

# IMHOTEP'S LEGACY ACADEMY FACULTY OF DENTISTRY

## SUMMER RESEARCH SCHOLARSHIP AWARD

### **Purpose**

The goal of the Imhotep's Legacy Academy (ILA) is to increase the number of African Nova Scotians pursuing post-secondary education in the fields of science, technology, engineering and mathematics (STEM). The ILA offers weekly interactive STEM enrichment activities and homework help for junior high students, an on-line tutoring program for high school students and summer research internships for post-secondary students. The ILA has partnered with the Dalhousie University Faculty of Dentistry (FoD) to create this scholarship for African Canadians pursuing a dentistry degree in Nova Scotia. Its purpose is to increase the number of African Canadians in the field of Dentistry by providing related research experience.

### **Eligibility**

Any African Canadian currently enrolled in undergraduate post-secondary STEM studies, e.g., science, engineering, health, in Nova Scotia is eligible to apply. Preference will be given to applicants who have participated, or intend to participate, in the Imhotep's Legacy Academy.

### **Description**

One scholarship valued at \$6,500 is available for the summer, with equal contribution from the ILA and the FoD. This award may supplement any other award. The award is tenable at Dalhousie University under the guidance of a faculty member whose primary appointment is in the Faculty of Dentistry. In advance of their application, students are expected to identify and communicate with the prospective FoD faculty member(s), whose research is in an area of interest to the applicant.

### **Selection procedure**

Selection is based on a combination of academic performance (50%), research ability (30%) and leadership/community involvement (20%). A cumulative GPA at the time of application in a science program of study of at least 3.0 is required.

### **Selection committee**

The selection committee is composed of members of the ILA's Board of Directors and a representative of the Faculty of Dentistry.

### **Deadline: February 29, 2024**

Submit completed application form (Part I), applicant's statement (Part II), and reference letter, along with most recent transcripts **via email** to:

*ILA-FoD Summer Research Scholarship Selection Committee  
Dalhousie University*

Email: *[imhotep@dal.ca](mailto:imhotep@dal.ca)*

**Information:** Imhotep's Legacy Academy

Phone: (902)494-2400 Toll Free: 1-866-996-9452 Email: [imhotep@dal.ca](mailto:imhotep@dal.ca)

## IMHOTEP'S LEGACY ACADEMY - FACULTY OF DENTISTRY APPLICATION FOR SUMMER RESEARCH AWARD

### PART I: Personal Data

| Date   |             |                             |                        |                                 |  |
|--|-------------|-----------------------------|------------------------|---------------------------------|--|
| Family Name  |             | Given Name                  |                        | Initials                        |  |
| <b>ADDRESSES (Changes to contact information must be sent to <a href="mailto:admin.imhotep@dal.ca">admin.imhotep@dal.ca</a>)</b> |             |                             |                        |                                 |  |
| Current Address  |             | Permanent Mailing address   |                        |                                 |  |
| Telephone number   |             | Email Address               |                        |                                 |  |
| <b>CITIZENSHIP</b>   |             |                             |                        |                                 |  |
| Canadian Citizen   |             | Canadian Permanent Resident |                        | International                   |  |
| <b>ETHNICITY</b>   |             |                             |                        |                                 |  |
| I am African Nova Scotian, African Canadian or person of African heritage.   |             |                             |                        |                                 |  |
| <b>ACADEMIC BACKGROUND (Including ongoing postsecondary degree)</b>  |             |                             |                        |                                 |  |
| Degree   | Institution | Department                  | Month and year started | Month and year awarded/expected |  |
|  |             |                             |                        |                                 |  |
|  |             |                             |                        |                                 |  |
|  |             |                             |                        |                                 |  |
| Indicate if you are attending university at the time of application.   |             |                             |                        |                                 |  |
| Attending full time  |             | Attending part time         |                        | Not attending                   |  |
| How many academic terms will you have completed towards your degree program when this award is held?                             |             |                             |                        |                                 |  |
| Are you currently enrolled in an undergraduate STEM program?   |             |                             |                        |                                 |  |
| YES  |             | NO                          |                        |                                 |  |

**IMHOTEP'S LEGACY ACADEMY - FACULTY OF DENTISTRY  
APPLICATION FOR SUMMER RESEARCH AWARD**

**PART I: Personal Data**

|             |            |          |
|-------------|------------|----------|
| Family Name | Given Name | Initials |
|-------------|------------|----------|

**ACADEMIC, RESEARCH AND OTHER RELEVANT WORK EXPERIENCE**

| Position held and nature of work<br>Full time/Part time (begin with current) | Organization and<br>Department | Supervisor | Period<br>(mm/yyyy-<br>mm/yyyy) |
|--|--------------------------------|------------|---------------------------------|
|  |                                |            |                                 |
|  |                                |            |                                 |
|  |                                |            |                                 |
|  |                                |            |                                 |

**SCHOLARSHIPS AND OTHER AWARDS OFFERED (Start with most recent)**

| Name of Award | Value \$<br>(If any) | Type<br>(Academic,<br>Research,<br>Leadership) | Level<br>(Institutional,<br>Provincial,<br>National,<br>International) | Location<br>of tenure | Period<br>held<br>(yyyy/mm-<br>yyyy/mm) |
|---------------|----------------------|--|--|-----------------------|---|
|               |                      |  |  |                       |   |
|               |                      |  |  |                       |   |
|               |                      |  |  |                       |   |
|               |                      |  |  |                       |   |

**SIGNATURE**

*By signing this document you confirm that all information given is correct and you agree to abide by regulations governing the summer research award.*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## IMHOTEP'S LEGACY ACADEMY - FACULTY OF DENTISTRY APPLICATION FOR SUMMER RESEARCH AWARD

### **PART II: Applicant's Statement**

*When preparing PART II use the following guidelines. Pages must be 8 ½" x 11" (216mm x 279mm); Pages must be single-spaced and one sided; All text must be in 12 point Times New Roman font; Margins must be set at a minimum of ¾" (1.87 cm); Your name must appear at the top right corner of every page; Pages must be numbered sequentially; **Maximum number of pages allowed is two (2)**; PART II must be submitted along with PART I and all other required documentation.*

#### **A. Research Experience**

Describe the scientific or engineering abilities that you have gained through your past research experience. For example experience gained from special projects, honours thesis or co-op reports. If you have relevant work experience (e.g. summer research position) discuss the relevance of that experience and any benefits you gained from it.

Also in this section, provide a brief overview of your research topic and provide the name of the Dalhousie University faculty member who will be supervising your research.\*

**Note:** The research topic and faculty supervisor must be identified and confirmed before an offer letter can be issued to the selected scholar.

*\*(Please see the attached list of Dentistry faculty supervisors and their areas of research.)*

#### **B. Relevant Activities**

Describe your professional and extracurricular activities that most demonstrate your communication, interpersonal, and leadership skills. Examples of these include presentations (oral or poster); mentoring; teaching; project management; committees; supervisory experience; elected positions held and volunteer work.

#### **C. Special Circumstances**

Describe any special considerations that have had an effect on your performance or productivity, including health problems, family responsibilities, disabilities or other circumstances. The selection committee will take these circumstances into consideration when evaluating your application. If your supervisor/employer is unable to provide you with a reference letter, you may use this section to provide an explanation.

**Supervisor: Dr. Vahid Adibnia**

**Project: Biosourced and bioactive nanofibers for tissue engineering**

Biological tissues are predominantly anisotropic structures made of macromolecular fibers. Replicating the structure of these tissues in the laboratory using biosourced and bioactive polymers is a valuable attempt for creating soft materials with applications in dentistry, 3D printing and microfluidics.

In this project, primarily using a high throughput centrifugal spinning approach for producing nanofibers, we design and test innovative nanofibers that show strong cell attachment and cell guidance, tunable surface chemistry, and physiologically relevant mechanical properties.

**The student will gain skills in:** Chemical modification, characterization and purification of biosourced polymers as building blocks of nanofibers. Nanofiber fabrication using various techniques including electrospinning, centrifugal spinning and contact drawing. Nanomaterials imaging and characterization. Cell-materials interactions. Collaborative and interdisciplinary research.

**Requirements and Relevant Background:**

We are open to applications from all eligible students. Students with medical science backgrounds are encouraged to apply.

**Contact:**

[AdibLab](#)

[adibnia@dal.ca](mailto:adibnia@dal.ca)

**Supervisor: Dr. Locke Davenport Huyer**

**Research Program:**

Polymer based biomaterials are foundational to successful medical advances, forming devices used in implantable applications ranging from joint replacement, sutures that resorb over time, to support tissue remodelling as surgical mesh supports, and to deliver drugs in a controlled fashion. While impactful, complications associated with these devices often arise due to non-optimized interaction of material chemistries with the human immune system that often cause prolonged inflammation and alteration of desired medical device use or required removal. Our lab is focused on an improved understanding of how immune cells interact with these material surfaces, and are focused on designing degradable polymer materials that can manipulate inflammation.

**Student Role/ Potential Projects**

- 1) Design and testing of immune-modulatory degradable polymer materials. *We are building polyester materials based on immunomodulatory metabolites. The student would synthesize materials using condensation techniques, and characterize their polymer properties (molecular weight, purity) and degradation (mass loss) according to variation in reaction parameters (time, feed ratios).*
- 2) Testing of a cell culture assay to screen modulatory material functionality. *The student would support a new cell culture method to test our new materials. This would include cell culture techniques of macrophages, and microscopic imaging with different stimuli and molecular probes.*
- 3) Characterization of inflammation associated with polymer implants. *The student would support characterization of inflammation associated with implanted polymers using histology and gene expression (qPCR) techniques.*

**Requirements and Relevant Background:**

We are open to application from diverse backgrounds. Knowledge in areas including immunology, cell culture techniques, polymer materials, and/or organic chemistry is an asset; but lack of research or technical experience in these areas should not prevent students from inquiring about a potential fit with projects if interested.

**Contact:**

[www.davenport Huyerlab.com](http://www.davenport Huyerlab.com)

[I.davenport Huyer@dal.ca](mailto:I.davenport Huyer@dal.ca)