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**Master of Science Programme in Anatomy and Structural Biology (International Programme)**

หลักสูตร วิทยาศาสตร์มหาบัณฑิต สาขาวิชา กายวิภาคศาสตร์และชีววิทยาโครงสร้าง (หลักสูตรนานาชาติ)(ภาคปกติ)

**Faculty of Science**

**Department of Anatomy**

คณะวิทยาศาสตร์

ภาควิชา กายวิภาคศาสตร์

**Expected number of students to be accepted all year round : 12 Students**

**Admission Requirements**

**A candidate must:**

1. must hold Bachelor degree of Science or any equivalent degree, or be studying in the final year in Bachelor of Science programme, in Bachelor of Nursing programme, or in other Bachelor degree in biomedical science;
2. have a minimum grade point average of 2.50;
3. have a TOEFL score of at least 480, TOEFL computer-based score of 157, TOEFL Internet-based score of 54, or IELTS score of 4.5 or pass the English Proficiency Examination arranged by the Faculty of Graduate Studies

Those who do not have any of the test scores specified above will have to take the English Proficiency Examination of the Faculty of Graduate Studies on the specified examination day;

4. In case your qualification does not match to the admission criteria, candidates must prior attach A "Requesting Form for Examination" approved by the program director. The form must be submitted before making the application. Kindly download here: [http://www.grad.mahidol.ac.th/grad/admission/form\\_th.php](http://www.grad.mahidol.ac.th/grad/admission/form_th.php)

Exemption from the above conditions may be granted by the Programme Committee under exceptional circumstances.

**Written Examination** (Applicants must attend the examination date accurately to your admission round.)

<u>First Round</u> January 17, 2015		<u>Second Round</u> May 16, 2015	
Subjects for examination	Time	Subjects for examination	Time
1. English	8.30 - 11.30 a.m.	1. English	8.30 - 11.30 a.m.
2. General Knowledge	11.30 - 12.30 p.m.	2. General Knowledge	11.30 - 12.30 p.m.
<b>Examination Place</b> Mahidol University , Salaya , Nakhonpathom more details : <a href="http://www.grad.mahidol.ac.th">www.grad.mahidol.ac.th</a> or Announcement at Faculty of Graduate Studies branches.			

## Curriculum Structure

	<b>Credit</b>
<b>Plan A, Type A(2)</b>	
Required courses	18
Elective courses not less than	6
Thesis	12

	<b>Credit</b>
<b>Required courses</b>	
SCAN 502 Structural Neurobiology	3(2-3-5)
SCAN 520 Human Structure and Development	3(3-0-6)
SCAN 521 Human Gross Anatomy Dissection	2(0-6-3)
SCAN 522 Structural Biology of Cell and Tissues	3(2-3-5)
SCAN 613 Seminar in Anatomy and Structural Biology I	1(1-0-2)
SCAN 614 Seminar in Anatomy and Structural Biology II	1(1-0-2)
SCID 500 Cell and Molecular Biology	3(3-0-6)
SCID 514 Animal Experimentation in Biomedical Research	1(0-2-1)
SCID 518 Generic Skills in Science Research	1(1-0-2)
<b>Elective courses</b>	
SCID 507 Microscopic Techniques	1(0-2-1)
SCID 508 Biomolecular and Spectroscopic Techniques	1(0-2-1)
SCID 509 Separation Techniques	1(0-2-1)
SCID 510 Immunological Methods	1(0-2-1)
SCID 511 Gene Technology	1(0-2-1)
SCID 513 Animal Cell Culture Techniques	1(0-2-1)
SCID 516 Biostatistics	3(3-0-6)
SCBT 502 Recombinant DNA Technology	3(2-3-5)
SCID 531 Microcomputer Applications	3(3-0-6)
SCID 532 Computer Programming	3(3-0-6)
SCID 533 Data Processing	3(3-0-6)
<b>Thesis</b>	
SCAN 698 Thesis	12(0-48-0)
<b>* These may change in cases where there are suggestions for the improvement of the curriculum</b>	

## Areas of research that a student can select for his / her research Thesis / Dissertation

### 1. Structural Cell and Molecular Biology

1. Shrimp biotechnology.
2. Virus and host interaction in shrimp.
3. Characterization of molecules involved in aquatic animal adaptation and excretory system.
4. Cell surface ligand-receptor interaction.
5. Molecular studies on dengue-2 virus and their variants

### 2. Neuroscience

1. Cellular and molecular mechanisms of neurodegeneration.
2. The roles of astrocyte and microglia in neuroprotection and neurotoxicity.
3. Synaptic plasticity and brain development.
4. Neuroendocrine control of growth and reproduction in mollusks and crustaceans.
5. Identification and mapping of neurotransmitters and corresponding receptors that are involved in the reproductive controls in the central nervous system of crustaceans and abalone.
6. Pathogenesis of motor neuron degeneration.
7. Gene expression profiling in neurological disorders.

### 3. Stem Cell Biology and Embryo Technology in mammal

1. Embryonic stem cell research on proliferation and differentiation.
2. Stem cells for cell therapy.
3. Tissue engineering and transplantation for hearing research.
4. Bone-marrow mesenchymal stem cells for treatment of stroke.
5. Animal gamete and embryo technology : in vitro embryo production, nuclear transfer, cryopreservation and genetic manipulation.
6. Transgenic animal models for diseases.

### 4. Reproductive Biology and Neuro-endocrinology of economic mollusks and crustaceans

1. Endocrine manipulation of the reproductive process for increased production in abalone and economic crustaceans.
2. Characterization and distribution of reproductive neuropeptides and hormones in abalone and economic crustaceans.
3. Reproductive biotechnology in shrimp.
4. Molecular mechanisms of gamete maturation, capitation, and fertilization.
5. Gamete membrane molecules and signal transduction during fertilization.
6. Genetic manipulation for enhancing reproduction of aquatic animals.
7. Cryopreservation of gamete and larvae of polychaete, *Perineresis nuntia*.
8. Cryopreservation of gametes and embryos of abalone and prawn.

### 5. Development of immunodiagnosis, drugs and vaccines for fasciolosis and schistosomiasis

1. Development of immuno-diagnosis and vaccine for fasciolosis.
2. Drug discoveries from natural bioactive compounds for trematode and nematode parasites.
3. Using *Caenorhabditis elegans* model organism in studying parasitic diseases.

## 6. Cancer Research

1. Cell-matrix interaction: signaling involved cell migration, cancer invasion and metastasis.
2. Analysis of translation elongation factor 1A2 (*EEF1A2*) genes in various cancers.
3. Antiviral and anticancer effects of medicinal herbs.

### Additional advantages of the programme

Graduate students in M.Sc. and Ph.D. programmes can select their research topics from a wide variety of ongoing research both in the Department of Anatomy and in the Center of Excellence.

Market demand for graduates from our programs is still high, especially in government and private universities. Graduates will be trained to be a professional in teaching and research skills.

### Details of Scholarships

1. Partial Scholarship (Faculty of Science) : support up to 90% of tuition fee / research fee
2. Teaching Assistantships funding from Faculty of Science.
3. Scholarship of the 60<sup>th</sup> Year Supreme Reign of His Majesty King Bhumibol Adulyadej.

### Application Process

Application is only available via online application at [www.grad.mahidol.ac.th](http://www.grad.mahidol.ac.th)

### Required Documents

Prepare the following required documents to submit via online admission system or post :

- Two (2) recent photographs (1x1 inch in size)
- A copy of an applicant's degree certificate or a letter of graduation certification (for an applicant with a degree completion) 2 copies
- A letter certifying that an applicant is currently in the final year prior to graduation (for an applicant seeking for a degree) 2 copies
- A detailed transcript of a degree (for an applicant with a degree completion) 2 copies
- A grade report with course names and grades received from the first to the current semester prior to graduation 2 copies
- A copy of identification card 2 copies
- A copy of house registration certification 2 copies
- A copy of Certificate of English score: TOEFL/IELTS/MU-Test (if any). See detail here: [http://www.grad.mahidol.ac.th/grad/academicinfo/engstandard2553\\_th.php](http://www.grad.mahidol.ac.th/grad/academicinfo/engstandard2553_th.php) 2 copies  
Those who early submit a valid English score prior to the examination will be exempt from English test on the examination date.
- A copy of proof of payment.

Submitting documents via online admission system.

- All documents must be in pdf format (maximum size 2 MB)
- Recent photograph must be in jpeg format only (maximum size 2 MB)

### **Job option after graduation**

- Expert in the field of anatomy and structural biology
- Researcher in the field of anatomy and structural biology in governmental or private institutes
- Researcher in the field of biomedical science in governmental or private institutes
- Scientist in the field of anatomy universities

**Further information may be obtained from the Director of Graduate Studies,**

**Department of Anatomy, Faculty of Science :**

1. **Assoc.Prof. Kanokpan Wongprasert** (E-mail : [kanokpan.won@mahidol.ac.th](mailto:kanokpan.won@mahidol.ac.th))

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Tel. : 0 2201 5447 Fax. : 0 2354 7168

2. **Assoc.Prof. Permphan Dhamasaroja** (E-mail : [permphan.dha@mahidol.ac.th](mailto:permphan.dha@mahidol.ac.th))

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Department of Anatomy, Faculty of Science  
Tel. : 0 2201 5447 Fax. : 0 2354 7168

### **Program Coordinator**

**Mrs. Waraporn Bunphet** (E-mail : [waraporn.bun@mahidol.ac.th](mailto:waraporn.bun@mahidol.ac.th))

Room B106, Biology Building, Floor 1,  
Department of Anatomy, Faculty of Science  
Tel. : 0 2201 5447 Fax. : 0 2354 7168

- Notes**
1. The programme of Anatomy and structural Biology requires students to study the pre - requisite course:
    - SCID 500 Cell and Molecular Biology 3 Credits
  2. For more information : [www.grad.mahidol.ac.th](http://www.grad.mahidol.ac.th)

**For more information please contact The Student Admission Section.  
Tel. 0 2441 4125 ext. 208-210, 0 2441 9129, E-mail : [gradthai@mahidol.ac.th](mailto:gradthai@mahidol.ac.th)**