

1	<b>Study Area</b>	A. Agriculture		
	<b>University</b>	<b>Yokohama City University</b> (Public)		
	<b>Graduate School</b>	Graduate School of Nanobioscience		
	<b>Field of Study</b> <i>*Category by PEACE Project</i>	6. Plant Protection / Genetic and Plant breeding		
	<b>Actual Study and Research Field</b> <i>*Category by University based on PEACE Project</i>	<ul style="list-style-type: none"> <li>✓ Marker assisted selection (MAS) of genetic traits in cereals</li> <li>✓ Breeding of disease resistant strains in cereals</li> <li>✓ Cloning and application of agronomically important genes</li> <li>✓ Application of functional genomics to plant breeding</li> <li>✓ Cell biology of mammals</li> </ul>		
	<b>URL of Graduate School</b>	<a href="http://www.yokohama-cu.ac.jp/eng/academics/graduate/nb.html">http://www.yokohama-cu.ac.jp/eng/academics/graduate/nb.html</a>		
	<b>Degrees</b>	Master of Science		
	<b>Status</b>	Research Student (6~12 months) →Graduate School Student (2 years)		
<b>Credits and years needed for graduation (In the case of Graduate School Student)</b>	30 credits, 2 years			
<b>Subjects with English as the language of instruction</b>	10 subjects	English speaking	English text	
	8 subjects	English speaking (infrequently Japanese)	English text	
	8 subjects	English speaking & *Japanese	English & *Japanese text	
*Tutors will support Afghan participants whenever they take lectures in Japanese or use Japanese language textbooks.				
<b>Selling Point</b>	<p>We have a valuable research center, "<b><u>KIHARA Institute for Biological Research (KIBR)</u></b>" that maintains a store of genetic resources - about 6000 varieties of wheat and 800 of capsicum (chili peppers). These are really precious in both global and historical terms. The human population continues to grow amid global changes in environment, and to ensure sustainable production of food, we are conducting comprehensive genome analysis of wheat species to clarify the genetic diversity and gene functions of cereal plants. We also develop plant science research that can only be conducted at this facility, such as breeding crops showing wide-range adaptation against environmental stresses, and introducing molecular analysis of agronomically important genes applied for cultivated plants.</p> <p>From 2010, we have launched a project for education and research aimed at reconstruction and human capacity building in Afghanistan. <b><u>This was adopted as JICA-JST joint project entitled "Science and Technology Research Partnership for Sustainable Development (SATREPS)"</u></b>, a large scale project launched through collaboration between the Japanese Ministry</p>			
	 <p style="text-align: center;"><i>YCU main campus</i></p>  <p style="text-align: center;"><i>KIHARA Institute (KIBR)</i></p>			

<p><a href="http://pgsource.sci.yokohama-cu.ac.jp/satrep/s/index_en.html">http://pgsource.sci.yokohama-cu.ac.jp/satrep/s/index_en.html</a></p>  <p><i>Yokohama City</i></p>	<p>of Education, Culture, Sports, Science and Technology, and the Japanese Ministry of Foreign Affairs.</p> <p><b><u>This project</u></b> aims at "the implementation of the wheat breeding system in society", so that Afghanistan is able to achieve sustainable food production by itself. <b><u>From Afghanistan, the Ministry of Agriculture, Irrigation and Livestock (MAIL)</u></b> is joining this project. In addition, we are connected with international organizations such as <b><u>CIMMYT Mexico</u></b> and <b><u>ICARDA Syria</u></b> to further promote this project.</p> <p><b><u>Through this project, YCU accepted an international student from the Ministry of Agriculture, Irrigation and Livestock (MAIL), Afghanistan this September.</u></b></p> <p><b><u>We have strong follow-up with administrative staff as well as teaching staff</u></b> to help students to learn the subjects. Experimental courses are also followed by the technical assistants. Our university has a strong attitude to push basic science into application fields.</p> <p><b><u>Yokohama City</u></b>, the second largest city in Japan with a population of nearly 3.7 million, is known as an innovative, diversified and highly urbanized city.</p>
--	--

## 2. Features of University

【 MAILING Address 】 Yokohama City University,  
22-2 Seto, Kanazawa-ku, Yokohama 236-0027 Japan  
http : // www.yokohama-cu.ac.jp

【 History of YCU 】

~ Growing with the International City of Yokohama ~

YCU has shared its path with the City of Yokohama which, in 2009 celebrated the 150<sup>th</sup> anniversary of the opening of its port to the world.

~ As a pioneer of commercial education and hospital for all ~

The origin of Yokohama City University can be traced back to Yokohama School of Commerce founded in 1882. Since the opening of the port, Yokohama has been a renowned center of trade in Japan. Yokohama School of Commerce was established to develop human resources equipped with Western commercial techniques. Because of its policy of complete educational pragmatism, many merchants' children in Yokohama who had a strong interest in learning attended this school. After graduation, many of them contributed to the development of the city on the front line of the trade industry. Yokohama School of Commerce was transformed to become Yokohama City College of Commerce (Y college), the origin of Yokohama City University. Another origin of YCU is Juzen Hospital of Nogeyama founded in 1874. Although Yokohama was the center of Western medicine at that time, there was no hospital for the citizens. And so Juzen Hospital was established to respond to the earnest needs of the community. Later, Juzen Hospital turned into Yokohama Municipal Medical College, which later became today's YCU Hospital and School of Medicine.

【 University objectives 】

～ Yokohama City University ----- Creating wisdom and distributing it to the world ～

#### YCU Mission Statement

YCU's mission is to fulfill its roles and responsibilities of education, research and medical care center, as a part of the urban social infrastructure of a Knowledge-based Society<sup>※</sup> in the international city of Yokohama. We aspire to become a university that contributes to the development of sustainable human society and one in which local residents can take pride.

※Urban social infrastructure of a Knowledge-based Society :

a core structure supporting the development of society in which new knowledge, information and technologies are taking on increasing importance as a foundation for activities in many different fields of society, including politics, economics and culture.

#### Specific Future Directions

- Develop human resources who can solve issues faced by "Cities" around the world including the City of Yokohama.
- Develop human resources who can tackle global challenges.
  - Develop physicians, nurses and other medical professionals who can succeed at hospitals and other medical institutions supporting regional medical care.
  - Provide sophisticated medical care services at the city and prefecture-wide level as Kanagawa Prefecture's only hospital affiliated with a public university.
  - Aim to become a world-class research center in the field of biomedical sciences, and others.

### **3. Features of Graduate School**

Agriculture is the key industry for improving people's lives in developing countries such as Afghanistan. In this context, higher yield of crops in response to environmental stresses is quite important. Herein, breeding science is indispensable to get an improved production of food supply. Recent developments in the plant genomic biology enable us to accelerate the selection procedure(s) of the desired strains, and cloning of the target lines. Our Graduate School provides the curricula for the students who wish to study these contents and gain experience through practice. This education and experiences will provide good basis for application to many fields.

### **4. Features of the Program and Curriculum in each Field of Study**

Kihara Institute for Biological Research (KIBR), Yokohama City University has preserved ca. 6000 strains of wheat and its wild relative, and ca. 800 strains of *Capsicum* species. In wheat strains, a number of Afghan strains/cultivars which had been lost in the originally cultivated area have been maintained in KIBR for more than 50 years. These show a large magnitude of genetic diversity in terms of disease resistance, stress tolerance and high yields, and should be precious genetic resources which are unique in KIBR. We set up a study program and curriculum to carry out a breeding program using these resources. Molecular markers are very useful to accelerate these breeding programs and carry out the Quantitative Trait Loci (QTL) analyses. We also have a program

and curriculum to conduct functional genomics which should trace almost all expressed genes in wheat. These subjects of genomics and molecular biology allow students to conduct research works in the graduate course. We have lectures to understand the background of these programs and experiments to learn skills underlying the programs.

#### 【 MODEL COURSE 】

Subjects	Credits	Subjects	Credits
General Topics in Bionanosystem Science	2	Advanced Genetic Resource I	1
Research of Genome System Science	8	Advanced Genome Science I	1
Exercise of Genome System Science	4	Advanced Genome Science II	1
English Presentation Technique I	2	Advanced Bioscience and Technology I	1
Practice of Genome Biofunction	1	Advanced Bioscience and Technology II	1
Introduction to Genome System Science I	2	Special Programs A	1
Introduction to Genome Bioinformatics	2	“ Biological Rhythm ”	
※Biopatent management	1	Special Programs B	1
※Science management	1	“ Ecological Physiology in Plants ”	
※Applied Ethics	1		

※ Students can select 2 of these subjects.

## 5. Academic Schedule

「Reference」

【 Calendar for The Academic Year ~ Case of Fall Admissions ~ 】

1<sup>st</sup> Semester                      September — January

Orientation

Course Registration

University Festival

~ Spring Vacation ~

2<sup>nd</sup> Semester                      April — July

Orientation

Course Registration

~ Summer Vacation ~

【 Schedule of Graduate School Entrance Examination 】

Entrance in September ( 1<sup>st</sup> Semester )

Application Period                      Beginning of June

Examination                              End of June

Examination Results                      Beginning of July

Entrance in April ( 2<sup>nd</sup> Semester )

Application Period                      Middle of November

Examination                              Beginning of December

Examination Results                      Middle of December

## 6. Facilities

We are going to provide suitable living facilities near the campus for Afghan participants.

There are 4 staff members in the International Academic Affairs section. All the staff members can

speak English and comprehensively support for international students with scholarships, tuition exemption, housing, study visa, and so on. “International Students Club” also collaborates with monetary support and promotion of their exchange activities. Besides, a special adviser who used to work at the UNHCR office in Afghan can support for Afghan participants.

“The Kanazawa International Exchange Lounge Volunteer Society” commissioned by Yokohama City Government is located at our campus. It provides cross-cultural communication opportunities with local residents, international students and Japanese students.

## 7 . List of faculty members (supervisors) capable of guiding Afghan participants

### in English

#### # Acceptable for Afghan students

< Professor's Name >	< Research and educational fields >
# Prof Yasunari Ogihara	Plant Genomics
<b># Prof Tomohiro Ban</b>	<b>Plant Breeding</b>
<b>【An international student from Afghanistan is doing research at the laboratory of Prof. Ban】</b>	
# Prof Yukihisa Shimada	Chemical biology
# Assoc Prof Masayuki Isshiki	RNA function in plant
Prof Minami Matsui (Visiting Professor)	Plant Synthetic Genomics
Prof Motoaki Seki (Visiting Professor)	Plant Functional Genomics
Prof Seiichi Toki (Visiting Professor)	Plant Molecular Genetics
Prof Toshiya Muranaka (Visiting Professor)	Applied Plant Genomics
Assoc Prof. Miyako Kusano (Visiting)	Metabolomics
Prof Tetsuya Miwa (Visiting)	Microbiology
Prof Yuichi Nogi (Visiting)	Microbiology
Prof Yuji Hatada (Visiting)	Microbiology
Assoc Prof Dhugal Lindsay (Visiting)	Microbiology
#Prof Dai Ayusawa	Molecular mechanism of aging
#Prof Yasuhiro Ozeki	Glycomics
#Assoc Prof Masaichi Higashi	Biochemistry of cancer
#Prof Toshifumi Yamamoto	Neuroscience
#Assoc Prof Tomomi Sato	Reproductive biology of mammals
#Assoc Prof Robert A Kanaly	Molecular toxicology
#Prof Hidetaro Yasumitsu	Somatic cell biology of mammals
#Prof Yasuaki Aratani	Molecular Immunology
#Assoc Prof Michihiko Fujii	Functional biochemistry
#Prof. Hideho Uchiyama	Developmental biology of animal
#Prof Kaoru Miyazaki	Biochemisry of cancer
#Prof Ichiro Tanaka	Plant developmental biology
#Prof Noritaka Adachi	Molecular mechanism of recombination in mammals
#Assoc Prof Shinsuke Kutsuna	Molecular mechanism of circadian rhythms in cyanobacteria
#Assoc Prof Hajime Shiota	Plant physiology