



Pre-Medical Studies

College of Life Sciences

Presentation Overview

- Meet your Program Directors
- Program Description
- Curriculum layout
- Sample Student Work
- **Outcomes**
- **Careers**
- Student Profile
- Alumni Profiles



Dr. Diana R. Cundell

Program Director Pre Medical Studies



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Jefferson

CREATE WHAT'S NEXT

Dr. Diana R. Cundell

COLLEGE OF LIFE SCIENCES
BSc. IN MICROBIOLOGY AND IMMUNOLOGY, KINGS
COLLEGE LONDON, ENGLAND
PHD IN MEDICINE, ROYAL POSTGRADUATE MEDICAL
FEDERATION, LONDON, ENGLAND
PROFESSOR OF BIOLOGY

Dr. Cundell has been a professor at Thomas Jefferson University for 23 years and program director for more than a decade. Her research spans over 30 years and has resulted in over 60 articles, 4 process patents and most recently a book “Allicin, the natural compound from garlic with many uses”

COURSES

- BIOL-493 and 494 Preceptorships I and II
- BIOL-303 Histology
- BIOL-321 Immunology
- BIOL-413 Pathology





Dr. Kathryn E. Mickle

Associate Director Pre Medical Studies



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Jefferson

CREATE WHAT'S NEXT

Dr. Kathryn E. Mickle

COLLEGE OF LIFE SCIENCES

BSc. IN BIOLOGY, SAINTJOSEPH'S UNIVERSITY, PHILA, PA

MS IN BIOLOGY, SAINTJOSEPH'S UNIVERSITY, PHILA, PA

PHD IN ECOLOGY AND EVOLUTIONARY BIOLOGY, UNIVERSITY OF KANSAS, LAWRENCE, KS

ASSOCIATE PROFESSOR OF BIOLOGY

Dr. Mickle has been a professor at Thomas Jefferson University for 6 years. She is a paleoichthyologist whose research focuses on over 300 million year old fossil fishes. She has described 9 new species and has led in depth investigations into the anatomy of these fossil fish. She is currently working on writing a book on lower actinopterygian fossil fishes. While her research focuses on fossil fish anatomy, her teaching focuses on human anatomy.

COURSES

- BIOL-201 Human Anatomy and Physiology I
- BIOL-203 Human Anatomy and Physiology II
- PAST-407A/PAS-507B Advanced Human Anatomy A
- PAST-407B/PAS-507B Advanced Human Anatomy B



Umbrella program preparing students for doctoral programs in health care fields including medicine, pharmacy, veterinary medicine

Kaplan MCAT prep course center

Experiential learning (100 hours off campus) and unique classroom courses (histology, medicinal plants, pathology)

Focus on active learning

CURRICULUM LAYOUT

Year One

CORE CURRICULUM

- Chemistry I and II Lecture and Lab
- Biology I and II Lecture and Lab
- Calculus I

Year Two

CORE CURRICULUM

- Anatomy and Physiology I and II Lecture and Lab
- Organic Chemistry I and II Lecture and Lab
- Calculus II
- Biostatistics

- Preceptorship I & II (Summer)

Year Three

CORE CURRICULUM

- Biochemistry I and II Lecture and Lab
- Physics I and II Lecture and Lab

Year Four

CORE CURRICULUM

- Microbiology Lecture and Lab
- Principles of Genetics Lecture and Lab
- Pathology Lecture and Lab

ELECTIVES

- Designated Pre-Medical Elective (3-4 credits)
- 5 Free Electives (15-20 credits)

TOTAL CREDIT HOURS: 126-132



JANUARY 25, 2019 // FRIDAY // \$1.50

REMEMBERING THE LIFE OF DR. WALDEMAR HAFFKINE (1860-1930)



Odessa, Ukraine

“The Savior of Humanity”

Lord Joseph Lister



Early Life and Education



Odessa

Nevka Oshkoverka

Dr. Waldemar Haffkine was a Ukrainian biologist who was well known for his development of vaccines for cholera and the bubonic plague. Before completing these amazing feats, a good chunk of his education took place at the University of Odessa where he studied physics, mathematics, and biology. It was here that he received a degree of Candidate of Natural Sciences.

Years before, Dr. Haffkine was born on March 12, 1860 in Odessa, Ukraine and later completed his early schooling in the city of Berdiansk. As the son of a Jewish schoolteacher, he took an early interest in learning.

As an adolescent, he joined the Jewish League for Self-Defense. An organization he took very formal notice of due to the anti-Semitic climate in the country at the time. Unfortunately, Haffkine would find himself in life-threatening situations, such as an incident in which he was injured while defending a Jewish home from a foreigner's invasion. He was even arrested, but later released.

Dr. Haffkine worked under Eli Metchnikoff from 1879 to 1883. He then went on to study and work at the zoological museum at Odessa from 1882 to 1885. In 1886, he worked at the University of Geneva before traveling to Paris to work under Metchnikoff and Louis Pasteur at the Pasteur Institute (Osh).

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Early Life and Education

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Impact on Immunology

Cholera Vaccine

Cholera is an acute illness that presents itself through severe diarrhea which, in turn, leads to life-threatening levels of dehydration. It is a fever spread through food or water that is contaminated with the microbes, *Vibrio cholerae*. Once ingested, the microbes attach itself outside of the epithelium of the duodenum and jejunum, both of which are parts of the small intestine. The cholera toxin is what actually causes the diarrhea. Once released, this toxin results in a disruption of intestinal functions and electrolyte reabsorption (World Health Organization 2019).

Dr. Haffkine was able to successfully develop the cholera vaccine on his first attempt in 1890. He did this by first producing an attenuated strain by blasting the microbes with hot air. He made himself the first human subject. A man of faith! Fortunately, though, this risk paid off because his omission seemed to have worked. Eventually, after this success, he was able to utilize his invention during the Indian cholera epidemic of 1893.



Vibrio cholerae



Vibrio parahaemolyticus



Indian stamp depicting Dr. Haffkine

Plague Vaccine

The Plague, also known as the Black Death, is another illness that took many lives. It is caused by the *Yersinia pestis* microbe. Usually victims would develop blackened skin, hence the name that was due to hemorrhaging and necrosis of the skin. Additionally, painful lymph node swellings, named buboes, would form (WebMD).

In 1896, Dr. Haffkine developed a plague vaccine while working at the JJ Group of Hospitals in Bombay (now Mumbai), India. Once again, he made himself the first human subject. Once it appeared to work on him, the vaccine was next tested on volunteers from the Hyderabad jail before it became widely accepted and administered.

Late Years

Dr. Haffkine officially retired in 1914 before returning to France. He still continued to work for medical journals. In 1927, he revisited his birthplace, Odessa. Further on, he spent his final few years in Lausanne, Switzerland. He passed away on October 26, 1930.

PLACEMENT RATE

95%

GRADUATE SCHOOLS STUDENTS ENTER

Medical School:

University of Maryland, SMC Temple, UMDNJ, Kansas (MD)

PCOM, NYCOM, LECOM, UMDNJ, VCOM (DO)

Other healthcare graduate programs:

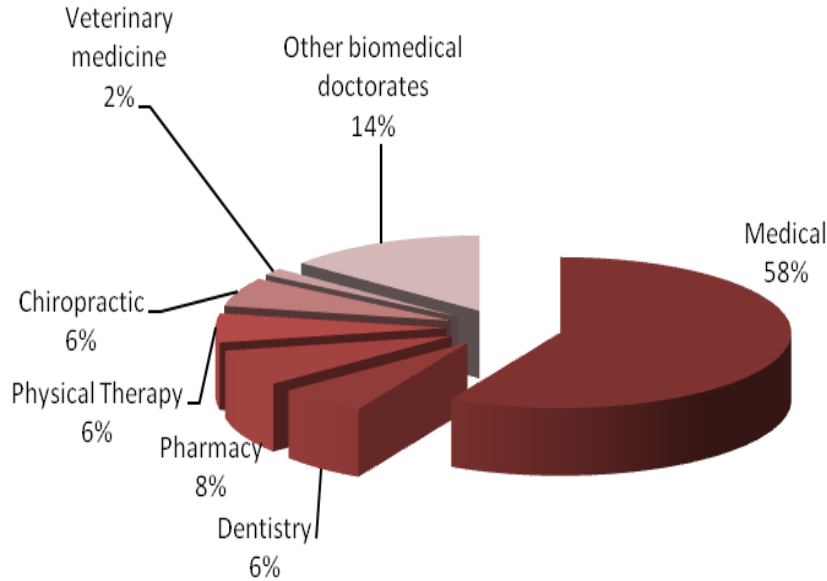
University of Pennsylvania (DVM)

Temple (DPM, PT, Pharm D)

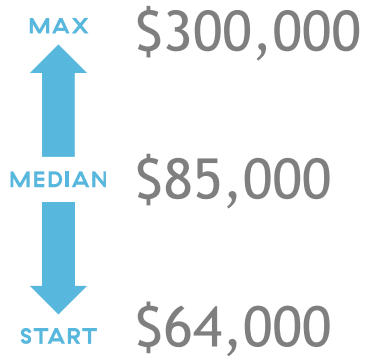
Logan (DC)



Career choices of our recent graduates



POTENTIAL FINAL SALARIES (dependent on career)





Rachel Alexander

FAIRFAX, VIRGINIA , CLASS OF 2022

I applied to Jefferson for the Pre-Medical Studies program because of a like-minded commitment to pursue excellence in scientific fields and serve the communities and individuals around us. The 3+4 joint-degree and early acceptance program in Medicine with Jefferson and Lake Erie College of Osteopathic Medicine (LECOM) enables me to pursue the whole-person approach to care in my academic and personal life.

“I’ve learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel” - Maya Angelou

Jefferson students are able to practice and embody what it means to be compassionate, empathetic, and excellent in their service to others. I highly recommend students to pursue this pathway because of the exceptional opportunities and mentorship available!





Stefanie Emanuel, D.Pharm, RPh

ASSOCIATE DIRECTOR OF CENTRAL PHARMACOVIGILANCE HUB
AT JOHNSON & JOHNSON, PHILADELPHIA, PA (hometown)
MOUNT EPHRAIM, NJ (current), CLASS OF 2002

I am a registered pharmacist and accomplished pharmacovigilance expert who graduated from Jefferson in 2002. In 2006, I received my Doctorate of Pharmacy degree from Temple University, graduating magna cum laude. Over the last 14 years, I have worked at multiple pharmaceutical companies leading pharmacovigilance projects and initiatives. Concurrently, I'm a preceptor and mentor to pharmacy and pre-med students pursuing careers in healthcare.

“If the dreams that you have don't scare you, then they're probably not big enough”

Overall, my undergraduate matriculation enabled me grow professionally and personally because of the opportunities offered through preceptorships, research assignments, leadership roles, and networking events.



Samantha Stankus

ROYAL VETERINARY COLLEGE OF LONDON, ENGLAND,
PRE-MEDICAL STUDIES CLASS OF 2017

One of the elements of Jefferson University that ensured my success was their small class sizes. There was never a professor that didn't know my name, or my face. Additionally, being a student with a learning disability, they were always accommodating to my time requirements.

“Animals are unpredictable things, so our whole life is unpredictable. It is a long tale of triumphs and disasters, and you’ve got to really like it to stick it. One thing, you’ll never get bored - James Herriott (All Creatures Great and Small)”

Being at the The Royal Veterinary College, a part of the University of London has expanded my ability to be independent and brave, while also widening my horizons. We were declared the number one veterinary school in the world in 2019, After graduation in 2021 I plan to practice in the city of Philadelphia specializing in possibly neurology, shelter medicine, emergency critical or primary care.



Jefferson

Thomas Jefferson University