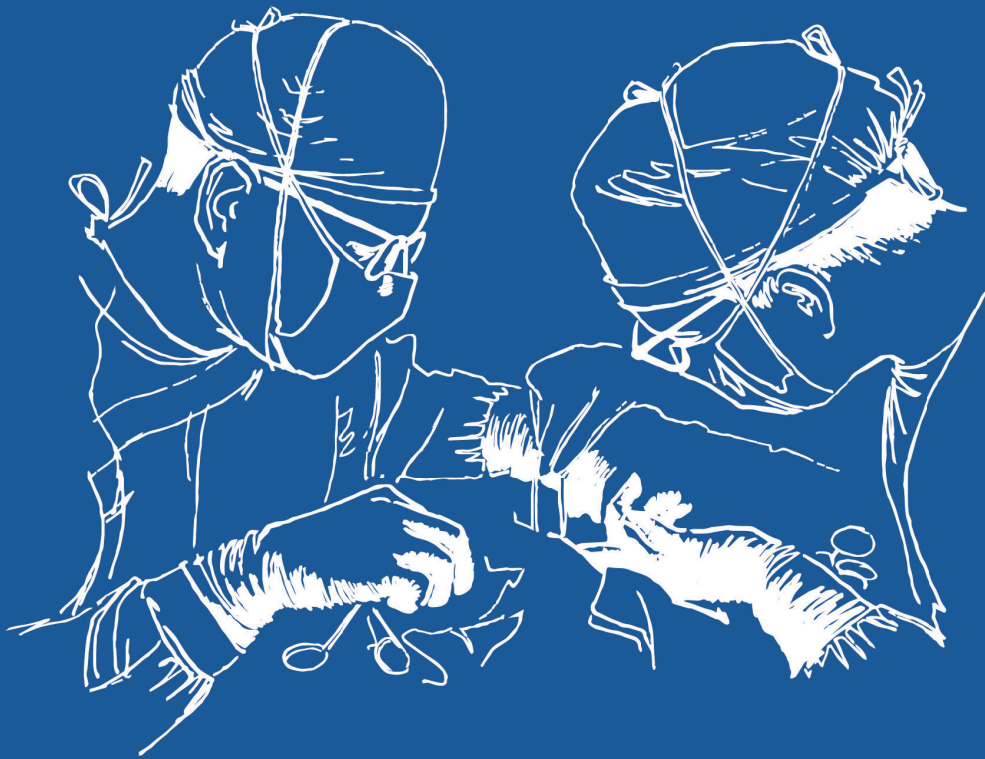


# SURGEONS AND SOMETHING MORE

THE HISTORY OF SURGERY AT  
THE UNIVERSITY OF PENNSYLVANIA



CLYDE F. BARKER & ELIZABETH D. BARKER

American Philosophical Society Press  
Philadelphia

*For Dode  
and  
for the residents, for maintaining  
the department's traditions and excellence.*

"Research is essentially intellectual play, to be equated with organized sport and imbued with competitive spirit."

Macfarlane Burnet

"In research, look for the unexpected finding."

Peter Medawar

"Treasure your exceptions . . . [They] are like the rough brickwork of a growing building which tells there is more to come and shows where the next construction is to be."

William Bateson

# **CIP to come**

*Cover Image Credit:* This line drawing is used with the permission of the University of Pennsylvania Archives and Records Center. The drawing of two surgeons appeared in the 1996 *Scope*, School of Medicine Yearbook on page 95.

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# Clyde F. Barker (1932–)

JRB Professor and Chairman of Surgery (1983–2001)

Contributed by Ronald M. Fairman

## Introduction

In writing this chapter, I came across some correspondence from Dr. Tom Starzl to the American College of Physicians regarding the *John Phillips Memorial Award for Outstanding Work in Clinical Medicine*, dated April 25, 2011. Starzl wrote, “Dr. Clyde Barker’s contributions to clinical medicine over the last fifty years have been so consistently innovative (and sustained over time) that he has emerged as the prototypical physician-investigator envisioned by Claude Bernard, the nineteenth-century father of experimental medicine.” Furthermore, “the immune tolerance of Barker and Billingham was the *de facto* cornerstone of all categories of transplantation and for that matter immunology generally.



Tom Starzl and Clyde Barker

Barker created a new field, a branch of transplantation in which alloengraftment depends in large part on achieving and maintaining immune ignorance of allografts.” Starzl concluded, “What Barker accomplished before, during, and after his eighteen-year tenure as Chairman of Surgery at the University of Pennsylvania required a unique dual personality: the able administrator who is also a working and inventive scientist. His career provides a model that deserves study of how to advance medicine and surgery against the grudging opposition posed by the unknown. Central to his effort was the attitude that research laboratories are to help people, and more specifically, sick patients; Barker created the profile of an extensive laboratory program interwoven into a world-class clinical endeavor. The result was

## 1849

Barker family reaches Utah.

## 1943–1958

All four Barker brothers obtain doctorates. Which one is most academically accomplished can be debated.

Hal directed Columbia Presbyterian Hospital's metabolic unit and ICU. He was also Director of Medical Affairs, in charge of new programs.

Roland's PhD thesis was based on nine papers he published on quantum theory with his mentor Henry Eyring, the founder of the field.

Earl directed Penn's third-year medical school class.

complete dissolution of the artificial barrier between *basic* and *clinical* science.”

When Barker finished his third six-year term as John Rhea Barton Professor and Chairman of Surgery in 2001, he marked the longest tenure of anyone in this leadership position in the oldest medical school and oldest university hospital in the US. As I researched and composed this chapter, I came to the realization he was the most unique and transformative chairman in the history of Penn Surgery.

## The Early Years

Clyde F. Barker (CFB) was born in Salt Lake City in 1932. His father, Fred G. Barker, was a Professor of Psychology at the University of Utah, and CFB added that he was an author and Shakespearean scholar.<sup>1</sup> The Barker family originally arrived in Salt Lake City in 1849, two years after the city was founded by Brigham Young. Tragically, his father died at fifty-five years of age from a coronary occlusion; CFB was thirteen years old. His mother, Jennetta, was from Ogden, north of Salt Lake City, was college educated, and to fund her children's education worked as a high school teacher. She died at ninety-four years of age. CFB was the youngest of four children. Hal was his oldest brother and was fifteen years older than CFB. Notably, he was captain of the tennis team at the University of Utah and spent his last two



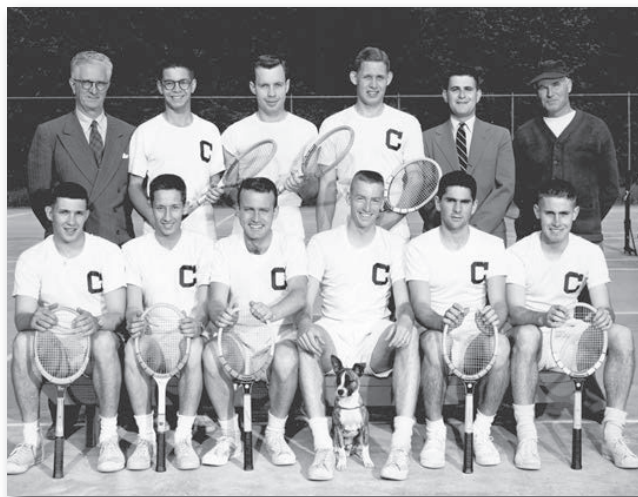
Barker Brothers - (L to R) Earl, Roland, Clyde, and Hal



**Clyde and Dode are classmates at Cornell. Meet on a blind date.**

years of medical school at Penn, graduating in 1943. After serving in the wartime Army from 1943–45, he did his surgical residency under I. S. Ravdin at Penn and then joined the faculty for one year. He was recruited to Columbia, promoted to full professor, had a huge clinical practice as a general surgeon, had twenty-two consecutive years of NIH research funding, and spent his entire career there.<sup>2</sup> His brother Roland, who was thirteen years older than CFB, received his PhD in chemistry from Princeton but died at age thirty-six of rheumatic heart disease. His other older brother Earl, who was twelve years older than CFB, graduated first in his class in college at the University of Utah, while also playing varsity tennis. He went to medical school at Penn and stayed at HUP for his residency in internal medicine. He became a nephrologist and spent his entire career at Penn.

Hal, as the oldest brother, had great impact on CFB following the death of their father. Hal encouraged CFB to be educated at Phillips Exeter Academy, and he enrolled there at fifteen years of age (1947) as a sophomore. Like Hal, CFB played competitive tennis and was captain of the tennis team at Exeter and their number one player. He was ranked first in both the intermountain and New England states and third nationally while at Exeter. Exeter served as an eye-opening educational and social experience for CFB, while he admitted he was not a dedicated student. He decided to attend Cornell University where he continued to develop his tennis prowess. As a junior and senior, he played number one singles and doubles for Cornell and was captain of the team as a senior. He met his future wife Dorothy (Dode was her nickname from childhood) in February of his junior



**Cornell University Tennis Team with Oliver, captain CFB's dog**

**1947–1950**

CFB at Phillips Exeter Academy.

**1950–1954**

Clyde and Dode are classmates at Cornell.

**1953**

Clyde and Dode meet on a blind date at Cornell.

**1953**

Cornell's once-beaten tennis team holds Cornell's record for most wins.

**1954**

CFB is number one player and team captain.

**1956**

Clyde and Dode are married after his second year of medical school.

## 1954

A summer of tournament tennis.

## 1954–1958

Medical school at Cornell.



CFB playing in the US Open at Forest Hills.

year on a blind date. From then onward, they were a couple. Dorothy majored in French literature at Cornell and was from Chicago.

Tennis remained a huge focus, and the summer following graduation from college, he played in the eastern grass court tournaments and the US nationals, earning a national ranking in the men's division. CFB went on to Cornell Medical School, and Dorothy returned to Chicago after college graduation to pursue a work opportunity. While his brothers wanted CFB to postpone marriage, he and Dode disagreed, and they were married in Chicago after he completed his second year of medical school in 1956. Tennis took a back seat during medical school, and he became, perhaps for the first time (in his own view), a serious student. He thrived academically and personally in medical school.

## Postgraduate Training

CFB followed his brothers' advice and came to HUP as a rotating intern in 1958. He clearly knew all about Penn from both Hal and Earl. He stayed on as a surgical resident while I. S. Ravdin was still chairman for the first six months of his residency. Jonathan Rhoads then became Chairman of Surgery in 1960. Notably influential Penn physicians during his residency included I. S. Ravdin, Bob Mayock (a former roommate of Hal's), Francis Wood,



Clyde as HUP intern

Bill Hanson, Truman Schnabel, and Sylvan Eisman. He was a surgical resident from 1959–1964.

Influential surgical faculty included Jerry Peskin, Jack Mackie, Julian Johnson (“J. J.”), Jim Thompson, and Jonathan Rhoads. CFB performed research as a resident with Jerry Peskin on portacaval shunts<sup>3</sup> and introduced/managed a machine for gastric cooling in HUP patients to stop upper gastrointestinal bleeding.<sup>4</sup> While Julian Johnson was known as an intensely demanding cardiovascular surgeon who was feared by the house staff, CFB considered J. J. a favorite mentor and admired his technical prowess and dedication, more so than any other surgical faculty. The surgical residency program at Penn was very much aligned with the traditional, rigorous pyramidal training models of that period (Halsted/Ravdin residency). There were twelve residents in his first year, and only three completed surgical training at HUP.

While contemplating a career in transplantation, as a chief resident, he visited the handful of active US transplant centers that existed at the time, including scrubbing with Tom Starzl on a kidney transplant at the University of Colorado. This brief clinical experience of working with Starzl was transformative and cemented his desire to pursue a career as a transplant surgeon. He spent one month studying the basics of transplantation research in Paul Russell’s laboratory at MGH. Passing up J. J.’s offer of a fellowship to train as a cardiac surgeon, he chose a vascular fellowship with Brooke Roberts at Penn from



Tom Starzl

1964–65. He was Brooke’s second vascular fellow; Harry Nelson was the first. He viewed his vascular fellowship as a necessary pathway to transplantation.

CFB and Dode began their family during his residency and went on to raise four children (Fred, John, Bill, and the youngest, Elizabeth) who all excelled academically and as adults have gone on to highly successful careers.



Julian Johnson

CFB’s favorite mentor during his residency

#### 1958–1964

CFB’s HUP internship and general surgery residency.

#### 1964

While a chief resident, CFB visits US transplant centers. He scrubs with Tom Starzl on a kidney transplant.

#### 1964–1965

CFB spends a year as vascular fellow under Brooke Roberts.

### 1965–1972

CFB is a junior member of HUP surgical faculty and also Billingham's post-doctoral fellow and a junior faculty member in the Department of Genetics.

### 1967–1972

CFB is associate in Department of Genetics, sharing a bench with Billingham for their work on privileged sites. They define the principle of immunologic ignorance.

### 1976–present

Vacations of Barker family at their Adirondack retreat.



Max



Barker Family at their Adirondack retreat  
(back row L to R) John, Bill, Fred, and Elizabeth

## Early Penn Faculty Career

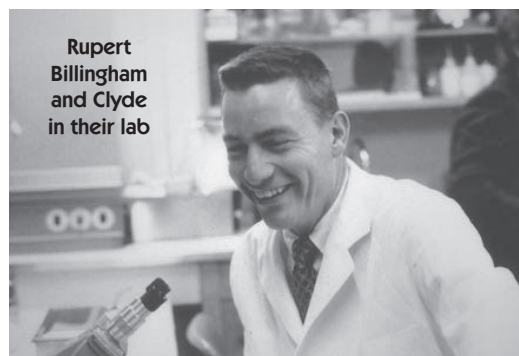
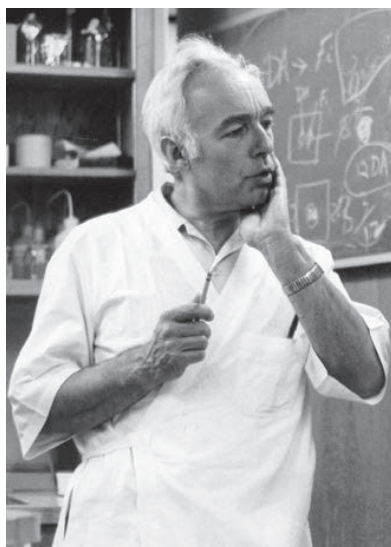
Following his vascular fellowship, he joined the faculty and became Roberts's junior associate in the Vascular Division. While focused on advancing transplantation, CFB performed the first infrapopliteal vein bypasses at HUP,<sup>5</sup> many to the level of the foot. He also performed the first resection of a suprarenal aortic aneurysm at HUP. He collaborated with Roberts and Ernie Ring (interventional radiologist) and pioneered transluminal angioplasty<sup>6</sup> and thrombolysis of occluded arteries with streptokinase.<sup>7</sup>

In 1966, Rupert Billingham moved to Penn from England and became Chair of the Genetics Department. Billingham was Peter Medawar's former gradu-

ate student and played a major role in the research responsible for Medawar receiving the Nobel Prize for transplantation tolerance in 1960.<sup>8</sup> CFB be-



Brooke Roberts



Rupert Billingham and Clyde in their lab

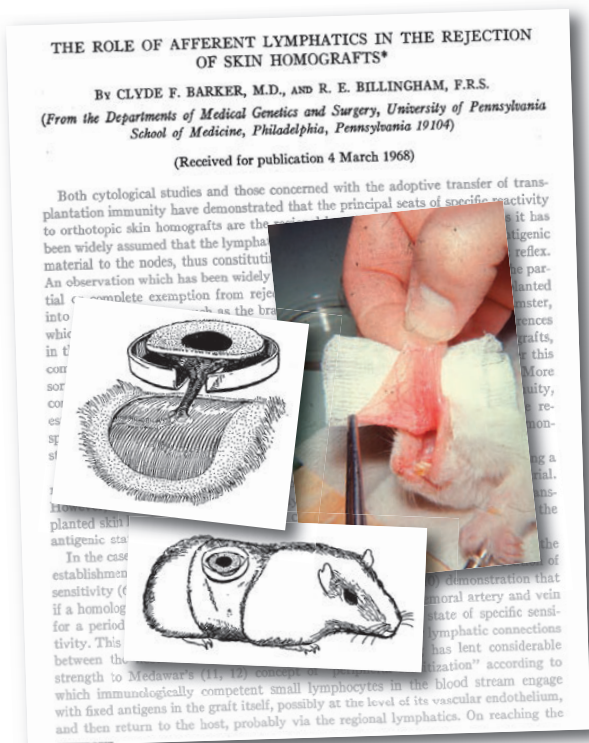
came one of Billingham's first post-docs and was a junior faculty member of his Department of Genetics for six years. They shared a research laboratory where they worked together on the same research projects.

With Billingham, CFB published twelve highly regarded basic research publications. Their first paper was a classic. It established a fundamental law of transplantation – immunologic ignorance. This principle is that the immune system cannot recognize the presence of foreign antigen that fails to reach host lymphoid tissue.<sup>9</sup> The decisive experiment

**1966 (Feb.)**

While a fellow in Billingham's genetics department, CFB performs HUP's first kidney transplant.

leading to this conclusion was their demonstration that skin allografts transplanted to a surgically constructed, vascularized pedicle lacking lymphatic drainage completely escaped rejection (see illustration).<sup>10</sup> Their dissection of this seemingly simple surgical model and of other privileged sites, such as the hamster cheek pouch, had profound impact.<sup>11</sup> The principal of immune ignorance remains a cornerstone of transplantation immunology and is one of the most important findings of the last half century.<sup>12</sup> Barker's presentation of this work at international meetings and publications of it in presti-



gious journals led to his recognition as one of the best-known researchers in the early years of transplantation biology. The enduring relationship with Billingham propelled CFB academically, and they remained lifelong, close friends.

Fifty years later, the importance of immune ignorance was reinforced by Fadi Lakkis's demonstration that skin allografts cannot be rejected by mice genetically lacking lymph nodes.<sup>13</sup> As an accomplished microsurgical



**1969**

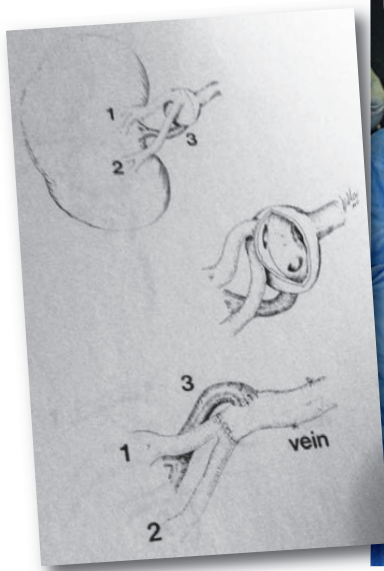
Ex vivo microsurgery to resect renal artery aneurysms.

geon, Barker used organ transplants in rodents to sort out basic differences in the rejection of skin and vascularized organ transplants.<sup>14</sup>

In February 1966, while still a postdoctoral fellow in Billingham's genetics department, CFB performed HUP's first human kidney transplant. The kidney functioned normally for forty-eight years until the otherwise healthy patient died of a coronary occlusion. This early transplant was one of only about ten in the world to survive that long. It was Billingham's support for CFB and his clout with the Penn nephrologists (who were skeptical of kidney transplantation) that led the young CFB to perform this first kidney transplant at Penn. Billingham moved to the University of Texas Southwestern Medical Center in 1971.



Five decades later: kidney donor, Joe; his brother the recipient, Howard; and the surgeon, Clyde Barker.



CFB performing ex-vivo surgery on kidney with his vascular fellow, Omaid Velazquez.

CFB became Chief of the Transplantation Program at Penn in 1966 and held this position until 2001. Transplantation became a Penn Surgery Division in 1969. CFB employed his technical skills as a kidney transplant surgeon to pioneer ex vivo renal artery surgery focused on complicated renal artery aneurysms at Penn.<sup>15</sup> This involved removing a kidney with

multiple renal artery aneurysms, cooling it, resecting the aneurysms, and reconstructing the renal arteries on a back table, following which he would re-implant the kidney into the pelvis of the patient. He was able to achieve both immediate and long-term successful results in this highly complicated group of patients who otherwise would have faced loss of the kidney and life-threatening complications. His results remain the gold-standard even today.

From 1968–1974, CFB was a Markle Scholar.<sup>16</sup> The Markle Foundation was founded in 1927 by Pennsylvania coal magnate, John Markle. The now-extinct scholar program was intended to identify and support the country's most promising teachers and investigators in academic medicine early in the course of their careers. By a uniquely competitive process, it was awarded to individuals who were identified as the future leaders of academic medicine. This provided CFB financial support over five years and, because of the Markle Foundation's influence, was instrumental in his early academic success. Most of the Markle Scholars became department chairmen or deans.

In 1972, CFB began pancreatic islet transplant research and explored the idea – not widely accepted at the time – that Type 1 diabetes mellitus was an autoimmune disease. In 1972, CFB with surgical residents Craig Reckard and Mory Ziegler reported the first complete and lasting reversal of diabetes in an animal model by pancreatic islet transplantation.<sup>17</sup> His research studies were the first to systematically dissect the immunological barriers to islet allograft acceptance. While CFB had numerous research collaborations, his graduate students Ali Naji and Jim Markmann, both surgeons and PhDs, became his most enduring collaborators.

### 1968–1974

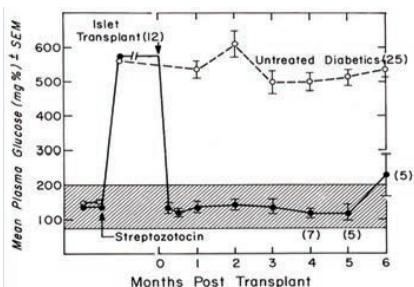
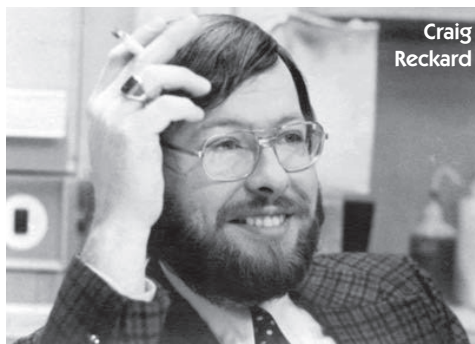
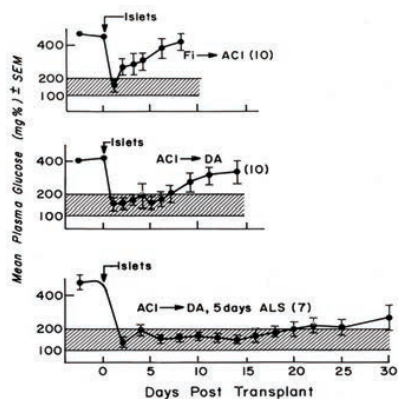
CFB is Markle Scholar.

### 1972

CFB begins research in transplantation of isolated pancreatic islets.

### 1972

CFB with research fellows Reckard and Ziegler reports the world's first complete and permanent reversal of diabetes by islet transplantation.



**1973**

CFB appointed full professor.

**1974**

CFB and other Philadelphia surgeons found organ-sharing program.

**1982–2001**

CFB is Chief of Vascular Division. One of his fellows, Marc Mitchell, was Chief of Surgery at Presbyterian and the VA Hospital before becoming Chairman of Surgery at the University of Mississippi. Two others also become surgery department chairs—Jeffrey Carpenter at Cooper Medical School of Rowan University, and Omaid Velazquez at the University of Miami.



Marc Mitchell

**1982**

Reports with Naji in *Science* that autoimmunity alone can destroy transplanted islet allografts.

He was proud to acknowledge that they later became more accomplished in research than him. Objectively, the Penn pancreatic islet research program went on to become the best in the country. Also in 1972, CFB performed the first liver transplant at HUP. The patient survived only a few days, and CFB declared a moratorium on further liver transplants awaiting further resources and better immunosuppression.

By the mid-1970s, the Penn kidney transplant program was performing large numbers of procedures with excellent outcomes, establishing it as one of the most respected clinical transplant centers in the country. In 1974, CFB with other Philadelphia transplant surgeons founded the Organ Procurement Organization (OPO) later named Gift of Life. After Barker and his colleagues appointed Howard Nathan as Director, it became the largest OPO in the US. As of the end of 2021 and for the fourteenth consecutive year, Gift of Life has coordinated the most organs for transplant achieving the highest number of organ donors (705) ever recorded for a US-based OPO. Those donations resulted in 1,732 transplants, the most in the US in 2021, and 1,007 kidney transplants, the most ever.

CFB was promoted to Professor of Surgery in 1973, the J. William White Professor of Surgical Research in 1978, and the Donald Guthrie Professor of Surgery in 1982. From 1974 until 1999, CFB had RO1 NIH funding of his research for twenty-five consecutive years, including a MERIT grant (1987–1996). From 1979 through 1981, he served on the NIH immunobiology study section. CFB became Chief of the Penn Division of Vascular Surgery in 1982 and held this position until 2001. Gary Gross and Ron Fairman were his first vascular fellows in 1982. In this same year, Barker and Naji published in *Science* that in an animal model of spontaneous diabetes, transplanted islet allografts exempt from rejection because of neonatal-induced tolerance are destroyed instead by autoimmunity alone.<sup>18</sup> This sentinel finding was the best evidence at the time that diabetes is an autoim-



CFB and Howard Nathan



Ron Fairman and Clyde Barker

mune disease. These studies also provided the first description of immunotherapy for autoimmune diabetes and identified recurrent autoimmunity as a barrier to the success of clinical islet transplantation.

## Chairman Years

CFB was appointed the John Rhea Barton Professor and Chairman of the Department of Surgery at Penn and Director of the Harrison Department of Surgical Research in 1983, following Brooke Roberts who was interim chairman for one year. He went on to serve as chairman for eighteen years until 2001.

Shortly after CFB became chairman, the rules governing the training of general surgical residents began to change. The Residency Review Committee (RRC) mandated that all residents have an identical clinical program, effectively ending the pyramidal model. In 1984, Barker began to provide all HUP surgery residents with an opportunity to be supported for two years of research. Vice Chair Jim Mullen was responsible for the day-to-day operations of the general surgery residency. CFB had strong collaborations in the medical school and university;

Mullen's close relationship with hospital administration created innovative programs within Penn Surgery and throughout HUP. The CFB-Mullen collaboration resulted in big dividends for the department. The William T. Fitts Library and Education Center opened on the fourth floor of the Maloney Building in 1994. Mullen was responsible for the concept and funding. Mullen's enduring contributions included the development of the hospital-wide Nutrition Support Service and its extension into the adjunct Home Total Parenteral Nutrition (TPN) program. For Mullen's numerous other accomplishments, see chapter 31.

While there were academic and clinical stars among the surgical faculty in 1983 when CFB became chairman, the department was relatively small with approximately twenty full-time faculty and only a few who were aca-

### 1983

Four chairmen celebrate CFB's appointment as JRB professor on the day his appointment is announced.



Clyde Barker, Brooke Roberts, Leonard Miller, and Jonathan Rhoads



Jim Mullen and Clyde Barker

**1985**

John Daly recruited to head a new division: Surgical Oncology.

**1985**

Liver transplant program begins.

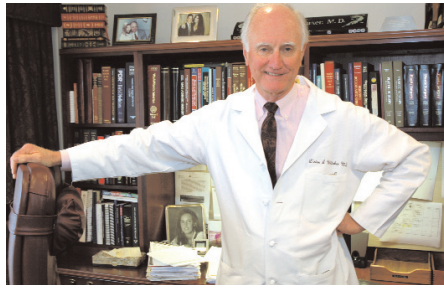
demically focused and productive. The general surgical residency training program was highly regarded, but not among the very best in the US. Barker's vision was to recreate Penn Surgery into a department comprised of highly productive, nationally recognized faculty who were both clinically and academically exceptional. He realized there needed to be significant programmatic changes in order to bring Penn Surgery to the forefront nationally. He felt it would be necessary to recruit outsiders rather than perpetuating Penn's usual pattern of inbreeding. What follows is a timeline that highlights CFB's successful transformation of Penn Surgery as chairman, yet while all these recruitments and events were occurring, remarkably CFB remained productive in clinical surgery, laboratory research and teaching. He uniquely was a "triple threat" in the true sense.

- In 1984 as the new Chairman, CFB and his department hosted the annual meeting for the Society of Clinical Surgery. This and other Penn-hosted meetings, such as the Halsted Society in 1989 and the International Surgical Group in 1996, garnered national exposure for Penn Surgery.
- In 1985, he recruited John Daly from Memorial Sloan Kettering as the first Chief of a new Division of Surgical Oncology. Daly served until 1993 when he left to become Chairman of Surgery at Cornell. Doug Fraker was then recruited from NIH to succeed Daly as Chief of the Division, a position he continues to hold today.



- In 1985, Ira Fox was recruited from Pittsburgh to start the liver transplant program, and Mory Ziegler was sent to Pittsburgh to train with Tom Starzl. Fox, with Mory Ziegler, Don Dafoe, Ali Naji, and CFB, spearheaded the program.
- CFB's other notable clinical events in the early 1980s included the first pancreas transplant and small bowel transplant (with Jim Mullen) at HUP.

- In 1986, CFB served as Chairman of Clinical Practices of the University of Pennsylvania (CPUP) and held this position until 1989.
- He appointed Linton Whitaker as Chief of Plastic Surgery in 1987, and Linton founded the Center for Human Appearance and the craniofacial surgery program.



Linton Whitaker

**1986–1989**

CFB is Chairman of Clinical Practices of the University of Pennsylvania.

**1987**

Linton Whitaker appointed Chief of Plastic Surgery Division.

**1987**

Bill Schwab recruited to head new division: Trauma.

**1988**

Ernie Rosato appointed head of new division: Gastrointestinal Surgery.



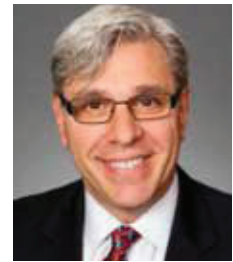
William T. Fitts

While faculty member Bill Fitts was a nationally respected leader in trauma,<sup>19</sup> who was President of the American Association for the Surgery of Trauma and editor of its journal, his untimely death in 1980 left a hole in the residency training program. CFB recruited William Schwab from New Jersey in 1987, who went on to develop one of the most respected clinical

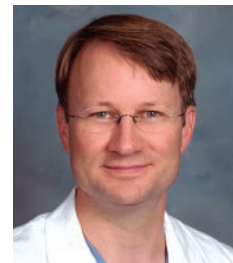
and academic trauma centers in the world. Schwab also started the PennStar helicopter service. Mike Rotundo, Schwab, et al. introduced the concept of “damage control” for severe abdominal injuries.<sup>20</sup> This revolutionary paradigm, though initially rejected, was eventually adopted worldwide and expanded over time to include the delayed closure of abdominal incisions following some general surgery procedures.<sup>21</sup>



Bill Schwab



Mike Rotundo



Mike Nance

- In 1988, CFB appointed Ernest Rosato as Chief of a new Division of Gastrointestinal Surgery. Ernie Rosato compiled the record for the largest consecutive number of chief resident teaching awards; he was the busiest gastrointestinal surgeon in the region, technically exceptional, and beloved by all the Penn medical students and residents.



Ernie Rosato



Pat Reilly

**1989**

Bill Kelley appointed Dean and CEO.

- In 1989, Bill Kelley was appointed Dean and CEO of HUP. A strong leader, he is credited with transforming Penn into a modern medical center, expanding research and faculty, and building three new buildings.<sup>22</sup> Kelley was supportive of CFB; in fact, CFB was the only chairman of a department who did not get dismissed, retire, or resign during the Kelley years.<sup>23</sup> Kelley served until 2000 when he was fired by University President Judith Rodin over the institution's financial setbacks (see chapter 24).<sup>24</sup>



CFB with Bill Kelley

**1989-2000**

Chairman of Radiology, Stan Baum, kept track of chairmen's retirements, resignations and dismissals. In his office he exhibited this collage of the chairs and marked with an X each chairman's demise. Eventually CFB was the only one left without an X.

**1990**

CFB et al introduce the concept of intrathymic tolerance, illustrated on the cover of *Science*.

**1991**

Larry Kaiser recruited to start lung transplantation. New section: General Thoracic Surgery.



- In 1990, Andy Posselt, Ali Najj, CFB, Jim Markmann, and Mike Choti reported in *Science* that the thymus is a privileged site and that intrathymic islet allografts can induce tolerance.<sup>25</sup>



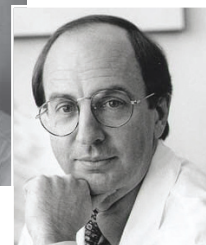
Andy Posselt



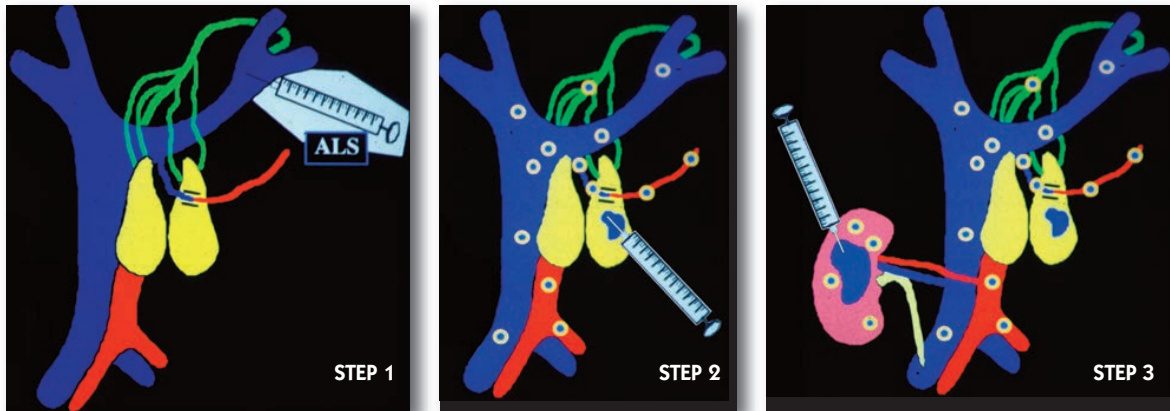
Ali Najj



Jim Markmann



Michael Choti



Induction of Intrathymic Tolerance - Induction of Donor Specific Unresponsiveness by Intrathymic Islet Transplantation. *Science* 249:1293-1295, 1990.

- In 1991, CFB recruited Larry Kaiser from Memorial Sloan Kettering to start a lung transplant program at Penn. Kaiser became Chief of the new section of General Thoracic Surgery and later became the next John Rhea Barton Professor and Chairman following CFB.
- In 1992, with Andy Posselt and others, CFB reported that intrathymic implantation of a subtherapeutic number of islets in newborn BB rats could prevent the development of diabetes.<sup>26</sup>



Andy Posselt, CFB and Ali Naji at a press conference on intrathymic tolerance

- In 1992, CFB was elected President of the American Society of Transplant Surgeons.

**1993**

Tim Gardner recruited to succeed Hank Edmunds as Chief of CT Division.



Henry Edmunds



Tim Gardner



Mike Acker



Joseph Bavaria

**1995**

A new liver transplant team recruited.

**1995**

Scott Adzick recruited as Chief of Pediatric Surgery.

**1997**

CFB elected President of American Surgical Association.

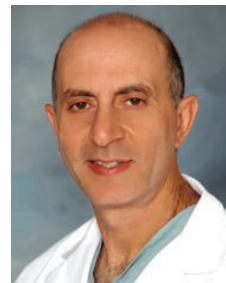
**1998**

Jim Markmann recruited.

- In 1993, he recruited Tim Gardner from Johns Hopkins to succeed Henry Edmunds as Chief of the Division of Cardiothoracic Surgery. Gardner held this position until he was succeeded by Barker’s former resident Michael Acker in 2003, who had returned to HUP with Gardner in 1993.

- HUP resident Joseph Bavaria was appointed in the cardiac division in 1990. He developed an internationally praised program to treat thoracic-aortic aneurisms.

- In 1995, CFB recruited Abraham Shaked and Kim Olthoff from UCLA. They transformed liver transplantation at HUP into one of the largest and most respected in the country.



Avi Shaked



Kim Olthoff

- That same year, Scott Adzick was recruited as Chief of Surgery at Children’s Hospital of Philadelphia (CHOP) and initiated the fetal surgery program, the largest in the world.

- In 1997, CFB was elected President of the American Surgical Association, once again propelling Penn Surgery to the forefront nationally and internationally.<sup>27</sup>

- In 1998, he recruited Jim Markmann to the Transplant Division. Markmann’s research and clinical contributions to Penn Surgery were substantial. He left Penn in 2009 to become Chief of the Division of Transplantation at Massachusetts General Hospital and Surgical Director of the Liver, Pancreas, and Islet Transplant Programs.

Between 1995 and 2000, Penn Medicine experienced several major setbacks and hur-



Jim Markmann and CFB

dles.<sup>28</sup> There were financial losses of roughly \$200 million dollars, there was a substantial Medicare fine of \$30 million dollars for inadequate billing documentation, and the gene therapy patient Jesse Gelsinger tragically died, leading to the closure of the Penn gene therapy program by the NIH. During these tumultuous years, CFB as Surgery Chairman maintained the department's professional and financial stability, as well as forward thinking and optimism.

From the start, CFB made it clear his goal was to train residents who would become national leaders in academic surgery. As Chairman, CFB kept hanging in his office a framed picture of all his research, transplant, and vascular fellows. He also initiated hanging photographs of the graduating general surgery residents outside the Fitts library on the fourth floor of the Maloney building (see illustration below). During his eighteen years as chairman, he trained sixteen chief residents and fellows who have become chairs at university medical schools, and well over thirty who became chiefs of academic divisions. Remarkably, forty-six trainees of his were ultimately promoted to the rank of full professor in university departments as of 2021. During CFB's years as chairman, the general surgery residency and fellowship training programs grew in numbers and stature, and Penn Surgery became one of the most coveted places to train in the US.

#### 1995–2000

Penn Medicine loses money, Bill Kelley is fired.

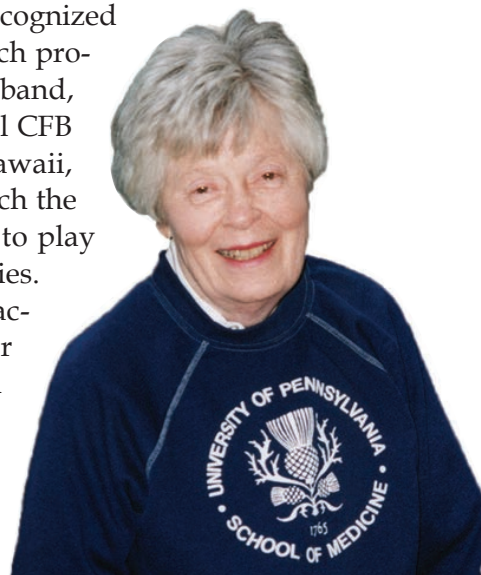


Wall of Fame  
on 4 Maloney

While many chairs of large academic departments cease to practice clinically or to maintain an independent lab with NIH funding, CFB continued all of his professional activities. He remained Chief of Transplantation, as well as Vascular Surgery, while he was chairman. As a clinical surgeon, he was unflappable in the operating room and highly capable. On a personal level, he was a pleasure to operate with, had a good sense of humor, never seemed to fatigue, and his clinical skills were exceptional. It is utterly remarkable how he successfully navigated the day-to-day administrative imperatives while also advancing his academic and clinical goals during his eighteen years as chairman. Many of us recall finding Clyde, Ali Najj, and Fran Ramirez (his administrative assistant) in his office, working late into the night on a grant or abstract deadline.

In 2001, he finished his third six-year term as John Rhea Barton Professor and Chairman of Surgery. It is worth repeating, this was the longest tenure of anyone in this leadership position in the oldest medical school and oldest university hospital in the US. This same year, a successful human pancreatic islet transplant program was initiated at HUP.<sup>29</sup> The degree to which he was respected throughout the university clearly enhanced the programmatic development he supported within Surgery. I was recruited back to Penn in 1996, and when our Division of Vascular Surgery embarked on “first in man” endovascular clinical trials for abdominal aortic aneurysms, CFB had the standing to successfully deal with the aggressive pushback we were subjected to from some sectors.<sup>30</sup> He understood the importance of clinical research in advancing the care of surgical patients, and his steadfast support was integral to our clinical research successes at the divisional level. I learned from CFB the importance of “leading from behind.” As chairman and throughout his career, he was a role model for multiple generations of surgical trainees and faculty members at Penn. Beyond the obvious as an incredibly successful academic and clinical surgeon who as chairman promoted internationally recognized faculty, clinical divisions, and research programs, he was a committed husband, father, and avid tennis player. I recall CFB and Dode would travel to Kauai, Hawaii, every January just so they could watch the Australian Open *live*. He continued to play competitive tennis well into his eighties.

I would be remiss if I did not acknowledge Clyde’s wife Dode in her own right. She opened her home and regularly welcomed faculty, residents, and students; she was a devoted wife/partner, mother, and huge supporter of Penn. From 1995–2001, Dode organized and di-





rected a weekly lunchtime arts and performance program for residents, faculty, patients, staff, and students. It was frequently attended by as many as 250 guests. During the years CFB was chairman, Dode hosted a Christmas party each year in her home for over 200 house staff, faculty, and other members of the hospital community, as well as a summer picnic for interns, residents, and faculty. She also started the surgical residents' library and was chair of the annual Philadelphia Antiques Show, the proceeds of which supported HUP. Dode was well known and admired by everyone at Penn, and we were all blessed to have her active involvement for so many years in our professional and personal lives. Sadly, Dode passed away in 2019 at the age of eighty-seven.

## Post-Chairman Years

Following his chairmanship, CFB has remained a huge force in Penn Medicine, and his contributions in support of Penn Surgery have continued uninterrupted. Both during his chairman years and since then, he successfully expanded the number of endowed chairs within Penn Surgery made possible by his chairmanship of the Benjamin and Mary Siddons Measey Foundation. Other Penn Surgery Measey Board members included Jonathan Rhoads, Brooke Roberts, and currently Ron Fairman. While a detailed discussion of Measey Foundation support for Penn Surgery is beyond the scope of this chapter, our faculty and surgical trainees have been the recipients of its career-transforming academic and educational support.

Notably, Jonathan Rhoads died in 2002. Clearly, Rhoads significantly influenced CFB over the course of their careers; they developed a close

**2011–2017**

CFB is President of American Philosophical Society.

W.W. Keen, Jonathan Rhoads, and CFB are the only three surgeons that have held this office in the APS which Benjamin Franklin founded in 1743.

relationship that became even more strongly cemented over time. In the same year, CFB was elected president of the United Network for Organ Sharing in the US (UNOS) and the following year was awarded the Medallion for Scientific Achievement by the American Surgical Association. He continued to accumulate awards; in 2009, he was named the Society of University Surgeons Lifetime Achievement Awardee, was awarded the Thomas Starzl Prize in Transplantation and Immunology, and the following year in 2010, received the Medawar Prize, the highest award of the International Transplantation Society.<sup>31</sup> Starzl provided the

Medawar Prize nomination, demonstrating his admiration for

CFB's career achievements. Other notable awards include the Roche Pioneer Award of the American Society of Transplant Surgeons, the Sheen Award of the American College of Surgeons, the Jonathan Rhoads Gold Medal of the American Philo-



CFB as President of the American Philosophical Society



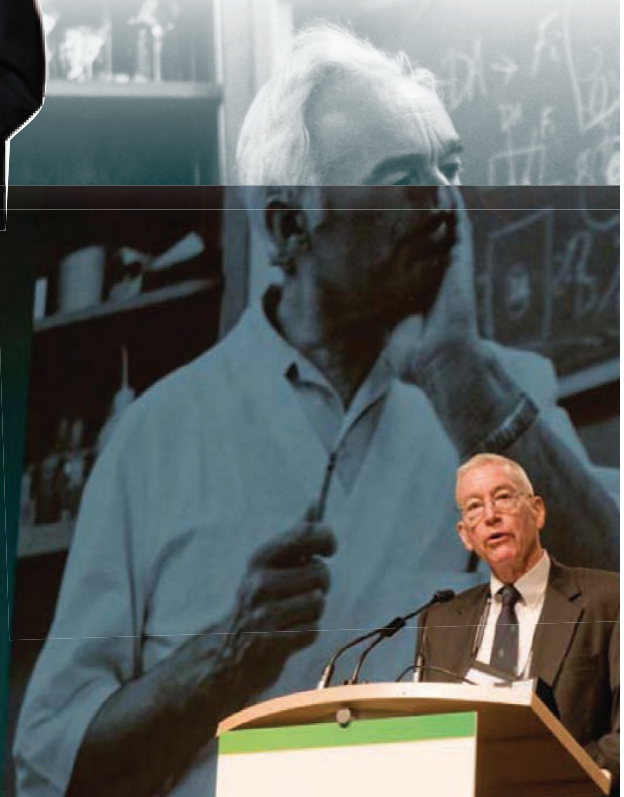
CFB awarded Starzl Prize



Medawar Prize



CFB accepting the Medawar Prize



sophical Society, the Distinguished Graduate Award of the School of Medicine at the University of Pennsylvania, and the American Philosophical Society's Henry Allen Moe Prize in the Humanities (2010).<sup>32</sup>

Clearly one of the most prestigious and unique accomplishments for a physician and surgeon came in 2011 when CFB was elected President of the American Philosophical Society (APS) for a six-year term.<sup>33</sup> The following year in 2012, the Clyde F. Barker Transplant House was opened. This is not a medical facility, but a guest house at 3940 Spruce Street designed to meet the unique needs of transplant patients and their families and caregivers. It was designed by Rafael Vinoly and built entirely through the generosity of private donors.

**2012**

Transplant House is named for CFB.



During the course of his career, he published well over 450 scientific papers and served on twelve editorial boards, including *Diabetes*, *Transplantation*, *Journal of Surgical Research*, *Archives of Surgery*, *Surgery*, *Journal of the American College of Surgeons*, and *Annals of Surgery*. His scientific memberships not already mentioned include the American College of Surgeons, the National Academy of Medicine, the Association of American Physicians, the American Association for the Advancement of Science, and the American Academy of Arts and Sciences. He has also been president of the Halsted Society and the US chapter of the International Society of Surgery. He has served as a visiting professor at more than ninety different universities in the US and abroad and is an Honorary Fellow of the Royal College of Surgeons of England and of the Royal College of Surgeons in Ireland.

As this book indicates, Barker's knowledge of the history of Penn Surgery is an ongoing passion that has served to strengthen and reconnect

former graduates of Penn Surgery training programs. He is the Editor-in-Chief of the *Penn Surgery Society Newsletter* that is published quarterly and broadly distributed. It spotlights the accomplishments of our current and former trainees as well as faculty, introduces new faculty members, and typically includes a historical component. Candidly, I look forward to reading every issue. Along the same theme, Barker has remained closely engaged with the achievements of his former trainees. Two recent examples include his presence in San Diego when I delivered my presidential address to the Society for Vascular Surgery in 2018, and when he and Dode were present as Dan Dempsey received the Philadelphia County Medical Society's Strittmatter Award in 2019 (Clyde had also received the Strittmatter Award in 2001).

In preparing this chapter, I was again reminded of how uniquely fortunate we have all been to know and work alongside a "living legend" for so many years. As he approaches his ninety-first birthday, he may no longer effortlessly spring over a tennis net following a win, but his intellect, enthusiasm, and ongoing desire to increase pride in everything related to Penn Surgery remain robust.

— Ron Fairman, MD



CFB portrait by  
artist Jon R. Friedman

## Notes

- <sup>1</sup> Barker, FG: *Forty-Minute Plays from Shakespeare* (New York: MacMillan, 1936). Fred G. Barker's grandson (Fred G. Barker II) is Professor of Neurosurgery at Harvard and Massachusetts General Hospital.
- <sup>2</sup> Hardy, Mark A: Memoir of Harold G. Barker *Transactions of the American Surgical Association* Vol 129, 2011, p. 264.
- <sup>3</sup> Peskin GW, Miller LD, Barker CF and Evans GW: Comparative Effects of Portosystemic Shunting on Liver Function: Use of New Technique: Half and Half Shunt. *Surgery* 54:67-77, 1963.
- <sup>4</sup> Barker CF, Nance FC and Peskin GW: Regional Hypothermia for Massive Bleeding. *Surgery* 56:624-627, 1964.
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- <sup>6</sup> Berkowitz HD, Spence RK, Freiman DB, Barker CF, Roberts B, McLean G and Ring EJ: Long Term Results of Transluminal Angioplasty of the Femoral Arteries. (Eds.) CT Dotter, A Gruntzig, W Schoop, E Zietler. In: *Percutaneous Transluminal Angioplasty*. New York: Springer-Verlag, 207-214, 1983.
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and  
Barker CF and Billingham RE: Immunologically Privileged Sites. (Eds.) HG Kunkel and Frank J. Dixon. In: *Advances in Immunology*. New York: Academic Press, 25:1-54, 1977.
- <sup>12</sup> Starzl TE: Acquired immunologic tolerance: with particular reference to transplantation. *Immunol Res.* 2007;38(1-3):6-41.
- <sup>13</sup> Lakkis FG, Arakelov A, Konieczny BT, Inoue Y. Immunologic 'ignorance' of vascularized organ transplants in the absence of secondary lymphoid tissue. *Nature Medicine*. 2000 Jun;6(6):686-688.
- <sup>14</sup> Barker CF and Billingham RE: Histocompatibility Requirements of Heart and Skin Grafts in Rats. *Transplant. Proc.*3:172-175, 1971.
- <sup>15</sup> Foley, Paul, Wang, Grace, Jackson, Benjamin, Naji, Ali, Carpenter, Jeffrey, Barker, Clyde, Fairman, Ronald, Woo, Edward: (2011). PS70. A Contemporary Experience of Open Surgical Treatment of Renal Artery Aneurysms. *Journal of Vascular Surgery—J VASC SURG.* 53.

- <sup>16</sup> Each year, North American medical schools were allowed to nominate one young faculty member from any of its departments. The nominees lived with and were evaluated in a two and a half day interview-retreat by a panel of business executives, college presidents, and their spouses. Twenty per year were selected.
- <sup>17</sup> Reckard CR and Barker CF: Transplantation of Isolated Pancreatic Islets across Strong and Weak Histocompatibility Barriers. *Transplant. Proc.* 5:761-763, 1973.
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- and
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- Ballinger and Lacy are often identified as the first to succeed with islet transplantation. Their work, simultaneous with Barker's, was published a few months earlier, but their correction of hyperglycemia was partial and of brief duration.
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- <sup>25</sup> Posselt A, Barker CF, Tomaszewski JE, Markmann JF, Choti MA and Naji A: Induction of Donor Specific Unresponsiveness by Intrathymic Islet Transplantation. *Science* 249:1293-1295, 1990.
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- <sup>30</sup> Fairman, Ronald M: Measuring the worth of a vascular surgeon: Making it personal through a career of service, *Journal of Vascular Surgery*, Volume 67, Issue 5, 2018, pp. 1321–1327.
- <sup>31</sup> Barker CF: Medawar Prize, Acceptance Speech, *Transplantation*, Vol. 90, No. 12, December 27, 2010, pp. 1253–1259.
- <sup>32</sup> Barker, Clyde F: “The Jayne Lecture: Thomas Eakins and His Medical Clinics.” *Proceedings of the American Philosophical Society* 153, no. 1 (2009): 1–47.
- <sup>33</sup> In the 275-year history of the American Philosophical Society, only two other surgeons have been president – WW Keen and Jonathan Rhoads.