Here is where Great Health Care Leaders are created.
We opened our doors in 1886 to our first class of pharmacy students. Since then, the University at Buffalo School of Pharmacy and Pharmaceutical Sciences has been a recognized national and international health care leader. Our innovative research led by outstanding faculty provided the groundwork for some of the most important advances in pharmaceutical care. All the while, we have maintained a steadfast commitment to educating the health care leaders of the future. I invite you to read more about our journey.

James M. O’Donnell, PhD
Dean and Professor
A Legacy of Learning

Beginning in 1886, here is where the foundational principles of pharmacy education began.

1886
First class begins studies

1888
First graduating class: 18 students, including two female students

1922
Two degrees offered: Master of Pharmacy and Doctor of Pharmacy

1940
Accreditation by the American Council of Pharmaceutical Education

1950
Department of Biopharmaceutics established by Gerhard Levy, father of pharmacodynamics

1962
Pharmaceutical Chemistry and Pharmacology degrees

1972
First clinical pharmacokinetics lab in the United States

1992
Smart Pill developed and patented by professor emeritus Jerome Schentag

1995
UB-University of Zimbabwe Antiretroviral Pharmacology Training Program

2002
Clinical Research Program for pharmacy student research leaders

2008
Center for Pharmacokinetics and Pharmacodynamics and Center for Protein Therapeutics

2012
Scholars Program for pharmacy student scholarly leaders

2015
Global Health Outreach Program

2016
MS Pharmacometrics and Personalized Pharmacotherapy Degree

2018
Systems Pharmacology Initiative

2019
Ranked #1 pharmacy school in New York State by U.S. News & World Report

First graduating class: 18 students, including two female students

Four-year Bachelor of Pharmacy degree

PhD in Pharmaceutical Chemistry and Pharmacology degrees

First clinical pharmacokinetics lab in the United States

First UB School of Pharmacy and Pharmaceutical Sciences Dual Degree: BS/MBA

Accreditation by the American Council of Pharmaceutical Education

Department of Biopharmaceutics established by Gerhard Levy, father of pharmacodynamics

Smart Pill developed and patented by professor emeritus Jerome Schentag

UB-University of Zimbabwe Antiretroviral Pharmacology Training Program

Clinical Research Program for pharmacy student research leaders

Center for Pharmacokinetics and Pharmacodynamics and Center for Protein Therapeutics

Ranked #1 pharmacy school in New York State by U.S. News & World Report

Systems Pharmacology Initiative
Fewer than 100 institutions across North America are members of the Association of Academic Health Centers (AAHC), in which global multidisciplinary members anticipate and direct 21st-century progress in health care, science and education. Of these, only 40 have schools of pharmacy. At UB, pharmacy joins medicine, dentistry, public health and health professions, nursing and social work to complete our dynamic AAHC team.

EXPANSIVE EDUCATION
Our creative academic approach to merging health care and science has allowed us to educate global leaders in clinical pharmacy and pharmaceutical sciences.
Distinctive Degrees

16 degree programs to prepare students for a variety of high-impact career options

PharmD
Collaborative PharmD
PharmD/MBA
PharmD/MPH
PharmD/JD
PharmD/MS in Pharmaceutical Sciences
PharmD/MS in Pharmacometrics and Personalized Pharmacotherapy
PharmD/PhD in Pharmaceutical Sciences

Combined PharmD (expedited degree completion)
PharmD + Biology BS
PharmD + Chemistry BA
PharmD + Biomedical Sciences BS
PharmD + Pharmaceutical Sciences BS

BS in Pharmaceutical Sciences
BS/MS in Pharmaceutical Sciences
MS in Pharmaceutical Sciences
MS in Pharmacometrics and Personalized Pharmacotherapy
PhD in Pharmaceutical Sciences

Unparalleled Student Involvement

24 established student organizations that foster professionalism and create career opportunities

UNIQUE, HIGH-IMPACT ORGANIZATIONS:

College of Psychiatric and Neurologic Pharmacists
Industry Pharmacists Organization
International Pharmaceutical Students’ Federation
Pediatric Pharmacy Advocacy Committee
Student Association of Specialty Pharmacy

UB first approved location in the country
Micro-credential Programs: Academic and Professional Distinction

Experiential Education
Connections to Real World Experience

Scholars Program
Established 2012
Provides enhanced curricular and leadership experiences that prepare students for residency or other postgraduate training
Current: 22 | Graduates: 45

Clinical Research Program
Established 1995
Provides individualized clinical and translational research opportunities that prepare students for fellowship or other postgraduate training
Current: 11 | Graduates: 100+

Pharmacometric Software Series
Established 2008
Provides the skills necessary to implement and execute PK/PD data analysis including simulation, parameter estimation, non-compartmental analysis, study design and bioequivalence.
Current: 20 | Graduates: 200+

1,100+
PRECEPTORS

650+
NATIONAL AND INTERNATIONAL TRAINING SITES
Graduating Pharmacy Leaders

#2 RANKED SCHOOL DEANS & CHAIRS

High-Powered Alumni Network

More than 5,000 active pharmacy alumni who enrich the student experience through innovative precepting, mentorship and career guidance.

TRANSFORMATIVE RESEARCH

Our unrelenting research helped develop the founding principles of drug discovery and paved the way for national and international standards of drug delivery, therapeutic drug monitoring and medication therapy management.

Source: American Journal of Pharmaceutical Education

#2 RANKED SCHOOL DEANS & CHAIRS
Center for HOPE
The Center for Health Outcomes, Pharmacoinformatics and Epidemiology (cHOPE) collaborates with community partners to provide evidenced-based health care research focusing on harmacotherapy optimization for underserved populations.

Innovative Partnerships with the New York State Department of Health

**OPIOID PRESCRIBER TRAINING PROGRAM**
SINCE 2016
- 40+% or 41,000+ NYS licensed prescribers educated
- Naloxone Education Program: 2,000+ practitioners trained
SINCE 2018
- Buprenorphine Education Program: 300+ practitioners trained

**MEDICAID PROGRAM DRUG UTILIZATION REVIEW INITIATIVES**
SINCE 2008
- Drug Utilization Review: 6M+ NYS Medicaid members positively affected by clinical reviews and medication utilization analyses
- Retrospective Drug Utilization Review: 100,000+ drug-related patient cases have been reviewed by clinical pharmacists

Creating New Directions in Bioinformatics and Life Sciences
Our preeminent researchers are developing the next generation of protein drugs to improve analytical methods used in various pharmaceutical systems.

**IONStar: Revolutionizing Disease Research**
IONStar is a cutting-edge analysis tool developed at UB that has been used in 70+ large-scale proteomic investigations, with near-perfect accuracy for quantifying and comparing a vast array of proteins.

IONStar is advancing the discovery of novel mechanisms to treat chronic heart disease, traumatic brain injury and create pathways for drug development in cancer treatment.

Center for Protein Therapeutics (CPT)
CPT advances the understanding of the bioanalysis, formulation and PK/PD of protein drugs through leading-edge research and student training.

In 2018-2019, the CPT provided school-based seed funding for 11 progressive projects, totaling nearly $1 million.
# Emerging Science

The State University of New York (SUNY) and the University at Buffalo (UB) have provided mission-critical funding for progressive initiatives in translational science research.

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<table>
<thead>
<tr>
<th>SUNY EMPIRE INNOVATION AWARD</th>
<th>$1 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative Systems Pharmacology funding</td>
<td>for strategic faculty hires and start-up costs to support multi-disciplinary labs examining single-cell pharmacology and its interface within translational oncology.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUNY EMPIRE INNOVATION AWARD</th>
<th>$750,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biologically Based Drug Delivery funding</td>
<td>for faculty hires and start-up costs to support engineering of biologically based drug delivery vectors to facilitate development of novel human disease therapies.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUNY EMPIRE INNOVATION AWARD</th>
<th>$500,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of Next Generation Therapeutics funding</td>
<td>for faculty hires and start-up costs to support protein therapeutic drug development.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UB BUILDING DISCIPLINARY EXCELLENCE AWARD</th>
<th>$1.5 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Drug Delivery System</td>
<td>for faculty hires and start-up costs to support development of a research core.</td>
</tr>
</tbody>
</table>

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## A Culture of Research Excellence

The investigative tenacity of **five of our faculty members** has resulted in **over $45 million** in continuous single project NIH research support.

<table>
<thead>
<tr>
<th>Year</th>
<th>Funding</th>
<th>Institution</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>$14+ million</td>
<td>National Institute of General Medical Science</td>
<td>William Jusko, SUNY Distinguished Professor of Pharmaceutical Sciences: Corticosteroid Pharmacokinetics and Pharmacodynamics</td>
</tr>
<tr>
<td>2002</td>
<td>$5+ million</td>
<td>National Heart, Lung and Blood Institute</td>
<td>Sathy Balu-Iyer, Professor of Pharmaceutical Sciences: Development and pharmacology of novel lipidic RAHF and biotherapeutics</td>
</tr>
<tr>
<td>2005</td>
<td>nearly $4 million</td>
<td>National Institute of General Medical Science</td>
<td>Javier Blanco, Professor of Pharmaceutical Sciences: Contribution of CBRS and AKRS to the pharmacodynamics of anthracycline drugs</td>
</tr>
<tr>
<td>2006-2013</td>
<td>$3+ million</td>
<td>National Institute of Allergy and Infectious Disease</td>
<td>Gene Morse, SUNY Distinguished Professor of Pharmacy Practice: AIDS Clinical Trials Group Pharmacology Specialty Laboratory</td>
</tr>
<tr>
<td>2008-2015</td>
<td>$16+ million</td>
<td>National Institute of Allergy and Infectious Disease</td>
<td>Gene Morse, SUNY Distinguished Professor of Pharmacy Practice: Clinical Pharmacology Quality Assurance and Quality Control (PQA/QC) Program</td>
</tr>
<tr>
<td>2008-2015</td>
<td>$3+ million</td>
<td>National Institute on Drug Abuse</td>
<td>Marilyn Morris, SUNY Distinguished Professor of Pharmaceutical Sciences: Gamma-hydroxybutyrate: Toxicokinetics, Toxicodynamics and Treatment Strategies</td>
</tr>
</tbody>
</table>
Innovation in Progress

Novel NIH Support

AGE AND RACE INFLUENCES ON IMMUNOSUPPRESSION AFTER RENAL TRANSPLANT

FIVE YEAR $3.5 million
National Institutes of Aging grant to study the gap between current, non-specific clinical methods and personalized medicine for high-risk kidney transplant patients across spectrum of adult aging by exploring the effects of age, race and sex on immunosuppressive medication and immune responses of renal transplant patients.

CATCH AND RELEASE IMMUNOTOXINS: CAR-BOMBS FOR CANCER

FIVE YEAR $1.8 million
National Cancer Institute grant to test new strategies for improving the delivery of potent toxins to cancer cells and support research to evaluate an untested method of delivering antibodies to target colon cancer cells that, if effective, could be applied to nearly any type of cancer.

TECHNOLOGICAL ADVANCES AND REGULATORY CONSIDERATIONS FOR QUANTIFYING PROTEINS AND PEPTIDES IN BIOLOGICAL MATRICES USING LC-MS

THREE YEAR $280,000
F. Hoffman LaRoche Limited award to develop novel bioanalytical strategies enabling highly sensitive, robust and precise characterization of protein biotherapeutics, targets and biomarkers in pre-clinical and clinical environments.

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Novel Industry Support

SPECIAL INNOVATION PROJECT 1 FOR INNOVATIONS THAT ADVANCE LOCAL EFFORTS FOR BETTER CARE AT LOWER COSTS

TWO YEAR $143,000
Island Peer Review Organization award to train pharmacists in the administration of rescue naloxone as well as identify high risk patients for opioid counseling.

BRAIN PHARMACOKINETICS OF DIFFERENT SIZE ANTIBODY FRAGMENTS

ONE YEAR $100,000
UB Center for Protein Therapeutics: By using our state-of-the-art brain microdialysis system we intend to develop a strategy that can significantly enhance the exposure of antibodies in the brain would lead to more efficacious antibodies.

BCSFB TRANSPORT OF PROTEIN THERAPEUTICS: INFLUENCE OF TYPE 2 DIABETES

ONE YEAR $100,000
UB Center for Protein Therapeutics: Evaluate the transport of protein therapeutics into CSF fluid using both in vitro and in vivo techniques and to determine the influence of Type 2 diabetes mellitus on the uptake and efflux of proteins.
GLOBAL HEALTH: PHARMACY WITHOUT BORDERS

Our global health initiatives promote culturally competent health care and foster servant leadership in local, national and international populations.

Medication Safety for Refugees

In 2016, UB launched the Sustainable Medication Literacy Program, one of the first programs of its kind in the country, providing vulnerable refugee populations with medication counseling and health care advisement through interpreters and culturally sensitive print materials.

More than 400 refugees from over 35 countries have received patient education on medication label reading to better understand prescription and over-the-counter medications and the importance of taking them as instructed.
Serving the Underserved
2013–2019

40+ interprofessional international and national medical relief trips

100+ students participated in Africa, Central America, Caribbean and across rural America

“This trip has challenged me to become more conscientious about how to identify and reach the community in need around me and how to bridge the gap in health care.”

Student Quote

Tackling the Opioid Epidemic

Narcan Immunization Training: Rho Chi Students Provide a Second Chance

Rho Chi Honor Society students provide student-to-student certified Narcan immunization training to UB pharmacy and health science students on how to recognize, as well as reverse, opioid overdose.

Since 2018: 35+ PharmD and health students trained.

Drug Deactivation

Since 2016, we have been responsible for the distribution of 25,000+ drug deactivation packets throughout Western New York to prevent drug abuse and protect the environment.
CIGBS: Bridging Gaps in Health Care Disparities

The Center for Integrated Global Biomedical Sciences (CIGBS) brings together scientific disciplines in a nontraditional approach to build innovative research capacity to address regional and global challenges.

2019: Capacity Building

A new team of University at Buffalo researchers and business leaders was established to advance the health initiatives in Jamaica and several African nations through academic research and capacity-building programs.

2018: Partnership Development

The University at Buffalo developed partnerships with universities in South Africa to launch a tuberculosis treatment and nanomedicine development program, and in Zimbabwe to expand cancer and behavioral health-related HIV research programs.

A $1 million grant helped create the Global Infectious Diseases Research Training Program, a collaboration with the University of the West Indies, State University of New York Upstate Medical University and Jamaica Ministry of Health, to improve the study of Zika, dengue, HIV, hepatitis and other viruses that affect the Caribbean region.
Preeminent past and present faculty are the reason for our success. We are proud of their legacy and their impact on the future of the profession.

Achievement
Awards and Recognitions

**INTERNATIONAL AND NATIONAL**

1. **National Academy of Sciences Member**
   Gerhard Levy: first PharmD inducted

2. International Pharmaceutical Federation
   - 1 Häst-Madsen Medal
   - 1 Lifetime Achievement Award

3. International Society of Pharmacometrics
   - 1 Innovation Award
   - 1 Leadership Award
   - 1 Lewis B. Sheiner Lecturer Award

4. American Society for Clinical Pharmacology and Therapeutics
   - 1 Malle Junima-Romet Mid-Career Leadership Award
   - 1 William B. Abrams Lecture
   - 2 Oscar B. Hunter Career Awards in Therapeutics

8. American Association for the Advancement of Science Fellows
## Awards and Recognitions, continued

### INTERNATIONAL AND NATIONAL

1. National Science Foundation CAREER Award
2. American Association of Pharmaceutical Scientists
   - 2 Distinguished Service Awards
3. American College of Clinical Pharmacy
   - 1 Therapeutic Frontiers Lecture
   - 2 Russell R. Miller Awards
4. American College of Apothecaries Research and Education Foundation Albert E. Rosica, Jr. Memorial Award
5. Volwiler Research Achievement Awards
6. American College of Clinical Pharmacy
   - 1 Therapeutic Frontiers Lecture
6. American College of Clinical Pharmacy
   - 2 Russell R. Miller Awards
7. American Association of Colleges of Pharmacy
   - 3 New Investigator Awards
   - 5 Volwiler Research Achievement Awards

### STATE UNIVERSITY OF NEW YORK (SUNY)

4. SUNY Distinguished Professors
5. SUNY Chancellor’s Awards for Excellence in Scholarship and Creative Activities
6. SUNY Chancellor’s Awards for Excellence in Faculty Service
7. SUNY Chancellor’s Awards for Excellence in Professional Service

### UNIVERSITY AT BUFFALO (UB)

4. UB Distinguished Professors
5. UB Exceptional Scholar Awards for Young Investigators
6. UB Teaching Innovation Awards
7. UB Exceptional Scholar Awards for Sustained Achievement
8. SUNY Distinguished Professors
9. SUNY Chancellor’s Awards for Excellence in Teaching
10. SUNY Chancellor’s Awards for Excellence in Scholarship and Creative Activities
11. SUNY Chancellor’s Awards for Excellence in Faculty Service
12. SUNY Chancellor’s Awards for Excellence in Professional Service
13. SUNY Distinguished Professors
14. SUNY Chancellor’s Awards for Excellence in Teaching
## Distinctiveness

### Fellows

<table>
<thead>
<tr>
<th>8</th>
<th>American Association for the Advancement of Science Fellows</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>American College of Clinical Pharmacy Fellows</td>
</tr>
<tr>
<td>14</td>
<td>American Association of Pharmaceutical Scientists Fellows</td>
</tr>
</tbody>
</table>

| 1 | American Society of Transplantation Fellow                |
| 2 | International Society of Pharmacometrics Fellows          |
| 1 | Infectious Diseases Society of America Fellow             |

| 1 | Society of Critical Care Medicine Fellow                 |
| 1 | American Society of Consultant Pharmacists Fellow        |
| 5 | American Pharmacists Association APRS Fellows            |

| 1 | American College of Neuropsychopharmacology Fellow       |
| 2 | American Association of Colleges of Pharmacy, Academic Leadership Fellows Program |

## Leaders

### Journals

<table>
<thead>
<tr>
<th>JOURNAL EDITORS</th>
<th>7 Faculty 9 Journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSOCIATE EDITORS</td>
<td>5 Faculty 7 Journals</td>
</tr>
<tr>
<td>REVIEW BOARDS</td>
<td>22 Faculty 85 Journals</td>
</tr>
</tbody>
</table>