid for the beverage by early clients, like the Universities of Richmond and Miami (Ohio)).

¹¹⁷ See ROVELL, *supra* note 3, at 38.

¹¹⁸ While at Indiana University Medical School, Bradley met Conrad Johnston, an endocrinologist at Indiana. ROVELL, *supra* note 3, at 38. Dr. Johnston’s wife’s sister was married to Alfred Stokely, who was chairman of the board of Stokely. *Id.*

¹¹⁹ See ROVELL, *supra* note 3, at 38 (“[B]radley made his way to [Stokely’s] Christmas party in 1966, where, by chance, he met Stokely and told him about the unique product made by a bunch of doctors in Gainesville. Stokely was initially intrigued . . .”). Dr. Shires and Dr. de Quesada eventually departed UF to work at the

headquartered in Indianapolis.¹²⁰ Although Stokely had successful beverage lines,¹²¹ it was best known for its pork and beans used in war rations.¹²²

Within months,¹²³ Stokely negotiated and secured an exclusive license to commercialize Gatorade in exchange for a \$5,000 signing bonus and a royalty of five cents for every gallon of Gatorade sold.¹²⁴ Upon conclusion of licensing negotiations, the inventors formed the Gatorade Trust to manage the royalties owed to the inventors.¹²⁵ To protect their licensed product and facilitate commercialization, Stokely shrewdly sought intellectual property protection by trademarking the name “Gatorade”¹²⁶ and seeking patent protection for such items as

Indiana University School of Medicine. See Greg Andrews, *New Beverage Stirs Old Dispute Over Gatorade*, INDIANAPOLIS BUS. J., Oct. 28, 1991, at A1.

¹²⁰ THE ENCYCLOPEDIA OF INDIANAPOLIS 1301 (David J. Bodenhamer & Robert G. Barrows, eds. 1994) (“William B. Stokely, Jr. . . . relocated to new headquarters in Indianapolis in 1933 when the company merged with Van Camp Packing Company. . . . In 1944 Stokely-Van Camp, Inc., became the official corporate name. . . . In 1967 Stokely-Van Camp acquired the rights to produce and market the now-successful Gatorade line of beverages.”).

¹²¹ See ROVELL, *supra* note 3, at 43–44.

¹²² See ROVELL, *supra* note 3, at 43 (“The Type C [Ration] was a box made for soldiers that included a day’s worth of food, including the company’s bestselling Pork & Beans, beef, and candy.”).

¹²³ It is valid to wonder if Stokely would have even been interested in Gatorade if they were unable to acquire an exclusive license. See ROVELL, *supra* note 3, at 42 (“[Stokely vice president and director of sales and marketing Hank] Warren wasn’t sure what the board would think, but right on the spot, he signed a letter of intent to look at the product. They came up with a three-month exclusive negotiating window.”).

¹²⁴ ROVELL, *supra* note 3, at 46; *Gator Fumble*, *supra* note 60; see also Rogin, *supra* note 17 (“Last fall Dr. Cade sold Gatorade on a royalty basis to Stokely-Van Camp. . . .”). But see David E. Rosenbaum, *U.S. Sues Gatorade Maker for Its Profits, Saying Grant Financed Developer*, N.Y. TIMES (Aug. 12, 1971) <https://www.nytimes.com/1971/08/12/archives/us-sues-gatorade-maker-for-its-profits-saying-grant-financed.html?searchResultPosition=15> (reporting in 1969 that Stokely’s royalty rate to the Gatorade Trust was three cents on each gallon sold plus an annual royalty of \$25,000); Rovell, *supra* note 112 (reporting in 1993 that Stokely’s royalty rate to the Gatorade Trust was 1.9–3.6 percent of net sales, depending on the amount of Gatorade sold). For more information on licensing in the context of technology transfer and research innovations, see *infra* note 214–15.

¹²⁵ See ROVELL, *supra* note 3, at 45; Karen Grassmuck, *Gatorade Brings U. of Florida’s \$17-Million and 5 Court Actions*, CHRON. HIGHER EDUC. (June 12, 1991), <https://www.chronicle.com/article/Gatorade-Brings-U-of-Florida/87070>; Andrews, *supra* note 119. There were nine original trust members, with varying numbers of shares. *Id.* But see Andrews, *supra* note 119 (citing 10 trust beneficiaries). What became Bank One Indianapolis—then called American Fletcher National Bank—is the trustee of the Gatorade trust. Andrews, *supra* note 119.

¹²⁶ See, e.g., GATORADE, Registration No. 848,245 (filed Sept. 21, 1967) (Registrant: STOKELY-VAN CAMP, INC.). But see Grassmuck, *supra* note 125

“Composition of Matter for Limiting Dehydration and Fatigue During Periods of Physical Exertion.”¹²⁷ Where the inventors were less knowledgeable on how to make a product consumers would actually want to drink,¹²⁸ Stokely immediately worked to make Gatorade more appealing to consumers by changing the packaging,¹²⁹ perfecting the

(suggesting UF trademarked the brand name for Gatorade). A search revealed 150 trademark applications containing “Gatorade.” *E.g.*, GATORADE THIRST QUENCHER, Registration No. 1,618,668; BE LIKE MIKE DRINK GATORADE, Registration No. 1,749,144; GATORADE THE SPORTS FUEL COMPANY, Registration No. 5,025,026.

¹²⁷ This invention relates to novel compositions of matter for replacing body fluids, salts, and minerals lost by an individual during vigorous physical activity and more particularly relates to a method of limiting dehydration of such individuals during the periods of vigorous activity particularly in areas of heat and excessive temperatures.

Composition of Matter for Limiting Dehydration and Fatigue During Periods of Physical Exertion, G.B. Patent No. 1,252,781 at 1 l. 11 (filed Jan. 16, 1969).

Other research indicated that Stokely had three pending patent applications, all of which it abandoned as part of a settlement with the U.S. government. *See infra* note 184. Based on patent applications outside the U.S. (some of which became issued patents) claiming priority to the U.S. applications, all three patent applications were provisional patent applications that Stokely did not convert to non-provisional patent applications. The U.S. Patent and Trademark Office does not publish provisional patent applications. *See, e.g.*, Neth. Patent No. 6,808,084 A; Lux. Patent Application No. 56,222 A1; Fr. Patent No. 1,570,800 A (issued); Spain Pat. No. 35,714 A0; Ger. Patent No. 1,767,652 A1; Gr. Brit. Patent No. 1,252,781; Swed. Patent No. 372,170 B; Ger. Patent No. 1,767,652 B2; Neth. Patent No. 156,603 B; Swed. Patent No. 372,170 C (all claiming priority to U.S. Provisional Patent No. 644,318 (filed June 6, 1967)); Gr. Brit. Patent No. 1,204,055 (claiming priority to U.S. Provisional Patent No. 759,209 (filed Sept. 10, 1968)); Isr. Patent Application No. 33,521 D0; Ger. Patent Application No. 1,956,149 A1; Isr. Patent Application No. 33,521 A (claiming priority to U.S. Provisional Patent No. 829,797 (filed June 1, 1969)); *see also* Can. Patent No. 897,065 (claiming priority to no U.S. patent application). The author could find no evidence of a published U.S. patent application related to a Gatorade product before 1991. *See* Compositions and Methods for Achieving Improved Physiological Response to Exercise, U.S. Patent No. 4,981,687 (filed July 17, 1989); *see also* ROVELL, *supra* note 3, at 36 (describing how the doctors, with help from professional colleague Eugene Tubbs, “found a lawyer in Orlando, who began the process of registering the initial patent for the sports drink and trademarking its unique name.”).

¹²⁸ *See supra* text accompanying notes 77–79 (taste); *see also* Rogin, *supra* note 17 (“When the product came to us it had a relatively flat taste, for the art of flavor had not come to the docs.”); *Sweat Solution*, *supra* note 9, at 15:18–15:31 (“We thought of it as something for athletes who would use it during a game . . . We didn’t even think of marketing it to the general public.”) (quoting Dr. Cade).

¹²⁹ *See* ROVELL, *supra* note 3, at 63 (“Stokely was back, and [Gatorade] introduced an icon that would soon become synonymous with the Gatorade brand—the lightning bolt.”).

taste,¹³⁰ altering the color,¹³¹ and adding cloudiness that “connotes substance to a drink.”¹³²

While the Gatorade inventors may have disagreed with some changes they found “physiologically ridiculous,”¹³³ their vision of the beverage was sure to be different than a licensee interested in putting Gatorade “in every home” in America.¹³⁴ Although Gatorade did not thrive commercially overnight,¹³⁵ its legend as a miraculous performance enhancer continued to grow.¹³⁶ It developed cult status as journalists used Gatorade as a *deus ex machina*¹³⁷ to create compelling copy and neat narratives.¹³⁸ Still in its infancy as a commercial product, Gatorade became the official sports drink of the National Football League (NFL).¹³⁹ The NFL’s Green Bay Packers and Kansas City Chiefs—winners of three of the first four Super Bowls¹⁴⁰—both drank

¹³⁰ See Rogin, *supra* note 17 (“Gatorade now has a distinct lemon-lime taste and is considerably sweeter than Dr. Cade’s home brew.”). Stokely’s national sales manager called Gatorade “really awful” before Stokely altered Gatorade’s flavor. ROVELL, *supra* note 3, at 42 (quoting Bob Rice).

¹³¹ See Rogin, *supra* note 17 (“It is also greenish yellow and opaque, whereas the original Gatorade was clear and colorless.”).

¹³² *Id.* (“[A] cloudy product is more popular than a clear one—it connotes substance to a drink.”) (quoting Jack Mooney). See generally ROVELL, *supra* note 3 at 46 (“[I]n order to make more money, Stokely had a couple things that it had to take care of before Gatorade hit the market.”).

¹³³ Rogin, *supra* note 17 (“If you’re thirsty you don’t drink peach juice . . . This is physiologically ridiculous.”) (quoting Dr. Cade).

¹³⁴ *Id.* (“We can live with the team business, . . . but Gatorade’s so good we want it in every home. We want to see what your wife says, your mother, as opposed to the 280-pound tackle.”) (quoting Jack Mooney).

¹³⁵ See Joe Kays & Arline Phillips-Han, *Gatorade: The Idea that Launched an Industry*, EXPLORE, Spring 2003, at 4, 5 (“[In 1967] Stokely-Van Camp [began] selling hundreds of thousands of gallons of Gatorade annually. . . . The next few years were marked by a series of legal disputes that were ultimately settled in 1973. . . .”), <https://research.ufl.edu/publications/explore/v08n1/gatorade.html>.

¹³⁶ See *id.* at 5 (“In 1983, the Quaker Oats Co. purchased Stokely-Van Camp and, as UF marketing Professor Richard Lutz describes it, ‘launched Gatorade from a sleepy little brand into superstardom.’”).

¹³⁷ *Deus ex Machina*, TV TROPES, <https://tvtropes.org/pmwiki/pmwiki.php/Main/DeusExMachina> (last visited July 9, 2020) (“A *Deus ex Machina* . . . is when some new event, character, ability, or object solves a seemingly unsolvable problem in a sudden, unexpected way.”).

¹³⁸ E.g., Neil Amdur, *Florida’s Pause that Refreshes: “Nip of Gatorade”*, MIAMI HERALD, Nov. 30, 1966, at 4D; Furman Bisher, *Dr. Cade’s Magic Elixir*, TAMPA TRIB.-NEWS, May 31, 1970, at G1–G3; Red Smith, *Florida Finds Its Stamina in Gatorade*, WASH. POST, Sept. 10, 1967 at B4; *Doctor Puts Punch in Team Water*, WASH. POST, Dec. 15, 1966, at K1.

¹³⁹ See ROVELL, *supra* note 3, at 50.

¹⁴⁰ *Pro Football & NFL History*, PRO FOOTBALL REFERENCE, <https://www.pro-football-reference.com/years/>.

Gatorade and credited it for their success.¹⁴¹ Many professional and college football teams soon followed, along with teams in other major professional sports.¹⁴² High-profile athletes and celebrities such as Jerry West,¹⁴³ Arthur Ashe,¹⁴⁴ Elvis Presley,¹⁴⁵ and others became devotees of the beverage.¹⁴⁶ Although there were a few hiccups to overcome in early commercialization efforts,¹⁴⁷ Gatorade benefitted

¹⁴¹ See ROVELL, *supra* note 3, at 51 (“If the Packers stop buying it for the whole team, I’ll go out and buy it myself out of my own pocket.”) (quoting Green Bay Packers offensive lineman Jerry Kramer); Rogin, *supra* note 17 (“In fact, Gatorade is one of two products Vince Lombardi endorses. . . . [Kansas City Chiefs] Coach Hank Stram says, ‘It has made an amazing difference in the physical capabilities of our squad.’”); *Heritage and History of Gatorade*, *supra* note 30 (“The [Kansas City] Chiefs were so impressed with the ‘Gator coach’s aid [suggested by UF head football coach Ray Graves]’ that they kept it on their sidelines throughout the entire season . . . which concluded with a stunning victory over the heavily favored Minnesota Vikings in Super Bowl IV.”) (ellipsis in original); Rogin, *supra* note 17 (“After the [NFL’s Kansas City] Chiefs started using Gatorade, Mays’s cramps disappeared, and he now drops only about seven pounds a game.”).

¹⁴² See ROVELL, *supra* note 3 at 49–50 (describing the adoption of Gatorade by college football teams at Purdue, Notre Dame, and Army); Rogin, *supra* note 17 (describing that sixteen AFL/NFL teams, nine NBA/ABA teams, five NHL clubs, nine MLB teams, the U.S. Davis Cup team, and sixty-nine college football teams all drank Gatorade as soon as 1968); *U. of Florida Gets \$115,296 in First Gatorade Royalties*, N.Y. TIMES (Sept. 16, 1973), <https://www.nytimes.com/1973/09/16/archives/u-of-florida-gets-115296-in-first-gatorade-royalties-promotional.html?searchResultPosition=33> [hereinafter *First Gatorade Royalties*] (reporting that “the National Football League officially approves [Gatorade] for its teams and all but the Oakland Raiders use it.”).

¹⁴³ See Rogin, *supra* note 17 (“I drink it like mad during a game. . . . Since I’ve used it I never get that real tired, totally exhausted feeling you get in a pressure game.”) (quoting Jerry West).

¹⁴⁴ See ROVELL, *supra* note 3, at 55.

¹⁴⁵ See ROVELL, *supra* note 3, at 57–58.

¹⁴⁶ See, e.g., ROVELL, *supra* note 3, at 4–5 (discussing how racehorses, Michael Phelps, publishing magnate Larry Flynt, former Vice President Al Gore, and the rock band KISS are all regular Gatorade drinkers).

¹⁴⁷ See, e.g., ROVELL, *supra* note 3, at 58–62 (detailing how in 1969, the FDA banned cyclamate—then used in Gatorade as a sweetener—and Stokely had to reformulate Gatorade with a combination of glucose and fructose); *First Gatorade Royalties*, *supra* note 142; see also *infra* Part VI.

greatly from fortunate timing,¹⁴⁸ positive publicity,¹⁴⁹ and its affiliation with a successful college football program.¹⁵⁰

IV. WON IN COURT: THE LEGAL BATTLE OVER GATORADE

Although Gatorade may not have turned a significant profit immediately,¹⁵¹ it was still a coveted brand and consumer product in 1969.¹⁵² Building on its success with athletes,¹⁵³ Gatorade licensee Stokely initially targeted the active consumer,¹⁵⁴ but nevertheless

¹⁴⁸ See, e.g., ROVELL, *supra* note 3, at 52–53 (“The government was embarking on a national effort to educate Americans on the benefits of vigorous activity, and those who were already exercising tried Gatorade and always seemed to be enthusiastic about it, giving it credit for their performance.”); *id.* at 55 (“Gatorade hit at a particular time in our cultural history where people started to realize that the use of nutritional supplements was crucial to performance. . . . [I]t was at a time when people were primed to connect science with performance.”) (quoting sports sociologist Jay Coakley).

¹⁴⁹ See generally ROVELL, *supra* note 3, at 49–59; e.g., *id.* at 49 (“[W]hen the media inquired, Gatorade drinkers and customers would swear by it without any prompting from Stokely.”); *id.* at 53 (“People [all over the country] knew what Gatorade was, thanks in part to an article by Gil Rogin that appeared in the July 1 issue of *Sports Illustrated* that year. . . . [I]t was yet another unplanned coup for the brand that continued to be rewarded for being unique.”) (referring to Rogin, *supra* note 17).

¹⁵⁰ ROVELL, *supra* note 3, at 47. (“[A]n informal poll revealed that Gatorade was already a well-recognized brand name. To destroy the name would be to destroy its association with the [University of Florida]’s teams, which had enjoyed such great success while using it.”) (discussing a contemplated name change of Gatorade by Stokely circa 1967).

¹⁵¹ See Rosenbaum, *supra* note 124 (quoting a Stokely spokesperson who claimed Gatorade had “never been a substantial contributor or loss item to the company.”); *Gatorade and Patent Policy*, 100 SCI. NEWS 143, 143 (1971) (“D.H. McVey, senior vice president of Stokely, says his company . . . has made no money on the product to date [Sept. 4, 1971].”). *But see* ROVELL, *supra* note 3, (“[T]he money I’m making from Gatorade is several times more than the salary I’m making at the university.”) (quoting Dr. Cade in 1968); Rosenbaum, *supra* note 124 (indicating in 1971 \$1.8 million per year in royalties generated by Gatorade would “not be unreasonable”); Grassmuck, *supra* note 125 (stating royalties “reached \$200,000 a year” by 1970); *First Gatorade Royalties*, *supra* note 142 (reporting (based on the University’s received royalties) yearly sales of Gatorade are about 10 million gallons with a resulting gross, for Stokely, of close to \$15-million).

¹⁵² See ROVELL, *supra* note 3, at 56 (“By June 1969, Gatorade had become the pride and joy of the Stokely brand.”); Galphin, *supra* note 113 (“Gatorade has become a star of the Stokely Van-Camp line.”).

¹⁵³ See *First Gatorade Royalties*, *supra* note 142 (“Gatorade’s principal popularity is among athletes, for whom it was originally developed.”); *see also supra* notes 140–46.

¹⁵⁴ See *First Gatorade Royalties*, *supra* note 142 (from 1973) (“Gatorade’s principal popularity is among athletes, for whom it was originally developed.”); ROVELL, *supra* note 3, at 97 (“[T]he brand had grown rapidly thanks to a broadened

doubled down on the brand's broader appeal by investing in Gatorade with extensive marketing efforts.¹⁵⁵

Meanwhile, the University of Florida received criticism for balking on Cade's offer to purchase the drink and missing out on a "piece of the pie" even as Gatorade was still generating modest royalties.¹⁵⁶ Whispers that the university would file a lawsuit hung over the heads of the inventors and Stokely.¹⁵⁷ An upset Cade remarked, "Sometimes I'm sorry I ever invented the thing."¹⁵⁸

Like the university, Uncle Sam felt left out of the Gatorade party.¹⁵⁹ When his team developed Gatorade, Dr. Cade had been working under a grant from the National Institutes of Health (NIH),¹⁶⁰ an agency of the United States government.¹⁶¹ The purpose of the grant was to study the "sodium levels in the kidneys of rats."¹⁶² As a result, the Department of Health, Education and Welfare—then home to the NIH¹⁶³—wanted

availability and a targeted campaign that was meant to acquaint potential active consumers with the benefits of the drink.”).

¹⁵⁵ See ROVELL, *supra* note 3, at 56 (citing “a \$4 million advertising campaign—the most Stokely had ever spent on a single campaign for one of its brands.”); *First Gatorade Royalties*, *supra* note 142 (reporting in 1973 “a \$2-million promotional program on television just started by Stokely-Van Camp and by expansion of sales into the international field”).

¹⁵⁶ See ROVELL, *supra* note 3, at 68 (“[W]hen news got out that the university wasn’t getting a piece of the pie, school officials had a lot of explaining to do.”); e.g., *Gator Fumble*, *supra* note 60 (calling UF Chancellor Robert Mautz’s comment, “At some point, somebody dropped a stitch,” “one of the understatements of the year”). See generally ROVELL, *supra* note 3, at 68–71.

¹⁵⁷ See Rovell, *supra* note 112.

¹⁵⁸ ROVELL, *supra* note 3, at 67 (quoting *Scientific Research*).

¹⁵⁹ See ROVELL, *supra* note 3, at 65–66 (“[Jan. 1967] the U.S. government informed Cade that since his work had been done under its grant, [Gatorade] might be his to patent.”); Grassmuck, *supra* note 125 (“[The royalties] attracted the attention of . . . the federal government . . .”).

¹⁶⁰ See ROVELL, *supra* note 3, at 65 (“Over a five-year period, the NIH had given Cade more than \$80,000 to perform his research.”); *Gator Fumble*, *supra* note 60 (“[Dr. Cade] has held a succession of research grants from Uncle Sam, including one for \$57,296 under which Gatorade was developed.”); Rosenbaum, *supra* note 124 (“A Justice Department spokesman said the [government] grants [used to develop Gatorade] amounted to \$35,000 to \$40,000 a year, not all of which went to Dr. Cade.”). *But see infra* notes 167–68.

¹⁶¹ *Who We Are*, NAT’L INST. OF HEALTH, <https://www.nih.gov/about-nih/who-we-are> (last visited Apr. 1, 2020) (“The National Institutes of Health (NIH), a part of the U.S. Department of Health and Human Services [HHS], is the nation’s medical research agency . . .”).

¹⁶² ROVELL, *supra* note 3, at 65.

¹⁶³ NIH was part of the Department of Health, Education and Welfare (HEW) in the 1960s and has been part of the Department of Health and Human Services (HHS) since 1980. See *A Common Thread of Service: A History of the Department of Health, Education, and Welfare*, U.S. DEP’T OF HEALTH & HUM. SERV. (June 1, 1971), <https://aspe.hhs.gov/report/common-thread-service> (“The Department of Health,

some of the profits.¹⁶⁴ The agency's policy at the time was that it owned inventions developed under grant-funded research.¹⁶⁵ The federal government was also taking an aggressive stance on patent ownership during that time, engaging in other high-profile lawsuits to secure ownership.¹⁶⁶ Although as little as \$42 of the grant funding may have been expended developing Gatorade,¹⁶⁷ the government contended that it owned Gatorade as an invention developed under a federal grant.¹⁶⁸

To preempt what appeared to be inevitable,¹⁶⁹ the Gatorade Trust filed suit¹⁷⁰ against the United States and the University of Florida in

Education, and Welfare [HEW] was created on April 11, 1953, when Reorganization Plan No. 1 of 1953 became effective. . . . The Reorganization Plan abolished the Federal Security Agency and transferred all of its functions to the Secretary of HEW and all components of the Agency to the Department.”); *HHS Historical Highlights*, U.S. DEP’T OF HEALTH & HUM. SERV., <https://www.hhs.gov/about/historical-highlights/index.html#:~:text=The%20Department%20of%20Health%2C%20Education,%20on%20May%204%2C%201980.&text=The%20Health%20Care%20Financing%20Administration%20was%20created%20to%20manage%20Medicare,from%20the%20Social%20Security%20Administration>. (last visited Sept. 3, 2020) (“HEW became the Department of Health and Human Services (HHS) on May 4, 1980.”).

¹⁶⁴ See ROVELL, *supra* note 3, at 72.

¹⁶⁵ See Rosenbaum, *supra* note 124 (“The Government contends that . . . all inventions arising out of such grants are the property of the Government.”). See generally *infra* notes 200–02.

¹⁶⁶ See Vicki Loise & Ashley J. Stevens, *The Bayh-Dole Act Turns 30*, 45 LES NOUVELLES 185, 185 (2010) (citing three controversial 1960s cases concerning Gatorade, 5-fluorouracil, and the phenylketonuria test in which the government asserted ownership of patents based on research it funded).

¹⁶⁷ See ROVELL, *supra* note 3, at 78 (“Cade . . . had also admitted to using \$42 worth of supplies (in the form of radioactive sulfate to measure the extracellular fluid volumes in the players) that were earmarked for the research covered by the grant.”); Rosenbaum, *supra* note 124 (“In the past, [Dr. Cade] has said that it took him only a week to do the research that resulted in Gatorade and that during that time he spent only \$42 of Government money.”); Williams, *supra* note 21, at A26 (“Dr. Robert J. Cade, an associate professor of medicine at the university, used his own time and money to develop Gatorade.”).

¹⁶⁸ See Galphin, *supra* note 113 (stating that Cade worked under the NIH, and its parent department, HEW, was asserting a proprietary interest in Gatorade); Grassmuck, *supra* note 125 (“[T]he federal government . . . decided that year to claim the rights to profits because the drink had been developed while the doctors were employed by the university and were conducting research under a grant from [HEW].”). See also Williams, *supra* note 21, at A26 (“[T]he National Institutes of Health also claimed rights because Cade had used NIH grants to conduct hormone research at the university.”).

¹⁶⁹ See Galphin, *supra* note 113 (stating that the UF regents were preparing to sue).

¹⁷⁰ See *Am. Fletcher Nat’l Bank v. United States*, No. IP70-C-0003 (S.D. Ind. filed Jan. 2, 1970) (naming Stokely, UF Board of Regents, and UF Research Foundation as co-defendants) (case closed July 28, 1972). Believing the case would be sympathetic to Florida judges, the Gatorade Trust’s lawyer “filed a motion for declaratory judgment in Indianapolis” on January 2, 1970. ROVELL, *supra* note 3, at

1970 in the Southern District of Indiana, near Stokely headquarters.¹⁷¹ Some of the defendants later filed suits in Florida (the Regents of the University of Florida)¹⁷² and in the District Court of the District of Columbia (the Department of Health and Human Services (HHS)).¹⁷³ All told, ownership of Gatorade and the resulting royalties would generate at least three lawsuits,¹⁷⁴ followed over the years by many others attendant with the global brand.¹⁷⁵ The court filings quickly transformed Gatorade from a “thirst quencher”¹⁷⁶ to a “litigation generator.”¹⁷⁷

What transpired in the courts would become a microcosm of the contemporary debate on sponsored research and IP in the United States. The government (through HEW) argued it had rights in Gatorade due to the federal grant funding that supported development of the invention,¹⁷⁸ however little funding that was.¹⁷⁹ The University of Florida wanted a piece of the financial pie to recover from the

71. Ironically, the courthouse in the Southern District of Indiana is now named for Senator Bayh, who led passage of the act that was in part a response to lawsuits like the one filed at the courthouse and that could have prevented the lawsuit if passed sooner. *See infra* Part V; *Indianapolis*, U.S. DISTRICT CT.: S. DISTRICT OF IND., <https://www.insd.uscourts.gov/> (last visited May 3, 2020).

¹⁷¹ *See Andrews, supra* note 119 (“That [1972 settlement] grew out of suits filed in 1970 among a variety of parties, including the university and HEW, both of which were asserting a right to the Invention.”).

¹⁷² *See ROVELL, supra* note 3, at 72 (“[T]he University of Florida filed suit in Florida against the [Gatorade] trust and Stokely-Van Camp in July 1971”); Rosenbaum, *supra* note 124 (noting that in July 1971, the UF Board of Regents filed a suit in Florida asserting their property rights to the drink); Samantha Beckett, *Gatorade Turns 50: Drink in Its History from the Gridiron to the Courthouse*, ABOVE THE L.: REDLINE (Sept. 15, 2015), <http://www.atlredline.com/gatorade-turns-50-drink-in-its-history-from-the-gridiron-1730753626>.

¹⁷³ *See ROVELL, supra* note 3, at 72 (“[T]he U.S. government filed suit in Washington, D.C.”); Rosenbaum, *supra* note 124 (“The Government sued Stokely Van Camp, Inc., today for all the profits the company has made from Gatorade.”); Beckett, *supra* note 172.

¹⁷⁴ *See Grassmuck, supra* note 125 (claiming four lawsuits in or around 1970).

¹⁷⁵ *E.g.*, ROVELL, *supra* note 3, at 98 (discussing Sands, Taylor & Woods’ trademark infringement suit for Gatorade’s use of “Thirst Aid,” eventually resulting in a \$16.3 million award); Andrews, *supra* note 119 (explaining the 1991 suit reopened the 1972 suit due to alleged violations of the settlement); Grassmuck, *supra* note 125 (discussing the 1991 lawsuit over Thirst Quencher II).

¹⁷⁶ *See Rogin, supra* note 17 (“We hang with the word thirst. We call it The Superb Thirst Quencher.”) (quoting Jack Mooney).

¹⁷⁷ Grassmuck, *supra* note 125.

¹⁷⁸ *See Andrews, supra* note 119 (“The HEWs claim was based on the fact that one of the doctors had been working under a federal grant.”); *Gatorade and Patent Policy, supra* note 151, at 143 (“Because Dr. Cade was working under a Federal grant, the U.S. Government thought it should have the right.”).

¹⁷⁹ *See supra* note 167.

embarrassment of passing on Dr. Cade's offer to sell Gatorade in 1966.¹⁸⁰ Despite declining the original ownership offer, the University still had a compelling legal position, as the inventors had relied on institutional resources¹⁸¹ to develop Gatorade and leveraged Gatorade's connection to the University for marketing and securing its trademark.¹⁸² Put simply, "Without the Gators, there would be no Gatorade."¹⁸³

Ultimately, the government dismissed its case against the Gatorade Trust in exchange for the doctors forgoing the patent rights in Gatorade and publishing the formula for their composition.¹⁸⁴ The University of Florida and the Gatorade Trust settled, with the university to receive 20% of the royalties Gatorade produced in perpetuity¹⁸⁵ at the cost of great public ignominy to the university.¹⁸⁶ Stokely retained the rights it

¹⁸⁰ See *supra* text accompanying note 113; see also Andrews, *supra* note 119 ("Originally, according to [Gary Klotz, a lawyer for UF], the university had been uninterested in the invention.").

¹⁸¹ *Gatorade and Patent Policy*, *supra* note 151, at 143 ("Because Dr. Cade was on the faculty and used university students and facilities, the university . . . thought they should have the rights to the invention.").

¹⁸² The University's case was on better ground, highlighting Stokely's appropriation of the Gatorade/UF connection. Members of the Gator football team were poked, prodded, and measured to prove Gatorade's efficacy. Then, the team made headlines with strong 1965 and 1966 seasons. In its advertising, Stokely capitalized on the Gators' success. Coach Graves and former Gator football players appeared in commercials touting the drink. Beckett, *supra* note 172; see also ROVELL, *supra* note 3, at 69–70 ("As the profits from the Gatorade brand rose, the university's claim to the product actually became more relevant. . . . Gatorade was able to gain publicity because it was tied to the success of the University of Florida football team."); Curtis, *supra* note 61 ("When profits [of Gatorade] soared, UF officials claimed their stake in the drink, arguing that its facilities, time and Gator sports were indispensable parts of Gatorade's success."); e.g., ROVELL, *supra* note 3, at 70 (describing commercials from Stokely featuring former UF football players and head coach Ray Graves).

¹⁸³ Beckett, *supra* note 172.

¹⁸⁴ See ROVELL, *supra* note 3, at 74 ("In order to satisfy the government, the doctors had to promise to publish their findings about Gatorade. Stokely, which was allowed to keep the trademark for Gatorade, was required to abandon all three U.S. patent applications filed for the product."); Beckett, *supra* note 172 ("The Government backed off when Stokely and the Trust agreed to abandon the three patent applications for Gatorade and published the formula in a medical journal."); see GATORADE *supra* note 126 (patent applications).

¹⁸⁵ See ROVELL, *supra* note 3, at 74 (\$237,509 in back pay); Andrews, *supra* note 119; Beckett, *supra* note 172; Grassmuck, *supra* note 125. *But see First Gatorade Royalties*, *supra* note 142 (reporting that the University's royalty rate is one cent per gallon on all Gatorade sold).

¹⁸⁶ See, e.g., ROVELL, *supra* note 3, at 71 ("[A]s 'Gatorade sales increased, the public fury over the university's not getting a cut mounted."); *Gator Fumble*, *supra* note 60 ("Dr. Cade capitalized on a series of horrendous blunders made by university

had licensed to Gatorade.¹⁸⁷ While all the legal disputes eventually wound down without impeding long-term financial success of Gatorade, the controversy provided a high-profile example of the flaws in the U.S. R&D apparatus and highlighted the need for reform.¹⁸⁸

V. NOTICED IN CONGRESS: IP POLICY REFORM IN THE AFTERMATH OF GATORADE’S LEGAL BATTLES

The problems raised by the Gatorade fiasco¹⁸⁹ were not isolated—by the 1960s, the federal government was funding over \$1 billion in R&D¹⁹⁰ at universities under grants and contracts¹⁹¹ like Dr. Cade’s.¹⁹² By the middle of the twentieth century, federally funded research at national labs, private institutions, and universities had become a novel and prominent feature of the U.S. economy.¹⁹³ Federally funded

bureaucracy.”); *id.* (“But done right, the benefits [to UF from Gatorade] would be measurably greater.”).

¹⁸⁷ See Grassmuck, *supra* note 125 (“In 1972 the university, the Gatorade Trust, Stokely-Van Camp, and the government agreed to a federal court judgment that all rights to Gatorade and any alterations, modifications, and innovations to Gatorade had been properly assigned to Stokely-Van Camp.”).

¹⁸⁸ See *infra* Part V.

¹⁸⁹ See *supra* Part IV.

¹⁹⁰ In 1953 (the first year HERD data was available), the federal government granted \$138 million to higher education R&D. See *Higher Education Research and Development Survey: Fiscal Year 2018*, NAT’L SCI. FOUND. (Jan. 6, 2020), <https://ncesdata.nsf.gov/herd/2018/> [hereinafter *HERD Data*] (showing in 1965, the year Gatorade was invented, the federal government provided \$1 billion to higher education R&D).

¹⁹¹ In Bayh-Dole, grants are “funding agreements.” See Bayh-Dole Act, 37 C.F.R. § 401.2(a) (2019) (calling universities “contractors”); see also *id.* at § 401.2(b), (h); *supra* note 191 (funding agreement); *infra* note 247 (contractor); WALTER ISAACSON, *THE INNOVATORS* 217 (2014) (stating by one account, making contracts with universities and industrial laboratories was the “most significant innovation” in the “growth of science and technology”) (quoting MIT President Jerome Wiesner).

¹⁹² See *supra* notes 160–68.

¹⁹³ See Mary L. Good, *Increased Commercialization of the Academy Following the Bayh-Dole Act of 1980*, in *BUYING IN OR SELLING OUT: THE COMMERCIALIZATION OF THE AMERICAN RESEARCH UNIVERSITY* 48, 49 (Donald G. Stein ed., 2004) (stating by the mid-1920s more than 1600 industrial research labs existed in the U.S., becoming “outlets for university research”); Peter Lee, *Transcending the Tacit Dimension: Patents, Relationships, and Organizational Integration in Technology Transfer*, 100 CAL. L. REV. 1503, 1503 (2012) (observing that the establishment of land-grant colleges in the nineteenth century manifested the federal government’s “commitment to funding basic scientific research.”); David Winwood, *Successful U.S. Innovation Ecosystem is Under Threat*, FIN. TIMES (June 11, 2015), <http://www.ft.com/cms/s/2/26fd1524-f4cc-11e4-8a42-00144feab7de.html#axzz4Gs0VSkV8> (explaining the Morrill Act, signed into law by President Lincoln, codified “the role and expectations of US universities in applying scientific and engineering approaches to the challenge of building a new nation.”). *But see* Edward C. Walterscheid, *The*

research proliferated leading up to and during World War II,¹⁹⁴ as the U.S. government realized such research could yield technological outputs with military value.¹⁹⁵ After World War II, federal expenditures on research continued to increase¹⁹⁶ as the U.S. sought science that was superior to the Soviets',¹⁹⁷ as well as industrial competitiveness between post-war friend and foe alike.¹⁹⁸ In the war's aftermath, the government (via the military), universities, and private corporations "fused together into an iron triangle: the military-industrial-academic complex."¹⁹⁹

However, no uniform national policy on intellectual property ownership of federally funded research inventions existed at that time.²⁰⁰ By one estimate, universities had to contend with twenty-two different patent ownership arrangements with government agencies.²⁰¹ Despite the lack of uniformity, the government often came to own the inventions produced through its R&D funding.²⁰²

Need for a Uniform Government Patent Policy, 3 HARV. J. L. & TECH. 103, 103 (1990) ("Prior to the war, the role of the federal government in funding such activities was almost negligible.").

¹⁹⁴ See Good, *supra* note 193, at 50 ("World War II saw the mobilization of the nations' scientists and engineers . . .").

¹⁹⁵ See Good, *supra* note 193 ("[T]he results proved the value of government-funded research to the war effort."); e.g., ISAACSON, *supra* note 191, at 219 (discussing government funded research of the atom bomb, radar, and air-defense systems).

¹⁹⁶ In 1960, the federal government provided \$646 million in funding to higher education for R&D. That number grew in every ensuing decade, with \$1.6 billion in 1970 (406.7% increase), \$4.1 billion in 1980 (248.8% increase), \$9.6 billion in 1990 (235.2% increase), \$17.5 billion in 2000 (182% increase), and \$37.5 billion in 2010 (213.6% increase). See *HERD Data*, *supra* note 190 (percentage increases derived by author); see also Walterscheid, *supra* note 193, at 103 ("During the war and quickly thereafter, government funding became more and more extensive.").

¹⁹⁷ See Good, *supra* note 193 ("Federal support for research grew during the cold war era Under this regime and the overriding issue of national security, the physical sciences and engineering flourished."); ISAACSON, *supra* note 191, at 228 ("On October 4, 1957, the Russians launched Sputnik, the first man-made satellite. . . . [T]he nation that funded the best science would produce the best rockets and satellites.").

¹⁹⁸ See Lee, *supra* note 193, at 1512 ("[C]oncerns [over government-owned patents stifling innovation] were exacerbated by perceptions of lagging economic competitiveness with Europe and Japan.") (footnotes omitted).

¹⁹⁹ ISAACSON, *supra* note 191, at 217.

²⁰⁰ See SUBCOMM. ON DOMESTIC & INT'L SCI. PLANNING & ANALYSIS OF THE HOUSE COMM. ON SCI. & TECH., 94th CONG., BACKGROUND MATERIALS ON GOVERNMENT PATENT POLICY: THE OWNERSHIP OF INVENTIONS RESULTING FROM FEDERALLY FUNDED RESEARCH AND DEVELOPMENT iii (Comm. Print 1976) [hereinafter GOVERNMENT PATENT POLICIES (1976)] ("Over the years, the Federal Government has developed patent policies on an Agency-by-Agency basis.").

²⁰¹ *The Federal Squeeze on University Research*, BUS. WK., June 19, 1978, at 92 [hereinafter *Federal Squeeze*].

²⁰² Although the policy varied by agency and time, most policies either provided for agency ownership or contractor ownership. See Memorandum of October 10,

The government's position was principled enough: the public funded the inventions, so the public ought to own the inventions.²⁰³ However, handling of "public ownership" was not clear-cut: inventions could be in the public domain (owned by no one and hence available to everyone)²⁰⁴ or owned by the government on behalf of the public (the more common scenario),²⁰⁵ two fundamentally different propositions (and justifications).²⁰⁶ The government's prevailing stance favoring

1963: Government Patent Policy, 28 Fed. Reg. 10,943 (providing guidelines to federal agencies indicating when taking title to inventions and when granting title to the contractor was appropriate). *Compare* Research and Marketing Act of 1946, Pub. L. No. 79-733, 60 Stat. 1087 (requiring the Department of Agriculture obtain assignment of the results of research or otherwise make results public), *and* National Science Foundation Act of 1950, Pub. L. No. 85-510, 64 Stat. 149 (requiring NSF contracts have "provisions governing the disposition of inventions produce thereunder in a manner calculated to protect the public interest"), *and* Walterscheid, *supra* note 193, at 112 (finding the Atomic Energy Commission the "epitome of the title-taking approach to patent policy") (footnotes omitted), *and* *Federal Squeeze*, *supra* note 201, at 92 (reporting HEW and NSF allowed arrangements where universities could license research patents), *with* Walterscheid, *supra* note 193, at 108 (suggesting the National Defense Research Committee (NDRC) and Office of Scientific Research and Development (OSRD) could "could grant title in any subject inventions made under the contract to the contractor or to anyone else.") (internal footnote omitted), *and id.* at 112 (finding the Navy and War Departments, later the Department of Defense, were "classic examples" of the title-granting approach to inventions), *and* *Federal Squeeze*, *supra* note 201, at 93 (noting the opposition by the Department of Energy (DOE) to university licensing).

²⁰³ See Good, *supra* note 193, at 50 ("It was assumed that the public good would be served by an approach where private industry could use the ideas published and the government could control the science and technology for its own use."); Walterscheid, *supra* note 193, at 124 ("[A group of] Congressmen shared a basically populist view predicated on the argument that research which is funded by the taxpayer belongs to the taxpayer and should be in the public domain.") (internal footnote omitted).

²⁰⁴ See Good, *supra* note 193, at 50 ("[A]ny intellectual property discovered by government by university scientists funded by the government was either the property of the government or put into the public domain by publication of research results.")

²⁰⁵ See *supra* note 197 (agency ownership).

²⁰⁶ The justification for inventions in the public domain was that the public funded the invention, hence the public should have access. See *supra* notes 203-04. The justification for government ownership was that the government funded the invention, hence the government should receive compensation. See *Federal Squeeze*, *supra* note 201, at 92 ("The critics say that the government has been denied income from such famous university innovations' as computer magnetic-core memory and Gatorade."). However, no complaints can be raised about the government's loss of income on a public domain invention because there is no need to compensate the government to use an invention in the public domain. See *Federal Squeeze*, *supra* note 201, at 92. Yet, some sources conflate the difference between the public domain and government ownership, despite their different propositions & justifications (although proponents of either view could argue it encourages widespread adoption and maximizes public benefit). See, e.g., *Gatorade and Patent Policy*, *supra* note 146, at 143 (stating that

government ownership of research inventions as the public's surrogate was flawed for many reasons, several of which were evident from the clash over Gatorade.²⁰⁷ Namely, government-owned inventions were underutilized, with as little as 5% of government-sponsored patents actually being put to commercial use, according to a 1968 statistic.²⁰⁸

Inventions owned but not invented by the government or public are not widely adopted because successful implementation of innovation takes effort and expertise.²⁰⁹ In the case of Gatorade, the inventors themselves undertook the early commercialization efforts for the beverage.²¹⁰ It is unclear who would have commercialized Gatorade had the government or public owned it from the start.²¹¹ An agency bureaucrat with no hope of realizing any of the financial gain is unlikely to be highly motivated to commercialize an invention, and the government “has never distinguished itself at running a business.”²¹²

“Government-owned patents” were “previously considered to be in the public domain”).

²⁰⁷ See *supra* Part IV.

²⁰⁸ U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-98-126, TECHNOLOGY TRANSFER: ADMINISTRATION OF THE BAYH-DOLE ACT BY RESEARCH UNIVERSITIES (1998) (“Before the [Bayh-Dole] Act, in 1979, a government audit showed that fewer than five percent of 28,000 patented inventions that had been funded with public money had been developed.”); see also HARBRIDGE HOUSE, INC., FCST COMM. ON GOV'T PATENT POLICY, GOVERNMENT PATENT POLICY STUDY 6 (1968) [hereinafter HARBRIDGE HOUSE REPORT] (finding 12.4% of government-sponsored inventions in use); Lee, *supra* note 193, at 1512 (“Empirical evidence that government-owned patents achieved very low commercialization rates fueled these concerns [that government-owned patents were stifling innovation.]”); *Federal Squeeze*, *supra* note 201, at 92 (citing that 15% of 28,000 government-owned patents are licensed); *id.* (claiming that 0 HEW-funded inventions reached the market before 1968 while sixty reached the market after the introduction of university licensing); Birch Bayh, U.S. Senator, Statement at Public Meeting of National Institutes of Health (May 25, 2004) [hereinafter Senator Bayh Statement], <https://www.ott.nih.gov/sites/default/files/documents/2004NorvirMtg/2004NorvirMtg.pdf> (“However, the result of this policy was billions of taxpayer dollars spent on thousands of ideas and patents which were collecting dust [T]axpayers were getting no benefit whatsoever.”). But see Eisenberg, *supra* note 13, at 1680 (noting that data was flawed because institutions could elect title in inventions funded by the Department of Defense).

²⁰⁹ See ISAACSON, *supra* note 191, at 215 (“Innovation requires having at least three things: a great idea, the engineering talent to execute it, and the business savvy (plus deal-making moxie) to turn it into a successful product.”).

²¹⁰ See *supra* Part III.

²¹¹ See NAT'L RESEARCH COUNCIL, *supra* note 22, at 61 (“In the pre-1980 system . . . [government agencies] had no incentive and negligible capacity to pursue further development and commercialization . . .”). See generally STEVEN D. LEVITT & STEPHEN J. DUBNER, *FREAKONOMICS* 6–21 (3d ed. 2009) (“But experts are human, and humans respond to incentives.”).

²¹² *Federal Squeeze*, *supra* note 201, at 92 (quoting Thomas F. Jones); see also, e.g., Michael Behar, *The Forecast is Cloudy*, N.Y. TIMES MAG., Oct. 23, 2016, at 26,

Put simply, “federally controlled patents available to everyone end up being exploited by no one.”²¹³

Furthermore, the government is too remote both geographically (from campuses) and socially (from the originating scientists) to be well-positioned to take advantage of research innovations developed at campuses all over the country.²¹⁴ The lack of local expertise familiar with the technology impairs the possibility of commercialization for the invention.

It was not merely the ownership of inventions for which the government took a counterproductive approach. The parameters of invention ownership were also of utmost importance. Perhaps the most harmful position the government took with regard to commercializing research inventions was the prohibition on exclusive licensing.²¹⁵ By

28 (“There is so much stuff on the shelf that isn’t being used.”) (quoting National Weather Service Director Nezzette Rydell on weather prediction technology).

²¹³ *Federal Squeeze*, *supra* note 201, at 92 (argument from university spokespeople); *see also* Good, *supra* note 193, at 51 (“[O]ne point seemed clear: if intellectual property were left in the public domain, corporate strategist would not move aggressively toward the development of new discoveries.”); Winwood, *supra* note 193 (“Without strong intellectual property (IP) protection, most inventions will never see the light of day [because] the costs of developing most of them into a marketable product are significant. Without proper patent protection, no one will invest in the mere promise of an invention.”).

²¹⁴ *See* Ajay Agrawal, *University-to-Industry Knowledge Transfer: Literature Review and Unanswered Questions*, 3 INT’L J. MGMT. REVS. 285, 301 (2001) (“[C]ommercialization of university inventions remains somewhat localized to the region of invention.”); Peter Lee, *Patents and the University*, 63 DUKE L.J. 1, 65 (2013) (“[R]epresentatives argued that universities were better conduits for technology transfer than agencies because they were more familiar with the inventions and had direct access to faculty inventors. In particular, universities could facilitate the direct interaction between inventors and licensees that is often critical to technology transfer.”) (footnotes omitted); Juan Alcácer & Wilbur Chung, *Location Strategies and Knowledge Spillovers*, 53 MGMT. SCI. 760, 760 (2007) (“Because knowledge is partially tacit and localized, its transfer requires frequent interaction that proximity facilitates.”).

²¹⁵ *See* Ashley J. Stevens, *The Enactment of Bayh-Dole*, 29 J. TECH. TRANSFER 93, 94 (2004); *see also* Lee, *supra* note 188, at 1512 (“In the late 1970s, concerns grew that government-owned patents were stifling innovation, as firms would not develop inventions into commercial products without possessing exclusive rights.”); *Federal Squeeze*, *supra* note 201, at 92 (“Industry is not going to touch inventions held by the government, without exclusive licensing.”) (quoting AAAS Executive William Carey), *Gatorade and Patent Policy*, *supra* note 151, at 143 (“Commercial developers have been unwilling to buy licenses for the use of inventions since they had no guarantee of exclusive rights.”).

In the context of IP, a license is permission to use the rights associated with that IP. *Licensing Agreement*, BLACK’S LAW DICTIONARY (10th ed. 2014). Licenses may be exclusive, unique to the licensee, or nonexclusive, by which the licensor could grant permission to multiple parties. *Exclusive License, Non-exclusive License*, BLACK’S LAW DICTIONARY (10th ed. 2014).

removing the incentive prompting commercialization efforts, the government had deterred the effort and thus the successful implementation of inventions.²¹⁶ Without any possibility of benefiting from the profits,²¹⁷ Gatorade's inventors would likely not have expended the effort to market and sell the beverage.²¹⁸ If the government had owned the electrolyte solution, Kent Bradley would not have introduced his former colleagues and Gatorade to Stokely while at Indiana.²¹⁹ This profit-motive rationale is the same that underlies the entire patent system.²²⁰

At the expense of oversimplification, tech transfer ordinarily occurs by licensing the IP associated with a research innovation to one (exclusive) or more (non-exclusive) companies or licensing it to a startup or spinout company. *See* KYLE WELCH, SAN DIEGO STATE UNIVERSITY FOUNDERS MANUAL: A GUIDE TO RESOURCES FOR ENTREPRENEURSHIP & THE COMMERCIALIZATION OF IDEAS 34 (2019) (“Although it is not exactly a binary choice, most ideas from university settings are commercialized in one of two ways: 1. Licensed to an existing company; or 2. Created as the core idea of a new startup company.”). In the case of Gatorade, the inventors exclusively licensed the rights in their IP (likely trademark, trade secret, and patent) to Stokely in exchange for royalties on products, relying in part on those IP rights. *See supra* Part III.

²¹⁶ *Gatorade and Patent Policy*, *supra* note 151, at 143 (describing “greater rights to Government-financed inventions to private contractors . . . a necessary incentive for commercialization.”).

²¹⁷ As of 1991, Gatorade inventors earned about \$8 million in royalties. Grassmuck, *supra* note 125.

²¹⁸ *See* ROVELL, *supra* note 3, at 55 (“When [Dr. Cade] talked about how much money his product would be earning, it was his way of expressing his pride in how successful his product would one day become.”); Rogin, *supra* note 17 (“Of course, I wouldn't spend all of [the money from Gatorade] on medicine. My wife wants a couch and I'd like to have another violin and I'd love to get a Porsche 911 for Mike Pickering to race.”). *But see* ROVELL, *supra* note 3, at 55 (“[T]here was never any evidence to show that Cade was particularly enamored with money.”).

²¹⁹ *See, e.g., supra* notes 118-20.

²²⁰ *See* U.S. CONST. art. I, § 8 (“The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries”); *see also* Terry Healy, *Wi-Fi Router*, in A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS 377, 383 (Claudy Op Den Kamp & Dan Hunter eds., 2019) (arguing the patent system is the “most important policy instrument” in encouraging innovation); Bradford C. Auerbach, *Biotechnology Patent Law Developments in Great Britain and the United States*, 6 B.C. INT'L & COMP. L. REV. 563, 566 (1983) (“The patentee exchanges full and complete disclosure of how to make and use the claimed invention for the court-protected right to exclude others from making, using or selling the claimed invention”); *e.g.,* ISAACSON, *supra* note 191, at 121 (“But when it came to hardware, such as computers and microchips, a proprietary system provided incentives for a spurt of innovation in the 1950s.”). An open, non-proprietary approach can be better suited for widespread adoption and successful transfer for certain inventions—despite the lack of a limited monopoly incentive. *See, e.g.,* ISAACSON, *supra* note 191, at 121 (“In the cases of the Internet, the Web, and some forms of software, the open model would turn out to work better.”); Jonathan Zittrain, *Internet*

Had Stokely (and later Quaker Oats²²¹) been unable to license Gatorade exclusively, there is little possibility that the company would have expended the financial resources and marketing efforts to promote Gatorade to consumers and put Gatorade on store shelves.²²² By virtue of being *outside* of the traditional bounds of research inventions at the time—unowned by the government and able to be exclusively licensed—Gatorade served as an example of what could go *right* with changes to national IP policy on ownership and exclusivity of research inventions.

On the other hand, the court melee over Gatorade was an example of what could go wrong without a national IP policy promoting uniformity²²³ and certainty²²⁴ for research inventions. While the government eased the zeal with which it clung to ownership of research inventions in the 1960s,²²⁵ still no coherent national policy existed on which university contractors could rely.

(claiming the internet would not exist without its inventions “disclaiming any property interest in its success”), in *A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS*, *supra* note 220, at 369, 371.

²²¹ See *infra* notes 268–69.

²²² See *supra* Part III; see also Joe Kays & Arline Phillips-Han, *Gatorade: The Idea that Launched an Industry*, EXPLORE: RES. AT U. FLA. (2003), <https://research.ufl.edu/publications/explore/v08n1/gatorade.html> (“Drawing on its vast marketing resources . . . Quaker Oats was able to secure more than 80 percent of the sports beverage market for Gatorade.”); see also STANFORD, NINE POINTS, *supra* note 22, at 2 (“When significant investment of time and resources in a technology are needed in order to achieve its broad implementation, an exclusive license often is necessary and appropriate.”); Senator Bayh Statement, *supra* note 208, at 2 (“Since the government refused to permit ownership of the patents, private industry and business refused to invest the resources necessary to bring the products to consumers.”); Walterscheid, *supra* note 193, at 133 (“The inventions failed to be commercialized because the private sector was not willing to take the developmental investment risk associated with commercialization when competitors could then manufacture the commercial product with no legal liability.”).

²²³ See *Gatorade and Patent Policy*, *supra* note 151, at 143 (“Experience . . . indicated a need for revision and modification [to patent policy]”); BayhDole25, Inc., *The Bayh-Dole Act at 25*, U. OF N.H.: FRANKLIN PIERCE SCH. OF L. (Apr. 17, 2006), https://ipmall.law.unh.edu/sites/default/files/BAYHDOLE/BayhDole25_WhitePaper.pdf (“The general problem was clear [leading up to the Bayh-Dole Act]: despite years of debate, the federal government still lacked a uniform technology transfer policy.”). *But see Gatorade and Patent Policy*, *supra* note 151, at 143 (“[F]lexible, Government-wide policy best serves the public interest.”) (quoting President Nixon).

²²⁴ See *Gatorade and Patent Policy*, *supra* note 151, at 143 (“[A 1971 policy change] still does not make clear what will be the disposition in the Gatorade case or what will be the impact on other patents resulting from billions of dollars of Government-financed research and development.”).

²²⁵ See *supra* notes 165–65.

Motivated in part by the Gatorade debacle,²²⁶ the U.S. government began relenting in its stance on ownership. In 1973, President Richard Nixon released a memo on patent policy granting federal agencies the discretion to allow universities to own inventions and grant exclusive licenses,²²⁷ building momentum on suggestions from the Kennedy administration that agencies grant title in patents to contractors such as universities.²²⁸ Nevertheless, this waiver system was still uncertain and insufficient.²²⁹

As the 1970s progressed, national concerns grew about U.S. economic vitality and industrial competitiveness with countries such as Japan.²³⁰ As a result of the economic consternation, the underutilization

²²⁶ See *supra* Part IV; *Gatorade and Patent Policy*, *supra* note 151, at 143 (“In a move designed to simplify and clarify such matters, President Nixon . . . issued a revised statement of Government patent policy for cases involving the disposition of rights to inventions made under Government-sponsored grants and contracts.”); *U.S. Patent Rein Loosened*, WASH. POST, Aug. 24, 1971, at A17.

²²⁷ Memorandum of August 23, 1971: Government Patent Policy, 36 Fed. Reg. 16,887, 16,888 (discussing recommended improvements that provide agency heads authority to permit contractors to greater rights to inventions to achieve utilization or when justified by equitable circumstances); *id.* at 16,890 (allowing for greater contractor rights when: (1) necessary to push an invention to the point of practical application, (2) government contribution is small compared to the contractor, (3) the contract originates to build on or develop inventions for use by the government, and the work is in a field which the contractor has acquired technical competence, or (4) deemed most likely to serve the public interest); BayhDole25, Inc., *supra* note 223 (“[N]ixon’s administration also sought to unify policy, and generally favored granting agencies additional discretion to facilitate transfer of patent rights to the private sector.”).

²²⁸ See Memorandum of October 10, 1963: Government Patent Policy, 28 Fed. Reg. 10,943 (providing guidelines to federal agencies indicating when taking title to inventions and when granting title to the contractor was appropriate).

²²⁹ See NAT’L RESEARCH COUNCIL, *supra* note 22, at 61 (“[T]he uncertainty of success and the complexities of obtaining waiver of government ownership under certain agency rules were often high.”); Sheila Slaughter & Gary Rhoades, *The Emergence of a Competitiveness Research and Development Policy Coalition and the Commercialization of Academic Science and Technology*, 21 SCI., TECH., & HUM. VALUES 303, 318 (1996) (“Before the Bayh-Dole Act, universities could secure patents on federally funded research only when the federal government, through a long and cumbersome application process, granted special approval.”).

²³⁰ See Good, *supra* note 193, at 51 (“Japan’s economic vitality and the commercial success of Japanese manufacturing created real concern about U.S. economic competitiveness.”); Slaughter & Rhoades, *supra* note 229, at 316 (“In the late 1970s and early 1980s, the emerging competitiveness R&D coalition . . . the new narratives about science and technology focused more on economic competitiveness.”); Walterscheid, *supra* note 193, at 131 (“The legislative history makes clear that the [Bayh-Dole] Act arose out of a deep concern about the ability of U.S. industry to keep pace with its foreign competition in technological innovation.”); BayhDole25, Inc., *supra* note 223 (“Bayh-Dole addressed the ‘malaise’ famously described by President Jimmy Carter in a July 1979 speech.”); Stevens, *supra* note

of research innovations,²³¹ and the collective embarrassment with inventions “like the Gatorade skeleton,”²³² proper ownership of research inventions became a debatable topic.²³³

Suddenly patent policy reform was on the congressional agenda—although what shape that reform took was a contested topic.²³⁴ In 1979, multiple bills on patent reform were put forth, all differing in their approaches to commercializing research innovations.²³⁵ Senator Birch Bayh (D-Ind.) was receiving pressure from Purdue University officials to allow universities to own inventions after missing out on the rewards from some of its research, then later benefitting from the discretion President Nixon extended to federal agencies.²³⁶ Senator Bob Dole (R-

215, at 93 (“[B]y the end of the 1970s it was clear that U.S. industry had lost its international competitiveness to Europe and, particularly, to Japan.”); Senator Bayh Statement, *supra* note 208 (“By the late 70s, America had lost its technological advantage.”).

²³¹ See BayhDole25, Inc., *supra* note 223 (referring to the NDRC, the MIT Radiation Laboratory, and the Manhattan Project) (“Beginning in 1978, forward-looking members of Congress realized that the U.S. could no longer afford to receive minimal returns on its now considerable annual investment of nearly \$8 billion in largely university-based research and development.”).

²³² See also *Gator Fumble*, *supra* note 60, at 4A (describing Dr. Cade as “effervescent”); *Federal Squeeze*, *supra* note 201, at 92 (“Another favored example [of the government being denied income from a famous university innovation] is Gatorade . . .”).

²³³ See, e.g., GOVERNMENT PATENT POLICIES, *supra* note 200, at iii (“[T]he impact of these policies for patenting and licensing federally-funded R. & D. results have been suggested as a timely subject for review.”); U.S. DEP’T OF JUSTICE, INVESTIGATION OF GOVERNMENT PATENT PRACTICES AND POLICIES: REPORT AND RECOMMENDATION OF THE ATTORNEY GENERAL TO THE PRESIDENT 89–90 (1947); see also Lee, *supra* note 193, at 1512 (“Since the rapid expansion of government science funding following World War II, the federal government has wrestled with the question of who should take title to patents arising from federal funds.”).

²³⁴ See Walterscheid, *supra* note 193, at 131 (“The Bayh-Dole Act was the culmination of significant Congressional consideration and debate in the late 1970s.”); Stevens, *supra* note 215, at 94 (“The seemingly arcane issue of government patent policy became a battlefield for these competing philosophies as economic stagnation pushed this issue to the fore.”).

²³⁵ See BayhDole25, Inc., *supra* note 223 (“The Stevenson-Wydler Act, passed at roughly the same time, pursued a different approach, and centralized technology licensing authority for government laboratories.”); see also Stevens, *supra* note 215, at 98 (describing the Bayh-Dole Act and the Stevenson-Wydler Act as “diametrically opposite in their spirit and intent.”).

²³⁶ See Memorandum of August 23, 1971: Government Patent Policy, 36 Fed. Reg. 16,887, 16,888; Jason F. Perkins & William G. Tierney, *The Bayh–Dole Act, Technology Transfer and the Public Interest*, 28 INDUS. & HIGHER ED. 143, 144 (2014) (“[P]urdue University . . . contacted Birch Bayh, Indiana’s senator to investigate options for change.”).

Kan.) had also explored the underutilization of research due to a lack of economic incentive.²³⁷

The fallout from the Gatorade litigation²³⁸ and the royalties forfeited by the University of Florida hung over the debate over IP policy reform.²³⁹ In 1980, Congress passed the Bayh-Dole Act,²⁴⁰ which incorporated some of the lessons learned from the litigation surrounding Gatorade.²⁴¹ The act's passage was largely a tribute to Senator Bayh²⁴² despite strong bipartisan support.²⁴³ Although his administration opposed the law,²⁴⁴ President Jimmy Carter signed the Bayh-Dole Act into law on December 12, 1980.²⁴⁵

The Bayh-Dole Act finally provided a national, uniform, clear policy²⁴⁶ regarding research inventions produced at universities, other

²³⁷ See *Perkins & Tierney, supra* note 236, at 144 (“[Senator Dole] investigated how important research discoveries and innovations were inefficiently utilized without economic incentives in place.”). For more information on the under-utilization of research, see *supra* notes 208, 231.

²³⁸ See *Gatorade and Patent Policy, supra* note 151 (“[Nixon’s patent guidelines do] not make it clear what will be the disposition of the Gatorade case or what will be the impact on other patents resulting from billions of dollars of Government-financed research and development.”); Stevens, *supra* note 215, at 94 (“[T]he federal government sued Stokely Van Camp in 1965 to force the company to abandon the patents filed on Gatorade Some people had started to realize that this idealistic approach was inhibiting the development of promising inventions simply because the government owned the rights.”).

²³⁹ See GOVERNMENT PATENT POLICIES (1976), *supra* note 200, at 91 (“The rise of interest in patents among nonprofit institutions has been fanned by reports in the press and popular periodicals about the ‘gold mine’ of patentable research findings. Scarcely a month goes by without a report or a feature article on [other examples] or a super-juice called ‘Gator Ade’ at the University of Florida.”).

²⁴⁰ Bayh-Dole Act, 37 C.F.R. § 401 (2019).

²⁴¹ See *supra* notes 226–29; *e.g., infra* notes 248–49 (allowing universities to own research inventions); *e.g., infra* note 253 (allowing universities to license inventions exclusively).

²⁴² See Stevens, *supra* note 215, at 97 (“As a farewell present to Birch, you’ve got it.”) (quoting Wiley Jones, staffer of Sen. Russell Long (D-La.), the most vocal opponent to the Bayh-Dole Act); *id.* (describing Sen. Long’s “willingness to yield” on his opposition to Bayh-Dole as a “senatorial courtesy”).

²⁴³ See Stevens, *supra* note 215, at 96 (describing how very politically diverse senators supported the bill that became the Bayh-Dole Act and describing its unanimous approval in the Senate Judiciary Committee as “a remarkable achievement”).

²⁴⁴ See Stevens, *supra* note 215, at 93 (“Bayh-Dole . . . barely survived a pocket veto by Jimmy Carter, who signed it into law on the last day possible.”). See *generally id.* at 98.

²⁴⁵ H.R. 6933, 96th Cong., (1980).

²⁴⁶ See Bayh-Dole Act, 37 C.F.R. § 401.3(a) (2019) (“Each funding agreement awarded to a contractor . . . shall contain the clause found in § 401.14.”); see also *id.* § 401.14(a), at *Standard Patent Rights* [hereinafter Bayh-Dole Act, at SPRC (for “Standard Patent Rights Clause” as defined in § 401.14(a))]; 96 CONG. REC. H29,901

research institutions, and small businesses.²⁴⁷ Most importantly, the Bayh-Dole Act permitted universities to own research inventions developed through federal R&D in nearly all circumstances,²⁴⁸ the Act's chief contribution to the national research apparatus.²⁴⁹ This policy innovation “put universities in the business of technology transfer”²⁵⁰ and “the process of getting ideas from lab to markets.”²⁵¹ Although this article focuses on tech transfer in the context of American universities, the Bayh-Dole Act also allowed individuals, small businesses, and other nonprofit organizations besides universities to own the fruits of their inventive labor.²⁵²

In addition to allowing universities to own the products of federally funded research, the Bayh-Dole Act allowed universities to exclusively

(daily ed. Nov. 17, 1980) (statement of Rep. Hollenbeck) (describing the Bayh-Dole Act as “[A] large step forward in the direction of improving the uniformity and quality of our patent laws [that] will help to stimulate industrial innovation and economic productivity by increasing the commercial development of Federal R&D.”); *see infra* note 247. The Bayh-Dole Act was “the first patent policy statute applicable to all federal agencies.” Walterscheid, *supra* note 193, at 129. *But see generally id.* (arguing for a *more* uniform patent policy than that implemented by the Bayh-Dole Act).

²⁴⁷ 37 C.F.R. § 401.2(b) (“The term *contractor* means any person, small business firm or nonprofit organization . . . which is party to a funding agreement.”); *id.* § 401.2(a) (“The term *funding agreement* means any contract, grant, or cooperative agreement entered into between any Federal agency . . . and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal government.”); *id.* § 401.14, at SPRC(a) (“*Nonprofit Organization* means a university or other institution of higher education or an organization of the type described in [the applicable sections of the Internal Revenue Code] or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.”). Because the article focuses on research inventions in the university context, “university” may hereinafter be used to stand in for “contractor.”

²⁴⁸ *See* 37 C.F.R. § 401.14, at SPRC(b) (“The *Contractor* may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203.”); *id.* at (a)(2) (“*Subject invention* means any invention of the *contractor* conceived or first actually reduced to practice in the performance of work under this *contract*”); *see also* Walterscheid, *supra* note 193, at 129 (“enacted the first patent policy statute applicable to all federal agencies.”).

²⁴⁹ *See* Lee, *supra* note 193, at 1514 (“For the framers of the Act, the key to commercializing government-funded inventions lay in providing universities with patent rights that they could then license to private firms.”); Slaughter & Rhoades, *supra* note 229, at 323 (describing how the rule changes allowed entities to enter the market creating ownership rights “on a scale with the enclosures of communal property by large landholders in Great Britain and Latin America with the onset of market economies.”).

²⁵⁰ Good, *supra* note 193, at 51; *see also* Meredith Wadman, *The Winding Road from Ideas to Income*, 453 NATURE 830, 831 (2008) (“The US wave in technology transfer began when the Bayh-Dole Act of 1980 gave universities title to ownership of inventions resulting from research funded by the federal government”).

²⁵¹ Williams, *supra* note 21.

²⁵² *See* 37 C.F.R. § 401.2(b); *see also supra* note 247.

license inventions,²⁵³ subject to several restrictions.²⁵⁴ The ability to exclusively license inventions allowed universities to find licensees willing to expend greater resources developing creations ripe for commercialization,²⁵⁵ as exclusivity greatly increased the value of many licenses to IP.

Its proponents believed the Bayh-Dole Act's policy changes would "enhance technology transfer to the private sector, thus promoting commercialization."²⁵⁶ As a tradeoff for the new ownership powers granted, the Bayh-Dole Act imposed duties upon universities to protect federally funded inventions²⁵⁷ and keep the government informed of commercialization efforts.²⁵⁸ The Act also included restrictions on what

²⁵³ See *infra* note 254. The right to exclusively license inventions is not explicitly provided by the Bayh-Dole Act, but implicit in the rights associated with ownership of subject inventions and in sections of the SPRC that acknowledge and limit exclusive licensing. See *id.* In most circumstances, nonprofit organizations may *not* assign away the rights in inventions, but merely license them. See *generally id.*; see also 37 C.F.R. § 401.14, at SPRC(k); see also *infra* note 259.

²⁵⁴ See, e.g., 37 C.F.R. § 401.14, at SPRC(i) ("[T]he contractor agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject inventions in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States."); *id.* at (b) ("With respect to any subject invention in which the Contractor retains title, the Federal government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world."); *id.* at (d) ("Conditions When the Government May Obtain Title"); *id.* at (j) ("March-in Rights"); *id.* at (k)(4) (efforts to attract small business licensees).

²⁵⁵ See BayhDole25, INC., *supra* note 223, at 21 ("Bayh-Dole created the mechanisms to allow the private sector to step in and fulfill this role [of developing technology], enabling private investors to decide which innovations showed the greatest potential for successful commercialization and then to allocate their capital and resources accordingly"); see also ROVELL, *supra* note 3, at 119 ("It takes sales, distribution, and research and development as well as marketing to create a business success.").

²⁵⁶ Lee, *supra* note 193, at 1508; see also 126 CONG. REC. 22, 29899 (1980) ("So the bottom line is that if we want to see any significant commercialization of these patents, we are going to have to grant some form of exclusivity.").

²⁵⁷ See, e.g., 37 C.F.R. § 401.14, at SPRC(d)(1) ("The contractor will convey to the Federal agency . . . title to any subject invention . . .") (emphasis removed); *id.* at (d)(2) ("In those countries in which the contractor fails to file patent applications . . ."); *id.* at (d)(3) ("In any country in which the contractor decides not to continue the prosecution of any non-provisional patent application . . ."); see also, e.g., *supra* note 253.

²⁵⁸ See, e.g., 37 C.F.R. § 401.14, at SPRC(c)(1) (disclosure of invention to agency); *id.* at (c)(2) (election of title to agency); *id.* at (c)(3) (initial patent application); *id.* at (h) (reports on utilization of subject inventions); *id.* at (f)(1)(i) (government license); *id.* at (f)(1)(ii) (execution of documents to convey title to agency); *id.* at (f)(3) (notifications regarding prosecution decisions); *id.* at (f)(4) (statement of government support in patent applications).

universities could do with such inventions, chiefly a prohibition on the sale of inventions to third parties.²⁵⁹

Gatorade's rapid success and the consternation over its litigation had a dual impact on national IP policy: demonstrating what goes right with universities empowered to own and exclusively license research inventions²⁶⁰ and what goes wrong when IP policy lacks uniformity, clarity, and certainty for handling research innovations.²⁶¹ In so doing, Gatorade influenced the Bayh-Dole Act,²⁶² a bipartisan bill that unified treatment of research inventions²⁶³ by vesting in universities the power to own and commercialize those inventions via exclusive licenses.²⁶⁴

VI. PROVEN IN THE MARKET: GATORADE'S ASCENDANCE IN THE GLOBAL BEVERAGE BUSINESS

While universities and the government were grappling with the Bayh-Dole Act's fundamental changes to policy for research inventions,²⁶⁵ Gatorade's licensees were wrestling with the competitive

²⁵⁹ See *id.* § 401.14, at SPRC(k) ("If the contractor is a nonprofit organization, it agrees . . . Rights to a subject invention in the United States may not be assigned without the approval of the Federal agency . . .").

²⁶⁰ See *supra* notes 120–45.

²⁶¹ See *supra* notes 164–83.

²⁶² See *supra* notes 221–40.

²⁶³ See NAT'L RESEARCH COUNCIL, *supra* note 22, at 61 ("The Bayh-Dole Act substituted a system of university and small business ownership and removed the inconsistencies and uncertainties in agency policies with respect to performer rights, a considerable achievement."); John Fraser, *Communicating the Full Value of Academic Technology Transfer: Some Lessons Learned*, 28 LICENSING J. 1, 1 (2008), reprinted in 1 TOMORROW'S TECH. TRANSFER 1, 9 (2009) ("Essentially, by pre-assigning the option to acquire ownership of intellectual property (IP) created using federal grants, universities and small U.S. businesses would have certainty of ownership. [Senator Bayh] believed that such certainty would increase the commercialization of academic and small-business discoveries into products that would improve the U.S. economy and U.S. competitiveness.").

²⁶⁴ See *supra* notes 243–47.

²⁶⁵ See Lee, *supra* note 214, at 31 ("The [Bayh-Dole] Act allowed and encouraged small businesses and nonprofits that received government funds to take title to patents arising from federally funded research. Congress enacted this legislation on the view that exclusive rights were necessary to motivate additional private investment to develop patented inventions into commercial products.") (footnote omitted); Donald S. Siegel et al., *Assessing the Impact of Organizational Practices on the Relative Productivity of University Technology Transfer Offices*, 32 RES. POL'Y 27, 28 (2003) ("Bayh-Dole dramatically changed incentives for firms and universities to engage in [technology transfer]. . . . [I]t allowed universities to own the patents that arise from federal research grants.").

soft drink industry.²⁶⁶ Despite being a nationally-recognized brand in the late 1960s,²⁶⁷ Gatorade did not become a large profit-generator until the 1980s,²⁶⁸ long after litigation for its earnings settled.²⁶⁹

The Gatorade brand thrived because of its ubiquity,²⁷⁰ cleverly engineered by the Stokely team. After Gatorade became the “official sports drink” of the NFL,²⁷¹ Stokely insisted that the players use cups and coolers branded with the Gatorade logo²⁷²—the orange coolers with white tops and green cups with the lightning bolt are today instantly recognizable to any former amateur or professional athlete.²⁷³ Partially motivated by the desire to acquire Gatorade,²⁷⁴ Quaker Oats Co. (Quaker) purchased Stokely in 1983, and with it the license to the sports drink.²⁷⁵ Gatorade continued to grow in popularity throughout the

²⁶⁶ See generally Karl Stark & Bill Stewart, *Want to Grow Fast? Focus on Profits, Not Revenue*, INC. (Oct. 15, 2013), <https://www.inc.com/karl-and-bill/should-you-sacrifice-growth-for-profits.html>.

²⁶⁷ See *supra* notes 135-148.

²⁶⁸ See Pamela G. Hollie, *Quaker “Insurance” on Bid for Stokely*, N.Y. TIMES, July 19, 1983, at D3 (reporting revenues of \$100 million in fiscal year 1982).

²⁶⁹ See *supra* Part IV for more on the litigation surrounding Gatorade.

²⁷⁰ Nielsen’s Sports Sponsorship Scorecard credited Gatorade with more than 590 million impressions from logos on cups, towels, and coolers during Super Bowl XXXIX. ROVELL, *supra* note 3, at 92.

²⁷¹ See *First Gatorade Royalties*, *supra* note 142 (reporting the NFL officially approved Gatorade for use and it was used by all but the Oakland Raiders).

²⁷² See ROVELL, *supra* note 3, at 50 (“When negotiating the agreement, Jim Keys had the idea of putting in the contract that all NFL teams would have to put coolers on their sidelines for every game.”).

²⁷³ See ROVELL, *supra* note 3, at 51 (orange coolers with white tops”); *id.* (describing how a young marketing intern helped develop the “green waxed-paper cups that have been so closely connected with the Gatorade brand”); ROVELL, *supra* note 3, at 62 (origin of the lightning bolt logo).

²⁷⁴ See Hollie, *supra* note 268 (citing analysts stating Gatorade as a “principal attraction” for Quaker); H. J. Maidenberg, *Stokely Approves Quaker Bid*, N.Y. TIMES, July 18, 1983, at D1 (discussing Quaker’s attraction to Stokely based partly on its production of Gatorade).

²⁷⁵ See Maidenberg, *supra* note 274 (“The tender offer calls for Quaker Oats to buy all the 2.7 million common shares outstanding of Stokely for each, or a total of \$208 million.”); Andrews, *supra* note 119 (discussing how Quaker purchased Stokely, which came with an exclusive license to Gatorade); see also ROVELL, *supra* note 3, at 78.

1980s and 1990s thanks to some viral moments²⁷⁶ and splashy marketing.²⁷⁷

For instance, consider how a sideline prank became a free national advertisement and feel-good story associated with the brand. On October 20, 1985, as retribution for a week of harassment from head coach Bill Parcells,²⁷⁸ New York Giants defensive tackle Jim Burt dumped one of the team's Gatorade buckets on Parcells following a victory against Washington.²⁷⁹ The "Gatorade shower" became a tradition for the Giants, who drenched their coach after many victories in the 1985 and 1986 seasons.²⁸⁰ The Giants overturned the cooler on Parcells following their Super Bowl XXI victory in January 1987, which USA TODAY later named the 42nd greatest Super Bowl moment of all time.²⁸¹ The Gatorade shower remains such an iconic tradition²⁸²—especially in football—that betting on what color players dump on the winning Super Bowl coach has become a popular gambling proposition.²⁸³ The ritual has such intrinsic marketing value²⁸⁴ that

²⁷⁶ See *Viral Marketing*, DICTIONARY.COM, <https://www.dictionary.com/browse/viral-marketing> (last visited Apr. 19, 2020) (n., "a marketing strategy that focuses on spreading information and opinions about a product or service from person to person, especially by using unconventional means such as the Internet or email."); see also ROVELL, *supra* note 3, at 91 ("The Gatorade dunk basically meant we had arrived. Mainstream America included mom, apple pie, Chevrolet, and now Gatorade.").

²⁷⁷ See ROVELL, *supra* note 112 ("Things really took off when Quaker Oats bought the brand. They really knew how to connect it to what was going on the field and had all the deals with the major sports.") (quoting Dr. Free, co-inventor of Gatorade).

²⁷⁸ See ROVELL, *supra* note 3, at 78 ("The whole week Coach Parcells was telling him how [Washington offensive lineman] Jeff Bostic was going to eat him up, and it infuriated him.") (quoting Giants teammate Harry Carson).

²⁷⁹ See ROVELL, *supra* note 3, at 78–79 ("They waited until Parcells took his headphones off, then doused him with the orange-colored drink in the orange cooler.").

²⁸⁰ See ROVELL, *supra* note 3, at 78–82.

²⁸¹ Nate Davis, *The 50 Greatest Super Bowl Moments of All Time*, USA TODAY (Jan. 28, 2016, 11:03 PM), <http://www.usatoday.com/story/sports/nfl/2016/01/28/greatest-super-bowl-moments-plays-all-time/79378274/>.

²⁸² See ROVELL, *supra* note 3, at 77–78 ("Over nearly two decades, the dumping of the Gatorade cooler on the coach has become a tradition at every level of sports. During every fall weekend, a Gatorade dunking probably happens on a football field in every state, and the reporting of the event gives the brand thousands of free media mentions and impressions every year.").

²⁸³ See Charles Curtis, *Have Super Bowl Bettors Figured Out What Color Gatorade Will Be Poured on the Winning Coach?*, USA TODAY (Feb. 2, 2020, 3:13 PM), <https://ftw.usatoday.com/2020/02/2020-super-bowl-gatorade-color-bet-purple>.

²⁸⁴ *E.g.*, ROVELL, *supra* note 3, at 80 ("The media loved the display. Along with television commentators mentioning it, newspaper writers filled their columns with mentions, even noting the time left in the game when the dunk occurred. The required photo along with each Giants victory was, of course, one of Parcells getting doused."); *id.* at 82 ("We had corporations in New York who wanted to get their hands on a cooler

Gatorade competitor Powerade contractually forbids players at partner schools, like the Ohio State University, from drenching their coach in Gatorade.²⁸⁵

By the end of the 1980s, Gatorade was generating hundreds of millions of dollars in sales for Quaker²⁸⁶ and solidified its status as the nation's top-selling sports drink.²⁸⁷ The brand went international²⁸⁸ and continued to grow through the 1990s. In 1991, Gatorade scored another marketing coup by winning a competition against Coca-Cola for the endorsement of Michael Jordan,²⁸⁹ two-time MVP²⁹⁰ and two-time league champion²⁹¹ for the Chicago Bulls of the National Basketball Association (NBA).²⁹² A photo of Jordan, a lifelong Gatorade drinker,²⁹³ dunking from the free throw line in the 1988 Slam Dunk

for their annual meeting so that they could dunk their CEO who had a good year.”); *id.* (“[W]hen Reagan greeted the Giants [after their Super Bowl victory], he walked into the Rose Garden with an orange bucket filled with popcorn and dunked it on [N.Y. Giant Harry] Carson.”); *id.* at 90 (stating that “no brand has ever received more free publicity than Gatorade got and is still getting from the dunk”).

²⁸⁵ Murray Sperber, *College Sports, Inc.*, in *BUYING IN OR SELLING OUT: THE COMMERCIALIZATION OF THE AMERICAN RESEARCH UNIVERSITY*, *supra* note 193, at 27 (“For example, the football players at Ohio State University are not allowed to celebrate an important victory by dousing their head coach with Gatorade The players must use PowerAde because Coca-Cola, the company that makes PowerAde, has exclusive contracts with Ohio State.”).

²⁸⁶ See ROVELL, *supra* note 3, at 98 (“Sales went up at least 25 percent each year, so that by the end of 1990, sales were approaching \$900 million annually.”); Grassmuck, *supra* note 125 (estimating in 1991 sales were about \$600 million a year).

²⁸⁷ See Andrews, *supra* note 119 (“Gatorade . . . remains the nation's No. 1 sports drink.”).

²⁸⁸ See *supra* note 155; ROVELL, *supra* note 3, at 96 (stating that Quaker launched Gatorade in Italy in 1987 and it became the country's number one sports drink); *id.* at 123 (stating that Gatorade was doing business in 13 countries as of 1992).

²⁸⁹ See Stuart Elliot, *It's Official: Michael Jordan Is Now Promoting Gatorade*, N.Y. TIMES, Aug. 9, 1991, at D16; see also ROVELL, *supra* note 3, at 98–105; Terry Lefton, *To “Be Like Mike,” Gatorade Had to Poach Michael Jordan from Coke*, SPORTS BUS. J. (Feb. 17, 2014), <https://www.sportsbusinessdaily.com/Journal/Issues/2014/02/17/Champions/Schmidt-Jordan.aspx>; *id.* at 104 (“Gatorade stepped up to the table . . . with a ten-year deal worth \$13.5 million.”).

²⁹⁰ *NBA MVP & ABA Most Valuable Player Award Winners*, BASKETBALL REFERENCE, <https://www.basketball-reference.com/awards/mvp.html> (last visited Apr. 20, 2020) (stating that Jordan won the MVP award in the 1987-88 and 1990-91 seasons and would go on to win three more times).

²⁹¹ *NBA & ABA League Index*, BASKETBALL REFERENCE, <https://www.basketball-reference.com/leagues/> (last visited Apr. 20, 2020) (stating the Chicago Bulls won the league championship in 1990–91 and 1991–92); see also *Michael Jordan Stats*, BASKETBALL REFERENCE, <https://www.basketball-reference.com/players/j/jordami01.html> (last visited Apr. 20, 2020).

²⁹² See *Michael Jordan Stats*, *supra* note 291.

²⁹³ See ROVELL, *supra* note 3, at 100 (discussing that Jordan was “a Gatorade drinker growing up,” “continued to drink Gatorade at North Carolina,” and used it to

Contest (sponsored by Gatorade) would become iconic in sports and pop culture.²⁹⁴ After that, posters of Jordan's dunk accompanied by the Gatorade logo²⁹⁵ became a fixture in dorm rooms and dens all over the country.²⁹⁶ By the mid-1990s, Jordan was the most popular athlete in the United States and possibly the most recognizable person in the world.²⁹⁷

Behind the success of its "Be Like Mike" advertising campaign with Jordan,²⁹⁸ Gatorade outsold Quaker's signature oatmeal²⁹⁹ for the first time in 1991.³⁰⁰ In 2000, PepsiCo (Pepsi) acquired Quaker,³⁰¹ making it a foundational licensed product for one of the world's three largest

mitigate weight loss when he lost "as much as five pounds in water weight per game" in the NBA).

²⁹⁴ See Mike Fiammetta, *Walter Iooss Jr. Discusses Classic Michael Jordan Photo*, SPORTS ILLUSTRATED (Feb. 27, 2015), <https://www.si.com/nba/2015/02/17/walter-iooss-jr-michael-jordan-1988-nba-dunk-contest-photo> ("The result was among the most ubiquitous photos of Jordan . . ."). Bleacher Report named the photo of Jordan the second most iconic photograph in sports history. See Michael Akelson, *The 101 Most Iconic Photographs in Sports History*, BLEACHER REPORT (Aug. 19, 2011), <https://bleacherreport.com/articles/804404-the-101-most-iconic-photographs-in-sports-history>.

²⁹⁵ Gatorade sports marketing head Bill Schmidt strategically "scouted out the arena beforehand and knew where the best points of interest would be." ROVELL, *supra* note 3, at 101.

²⁹⁶ However, the most popular Jordan poster features a *different* classic photo than the oft-discussed iconic one, see *supra* note 288. E.g., *Michael Jordan Famous Foul Line Dunk Vintage Sports Poster Print*, ALLPOSTERS, https://www.allposters.com/sp/Michael-Jordan-Famous-Foul-Line-Dunk-Vintage-Sports-Poster-Print-Posters_i8758797_.htm.

²⁹⁷ See DAVID HALBERSTAM, *PLAYING FOR KEEPS: MICHAEL JORDAN AND THE WORLD HE MADE 7* (Broadway 2000) ("Whether he was the best or not, there was no doubt that he was the most compelling and most charismatic athlete in all of sports in the nineties. . . . He was arguably the most famous American in the world, more famous in distant parts of the globe than the President of the United States or any movie or rock star."); see also ROVELL, *supra* note 3, at 102 ("Jordan was so big [in 1991] that the Bulls coming into town probably meant the closest form of hero worship since the Beatles."); *Oprah Winfrey and Michael Jordan Interview*, YOUTUBE, at 1:00 (June 14, 2019), <https://www.youtube.com/watch?v=ZaHIXVQcRFI> ("[J]ust about the most famous man on the planet is here!") (quoting Oprah Winfrey).

²⁹⁸ See ROVELL, *supra* note 3, at 105–15; see also *id.* at 109 ("In Gatorade's 26-year history, this was definitely its shining moment.").

²⁹⁹ Oatmeal had been Quaker's signature product since the company's inception. See *Quaker Oats History: Oat Origins*, QUAKER OATS, <http://www.quakeroats.com/about-quaker-oats/content/quaker-history.aspx> (last visited Apr. 19, 2020).

³⁰⁰ ROVELL, *supra* note 3, at 109 ("[In 1991] Gatorade had, for the first time, passed oatmeal in sales.").

³⁰¹ See ROVELL, *supra* note 3, at 144 (discussing Pepsi's purchase of Quaker for \$13.4 billion in stock).

food and beverage companies.³⁰² Revenues continued to grow throughout the 2000s in the now substantial sports drink market Gatorade had created,³⁰³ and sales in the 2010s exceeded \$5 billion per year.³⁰⁴ As of 2010, Gatorade was the official sports drink of the NFL, NBA, MLB, MLS, NHL, and WNBA.³⁰⁵

As of 2015, Gatorade's licensees had paid the Gatorade Trust over \$1 billion in royalties.³⁰⁶ The University of Florida's share of the Gatorade royalties³⁰⁷ had net the university \$200 million as of 2016.³⁰⁸ By design, Gatorade continues to be omnipresent in amateur and professional athletics.³⁰⁹ Notably, the Gatorade brand never forgot its R&D roots, touting its connection to research whenever possible.³¹⁰

³⁰² See Chloe Sorvino, *The World's Largest Food and Restaurant Companies in 2019*, FORBES (May 15, 2019, 5:50 PM), <https://www.forbes.com/sites/chloesorvino/2019/05/15/worlds-largest-food-restaurant-companies-2019/#36fced8f5f0d> (stating that Anheuser-Busch, Nestle, and Pepsi are the top three food and drink companies in the world).

³⁰³ See ROVELL, *supra* note 3, at 126 (citing that the sports drink market "was on an upward climb toward \$1 billion" in 1992). Gatorade had 83% of the sports drink market in 1992. *See id.* at 127.

³⁰⁴ Rovell, *supra* note 112 ("[S]ales in recent years have surpassed \$5 billion a year."); *Sweat Solution*, *supra* note 9, at 16:35 ("[In 2014], Gatorade is made by PepsiCo and accounts for more than \$3 billion per year in worldwide sales.") (on-screen text).

³⁰⁵ *Company Fact Sheet*, GATORADE (2010), https://web.archive.org/web/20101221172620/http://pepsico.com/Download/Gatorade_Company_Fact_Sheet.pdf; *see also Heritage and History of Gatorade*, *supra* note 30 ("Gatorade is now also the official sports drink of the NBA, AVP, and PGA, Major League Baseball, Major League Soccer, and numerous other elite and professional organizations and teams."). Gatorade had been the official sports drink of the NFL since the 1960s. *See supra* notes 138–40.

³⁰⁶ Rovell, *supra* note 112; *see also The U.S. Liquid Refreshment Beverage Market Accelerated in 2015*, BEVERAGE MARKETING CORP. (July 12, 2016), <http://www.beveragemarketing.com/news-detail.asp?id=382> [hereinafter *Beverage Market*].

³⁰⁷ *See supra* Part IV, notes 185–86 (discussing UF's share of royalties from the Gatorade settlement).

³⁰⁸ Rovell, *supra* note 112; *see also* Anthony Clark, *UF Still Profiting from Gatorade*, GAINESVILLE SUN (Feb. 10, 2009), <https://www.gainesville.com/article/LK/20090210/news/604173062/GS> (stating UF receives \$12 million or more per year from Gatorade); *Sweat Solution*, *supra* note 9, at 16:50 (stating UF received over \$200 million from Gatorade since 1973) (on-screen text).

³⁰⁹ *See Heritage*, *supra* note 30 ("Today, Gatorade can be found on the sidelines of more than 70 Division I colleges as the official sports drink of their men's and women's intercollegiate sports."); *see also* ROVELL, *supra* note 3, at 143 ("[P]eople have come to expect [Gatorade] in a sports setting, to the point where its presence is taken for granted.") (quoting sports sociologist Dr. Jay Coakley).

³¹⁰ *See Heritage*, *supra* note 30; ROVELL, *supra* note 3, at 128 ("Gatorade had the science behind it to prove to the consumer that Gatorade worked. Coca-Cola didn't have the same body of research [with Powerade]."); *e.g.*, *Thirst Quencher*, *supra* note

Over the course of a half-century, what started as a nephrologist's pet project on a bunch of football-playing Gators became one of the most identifiable trademarks in the world,³¹¹ the apex predator of the sports drink market,³¹² and one of the most valuable beverage licenses on the planet.³¹³

VII. EMULATED IN PRACTICE: LESSONS FROM THE GATORADE SAGA FOR THE COMMERCIALIZATION OF RESEARCH

While Gatorade was establishing its preeminence in the sports beverage market,³¹⁴ American universities were acclimating to the changes in IP policy introduced by the Bayh-Dole Act³¹⁵ and trying to replicate the success of Gatorade on their own campuses. With the advent of university ownership of federally-funded research inventions,³¹⁶ universities had to build tech transfer operations that

2; *Product Information*, PEPSICO, <https://www.pepsico.com/brands/product-information> (last visited Apr. 26, 2020) (“With a legacy over 50 years in the making, it’s the most scientifically researched and game-tested way to replace electrolytes lost in sweat.”). The Gatorade Sports Science Institute (GSSI) was founded in 1985 to help “athletes optimize their health and performance through research and education in hydration and nutrition science.” *About GSSI*, GATORADE SPORTS SCI. INST., <https://www.gssiweb.org/en/about/about-gssi> (last visited Apr. 26, 2020).

³¹¹ *Beverage Market*, *supra* note 306 (valuing Gatorade as the “sixth largest liquid refreshment beverage trademark during [2015]”). Gatorade “expanded to Canada in 1984, Japan in 1982[,] and Europe and South America in 1988,” and was available in eighty different countries as of 2010. *Company Fact Sheet*, *supra* note 305.

³¹² *Beverage Market*, *supra* note 306.

³¹³ *See* Kays, *supra* note 10 (stating that Gatorade brought UF more than \$250 million in royalties); *Most Valuable Soft Drink Brands Worldwide in 2019, Based on Brand Value*, STATISTA (2019), <https://www.statista.com/statistics/273063/leading-15-most-valuable-global-soft-drink-brands-based-on-brand-value/> (showing Gatorade as the fourteenth most valuable soft drink brand in the world), *Sports Drink Dollar Sales in the United States from 2013 to 2018, by Brand*, STATISTA (2019), www.statista.com/statistics/1048937/sports-drink-brands-in-us-dollar-sales/ (showing sales of Gatorade totaled \$5.5 billion in 2018, compared to \$1.05 billion for Powerade and \$250 million for BodyArmor).

³¹⁴ *See supra* Parts III, VI.

³¹⁵ *See* Rebecca Zacks, *The TR University Research Scorecard 2000*, MIT TECH. REV. (July 1, 2000), <https://www.technologyreview.com/2000/07/01/236249/the-tr-university-research-scorecard-2000/> (“[After the Bayh-Dole Act] [u]niversities that would previously have let their intellectual property lie fallow began filing for and getting patents at unprecedented rates.”); *infra* Part VII for more information on the Bayh-Dole Act and its passage; *see also infra* note 319.

³¹⁶ Bayh-Dole Act, 37 C.F.R. § 401.14, at SPRC(b) (2019) (allowing a contractor to retain title to an invention); *see also supra* Part V.

complied with the terms of federal awards,³¹⁷ protected inventions,³¹⁸ and at least nominally commercialized research innovations.³¹⁹ This required an investment of great resources, and some universities adapted quickly to this new truth,³²⁰ while others were slow to build a tech transfer infrastructure.³²¹ Although it took time for tech transfer to mature at many universities, the overall number of patents at universities grew substantially in the years immediately following the passage of the Bayh-Dole Act.³²²

All the while, Gatorade's fascinating story of moving from the practice field to the top of the soft drink market has served as an

³¹⁷ See Good, *supra* note 193, at 51–52 (discussing how the Bayh-Dole Act helped universities develop their IP through federal grants and contract); e.g., 37 C.F.R. § 401.8(a) (“[A]gencies have the right to receive periodic reports from the contractor on utilization of inventions.”); *id.* § 401.14, at SPRC(c)(1) (“The contractor will disclose each subject invention to the Federal Agency within two months after the inventor discloses it in writing to contractor personnel responsible for patent matters.”); *id.* at (c)(2) (“The contractor will elect in writing whether or not to retain title to any such invention by notifying the Federal agency within two years of disclosure to the Federal agency.”).

³¹⁸ 37 C.F.R. § 401.14, at SPRC(c)(3) (stating contractors file the initial patent application); *id.* at (d)(2) (stating contracts convey the title to the Federal agency to any invention in countries where it failed to file a patent); *id.* at (d)(3) (stating contractors relinquish the title to the Federal agency in any country in which it does not continue patent prosecution); *id.* at (f)(1) (stating the contractor must deliver to the Federal agency all instruments necessary to establish rights the government has throughout the world in the subject inventions) (emphasis omitted); *id.* at (f)(2) (stating the contractor must agree to require its employees disclose any inventions and establish government rights in the inventions).

³¹⁹ 37 C.F.R. § 401.14, at SPRC(e)(2) (“The contractor’s domestic license may be revoked or modified . . . to achieve expeditious practical application of the subject invention . . .”) (emphasis omitted); *id.* at (j) (stating the Federal agency can retain license to an invention if the contractor has not taken “effective steps to achieve practical application of the subject invention in such field of use”); *id.* at (j)(3) (“Such action is necessary to meet requirements for public use specified by Federal regulations.”).

³²⁰ See *supra* Parts III, VI; see also Wadman, *supra* note 250, at 831 (“At the time [of the passage of the Bayh-Dole Act], TTOs in the United States numbered in the single digits. Today, more than 230 universities have them.”).

³²¹ See ISAACSON, *supra* note 191, at 450 (“[In the mid-1990s], most other elite universities emphasized scholarly research and avoided commercial endeavors.”).

³²² From 1969–80, there was an average of 287.7 patents granted to American universities and colleges, but from 1981–92 there was an average of 853.8 patents granted to American universities and colleges. See *University Patent Count & Expenditures*, USPTO, <https://developer.uspto.gov/sites/default/files/viz/university-patent-count-expenditures.xlsx> (last visited Aug. 10, 2016). Since the year 2000, American universities and colleges have secured an average of 3,000 patents per year. See *id.*; see also NAT’L RESEARCH COUNCIL, *supra* note 22, at 61 (“The [Bayh-Dole Act] was followed by a surge not only in patent and licensing activity but also in universities creating internal capacity to undertake this new level of activity.”).

aspirational story for universities across the country.³²³ Beyond being motivational, the Gatorade saga is instructive: it provides valuable lessons for American universities, policymakers, and tech transfer professionals of what to do, what not to do, and how innovation may materialize when shepherding research innovations.³²⁴

The Gatorade saga's lessons for what to do when commercializing a research idea include the following:

- Incentivize scientists to commercialize their research by allowing them to retain a portion of the profits from commercialization;³²⁵
- Involve inventors in commercializing research innovations, such as by leveraging inventors' personal and professional networks in identifying licensees;³²⁶

³²³ Andrews, *supra* note 119 (“[T]he invention of Gatorade is widely viewed as one of the early successes of technology transfer.”) (citing Indiana University Technology Transfer Director Mel DeGeeter).

³²⁴ See Williams, *supra* note 21, at A1 (“It is a classic example of how not to handle a patent idea.”) (quoting Donald Price, Dir., UF Off. Corp. Programs). Although this article focuses on university research and research innovations, there is not an extraordinary amount of literature on the origin stories of most university tech transfer inventions, even the “home runs.” See *infra* note 380 (examples of research innovations).

³²⁵ See *supra* Parts III, VI; e.g., Jorge L. Contreras & Jacob S. Sherkow, *CRISPR, Surrogate Licensing, and Scientific Discovery*, 355 SCI. 698, 698–99 (Feb. 17, 2017) (discussing how CRISPR patent holders exclusively licensed the right to develop therapeutics to startups with the technology's principal researchers because it “delegates the job of licensing” in exchange for allowing the researchers to “profit far more than they otherwise would”); Jessica Silbey, *Photocopier* (stating Xerox inventor Chet Carlson retired “a wealthy man” from the patent royalties he shared with Battelle Memorial Institute), in *A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS*, *supra* note 220, at 233, 234.

³²⁶ See *supra* ROVELL, *supra* note 3, at 38 (“Luckily, [Cade's] web of colleagues was in the right place at the right time.”); *supra* notes 117–19 and accompanying text (outlining the relationships that led to an introduction to eventual Gatorade licensee Stokely); see also NAT'L RESEARCH COUNCIL, *supra* note 22, at 59 (describing licensing as one of the “mechanisms that enable or depend on repeated personal contact”); Lee, *supra* note 214, at 48 (“Indeed, patent-mediated technology transfer necessarily involves a high degree of personal contact between faculty inventors and licensees.”); e.g., ISAACSON, *supra* note 191, at 256–59 (discussing how the relationship between Robert Kahn and Vint Cerf led to their collaboration that helped precipitate the development of the internet).

- Recognize that research³²⁷ can lead to transformative results,³²⁸ including in ways that influence culture and society;³²⁹
- Foster collaboration between scientists of varying backgrounds and disciplines;³³⁰
- Generate collisions between scientists and diverse groups of people;³³¹
- Allow input from surprise contributors;³³²

³²⁷ See ROVELL, *supra* note 3, at 65; e.g., Healy, *supra* note 220, at 377 (highlight how core Wi-Fi technology was developed by radio astronomers searching for gravitational waves associated with exploding black holes); see *infra* note 378.

³²⁸ See *infra* note 394; e.g., ISAACSON, *supra* note 191, at 261 (state the internet would “become a transformative tool”); *id.* at 464 (“[Google] represented a climactic leap in the relationship between humans and machines. . . .”); Adam Mossoff, *Morse Telegraph*, (discussing how the NY Sun called the telegraph “the greatest revolution of modern times”), in A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS, *supra* note 220, at 6; Stef van Gompel, *Light Bulb* (stating the light bulb “transformed the world”), in A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS, *supra* note 220, at 105; Beth Webster, *Bell Transistor* (calling the transistor is “one of the most profound enabling technologies to be invented in the twentieth century”), in A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS, *supra* note 220, at 217.

³²⁹ Despite seeming unimportant, Gatorade’s impact changed many people’s day-to-day lives, or at least their dietary habits. See ROVELL, *supra* note 3, at 126 (“Sports drinks were also starting to emerge as a casual drink, appearing at occasions that would otherwise be reserved for a soda.”); see *infra* note 362 (Gatorade “would inspire the multimillion-dollar sports beverage industry.”); see also, e.g., Melanie Brown, *Oral Contraceptive Pill* (claiming development of the pill was the “single biggest revolution” for women), in A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS, *supra* note 220, at 225; Gompel, *supra* note 328, at 105 (“[B]y illuminating homes, schools, factories, offices, shop windows, theaters, street corners and parks, [light bulbs] also improved conditions for learning and reading, furthered economic and commercial progress, created opportunities for leisure and night life”); Silbey, *supra* note 325, at 239 (claiming Xerox copying “transformed the world”).

³³⁰ See *supra* Part II; e.g., ISAACSON, *supra* note 191, at 225 (discussing how one team that developed interactive computing (a key development enabling the internet) was half psychologists and half engineers).

³³¹ See *supra* notes 55–57 (calling Dewayne Douglas’ a “coffee buddy” of the Gatorade inventors); e.g., ISAACSON, *supra* note 191, at 221–24 (discussing J. C. R. Licklider’s tactics for fostering collaborations that contributed to the development of the internet); Webster, *supra* note 328, at 221 (describing how Bell Lab’s campus “was designed to encourage physical connections between groups” and to ensure “people bumped into each other”).

³³² See *supra* note 82 (Mrs. Cade’s suggestion of lemon juice); A “lab assistant” at the federal research lab in Peoria, Illinois, provided a moldy cantaloupe vital to culturing penicillin. See, e.g., BILL BRYSON, *THE BODY* 42 (2019). Stanford officemate Sean Anderson suggested that the Google cofounders name their search engine for googol, “the term for the number 1 followed by a hundred zeros.” ISAACSON, *supra* note 191, at 460; Stavroula Karapapa, *Post-it Note* (discussing how a next-door lab with on a scrap of yellow paper inspired the iconic Post-it Note color),

- Recognize the potential value in seemingly “small ideas”,³³³
- Protect research innovations through intellectual property (especially patents),³³⁴ including multiple forms of IP if possible;³³⁵
- Partner with an external party to move ideas to the market, particularly to acquire needed expertise or business acumen;³³⁶

in A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS, *supra* note 215, at 329, 334.

³³³ See *Sweat Solution*, *supra* note 9, at 1:06 (quoting Phoebe Cade-Miles, daughter of Dr. Cade); see also, e.g., Healy, *supra* note 220, at 377 (discussing how Wi-Fi patents began to process research data, not serve in wireless network technology); ISAACSON, *supra* note 191, at 458 (Google cofounder “had no thought of building a search engine. . . . The idea wasn’t even on the radar.”); Megan Molteni, *Crispr’s Origin Story Comes to Life in a New Documentary*, WIRED (Mar. 11, 2020, 8:00 AM), <https://www.wired.com/story/crisprs-origin-story-comes-to-life-in-a-new-documentary/> (discussing CRISPR’s origins as a “humble yogurt culture helper”).

³³⁴ See *supra* note 126 (patent applications related to Gatorade); see also Lee, *supra* note 214, at 32 (“For universities, however, patents were seen as a necessary conduit for transferring federally funded technologies to the private sector for commercialization.”); see also, e.g., Method for Node Ranking in a Linked Database, U.S. Patent No. 6,285,999 B1 (filed Jan. 9, 1998) (Google search engine); Improvement in the Mode of Comm’ing Info. by Signals by the App. of Electro-Magnetism, U.S. Patent No. 1,647 (issued June 20, 1840) (Morse telegraph); Three-Electrode Circuit Element Utilizing Semiconductive Materials, U.S. Patent No. 2,524,035 (filed June 17, 1948) (Bell transistor); Acrylate Copolymer Microspheres, U.S. Patent No. 3,691,140 (filed Mar. 9, 1970) (Post-it note); Methods and Compositions for RNA-Directed Target DNA Modification and for RNA-Directed Modulation of Transcription, U.S. Patent No. 4,405,829 (filed Apr. 13, 2015) (CRISPR); Healy, *supra* note 220, at 377 (patents used in Wi-Fi); ISAACSON, *supra* note 191, at 121 (patents for computer hardware such as computers and microchips).

³³⁵ See *supra* notes 1, 30, 31, 123 (Gatorade trademarks); e.g., Lionel Bentley, *Singer Sewing Machine* (stating Singer found “maintaining the trademarks” related to the sewing machine “was far better than having any patent”), in A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS, *supra* note 220, at 77; Catherine Bond, *Aspirin Pill* (discussing how Bayer held both a trademark and valid patent for Aspirin, see *Bayer Co. v. United Drug Co.*, 272 F. 505, 507 (S.D.N.Y. 1921) for background on the trademark), in A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS, *supra* note 220, at 212; Silbey, *supra* note 325, at 234 (Haloid Co. trademarked trademark of Xerox for); Karapapa, *supra* note 332, at 334 (Post-it Trademark); STANFORD CREATOR’S GUIDE, *supra* note 20, at 24–25 (discussing how Stanford licensed both the patent and copyrightable software code to Google).

³³⁶ See ROVELL, *supra* note 3, at 18 (“But we didn’t know a damn thing about flavoring.”) (quoting Dr. Shires); *id.* at 46–47 (describing Stokely’s efforts to improve the taste of Gatorade); see *supra* Parts III & VI; e.g., BRYSON, *supra* note 332, at 42 (discussing how federal government researchers needed to partner with American pharmaceutical companies to scale up production of penicillin). *But see*, e.g., ISAACSON, *supra* note 191, at 462–64 (discussing how Google cofounders had to start a company due to lack of initial interest from potential licensees).

- License IP exclusively to give a licensee a competitive advantage worth expending the significant investment needed to develop an idea;³³⁷
- Appreciate the value of marketing in the successful commercialization of a research innovation;³³⁸
- Capitalize on publicity and an idea's association with the university;³³⁹
- Understand that seemingly “low-tech”³⁴⁰ ideas can be extremely valuable;³⁴¹
- Build upon early adopters of a product or service by recognizing alternative uses or users;³⁴²

³³⁷ See *supra* notes 123–24; 128–31; see also STANFORD CREATOR'S GUIDE, *supra* note 20, at 25 (“[A]n exclusive license is often the best option to provide the company with an incentive to invest the resources needed for commercialization.”); see also, e.g., Contreras & Sherkow, *supra* note 325, at 698 (discussing how the key CRISPR patent holders were granted exclusive license rights to a spinout company (with respect to therapeutics)); STANFORD CREATOR'S GUIDE, *supra* note 20, at 25 (highlighting how Stanford exclusively licensed the copyrights associated with its search engine to Google). *But see* Lee, *supra* note 193, at 1552 (“Cetus and Genentech were among dozens of biotechnology companies that licensed” the technology behind recombinant DNA from UCSF).

³³⁸ E.g., Graham Dutfield, *Viagra Pill* (attributing sales of Viagra to “direct-to-consumer publicity” and media hype), in A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS, *supra* note 220, at 391.

³³⁹ E.g., ISAACSON, *supra* note 191, at 463–64 (examining how Google cofounders capitalizing on a connection from a Stanford professor and on the “favorable buzz” to land investments from the rival top venture capital firms in Silicon Valley).

³⁴⁰ The term “low-tech” (adj.) means, “Of or relating to low technology.” *Low-tech*, AM. HERITAGE DICTIONARY, <https://ahdictionary.com/word/search.html?q=low-tech> (last visited Apr. 28, 2020); see also *Low-tech*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/low-tech> (last visited Apr. 28, 2020) (“technologically simple or unsophisticated”). Describing Gatorade and other inventions as “low-tech” is not intended to slight the scientific acumen required to create such inventions or overcome technical hurdles to develop it, but only the perception that such ideas are unsophisticated. See, e.g., *supra* notes 355 (describing Dr. Cade a “unique genius”); Rogin, *supra* note 79 (describing how the glucose initially “turned into rock” rather than dissolving into the water).

³⁴¹ See *supra* Part II (listing the initial ingredients of Gatorade as water, glucose, sodium, and potassium); see also Karapapa, *supra* note 332, at 329 (describing the Post-it note as “a piece of stationery consisting of a small piece of paper with re-adherable stirp of adhesive on the back.”).

³⁴² Gatorade was initially targeted at only the collegiate and professional athlete, then the hyper-active consumer. See *supra* note 154. Consumers quickly seized upon it for other applications. See, e.g., *supra* note 265; e.g., Rogin, *supra* note 17 (alcohol mixer); *id.* (hangover cure); see also *id.* (explaining Gatorade could be of value to soldiers, those working in engine or furnace rooms, racehorses, and the UF choir); see also, e.g., ISAACSON, *supra* note 191, at 226 (discussing how key developments in the creation of the internet were initially devised for air defense systems).

- Avoid costly hurdles where possible;³⁴³
- Identify the profound public benefit that can result from quaint research innovations.³⁴⁴

The Gatorade saga's lessons of what *not* to do when commercializing a research idea include the following:

- Have unclear ownership policies at the national or institutional level;³⁴⁵
- Lack standardized processes through which researchers can disclose or otherwise share inventions and creations with the university;³⁴⁶

³⁴³ See ROVELL, *supra* note 3, at 23, 58–62 (reviewing rejection of the name Gator-Aid to avoid potential need for regulatory approval and reformulation to eliminate FDA-banned cyclamate).

³⁴⁴ See Rogin, *supra* note 17 (arguing that Gatorade has “substantially improved not only the lot of the Florida football team but that of all sweaty mankind.”); *e.g.*, *id.* (discussing use of Gatorade to prevent heat prostration, heat stroke, and incidents of injuries related to fatigue, infant diarrhea, fluid loss related to severe burns, colds, upset stomachs); Curtis, *supra* note 61 (highlighting the use of Gatorade “in third-world countries to fight dehydration and diarrhea”); *see also, e.g.*, Good, *supra* note 193, at 53 (discussing University of Wisconsin’s development of Warfarin for “rodent eradication” but is now known as blood thinner Coumadin).

³⁴⁵ See Mark L. Gordon, *University Controlled or Owned Technology*, 30 J.C. & U.L. 641, 656 (2004) (“At the time, the University did not have a formal policy in place regarding the ownership of faculty inventions”); *e.g.*, STANFORD CREATOR’S GUIDE, *supra* note 20, at 24 (discussing that Stanford did not own any IP related to Yahoo! because “use of basic desktop computers is considered incidental” but owned IP related to Google because the founders developed it “in the course of research toward their Ph.D. degree requirements.”). Oddly enough, a 1991 dispute over a new beverage line, similar to Gatorade, debatably subject to Florida’s updated patent policies would revive the 1970 dispute and spring from such an assignment document. *See* Andrews, *supra* note 119 (“According to court papers filed last April reopening the 1970 litigation, Bank One contends that one of the doctors, J. Robert Cade, bypassed the trust in assigning rights to the new drink to the University of Florida Research Foundation, an Independent fund-raising arm of the university.”).

³⁴⁶ See ROVELL, *supra* note 3, at 65 (“In December 1966 Cade was urged by an executive at the University of Florida to report his invention—more than fourteen months after it had been conceived.”). Another administrative measure is a university committee that reviews ownership issues and commercial potential of technologies—to act as a decision-making buffer for the administration. *See, e.g.*, Andrews, *supra* note 119 (“What [disputes over successful technology transfer] requires is better upfront review and upfront strategy so you don’t get into these legal problems [like that surrounding Gatorade] five years later.”); Williams, *supra* note 21 (“Faculty members are required to disclose all inventions to a university committee that reviews the potential to obtain a patent and the commercial prospects of the invention, [Donald] Price[, Dir., UF Off. Corp. Programs,] said.”).

- Fail to obtain assignments and other important documents from creators early in the process;³⁴⁷
- Have an unsophisticated tech transfer operation;³⁴⁸
- Forecast with certainty the commercial success of a research idea at its inception;³⁴⁹

³⁴⁷ See ROVELL, *supra* note 3, at 68; Beckett, *supra* note 172 (“Dr. Cade had never signed the University’s standard invention assignment form.”); *Gator Fumble*, *supra* note 60 (“[U]niversity files . . . did not contain the usual waiver of patent rights to his discoveries.”); *id.* (“If the agreements between Dr. Cade and the university had been properly executed back in early 1967, the university would be getting something like 75 percent of the royalty—not 20 percent.”); Rovell, *supra* note 112 (“Cade had somehow never signed the standard invention agreement, which in most cases assigned about 75 percent of the earnings from a deal reached by a University of Florida employee back to the school.”); *see also, e.g.*, Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc., 563 U.S. 776, 793 (2011) (holding that the Bayh-Dole Act did automatically vest title with Stanford, and the faculty member owned and could assign the HIV test procedure he invented); Williams, *supra* note 21 (“[Donald] Price[, Dir., UF Off. Corp. Programs] said [UF] now requires all of its faculty members to sign employment agreements assigning the university rights to all patents resulting from their research. . . . Such employment agreements are now common on campus.”). The Bayh-Dole Act *requires* universities obtain assignment for inventions developed under federal grants. *See* Bayh-Dole Act, 37 C.F.R. § 401.14, at SPRC(f)(2) (2019) (as amended by Rights to Federally Funded Inventions and Licensing of Government Owned Inventions, 83 Fed. Reg. 15,954, 15,962 (Apr. 13, 2018)).

³⁴⁸ *See* Auerbach, *supra* note 220, at 565 n.11 (“Universities with coherent patent and licensing strategies will not lose the benefits of research accomplished in their laboratories.”); Gordon, *supra* note 345, at 656 (“The University of Florida was not prepared to take full advantage of technology transfer when a University researcher invented Gatorade in 1965.”); Williams, *supra* note 21 (“If we had done Gatorade right, we would be getting \$5 or \$6 million [a year].”) (quoting Donald Price, Dir., UF Off. Corp. Programs) (alteration in original). Florida’s contemporaries were also prone to such misjudgments. *See id.* (estimating that the University of Indiana missed out on \$95 million in revenues from a fluoride compound licensed to Procter & Gamble used in Crest toothpaste).

³⁴⁹ *See* Williams, *supra* note 21 (“Gatorade was developed in 1965 when many universities were ill equipped to judge the commercial potential of ideas emerging from their research labs. Officials blew the university’s chance to control the Gatorade royalties when they declined to develop a professor’s idea. . . . It is probably a safe bet that no university would make such a mistake today. Academia is vastly more sophisticated about the commercial potential of its research.”); *see also* ROVELL, *supra* note 3, at 45 (“[T]he \$1 million price tag [flat fee requested by the doctors] wasn’t going to work, since the [Stokely] board wasn’t sure the product would ever sell. To protect itself from making a foolish investment, the board authorized . . . a royalty structure, in which the doctors would earn a percentage of the sales.”); *Sweat Solution*, *supra* note 9, at 15:10–15:31 (UF’s doubts of market potential). *See also, e.g.*, Christopher Beauchamp, *A.G. Bell Telephone* (discussing Western Union’s declined opportunity to buy the telephone patent for \$100,000), *in* A HISTORY OF INTELLECTUAL PROPERTY IN 50 OBJECTS, *supra* note 220, at 99. Yahoo!, Excite, and

- Engage in costly litigation that could hinder commercialization;³⁵⁰
- Be unprepared to capitalize on useful research innovations.³⁵¹

The Gatorade saga also provides lessons on how innovation may materialize with research ideas through:

- Luck, serendipity, or pure coincidence;³⁵²
- A messy, complicated, and convoluted process;³⁵³

AltaVista all passed on a \$1 million offer to license the Google search engine. *See ISAACSON, supra* note 191, at 462.

³⁵⁰ However, it is likely that a highly successful commercial product will attract litigation because of the financial stakes, and in other cases litigation may be necessary to extract value from the idea if firms are infringing on the idea while evading royalties. *See, e.g., ROVELL, supra* note 3, at 67 (discussing how Dr. Cade’s was told to expect multiple law suits per year); *see also, e.g., Genentech, Inc. v. Eli Lilly & Co., 998 F.2d 931 (Fed. Cir. 1993)* (lawsuit over recombinant DNA in which the Regents of the University of California were codefendants).

³⁵¹ *See Andrews, supra* note 119 (“The wrangling [in court for Gatorade] underscores the importance of forethought in technology transfer.”) (citing Mel DeGeeter). While there are many examples where this again occurred, such mistakes usually ensure that a research invention will not be commercially successful, and many of the top research universities are sufficiently prepared to capitalize on a valuable idea.

³⁵² *See ROVELL, supra* note 3, at 91 (“There are things that happen serendipitously”) (quoting former Gatorade Executive Peter Vitulli). Dewayne Douglas was a coffee buddy of Dr. Cade’s before approaching him with the Gators’ “dehydration problem.” *See supra* notes 55–57. Georgia Tech Coach Bobby Todd credited Gatorade for UF’s victory in the Orange Bowl. *See supra* notes 106–07. Alfred Stokely of Stokely-Van Camp was Kent Bradley’s coworker’s wife’s sister’s husband. *See supra* notes 117–20; *see also, e.g., BRYSON, supra* note 332, at 40–42 (discussing Alexander Fleming’s “serendipitous discovery” that mold from the genus *Penicillium* inhibited bacterial growth, leading to the first antibiotic); ISAACSON, *supra* note 191, at 451 (discussing how Google cofounder Sergey Brin was other cofounder Larry Page’s orientation guide before graduate school at Stanford).

³⁵³ *See Patricia E. Campbell, University Inventions Reconsidered: Debunking the Myth of University Ownership, 11 WM. & MARY BUS. L. REV. 77, 96–97 n.110 (2019)* (“[Universities] recognize that patent management is a complicated undertaking, that it is expensive and that it demands a high degree of legal competence, administrative astuteness and promotional zeal”) (footnote omitted); Lee, *supra* note 193, at 1539 (“[T]echnology transfer often unfolds as a complex process rather than a simple one-off conveyance of patent rights.”); *Gatorade and Patent Policy, supra* note 151, at 143 (“Patent law, a complicated business, becomes even more complex when universities, researchers, big business and Government get into the act. This has happened in the Gatorade case.”); *see, e.g., supra* Parts III & IV; *see also, e.g., BRYSON, supra* note 332, at 41–43 (commercializing the discovery of antibacterial mold via penicillin); Healy, *supra* note 220, at 77 (commercializing the Wi-Fi router).

- The ingenuity of individual or small groups of scientists;³⁵⁴
- The work of eccentric, brilliant creators;³⁵⁵
- Acts of individual-minded iconoclasts;³⁵⁶
- Unpredictable sources of inspiration;³⁵⁷
- Fortuitous timing;³⁵⁸
- The sheer fun of scientific experimentation.³⁵⁹

The most obvious and inspirational lesson from the Gatorade story is that amazing results can occur when a team of research scientists

³⁵⁴ *E.g.*, ISAACSON, *supra* note 191, at 446–65 (Google with Larry Page and Sergey Brin); Webster, *supra* note 328, at 217–18 (Bell transistor with Bill Shockley, John Bardeen, and Walter Brattain).

³⁵⁵ Everyone who encountered or studied Dr. Cade was enamored by his eccentricities and apparent genius, which seem to have been intertwined. *See supra* note 60 (discussing Dr. Cade as eccentric); Rogin, *supra* note 17 (“When you first meet friends and colleagues of Dr. Robert Cade . . . they invariably inform you that he is a genius.”); *id.* (“He has a lot of different and unusual ideas, and his approaches are outstandingly different.”) (quoting one of Dr. Cade’s interns); *Sweat Solution, supra* note 9, at 2:15 (“Well Bob Cade was a unique genius. He could do almost anything.”) (quoting Dr. Shires); *see also, e.g.*, BRYSON, *supra* note 332, at 41 (describing the principal investigator of penicillin at Oxford as eccentric); ISAACSON, *supra* note 191, at 221–24 (discussing some eccentricities of J.C.R. Licklider, MIT professor and “the single most important person in creating the internet”).

³⁵⁶ *See* Rogin, *supra* note 17 (“He’s such a rebel. He’s surely an individualist.”) (quoting Mary Cade); *id.* (“I don’t mind being the only person in the world thinking what I think.”) (quoting Dr. Cade); *see also, e.g.*, ISAACSON, *supra* note 191, at 451 (“And I think [our success] was part of that training of not following rules and orders, and being self-motivated, questioning what’s going on in the world and doing things a little bit differently.”) (quoting Larry Page); *Google Founders Talk Montessori*, YOUTUBE, at 1:00 (Feb. 11, 2010), https://www.youtube.com/watch?v=0C_DQxpX-Kw.

³⁵⁷ *See Sweat Solution, supra* note 9, at 5:00; *see also, e.g.*, ISAACSON, *supra* note 191, at 457 (describing how Larry Page woke up “in the middle of the night” with the initial idea that became Google); Karapapa, *supra* note 332, at 331 (explaining that Arthur Fry wondered “if he could create a bookmark that would stick to the page but could be removed without damaging it” before inventing the Post-it note).

³⁵⁸ *See* Rogin, *supra* note 17; *see also, e.g.*, BRYSON, *supra* note 332, at 42 (explaining that the U.S. benefited from the opportunity to scale up production and commercialize penicillin due to World War II hindering Oxford’s opportunity to do so).

³⁵⁹ *See* ROVELL, *supra* note 3, at 71 (“Gatorade started out as fun . . . A lark, just a little probe into man’s machinery.”) (quoting the ATLANTA J.-CONST.); Rogin, *supra* note 17 (“Gatorade started out to be fun, a joke. It’s no longer a joke. There’s a lot of money involved.”) (quoting Dr. Cade); *see also, e.g.*, ISAACSON, *supra* note 191, at 254 (describing how those receiving the first request for comment seeking input on host-router links “felt that they were being included in a fun process.”).

hypothesize solutions to an important problem.³⁶⁰ The greatest asset a university has is the collective expertise and creativity of its researchers.³⁶¹ For Gatorade, what began as a simple inquiry into what football players lost in sweat became a billion-dollar industry.³⁶² A team of researchers saw a problem, gathered data, hypothesized a solution, and performed experiments to test the hypothesis.³⁶³ While no one envisioned Gatorade becoming a commercial success of such magnitude, its marvelous path demonstrates the promises of marrying university researchers with a problem ripe for solution.

Perhaps the most satisfying lesson from the Gatorade saga was how a commercially valuable, successfully transferred research product can create a “virtuous cycle of tech transfer activity.”³⁶⁴ The royalties generated from a Gatorade can reinvigorate, nourish, and even

³⁶⁰ See ROVELL, *supra* note 3, at 11 (“For Cade, [the intrigue of working with the football team] was more about using science to solve problems.”); Kays & Phillips-Han, *supra* note 222 (“It’s obvious why [the athletes were not urinating during practice], but it’s just not the kind of thing I went around giving great periods of thought to. That question changed our lives.”) (quoting Dr. Cade); *Sweat Solution*, *supra* note 9, at 15:00 (“You don’t wake up one morning and say, ‘What am I going to invent today?’ You wake up one morning and say, ‘There’s this problem, and I’ve got to solve it.’”) (quoting Phoebe Cade-Miles); see also, e.g., ISAACSON, *supra* note 191, at 232 (discussing how ARPA’s Bob Taylor realized problems “could be solved by building a data network to connect research centers,” the central “epiphany” of the internet).

³⁶¹ E.g., ISAACSON, *supra* note 191, at 246 (“The Internet was born of an ethos of creative collaboration . . .”).

³⁶² See L.A. Times Staff, Dr. J. Robert Cade; *Gatorade Inventor Pioneered The Multimillion-Dollar Sports Beverage Industry*, CALGARY HERALD, Dec. 2, 2007, at B11 (“Dr. J. Robert Cade began with a simple intention 40 years ago: help the University of Florida football team stay hydrated. His invention—Gatorade—would inspire the multimillion-dollar sports beverage industry.”); KAYS & PHILLIPS-HAN, *supra* note 222.

³⁶³ See *supra* Part II, note 56, for more on the initial development of Gatorade.

³⁶⁴ See ASS’N OF UNIV. TECH. MANAGERS, U.S. LICENSING ACTIVITY SURVEY: FY2014 33 (2015) (“Under the Bayh-Dole Act, some of [the licensing] income is to be distributed to the inventors and creators of the technology, with the remainder used by the institution to support further academic and research purposes. This is the virtuous cycle of tech transfer activity.”); see, e.g., Grassmuck, *supra* note 125 (“Tremendous good has come from the royalties of Gatorade.”) (quoting Donald Price, Dir., UF Off. Corp. Programs). Yet, royalty income is still only a miniscule amount compared to other sources of revenue for universities, hospitals, and research institutes. See Ashley Stevens, *Academic Licensing: Royalty Income and Economic Impact*, 3 LES NOUVELLES 133, 140 (2003) (“[R]oyalty income is still a relatively minor contributor to the finances of these institutions, amounting to just 3% of total sponsored research funding and dwarfed by tuition income, patient care revenues and charitable donations.”); Jon Marcus, *Think Universities are Making Lots of Money from Inventions? Think Again*, HECHINGER REP. (Jan. 17, 2020), <https://hechingerreport.org/think-universities-are-making-lots-of-money-from-inventions-think-again/>.

transform a university's research program through the reinvestment into future research efforts³⁶⁵—in fact, the terms of grants promulgated under the Bayh-Dole Act require it.³⁶⁶ At the University of Florida, the tens of millions of dollars in royalties generated from Gatorade³⁶⁷ have funded research programs,³⁶⁸ built facilities,³⁶⁹ and bankrolled incubators.³⁷⁰ Gatorade has inspired a spirit of entrepreneurship and

³⁶⁵ As early as 1973, the Gatorade royalties were earmarked to fund kidney research, marine science, biological sciences, oceanography, and other health and education-oriented programs. *See U. of Florida Gets \$115,296 in First Gatorade Royalties*, N.Y. TIMES (Sept. 16, 1973), <https://www.nytimes.com/1973/09/16/archives/u-of-florida-gets-115296-in-first-gatorade-royalties-promotional.html>; *see also* NAT'L RESEARCH COUNCIL, *supra* note 22, at 60 (“The public good [from university technology transfer] might include inputs into further research. . . .”). *But see* Gregory K. Sobolski et al., *Technology Licensing: Lessons from the U.S. Experience*, 294 J. AM. MED. ASS'N 3137, 3139 (2005) (“Since the US model indicates that only 5% of research sponsorship can be expected in returns from licensing income, it is unlikely that licensing income can subsidize further research activities significantly and alleviate the burden of government sponsorship . . .”).

³⁶⁶ *See* Bayh-Dole Act, 37 C.F.R. § 401.14, at SPRC(k)(3) (2019) (“The balance of any royalties or income earned by the contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental [sic] to the administration of subject inventions, will be utilized for the support of scientific research or education . . .”).

³⁶⁷ *See* Grassmuck, *supra* note 125 (estimating \$17 million in royalties for the university as of 1991).

³⁶⁸ *See id.* (reporting that the “university uses all of its royalty payments for medical research”); *First Gatorade Royalties*, *supra* note 142 (reporting the “royalties will also support a number of other health and education-oriented research programs”).

³⁶⁹ *See* Jeff Schweers, *Gatorade: 50 Years of the Thirst Quencher*, GAINESVILLE SUN (Oct. 4, 2015, 12:01 AM), <https://www.gainesville.com/article/LK/20151004/SPORTS/604135445/GS> (“Gatorade money helped build the \$53 million UF Research and Academic Center at Lake Nona in Orlando.”). Gatorade's revenues have also funded research outside the University of Florida. *See, e.g., First Gatorade Royalties*, *supra* note 142 (“The university's new Cornelius Vanderbilt Whitney research center at St. Augustine's Marineland will get \$30,000 for studies in marine science, biological sciences and oceanography.”); *Heritage*, *supra* note 30 (“[T]he Gatorade Sports Science Institute was founded in Barrington, Illinois, to conduct scientific research in the areas of exercise science, hydration, and sport nutrition. Three years later, the lab would be expanded to provide advanced testing for athletes and new Gatorade products and flavors and develop education materials for sports health professionals around the world.”); *id.* (“[G]atorade and [GSSI] begin [sic] working with auto racing organizations to develop a hydration tool that could withstand 130-degree temperatures and keep drivers hydrated safely throughout the course of a race. The result of their research was the development of GIDS, the Gatorade In-Car Drinking System, which is now considered an essential piece of racing equipment.”).

³⁷⁰ *See* Schweers, *supra* note 369; *id.* (“Gatorade helped build Sid Martin Biotech Incubator in Alachua and provides grants to startups at the Innovation Hub downtown, which was recently awarded another U.S. Department of Commerce grant to double its size.”); *id.* (“Gatorade also provided \$200,000 for tuberculosis research in Haiti,

innovation at the University of Florida³⁷¹ and “allowed [it] to be competitive with some of the top schools in the country” in tech transfer.³⁷² For these reasons, Gatorade is a grand illustration of how revenue created through tech transfer can support a university’s ongoing research mission.³⁷³ As such, Gatorade is a shining example³⁷⁴ of the good that can result from successful commercialization of university research, and the “happy arrangement” that can exist among a university, faculty creators, and commercial partners.³⁷⁵

VIII. GROUNDED IN REALITY: THE BENEFITS OF RESEARCH INNOVATION & THE CHALLENGES OF REPLICATING GATORADE’S SUCCESS

Gatorade remains a premium example of a “home run”³⁷⁶ research innovation that can benefit a university, its scientist creators, industry,

and supports many new hires in the preeminence program.”); *id.* (“Gatorade money also financed the creation of the LifeLink Foundation in 1982, a nonprofit organization dedicated to organ and tissue donation and recovery.”).

³⁷¹ See Schweers, *supra* note 369. (“Nan-Yao Su and creator of [UF licensed product] Sentricon termite control said he was inspired by Cade.”); *id.* (“It has fueled biotech research and inspired other UF scientists to pursue technology licensing, helping to launch over 175 biomedical and technology startups since 2001. UF ranked sixth nationally with 16 startups in 2013 and ranked eighth for U.S. patents with 107. Last year, UF had 15 new start-ups.”); *id.* (“Gatorade has helped assemble brilliant people . . . People like Marco Pahor at the Institute on Aging, Patricia Snyder at the Anita Zucker Center for Excellence in Early Childhood Education, and Linda Bartoshuk at the UF taste center.”).

³⁷² See Schweers, *supra* note 369.

³⁷³ See Schweers, *supra* note 369. (“No other commercial product is more closely associated with a university than Gatorade is with the University of Florida.”); *id.* (“It certainly was a marvelous accomplishment. . . . It has allowed us all to move forward in the field of medical research and application of clinical and research medicine.”) (quoting Dr. Shires); Williams, *supra* note 21 (“Technology transfer . . . has become an integral part of the academic consciousness.”); Marcus, *supra* note 364 (“[M]oney that comes from licensing typically goes back into the research budget.”). See generally STANFORD, NINE POINTS, *supra* note 22, at 9 (“[A] multiplicity of approaches are possible to address the dual goals of [tech transfer], nurturing future research and using the innovations of university research to provide the broadest possible benefit to the public.”).

³⁷⁴ *E.g.*, Healy, *supra* note 220, at 382 (explaining how CSIRO used AUD \$150 million from litigation settlements related to Wi-Fi patents to invest in endowment for scientific research projects).

³⁷⁵ Grassmuck, *supra* note 125 (noting the “happy arrangement” the distribution of funds from Gatorade resulted in for all parties) (quoting Donald Price, Dir., UF Off. Corp. Programs); see also Lee, *supra* note 193, at 1506 (“[T]he link that connects publicly sponsored research and private-sector commercialization is technology transfer.”).

³⁷⁶ See Good, *supra* note 193, at 53 (citing Gatorade as an example of a “home run” for a university licensing program); see also, *e.g.*, ROVELL, *supra* note 3, at 110

and the public. Other current and future household names in university research innovations include the internet,³⁷⁷ Google,³⁷⁸ and CRISPR.³⁷⁹

(describing Gatorade's advertising campaign with Michael Jordan as a "home run"); Zacks, *supra* note 310 ("All it really takes to win the financial game is one IP home run.").

³⁷⁷ See generally ISAACSON, *supra* note 191, at 217–61 (discussing how the innovations that culminated in the internet occurred in part at MIT, Harvard, Stanford, and UCLA); see also Zittrain, *supra* note 220, at 369 (detailing that the Internet Protocol (IP) sprang from "the cooperative and academic environment"). While some universities have realized value from components making up what is "the internet," see, e.g., *supra* notes 332–34 (Stanford's equity stake in Google). No single university realized the financial gains of commercializing the internet as a whole. Instead of being commercialized, many of the important developments made openly available and successfully transferred via indirect mechanisms, such as academic publications. E.g., Vinton G. Cerf & Robert E. Kahn, *A Protocol for Packet Network Intercommunication*, 22 IEEE TRANSACTIONS ON COMM. 637, 648 (1974); see also ISAACSON, *supra* note 191, at 259 (stating that "the Internet was born" when discussing the Cerf and Kahn paper).

³⁷⁸ See generally ISAACSON, *supra* note 191, at 248–65 (describing development of Google at Stanford). Although Google's research origins are often obscured in retellings of history, its co-creators Sergey Brin and Larry Page were graduate students (who are more likely to be directly involved in research than undergraduates) with a research grant from the federal government. See Sergey Brin & Lawrence Page, *The Anatomy of a Large-Scale Hypertextual Web Search Engine*, 30 COMPUTER NETWORKS & ISND 107, 107 (1998) ("In this paper, we present Google, a prototype of a large-scale search engine which makes heavy use of the structure present in hypertext."); *id.* at 116 ("The research described here was conducted as part of the Stanford Integrated Digital Library Project, supported by the National Science Foundation under Cooperative Agreement IRI-9411306. Funding for this cooperative agreement is also provided by DARPA and NASA. . . ."); see also *Award Abstract No. 9411306: The Stanford Integrated Digital Library Project*, NSF (start date Sept. 1, 1994) (Sponsor: Stanford) ("This project . . . is to develop the enabling technologies for a single, integrated and 'universal' library . . . includ[ing] both on-line versions of pre-existing works and new works and media of all kinds that will be available on the globally interlinked computer networks of the future."). Brin and Page also relied in part on the Stanford Office of Technology Licensing, which licensed both patent and copyrights to Google. See ISAACSON, *supra* note 191, at 462; STANFORD CREATOR'S GUIDE, *supra* note 20, at 24–25.

³⁷⁹ Mitchell R. O'Connell et. al., *Programmable RNA Recognition and Cleavage by CRISPR/Cas9*, 516 NATURE 263, 263 (2014) ("The CRISPR-associated protein Cas9 is an RNA-guided DNA endonuclease that uses RNA:DNA complementarity to identify target sites for sequence-specific doublestranded DNA (dsDNA) cleavage."). CRISPR is a "gene-editing technology." Molteni, *supra* note 333. Many scientists, journalists, and other experts think CRISPR is a revolutionary technology that will profoundly alter how humans interact with biology, disease, and heredity. See, e.g., *id.* (describing CRISPR as "one of the most revolutionary technologies of the modern era"); *id.* (explaining CRISPR is "handing humans the ability to profoundly alter the evolution of any species on the planet"). CRISPR originated in part from federally funded research at universities, in particular UC Berkeley and (through the Broad Institute) MIT and Harvard. See *id.* at 266 (acknowledging funding from NSF, NIH, and the DoD Nat'l Sci. & Eng'g Graduate Res. Fellowship); see, e.g., *Project No.*

Although there is a sluggers' lineup of examples,³⁸⁰ home runs in tech transfer are relatively rare³⁸¹—at least in the financial, commercial sense. Nevertheless, these “big winners”³⁸² are sought after and warp realistic expectations³⁸³ for universities, policy experts, and the public.

A university trying to find the “next Gatorade”³⁸⁴ or hit a home run of its own may be swinging blindly at a 100-mile per hour fastball.³⁸⁵ While Gatorade was a home run for the University of Florida,³⁸⁶ recreating such a smashing success requires the alignment of innumerable factors.³⁸⁷ There were some circumstances unique to Gatorade that are not frequently present for research innovation.

5P50GM102706-03: Center For RNA Systems Biology, NIH REPORTER (Awardee Organization: UC Berkeley).

³⁸⁰ See, e.g., *supra* notes 377 (the internet), 378 (Google); 379 (Crisper-Cas); see also, e.g., Good, *supra* note 193, at 53 (FSU's anti-cancer drug, Taxol); *id.* (Carnegie-Mellon's text-crawling search engine, Lycos); Lee, *supra* note 193, at 1552 (recombinant DNA licensed to Genentech and several other biotech companies (UCSF)); Marcus, *supra* note 364 (University of Illinois's web browser, Mosaic); *id.* (Georgetown's non-drowsy allergy medicine, Allegra); U.S. CONG. JOINT ECON. COMM., 98TH CONG., THE U.S. CLIMATE FOR ENTREPRENEURSHIP AND INNOVATION 29 (Comm. Print 1984) (Columbia's pre-Bayh-Dole laser technology and atomic power); Good, *supra* note 193, at 53 (University of Wisconsin's blood thinner, Coumadin); Lee, *supra* note 214, at 40–41 (Columbia's creation of cotransformation, a “process for inserting exogenous DNA into a host cell to produce particular proteins”); Auerbach, *supra* note 220, at 565 n.11 (Fluoride at IU); Sobolski, *supra* note 365, at 3138 (Michigan State's chemotherapy medication).

³⁸¹ See Good, *supra* note 193, at 53 (“These discoveries, which have major commercial value, are unique . . .”); Marcus, *supra* note 364 (“[T]hose kinds of [big] payoffs . . . [are] more exceptions than rules.”); Wadman, *supra* note 250, at 830 (“[W]indfall deals are rarities.”).

³⁸² *Life of a Stanford Invention*, STAN.: OFFICE OF TECH. LICENSING (2018), https://otl.stanford.edu/sites/g/files/sbiybj10286/f/otl_overview_fy18_1.59.44_pm_1.pdf; see also Wadman, *supra* note 250, at 831 (explaining that when there are “big winners—some mind-boggling numbers are involved”).

³⁸³ See NAT'L RESEARCH COUNCIL, *supra* note 22, at 67 (describing “the likelihood of very significant payoff from IP-based transactions slim and disappointed expectations high”); Sobolski, *supra* note 365, at 3139 (“Too frequently, discussions of technology licensing ignore establishing reasonable expectations and expected values from licensing programs.”); *id.* (“[T]he chance to generate significant revenue, however slight, tends to create a distorted perception.”).

³⁸⁴ Wadman, *supra* note 250, at 453 (“Every tech-transfer person in the country wants to land the next Gatorade, the next Taxol, the next Cisplatin.”) (quoting John Frangioni); *id.* (“Other universities look at those very few rare cases and imagine they can also hit the invention jackpot”) (quoting former Stanford Professor Daria Mochly-Rosen).

³⁸⁵ See *supra* notes 378–80.

³⁸⁶ See *supra* note 376 (describing Gatorade as a “home run”).

³⁸⁷ See, e.g., Behar, *supra* note 212, at 29 (“There is no orderly process to take some really great idea somebody has in research and turn it into something that the weather service can use.”) (quoting Under Sec'y of Oceans & Atmospheres Conrad Lautenbacher).

Notably, Gatorade was significantly closer to a commercially viable product upon its inception than much of the basic, commercially distant research being performed at universities.³⁸⁸ Basic research by its very nature often originates as a solution looking for a problem³⁸⁹ rather than the other way around, as was the case with Gatorade.³⁹⁰ Basic research is also extraordinarily risky,³⁹¹ requiring significant time and development before commercialization is feasible.³⁹² Despite several

³⁸⁸ See *supra* Parts II-III (explaining that in 1965 players were drinking a prototype of Gatorade and within weeks Stokely was selling the product); Walterscheid, *supra* note 193, at 133 (“As a practical matter, such inventions [produced through federal R&D funding] are almost never in a commercial form when they are first reduced to practice.”).

³⁸⁹ See *HERD Survey*, *supra* note 13, at 3 (describing basic research as “without any particular application or use in view”); see also NAT’L ECON. COUNCIL & OFFICE SCI. & TECH. POLICY, A STRATEGY FOR AMERICAN INNOVATION 21 (2015) (“Basic research, by definition, will sometimes lead us down blind alleys, but it will also tell us what we don’t know, which then helps us figure out new pathways.”) (quoting Pres. Barack Obama); ISAACSON, *supra* note 191, at 451 (“I think the productivity of pure research [at Stanford] was a lot higher, because it had a real-world grounding. . . . It’s not just theoretical. You want what you’re working on to apply to a real problem.”) (quoting Larry Page); Karapapa, *supra* note 332, at 329 (“Unlike the common assumption linked to inventorship that there is a technical problem that needs solving, the discovery of the glue that is used in the Post-it notes was—according to its inventor—‘a solution waiting for a problem to solve.’”); Auerbach, *supra* note 220, at 564 (“University scientists traditionally engage in pure research, regardless of the prospects of commercial success.”).

³⁹⁰ See *Sweat Solution*, *supra* note 9 (describing the Gators’ severe dehydration problem).

³⁹¹ See *About*, NAT’L SCI. FOUND., [nsf.gov/news/special_reports/i-corps/about.jsp](https://www.nsf.gov/news/special_reports/i-corps/about.jsp) (last visited July 23, 2020) (“The goal of the NSF Innovation Corps (I-Corps) program . . . has been and will continue to be to reduce the time and risk associated with translating promising ideas and technologies from the laboratory to the marketplace.”); Marcus, *supra* note 364 (describing commercialization as high-risk and imprecise); see also, e.g., Webster, *supra* note 328, at 222 (“These contracts [for basic research at Bell Labs] . . . underwrote the high-risk, high cost end of many innovations that later metamorphosed into civilian use.”).

³⁹² See VANNEVAR BUSH, SCIENCE THE ENDLESS FRONTIER 10 (U.S. GPO, 1945), <https://www.nsf.gov/od/lpa/nsf50/vbush1945.htm> (“[N]ew products and new processes do not appear full-grown. They are founded on new principles and new conceptions, which in turn are painstakingly developed by research in the purest realms of science.”); Marcus, *supra* note 364 (“The basic research performed in university laboratories underpins discoveries that may take years to end up in the market, if they ever do.”); see also, e.g., BRYSON, *supra* note 332, at 40-43 (detailing how Penicillin was not turned into a usable medicine until 14 years after Fleming discovered *Penicillium*’s antibacterial properties); Healy, *supra* note 220, at 377-83 (explaining the core Wi-Fi patent took decades to be commercialized and began as a basic research idea unrelated to wireless communication); ISAACSON, *supra* note 191, at 251 (detailing the 40-year development of the internet); *id.* at 465 (“Figuring out what Crispr is, where its key bacterial genetic sequences come from, and what they

other inventions and attempted commercial products, Dr. Cade was unable to recreate a fraction of the success that his miracle beverage realized.³⁹³

In addition to the nascency of most university research,³⁹⁴ there is an abundance of obstacles that can doom a research invention. The path to commercialization of research has many pitfalls,³⁹⁵ a great number of which are out of the control of the tech transfer office and inventors.³⁹⁶ Possible pitfalls may include patentability issues,³⁹⁷ researcher and tech transfer naivete or lack of industry mentorship,³⁹⁸ lack of inventor commitment or cooperation,³⁹⁹ lack of institutional or government support such as money for prototyping or proving concepts,⁴⁰⁰ technical

could do with it took scientists scattered across the globe years of chipping away at a molecular mystery.”).

³⁹³ Dr. Cade developed several inventions besides Gatorade. *E.g.*, Grassmuck, *supra* note 125 (protein drink Go!) (“Thirst Quencher II”); Rogin, *supra* note 17 (detailing the invention of Gator-Go (nutritious dietary supplement beverage), a hydraulic football helmet, a hemispherical shoe polish can, Hopn Gator (a mixture of beer and a fluid similar to Gatorade), an organic foam to fertilize and protect plants from frost, the irradiated pecan, and a cookbook “Rabbit Recipes for Bunsen Burners”).

³⁹⁴ *See, e.g.*, Marcus, *supra* note 364 (“We are a university that focuses on research. We’re not a product development company.”) (quoting Brooke Beier, V.P., Technology Commercialization, Purdue Res. Found.).

³⁹⁵ Behar, *supra* note 212, at 27 (finding that legions of NOAA scientists face many challenges with regards to their weather forecasting innovations).

³⁹⁶ *See* Marcus, *supra* note 364 (“There’s a lot of steps there [in commercializing an invention] that are out of your control . . .”) (quoting a staffer quoting Senator Bayh).

³⁹⁷ *See* Lee, *supra* note 214, at 7 (“[C]ourts viewed academic science as falling outside of the scope of patentability . . .”); *id.* at 62 (“[T]hese changes [narrowing patentability] have disproportionately impacted university inventions, which tend to be rather upstream and embryonic.”); *e.g.*, *Assoc. for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576 (2013) (invalidating patent claims owned in part by the University of Utah Research Foundation); *Univ. of Rochester v. G.D. Searle & Co.*, 358 F.3d 916 (2004) (rejecting a less stringent written description requirement for universities under 35 U.S.C. § 112 in the interest of transferring innovations to the public).

³⁹⁸ *See* Marcus, *supra* note 364 (“[A]cademicians are absolutely clueless about what needs to be done to make a project attractive to industry.”) (quoting Stanford Professor Daria Mochly-Rosen); Wadman, *supra* note 250 (“The TTOs are being stretched too thinly, and lack expertise in the huge range of fields from which inventions may issue.”).

³⁹⁹ *See* Marcus, *supra* note 364 (“First, researchers have to be willing to invest time in translating abstract concepts into tangible products. Many aren’t, technology-transfer directors said.”); *id.* (noting that “faculty are awarded tenure and promotion based on . . . how much research money they bring in and how many papers they publish, not their numbers of patents or startups or the licensing revenue they earn”).

⁴⁰⁰ *See* *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336 (“[U]niversity research relates to basic research, including research into scientific principles and

and scientific challenges,⁴⁰¹ the propensity and desire in academia to share information via publication in scientific journals and presentations,⁴⁰² regulatory hurdles,⁴⁰³ trouble identifying and securing a licensee,⁴⁰⁴ lack of funding or access to capital,⁴⁰⁵ failure identifying market interest, the inability or disinclination to bring infringement

mechanisms of action, and universities may not have the resources or inclination to work out the practical implications of all such research” (citation omitted); Marcus, *supra* note 364 (noting that “technology transfer administrators say government grants typically don’t cover” proof-of-concept funding); Sobolski, *supra* note 365, at 1339 (“Also, the institutional infrastructure around technology licensing requires paying skilled employees at higher wages”); Wadman, *supra* note 250, at 830 (“There are also problems with small staffs—the median size of a US TTO is six employees, and many others around the world are smaller.”); *see also, e.g.*, Marcus, *supra* note 364 (discussing an organization started by a former Stanford professor giving research innovations “\$50,000 a year for two years to create . . . proofs of concept”); *id.* (detailing how Johns Hopkins faculty complained about a lack of institutional resources to commercialize research).

⁴⁰¹ *See* Rogin, *supra* note 17 (discussing how Gatorade scientists had to solve how to dissolve glucose in water); Bush, *supra* note 392 (stating that most basic research requires significant time and development to reach market); *see also, e.g.*, BRYSON, *supra* note 332, at 40 (discussing Alexander Fleming’s difficulty in turning the discovery of Penicillium’s antibacterial properties into a usable medicine).

⁴⁰² *See Stifling or Stimulating – the Role of Gene Patents in Research and Genetic Testing: Hearing Before the Subcomm. on Courts, the Internet, & Intellectual Prop.*, 110th Cong. 29 (2007) (statement of Lawrence M. Sung, Law Professor & I.P. Law Program Director, University of Maryland Law School) (suggesting that “ensuring that researchers are able to publish the results of their research in dissertations and peer-reviewed journals” be considered in licensing inventions); *see also, e.g.*, In re Klopfenstein, 380 F.3d 1345 (Fed. Cir., 2004) (holding a printed slide presentation at a meeting of the American Association of Cereal Chemists was a “printed publication” that acted as a statutory bar to patenting under 35 U.S.C. § 102); MIT v. AB Fortia, 774 F.2d 1104 (Fed. Cir. 1985) (holding an orally presented paper was a “printed publication” under 35 U.S.C. § 102 and could serve as prior art).

⁴⁰³ *E.g.*, Healy, *supra* note 220, at 379 (showing that initial commercialization efforts of Wi-Fi were hindered because regulatory authorities only allowed use of the technology at high frequencies).

⁴⁰⁴ *See* Marcus, *supra* note 364 (“But you have to find somebody willing to pay money for [an invention], license it, develop it.”) (quoting a former staffer to Senator Bayh).

⁴⁰⁵ *See* BRYSON, *supra* note 332, at 46 (estimating that development of a new drug requires \$3 billion). Some universities are taking measures to combat this challenge. *See, e.g.*, Williams, *supra* note 21, at A26 (describing how Harvard’s Medical Science Partners was created “to find a way to close the funding gap between research and development”); Marcus, *supra* note 364 (detailing how the University of Chicago and others “have created their own multimillion-dollar funds to invest in early stage faculty startups”).

lawsuits,⁴⁰⁶ and the banal administrative defects of bureaucracy.⁴⁰⁷ There is also the general unpredictability about what is commercially viable and what will transpire in the wacky marketplace⁴⁰⁸—even Gatorade’s initial licensee grossly underestimated its commercial potential.⁴⁰⁹

Simply put, the commercialization of university research ideas is a complex process⁴¹⁰ with an infinite number of ways to fail. If there is a high probability of success, a company will likely undertake the effort itself rather than rely on a university to do the research at all.⁴¹¹ One need not look further than the Gatorade tale to see the necessary steps that required a specific outcome for Gatorade to exist and succeed: Dwayne Douglas had to have a preexisting relationship with Dr. Cade,⁴¹² Dr. Cade had to be available and interested in solving the problem,⁴¹³ Coach Graves had to be receptive to some doctors conducting experiments on his players,⁴¹⁴ the initial results had to be promising,⁴¹⁵ the football team had to perform spectacularly well after they started drinking Gatorade,⁴¹⁶ Dr. Cade’s wife had to suggest adding lemon to improve the taste,⁴¹⁷ Gatorade had to receive an inordinate amount of publicity,⁴¹⁸ Kent Bradley had to relocate to the University

⁴⁰⁶ See Lee, *supra* note 214, at 45 (“At the enforcement level, universities holding patents often assert far less than their full exclusionary force.”); Marcus, *supra* note 364 (“Another way a few universities are trying to maximize their income is by becoming more aggressive in protecting their existing patents, something they’ve previously been reluctant to do because there wasn’t any money in their budgets for it.”).

⁴⁰⁷ See, e.g., Behar, *supra* note 212, at 29 (“Dysfunctional, compartmentalized bureaucracy gets in the way [of tech transfer].”).

⁴⁰⁸ See *supra* Parts III & VI, note 344; see also NAT’L RESEARCH COUNCIL, *supra* note 22, at 67 (“As with research itself, it is exceedingly difficult in technology transfer to predict with confidence what the successes will be.”).

⁴⁰⁹ See sources cited *supra* note 347.

⁴¹⁰ See sources cited *supra* note 348; see also Marcus, *supra* note 364 (“But moving research from a lab to the market is complex.”).

⁴¹¹ See Wadman, *supra* note 250, at 831 (“Frankly, if there wasn’t a need to fill this gap between basic science and product development, we wouldn’t need to operate a tech-transfer enterprise.”) (quoting Ted Bianco, Tech Transfer, Wellcome Trust).

⁴¹² See *supra* notes 54–56.

⁴¹³ See *supra* notes 57–59.

⁴¹⁴ See *supra* notes 64–69, 86–87.

⁴¹⁵ See *supra* notes 88–93.

⁴¹⁶ See ROVELL, *supra* note 3, at 70 (“If the Gators hadn’t done well while using Gatorade, it would have been highly unlikely that the drink would have made it out of the laboratory.”). The basketball team also had to have “its greatest year in its history” for Stokely’s intrigue to turn into “serious interest.” *Id.* at 38.

⁴¹⁷ See sources cited *supra* note 82.

⁴¹⁸ See ROVELL, *supra* note 3, at 79 (“The following season [after the Gatorade shower became a New York Giants’ ritual], the stunt caught on nationally in a serendipitous marketing coup that was too good to be true for those who worked on

of Indiana and interact with Stokely,⁴¹⁹ Stokely had to be a capable licensee and expend adequate resources to market Gatorade,⁴²⁰ the market had to be ready for a product fit for the physically active and health-conscious consumer,⁴²¹ the litigation had to unfold in a way that allowed commercialization to continue unimpeded, Gatorade's early adopters had to win Super Bowls and sing its praises,⁴²² and a series of publicity boons had to work in Gatorade's favor for it to become the beverage powerhouse it is today.⁴²³

Change the outcome of any one of those events and Gatorade likely does not become the commercial success it is today. Remove one of the events and no one outside Gainesville ever hears of it.⁴²⁴ If the 1966 Florida Gators go 4-5-1 (as they did in 1961⁴²⁵), the Gatorade on the shelf of 7/11 or the pallet at Costco likely disappears.⁴²⁶

Other research ideas at universities face a similar fate and improbability of success. For this reason, it is wholly unrealistic for other universities to depend on or forecast the fortune that Gatorade has produced for the University of Florida. Most tech transfer offices still operate at a deficit.⁴²⁷ Some of the policy changes from the Bayh-Dole Act, partially inspired by the Gatorade saga, have been of great benefit

the Gatorade brand."); *id.* at 84 ("The [Gatorade] cooler had started out as a way to allow trainers to mix a large volume of liquid without having to transfer it, but [after the popularity of the Gatorade shower] it was seen as one of the world's first forays into product placement.").

⁴¹⁹ See *supra* notes 117–119.

⁴²⁰ See ROVELL, *supra* note 3, at 3 (noting that in both 2003 and 2004, \$135 million was spent on advertising alone).

⁴²¹ See *supra* notes 148, 154; see also ROVELL, *supra* note 3, at 159 ("Had the exercise boom not been anticipated or had it been analyzed as a momentary blip, Gatorade could have lost the advantage of dominating the category . . .").

⁴²² See *supra* Parts III & VI.

⁴²³ See Schweers, *supra* note 369 ("Gatorade turned out to be a billion-dollar fluke, one of those rare collisions of events and ideas that created a one of a kind product.").

⁴²⁴ See ROVELL, *supra* note 3, at 28 ("Had the Gators not been successful, marketing Gatorade might have been a struggle. . . . Being tied to a winning program at least made it easier to claim that the drink was working."); *Sweat Solution*, *supra* note 9, at 9:25 ("If they lost, we might not have survived") (quoting Dr. Shires).

⁴²⁵ *Florida Gators School History*, *supra* note 42.

⁴²⁶ See Bob Henderson, *Clearwater Doctor Sips Sports Drink of Success*, ST. PETERSBURG TIMES (Sept. 19, 1996), <https://www.tampabay.com/archive/1996/10/19/clearwater-doctor-sips-sports-drink-of-success/> ("If [the UF football team] had lost [its first game with Gatorade on the sidelines], you probably never would have heard of Gatorade again.") (quoting Dr. Free).

⁴²⁷ See Marcus, *supra* note 364 ("[Colleges and universities are] making so little money from licensing inventions that, at many schools, it doesn't even cover the cost of managing them."); Wadman, *supra* note 250, at 830 ("[S]ome TTOs lose more money than they make for their institutions . . .").

to the American economy.⁴²⁸ Yet the positive impacts are produced by a disproportionate number of universities, leading to a very top-heavy picture in income from licensing university innovations.⁴²⁹ Most of the universities that produce large amounts of revenue to help sustain their ongoing research are traditional research-intensive universities⁴³⁰ or have a home run technology like Gatorade⁴³¹ that skew the perception of success—or at least the uniformity of that success.⁴³² At the expense of mixing sports metaphors, tech transfer and the commercialization of research are “a bit like college football” in that there are “big-time programs that make a lot of money,” but they are “few and far

⁴²⁸ See sources cited *infra* notes 430-449.

⁴²⁹ See ASS'N OF UNIV. TECH. MANAGERS, *supra* note 364, at 34 (stating that only 223 of 41,792 active licenses (0.5%) generated more than \$1 million in 2014); see also Eric G. Campbell et al., *Inside the Triple Helix: Technology Transfer and Commercialization in The Life Sciences*, 23 HEALTH AFF. 64, 70 (2004) (“[T]echnology transfer produces limited revenues for most universities. Of the total \$1.7 billion in licensing revenues earned by the 140 respondents . . . the top ten income-producing universities generated \$1 billion, or 60 percent of all licensing revenues”) (citation omitted); Sobolski, *supra* note 365, at 3137 (“[T]he 6 highest earners (top 7%) obtained nearly 60% of all income [from licensing]. This distribution represents a classic “winner-take-all” phenomenon with a few earning most of the income.”); Marcus, *supra* note 364 (“Just fifteen [universities] accounted for 72 percent of all the money [in licensing revenue].”).

⁴³⁰ See Sobolski, *supra* note 365, at 3138 (describing two of the four broad groups of licensing at U.S. universities as U.C., a large research-intensive university with many campuses, and a group “composed of several traditionally research-intensive universities—Stanford, MIT, University of Washington, University of Wisconsin, and Harvard” as having large budgets and incomes).

⁴³¹ See *id.* (describing one of the four broad groups of licensing at U.S. universities as having “high licensing incomes with comparatively low levels of sponsored research, driven by one or a few highly lucrative patents [including UF]”); see also Good, *supra* note 193 (“[W]hat makes a program really substantial is an intellectual ‘home run.’”); Keys & Phillips-Han, *supra* note 222 (“Often, Gatorade revenue has provided ‘seed money’ for projects that offered great potential but were still in the developmental stage. Many of these projects went on to win competitive national grants, recouping the university’s investment in them many times over.”) (quoting UF V.P. for Research Win Phillips); see also, e.g., Grassmuck, *supra* note 125 (finding that in 1989 \$2.6 million of Florida’s total \$2.7 million in royalty revenue came from Gatorade); *Life of a Stanford Invention*, *supra* note 382 (citing a cumulative \$404 million from equity and \$68 million from “non-Google equity” (leaving \$336 million in Google equity, or 83.2% of cumulative equity)).

⁴³² See Sobolski, *supra* note 365, at 3138 (describing the last of the four broad groups of licensing at U.S. universities as “earn[ing] relatively little income with small to moderate research budgets.”).

between.”⁴³³ If you are as lucky as the University of Florida—you can be good at both tech transfer and college football.⁴³⁴

While the Gatorades and Googles of the world are infrequent,⁴³⁵ the overall importance of research innovation to an advanced economy like the U.S. is hard to refute.⁴³⁶ Put one way, basic research “leads to new knowledge” that “provides scientific capital” for practical inventions deployed by industry and the broader economy.⁴³⁷

Given the degree to which it reinvented R&D in the United States, the success of the Bayh-Dole Act on its own is hard to deny.⁴³⁸ Described as the “Viagra for campus innovation,”⁴³⁹ the Bayh-Dole Act has incentivized universities⁴⁴⁰ and laboratories to perform commercially valuable research and to transition that research to the market.⁴⁴¹ Since its inception, the Bayh-Dole Act has resulted in over

⁴³³ Marcus, *supra* note 364 (quoting emeritus University of Wisconsin Professor Marc Levine).

⁴³⁴ See ROSS DEVOL ET AL., CONCEPT TO COMMERCIALIZATION: THE BEST UNIVERSITIES FOR TECHNOLOGY TRANSFER 5 (2017) (ranking UF with the third highest “technology transfer and commercialization index”); *Florida Gators School History*, *supra* note 42 (showing the Gators winning two BCS Championship games and finishing top-ten in the AP postseason poll 8 times since the year 2000).

⁴³⁵ See *supra* note 381 (describing that home runs in tech transfer are comparatively rare).

⁴³⁶ Jonathan R. Cole, *The Triumph of America’s Research University*, ATLANTIC (Sept. 20, 2016), <https://www.theatlantic.com/education/archive/2016/09/the-triumph-of-americas-research-university/500798/> (“When educated Americans think of their best universities, they probably don’t think that . . . [t]hese institutions have become the engines of innovation and discovery that now drive a large part of the economic growth and social change in the United States.”); see also *The State of U.S. Science and Engineering*, NSF (2020), <https://nces.nsf.gov/pubs/nsb20201/global-science-and-technology-capabilities> (calculating U.S. value-added output from R&D intensive industries at \$1.04 trillion in 2018).

⁴³⁷ ISAACSON, *supra* note 191, at 219 (quoting BUSH, *supra* note 392, at 15).

⁴³⁸ See Good, *supra* note 193, at 53 (“The economic impact of these [tech transfer] activities is now well understood, not just in terms of university return but in overall economic stimulus”); Zacks, *supra* note 315 (“[T]he result [of the Bayh-Dole Act] seems nothing less than a major boon to national economic growth.”).

⁴³⁹ Zacks, *supra* note 315.

⁴⁴⁰ See Good, *supra* note 193, at 54 (“In the United States, the Bayh-Dole Act has been very successful in helping create the technological advancements its sponsors had hoped for.”); see also LEVITT & DUBNER, *supra* note 211, at 16 (“An incentive is a bullet, a lever, a key: an often tiny object with astonishing power to change a situation.”); see e.g., Bayh-Dole Act, 37 C.F.R. § 401.14, at SPRC(b) (2019) (allowing a contractor to retain title to an invention).

⁴⁴¹ See, e.g., Walterscheid, *supra* note 193, at 112 (“The grant of title was the most effective means of obtaining R&D work from the most competent contractors.”); see also S. REP. NO. 480, 96th Cong. (1979) (“It is in the public interest to see that new discoveries are commercialized as quickly as possible without the artificial restraints caused by the unnecessary delays and uncertainties of the present Government patent

100,000 patents obtained by research institutions,⁴⁴² millions of jobs,⁴⁴³ tens of thousands of startup companies or spinouts,⁴⁴⁴ a boost of billions of dollars for the national economy,⁴⁴⁵ and a system of indirect benefits that result in a feedback loop helping to sustain academic R&D.⁴⁴⁶ Furthermore, non-monetary rewards of invention can spur innovation and creativity for market solutions by providing tangible examples of the benefits of scientific work.⁴⁴⁷ The Bayh-Dole Act has helped the United States remain at the forefront of international innovation,⁴⁴⁸ inspired other countries to emulate its model for research and

policies which only serve to make an already risky attempt to develop new products more of a burden on interested companies.”).

⁴⁴² *Driving the Innovation Economy*, AUTM (2018), https://autm.net/AUTM/media/Surveys-Tools/Documents/AUTM_FY2018_Infographic.pdf; ASS’N OF UNIV. TECH. MANAGERS, *supra* note 364, at 10 (claiming 6363 issued U.S. patents in 2014 to U.S. institution survey respondents). *But see* Walterscheid, *supra* note 193, at 104–05 (“Ascertaining exactly how many subject inventions arise out of this federal R&D expenditure is difficult, but each year literally thousands of such inventions are made.”) (footnotes omitted). Utilization of patents has also improved, perhaps as high as 30%. *See* BayhDole25, Inc., *supra* note 223, at 22.

⁴⁴³ *See* LORI PRESSMAN ET AL., THE ECONOMIC CONTRIBUTION OF UNIVERSITY/NONPROFIT INVENTIONS IN THE UNITED STATES: 1996–2017 21 (2019) (estimating 2.68–5.88 million jobs are supported by sales of products licensed from academia over a 22-year period); *Driving the Innovation Economy*, *supra* note 442 (claiming 5.9 million jobs supported by academic technology transfer from 1996–2015).

⁴⁴⁴ *See* *Driving the Innovation Economy*, *supra* note 442 (citing 13,000+ startups formed from academic technology transfer from 1996–2017); *see also* Brady Huggett, *Reinventing Tech Transfer: US University Technology Transfer Offices are Adopting New Models in Search of Increased Return on Research Investment*, 32 NATURE BIOTECHNOLOGY 1184, 1184 (2014) (“[M]ajor metrics for gauging tech transfer output—licensing income, licenses and/or options executed, patents and startups formed—have risen over the past ten years, and in particular over the past five.”).

⁴⁴⁵ *See* PRESSMAN ET AL., *supra* note 443, at 22 (estimating the total contribution of academic licensors to GDP from \$374 billion to \$865 billion over a 22-year period); *Driving the Innovation Economy*, *supra* note 443 (claiming \$1.7 trillion was contributed to U.S. gross industrial output and \$865 billion contributed to U.S. GDP by academic technology transfer from 1996–2017); *see also* Stevens, *supra* note 364, at 140 (estimating that “sales of products resulting from academic inventions totaled \$26 billion as of 1999”).

⁴⁴⁶ *See* Stevens, *supra* note 364, at 140 (estimating that “tax revenues would have been almost \$10 billion, implying that the tax revenues resulting from the economic spin-off of academic research is paying for over a third of the current annual federal investment in academic research.”).

⁴⁴⁷ *See* *Sweat Solution*, *supra* note 9, at 15:35 (“I think everyone likes to see results when they work on something. They like to have something you can see or hold in your hand. It gives you a sense of accomplishment.”) (quoting Dr. Cade).

⁴⁴⁸ *See* Good, *supra* note 193, at 54 (citing “the nation’s immense lead in the biotechnology industry” as an example of a positive effect from the Bayh-Dole Act).

commercialization,⁴⁴⁹ leveraged U.S. intellectual property to maintain competitiveness even as domestic manufacturing declined,⁴⁵⁰ and nourished regional economies throughout the country.⁴⁵¹ While the Bayh-Dole Act and the model of university ownership are not without their critics,⁴⁵² they retain prominent advocates⁴⁵³ and bipartisan support in Congress thirty years after the act's passage.⁴⁵⁴ The relationship between government, industry, and academia further aroused by the Bayh-Dole Act "was, in its own way, one of the significant innovations that helped produce the technological revolution of the late twentieth century."⁴⁵⁵

While Gatorade is a shining example of successful tech transfer,⁴⁵⁶ it may provide a model for tech transfer success that is unrealistic for

⁴⁴⁹ See Stevens, *supra* note 215, at 93 ("[F]oreign countries are now adopting the Bayh-Dole model . . . because they want to replicate the high technology-led economic development that Bayh-Dole is generally credited with having helped create."); Winwood, *supra* note 193 ("Widely mimicked by other nations, [the Bayh-Dole Act] formaliz[ed] how universities manage their inventions, so there is a clear path from basic discovery to commercial implementation."); see also Andrew Browne, *Mr. Xi's Trump Moment*, WALL ST. J., Oct. 22-23, 2016, at C1, C2 ("[Chinese] Premier Li Keqiang is . . . promoting 'mass entrepreneurship and innovation' to create jobs.").

⁴⁵⁰ See Exec. Order No. 12,591, 3 C.F.R. 220 (1987) ("It is important not only to ensure that we maintain American preeminence in generating new knowledge and know-how in advanced technologies, but also that we encourage the swiftest possible transfer of federally developed science and technology to the private sector. . . . to keep the United States on the leading edge of international competition.").

⁴⁵¹ See Good, *supra* note 193, at 48 (citing studies indicating "the presence and participation of universities, especially research universities, is a major factor in the growth of economic clusters in the new knowledge-based economy"); e.g., *id.* (Silicon Valley); *id.* (Cambridge); *id.* (NC Research Triangle).

⁴⁵² See, e.g., BUYING IN OR SELLING OUT: THE COMMERCIALIZATION OF THE AMERICAN RESEARCH UNIVERSITY, *supra* note 193; Campbell, *supra* note 353; Wadman, *supra* note 250, at 830 ("The list of complaints about TTOs is long and diverse. . . .").

⁴⁵³ For example, *The Economist* praised the Bayh-Dole Act as "innovation's golden goose." Opinion, *Innovation's Golden Goose*, ECONOMIST (Dec. 14, 2002), <https://www.economist.com/technology-quarterly/2002/12/14/innovations-golden-goose>; see also NAT'L RESEARCH COUNCIL, *supra* note 22, at 61 ("The system put in place by the Bayh-Dole Act . . . is unquestionably more effective than its predecessor system . . . in making research advances available to the public.").

⁴⁵⁴ See H.R. Con. Res. 328, 111th Cong. (2010) ("Expressing the sense of the Congress regarding the successful and substantial contributions of the amendments to the patent and trademark laws that were initially enacted in 1980 by [the Bayh-Dole Act] on the occasion of the 30th anniversary of its enactment.").

⁴⁵⁵ ISAACSON, *supra* note 191, at 220.

⁴⁵⁶ See Andrews, *supra* note 119 ("Despite the legal wrangling, the invention of Gatorade is widely viewed as one of the early successes of technology transfer.").

most universities to duplicate.⁴⁵⁷ Even if the economics are not in every university's favor,⁴⁵⁸ the hope of a spectacular success like Gatorade—combined with more modest victories and the cumulative public benefit from research innovation—justifies the whole enterprise.⁴⁵⁹ For this reason, the Gatorade saga is an important prototype for universities and the U.S. economy at large to use as a model⁴⁶⁰—as “fuel of interest” for the their own “fire of genius.”⁴⁶¹ Gatorade's lessons are vital ones for a modern, advanced economy like the United States that relies on knowledge-based industries for its economic competitiveness⁴⁶² and universities for its research, education, and innovation.⁴⁶³

⁴⁵⁷ *But see* Perkins & Tierney, *supra* note 236, at 144 (“Such high royalties are certainly uncommon in academe; but technology transfer continues to be a significant part of many research universities’ plans for new revenue streams.”).

⁴⁵⁸ *See supra* note 427.

⁴⁵⁹ *See* NAT’L RESEARCH COUNCIL, *supra* note 22, at 60 (“[T]he goal of expeditious and wide dissemination of discoveries and inventions places IP-based technology transfer squarely within the research university’s core missions of discovery, learning, and the promotion of social well-being.”). *Compare* ISAACSON, *supra* note 191, at 449 (“If you invent something, that doesn’t necessarily help anybody. You’ve got to actually get it into the world; you’ve got to produce, make money doing it so you can fund it.”) (quoting Larry Page of Google), *with id.* (“He was one of the greatest inventors, but it’s a sad, sad story He couldn’t commercialize anything, he could barely fund his own research.”) (quoting Larry Page on Nikola Tesla).

⁴⁶⁰ *See generally* STANFORD, NINE POINTS, *supra* note 22, at 1 (“Licensing approaches, even for comparable technologies, can vary considerably from case to case and from institution to institution based on circumstances particular to each specific invention, business opportunity, licensee and university. In spite of this uniqueness, universities share certain core values that can and should be maintained to the fullest extent possible in all technology transfer agreements.”). *But see* Siegel et al., *supra* note 21, at 117 (“[G]iven that the stakeholders in this process (i.e., university scientists, university administrators, and firms/entrepreneurs) have different motives and behaviors, and operate in different cultural environments, there is room for considerable disagreement and misunderstanding.”).

⁴⁶¹ Catherine L. Fisk, *Removing the ‘Fuel of Interest’ from the ‘Fire of Genius’: Law and the Employee-Inventor*, 65 U. CHI. L. REV. 1127, 1127 (1998) (emphasis removed) (quoting Abraham Lincoln, Second Lecture on Discoveries and Inventions (Feb. 11, 1859)).

⁴⁶² *See* Good, *supra* note 193, at 54 (“In the evolving knowledge-based global economy, this dependence on universities for cutting-edge, commercially viable science and technology . . . is destined to increase.”); Healy, *supra* note 220, at 382 (“Governments agree that innovation is the key to the future, particular for advanced economies.”).

⁴⁶³ *Remarks by the President in State of the Union Address*, THE WHITE HOUSE: PRES. BARACK OBAMA (Jan. 24, 2012), <https://obamawhitehouse.archives.gov/the-press-office/2012/01/24/remarks-president-state-union-address> (“Innovation also demands basic research. Today, the discoveries taking place in our federally financed labs and universities could lead to new treatments that kill cancer cells but leave healthy ones untouched.”); *see also* Winwood, *supra* note 188 (claiming that in recent years, U.S. research universities educated as many as 500,000 graduate students in

IX. CONCLUSION

The story of Gatorade is not only a tale of an outrageously successful consumer product, but one of a research invention that impacted U.S. IP policy and provided a template for technology transfer. Gatorade was born in the lab—the product of an inquisitive group of scientists at the University of Florida—and proven on the field—shown to improve athletic performance by replenishing what was lost through sweat⁴⁶⁴—and in the market—becoming a massively successful consumer product, dominating the sports beverage market, and growing into one of the most valuable brands in the world.⁴⁶⁵

The litigation over ownership of Gatorade in the years after its development highlighted legal deficiencies in the nation's R&D apparatus, prompting reform to IP and research policy. The clash over Gatorade influenced the Bayh-Dole Act, the 1980 piece of legislation that standardized contractor ownership of research inventions and launched the field of tech transfer at universities. Thereafter, Gatorade would serve as an inspirational story (and cautionary tale) of how innovation transpires at universities in the U.S.

Although replicating the success of Gatorade may be a fruitless endeavor for many universities, it is still an indispensable template for universities to emulate and aspire to achieve. The story of how Gatorade went from a “small idea”⁴⁶⁶ in the laboratory of the football field,⁴⁶⁷ to a congressionally-recognized “super-juice,”⁴⁶⁸ to a “home run”⁴⁶⁹ in the marketplace serves as the quintessential example of how the commercialization of research can benefit the public, inventors, and

science and engineering, performed as much as 15% of research and development in the U.S., and accounted for as much 53% of national basic research).

⁴⁶⁴ See *supra* Part II. Despite literature discussing its ability to rehydrate, see *supra* note 2, and the brand's celebration of its scientific roots, see *Heritage and History of Gatorade*, *supra* note 30, there are doubts to its efficacy to improve performance. See, e.g., ROVELL, *supra* note 3, at 203 (quoting Dr. Robert J. Murphy, team doctor at Ohio State, telling “a group of doctors at an Am. Med. Ass'n meeting that Gatorade did not, in fact, travel through the body and get absorbed faster than water.”).

⁴⁶⁵ See Stuart Elliott, *Brands That Shaped Marketing in the 20th Century, and Some with Promise in the 21st*, N.Y. TIMES (Dec. 13, 1999), <http://www.nytimes.com/1999/12/13/business/media-business-advertising-brands-that-shaped-marketing-20th-century-some-with.html> (ranking Gatorade as the 25th most powerful corporate, media, or product brands of the twentieth century).

⁴⁶⁶ See *supra* note 333 and accompanying text.

⁴⁶⁷ See *Sweat Solution*, *supra* note 9, at 3:45 (“This is a laboratory”) (video footage of football field).

⁴⁶⁸ See HARBRIDGE HOUSE REPORT, *supra* note 208 (“Scarcely a month goes by without a report or a feature article on [other university inventions], or a super-juice called ‘Gator Ade’ at the University of Florida.”).

⁴⁶⁹ See *supra* note 376 (describing Gatorade as a “home run”).

the ongoing research missions of universities across the country.⁴⁷⁰ Is it in *you*?⁴⁷¹

⁴⁷⁰ See *supra* Part VII; see also NAT'L RESEARCH COUNCIL, *supra* note 22, at 59 (“Discovery, learning, and promotion of social well-being are mutually supportive core university missions. Transfer of new knowledge to those in society who can make use of it for the general good contributes to each of these missions.”).

⁴⁷¹ See *supra* note 1.