

SUMMARY OF CONTRIBUTIONS OF HENRY BUCHWALD, MD, PHD

To the University of Minnesota, it's Medical School, and the Department of Surgery

I. Appointments, Honors, and Service

Background: Columbia College (BA, Valedictorian, Varsity Swimming), 1950-1954; College of Physicians and Surgeons, Columbia University on Professional Option (MD, top of class), 1953-1957; Internship, Columbia Presbyterian Medical Center, 1957-1958; Chief Flight Surgeon, SAC, US Air Force, Offutt Air Force Base, 1958-1960.

Appointments and Degrees, University of Minnesota: Surgical residency and laboratory, 1960-1967; promoted to Instructor during year of chief residency, 1966-1967; MS (Biochemistry) 1966; PhD (Surgery) 1966; appointed Assistant Professor end of residency, 1967; appointed tenured Associate Professor, 1970; appointed tenured Full Professor, 1977; founding father Department of Biomedical Engineering, 1977; appointed Professor of Biomedical Engineering 1977; First Owen H. & Sarah Davidson Wangensteen Chair in Experimental Surgery, 2001-2004

Primary Honors:

University of Minnesota:

- Clinical Scholar Award, 1991
- Harold S. Diehl Award, U of M Alumni Society, 2002
- Department of Surgery Wangensteen Award for Excellence in Teaching, 2002
- Plaque, U of M Wall of Discovery on Scholar's Walk, 2006

- Inaugural Class of Researchers for the Academy of Medicine Device Innovators, 2012
- Plaque, Department of Medicine for cardiovascular contributions, 2014
- Plaque, Medical School's Wall of Scholarship for highly cited work, 2014
- Plaque, elected to membership in the Academic Health Center's Academy for Excellence in Health Research, 2015
- Plaque, Medical School's Wall of Scholarship, for highly cited work, 2016
(Only Department of Surgery represented on the Wall of Scholarship, and only one of two faculty with more than one citation.)

Outside of University of Minnesota:

- Samuel D. Gross Prize of the Philadelphia Academy of Surgery, 1967; only other U of M awardee – Owen. H. Wangenstein
- Inventor of the Year Award and induction into the Minnesota Inventor's Hall of Fame, 1988
- Outstanding Achievement Award, Minnesota Medical Alley, 1989
- Tribute, US Senate Congressional Record, 1999
- Dedication of 53rd Volume of the Surgical Forum, American College of Surgeons, 2002
- Honored for NFLPA-sponsored Living Heart Foundation – Heart Obesity Prevention Education (LHF-HOPE) program by the NY Stock Exchange, ringing of closing bell, 2013
- Honorary member of the Royal College of Surgeons of England, 2014

- Honorary member of the Austrian Society for Surgery of Obesity and Metabolic Diseases, 2009; Japan Society for Treatment of Obesity, 2009; and Brazilian Society for Surgery of Obesity and Metabolic Diseases, 2010

(Full list of honors and awards available on CV.)

Primary Presidencies, Chairmanships, and Directorships:

- Chair, Minnesota Inventors' Hall of Fame, 1989-1991
- Chair, International Study Group on Diabetes Treatment with Implantable Insulin Delivery Devices, 1989-1993
- President, Central Surgical Association, 1997-1998
- President, American Society for Bariatric Surgery, 1998-1999
- President, International Federation for the Surgery of Obesity, 2003-2004
- Chair, American College of Surgeons' National Faculty for Bariatric Surgery, 2003
- President, Owen H. Wangensteen Surgical Society, 2006-2010

(Full list available on CV.)

Major Administrative Positions:

- Department of Surgery, Director, Graduate Surgical Training
- Department of Surgery, Director, Resident Training Program
- Department of Surgery, Director, In-Training Examination
- Chairman, Credentials Committee, U of M Hospital, 1980-1992 (faculty elected for 12 successive years)

Editorial Boards:

- Co-Editor-in-Chief, *Obesity Surgery*, 2009-2011
- Associate Editor or Member Editorial Board on 12 major publications

Professional Societies and Committees:

(See CV)

II. Research

Independent laboratory in lipid metabolism and atherosclerosis established during second year of residency (1962) and continuously in existence until 2011; initially funded by Dr. Wangenstein, Chair, Department of Surgery, a Helen Hay Whitney Foundation Fellowship (1962-1964), and the American Heart Association Established Investigatorship (1964-1969).

Inventor of the partial ileal bypass (PIB) operation, 1962-1963, while a laboratory resident. PIB is still the most potent therapy to lower plasma cholesterol levels. In many countries today where long-term use of the statins is not available, the PIB is frequently performed and referred to as the *Buchwald Procedure*.

Principal Investigator of the Program on the Surgical Control of the Hyperlipidemias (POSCH) grant, at 60 plus million dollars, the largest investigator-initiated grant funded by the NHLBI. POSCH was the first RCT statistically significantly to demonstrate that myocardial infarctions and atherosclerotic deaths could be reduced in a post myocardial infarction population by marked lipid intervention, that the same held true for peripheral arterial disease and the need for coronary artery bypass grafting

or percutaneous transluminal coronary angioplasty. POSCH also showed that life expectancy was increased for over 25 years and that the incidence of type 2 diabetes in a diabetes-free population was reduced 2.7-fold in the PIB group in comparison to controls. In addition, POSCH coronary arteriography at 0, 3, 5, 7, and 10 years showed retardation and actual regression of plaque lesions.

Founded separate bioengineering laboratory that produced the first implantable infusion pump, a second model, a novel peritoneovenous shunt, and one-way flow catheters, as well as an oxygen transport rate analyzer and an expandable abdominal and perianal operative access device. Personally implanted the first pumps for heparin, chemotherapy, and insulin infusions.

Recognized as a founding father of metabolic/bariatric surgery. In laboratory, translational, and advanced clinical metabolic/bariatric surgery, contributed technical modifications and techniques. Produced first in this field meta-analysis and advanced basic understanding of the relationship of metabolic/bariatric surgery to type 2 diabetes mitigation.

Patents: 20

Surgical Residents and Other Trainees: 67

Addendum:

Frequently listed among the University's top ten recipients of research funding

Over the years responsible for approximately \$100,000,000 in research funding

III. Scholarly Outreach

Peer-reviewed publications: 349

Books and editorships: 11

Book Chapters: 79

Visiting Professorships, Lectures, Invited Speaker: 265

IV. Clinical Care

Operations: about 10,000

Bariatric surgery cohort: 4,000

V. Current Projects

National establishment of NFLPA-sponsored Living Heart Foundation – Heart Obesity Prevention Education program (LHF-HOPE) centers for health screening of former NFL players, community outreach programs, and educational symposia. The inaugural permanent center has been established at the University of Minnesota, and several University of Minnesota faculties are becoming involved, including the Athletic Department, Student Health Services, and the University Recreation and Wellness Program.

Extension of LHF-HOPE to a national IT Platform (Athlete's Health) of health advisory and referral services based on athletic participation at the professional, college, and amateur levels.

Four institutions (University of Minnesota, Brigham and Women's Hospital, Harvard; Weill Cornell Medical Center; OB klinika - Centre for Treatment of Obesity and

Metabolic Disorders, Prague, Czech Republic) trial of the ability of the partial ileal bypass operation to resolve type 2 diabetes in non-obese, hyperlipidemic patients, refractory or unable to tolerate the statin drugs. This clinical trial is predicated on our published POSCH report demonstrating the preventive effect of partial ileal bypass on type 2 diabetes.

In association with the Medical Device Center of the Department of Biomedical Engineering, working closely with Dr. Art Erdman, development of a perianal operative platform for colorectal surgery that does not require insufflation and provides direct lesion visualization by expandable blades, lit by LEDs, on a flexible scope.

Continuation of presentations at national and international meetings, as well as publication in the scientific literature, and in a bimonthly column in *General Surgery News*. Publications have repeatedly been cited by ResearchGate as the most read during a given week for the Department of Surgery.

Teaching surgical residents and students in office tutorials, in the Department of Surgery surgical technique courses, in the weekly surgery conferences, and a course in entrepreneurship in the Wharton Business School. I have volunteered several times to assist junior staff and laboratory surgical residents in research planning and grant writing.

Scheduled to teach courses in both Spring and Fall Semesters in the Department of Biomedical Engineering.

In discussions with the American College of Surgeons on being a consultant to the College in the area of metabolic surgery. Because of my considerable experience and leadership in initiating and espousing the field of metabolic surgery, the Executive

Director of the American College of Surgeons has asked me to organize a symposium on metabolic surgery. I will choose 30-40 delegates who will be sponsored by the College, to convene at the headquarters of the College in Chicago. The purpose of this symposium will be to broaden the knowledge base of the College leadership about this discipline and to plan on how to integrate the burgeoning field of metabolic surgery into the future activities and programs of the College. In the past, I have had an integral role in the reorientation, and the actual change in name, of the American Society of Bariatric Surgery (ASBS) (President, 1998-1999) to the American Society for Metabolic and Bariatric Surgery (ASMBS), and similarly the International Federation for the Surgery of Obesity (IFSO) (President, 2003-2004) to the International Federation for the Surgery of Obesity and Related Diseases.

VI. Finances

Active grant: Covidien/Medtronic for the partial ileal bypass/type 2 diabetes study: \$85,000

Pending grant: MNReach for Operative Platform for Transanal Colorectal Surgery: \$100,000

Pending grant: Institute for Engineering in Medicine Exploratory Grant for Transanal Colorectal Surgery Operative Platform: \$35,000

Note:

During my 56 years at the University of Minnesota, including residency training, active clinical practice and postclinical years, the total monies I have generated for the

Department of Surgery and the University of Minnesota in clinical reimbursement, grants, fellowships, royalties, and gifts has far exceeded my total take-home income in salary, practice percentage, bonuses, etc. Thus, apart from my academic and clinical contributions, the University of Minnesota has financially profited for over half a century from my presence.