The Department of Biochemistry is involved in both pre-clinical and clinical teaching. In the pre-clinical years, teaching concentrates mainly on basic principles of biochemistry and metabolism. Teaching in the clinical years is devoted to clinical chemistry, including interpretation of biochemical data on patients. The Department is also engaged in teaching medical laboratory science to undergraduates; biochemistry to nursing students, and offers a graduate program leading to an M.Sc degree in Biomedical Sciences and/or Clinical Biochemistry. A Ph.D. program by research has also been offered since 2009. The Department has also been recognised by the Royal College of Pathologists, London, in relation to postgraduate education through the Oman Medical Specialty Board (OMSB).

The major research activities are focused around the development of molecular tests for detecting and mapping mutations associated with various genetic disorders including hypertension, diabetes, deafness and hyperlipidaemias. The Department has a total of eight academic staff in addition to four consultants at SQUH who are also involved in the teaching programmes. There are seven biomedical research scientists in the College who are involved in research run by the Department.

The Department also provides a clinical biochemistry service to Sultan Qaboos University Hospital (SQUH) on a 24-hour basis and serves as a referral laboratory for hospitals all over the Sultanate. Twenty one biomedical scientists serve the Department at SQUH.
Support Staff
George Khaukha, Superintendent (College)
Halima Adnan, Superintendent (Clinical)
Mater Al-Maney, Chief Biomedical Scientist (Clinical)
Adil Al-Wahaibi, Chief Biomedical Scientist (Clinical)
Younis Al-Musafir, Senior Biomedical Scientist (Clinical)
Romulo Cipriano, Senior Biomedical Scientist (Clinical)
Suleiman Al-Riyami, Senior Biomedical Scientist (Clinical)
Hamed Al-Riyami, Senior Biomedical Scientist (Clinical)
Sameera Al-Harryy, Senior Biomedical Scientist (Clinical)
Nasser Al-Nazwani, Chief Technician (College)
Mohammed Al-Kindi, Chief Biomedical Scientist (College)
Hameeda Al-Barwani, Senior Biomedical Scientist (College)
Mohammed Al-Toubi, Biomedical Scientist (College)
Abdulrahim Al-Abri, Biomedical Scientist (College)
Sana Hasari, Biomedical Scientist (College)
Taruna Dutt, Coordinator (College)
Marina Bendecio, Coordinator (Clinical)

Highlights of the Year 2009-2010
A workshop on Bioinformatics for Beginners was held by the Department from 11–15th April 2010. Subjects covered included: 1) Basic DNA Sequence Analysis; 2) Sequence comparison- identity, homology and mutation matrices; 3) Determining Protein Structure from Sequence using Computational Approaches; 4) Small and large scale expression analysis, Genome data analysis, and 5) Phylogenetic Analysis. The workshop was run by Mr. David Judge, Cambridge University, UK and Prof. Riad Bayoumi. The overall objective of the workshop was to present a hands-on introduction to aspects of Bioinformatics central to the analysis and stor
age of genomic data. This was done via: a brief theoretical introduction; an overview of available software; a basic explanation of important algorithms; an opportunity to use appropriate software to tackle example problems, and an opportunity to discuss research projects with tutors and colleagues.

Dr. Hamza Babiker was promoted to Associate Professor in the month of May 2010. New staff members were Dr. Yajnavalka Banerjee and Dr. Nafila Al-Riyami who joined the Department in August and November 2009 respectively.

Teaching Programmes

**B.SC. MEDICAL LABORATORY SCIENCES (MLS)**
The Department is teaching on the MLS degree in Semesters 6 through 10. It also offers courses in Molecular Diagnostics and in Clinical Chemistry - Specialization I, II and III.

**UNDERGRADUATE CLINICAL PROGRAMME**
The Department is teaching on the following MD courses: Molecular Biology & Introductory Genetics; Metabolism; Foundation Biochemistry; Enzymology and Metabolism; Alimentary System, and Applied Medical Sciences. The department also participates in various system courses like Hemopoietic System, Endocrine
NURSING DEGREE
The Department of Biochemistry is teaching Biochemistry for Nursing in the College of Nursing.

POSTGRADUATE PROGRAMME
In the postgraduate programme, the Department offers the following courses: Biochemical basis of Disease; Instrumentation and Biochemical Techniques; Molecular Biology, and Methodology in Clinical Biochemistry. The Department of Biochemistry has 9 students registered for the M.Sc. degree and 2 students studying for their Ph.D.

Clinical & Diagnostic Services

SERVICE PROVISION
The Department of Clinical Biochemistry provides service for a wide range of routine and specialised investigations. Some of the specialised tests are unique and hence the Department offers a referral labora-
tory service for such investigations. Service is provided to the hospital on 24 hour basis. The estimated number of tests performed in 2010 is 1,295,000 [Figure 1], i.e. there has been an increase of 14.5% in the workload compared to 2009 [Figure 2]. The Clinical Biochemistry Department manages the Commercial Laboratory Services offered to some selected hospitals within the private sector e.g. Muscat Private Hospital and Hatat Polyclinic.

NEW TESTS
Two new tests introduced in this period were: Serum Light Chains (Kappa and Lambda) quantitation in the protein section of the laboratory, and The Urine Metanephrines assay (HPLC).

POINT OF CARE TESTING (POCT)
The Department maintains Quality Assurance of blood gas analysers outside the laboratory i.e. in the Accident and Emergency Unit (A&E), Operating Theatre (OT), and Intensive Care (ICU) and Neonatal (NNL) units.

TEACHING
Teaching is conducted by senior biomedical scientist staff (superintendent, chief and seniors) and clinical staff (professor and consultants). The mode of instruction includes lectures, seminars and practical demonstration of methods, techniques and instrument operation. The Department has introduced regular sessions to emphasise the importance of the pre-analytical phase to nurses. These sessions also include the I.V. Therapy course for nurses during the induction program.

EXTERNAL QUALITY ASSURANCE
The department continues to participate in the ‘Royal College of Pathology of Australia’ External Quality Assurance program.

Research
RESEARCH PROJECTS
The Clinical and genetic characterization of type 2 diabetes mellitus in Omanis

<table>
<thead>
<tr>
<th>Project Code:</th>
<th>RC/MED/BIOC/10/01; Dates: 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value:</td>
<td>OR 87,300; Project Funder: The Research Council, Oman</td>
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<tr>
<td>Investigators:</td>
<td>Prof. Riad Bayouni, Dept. Biochemistry, SQU; Prof. Mohammed Hassan, Dept. Physiology, SQU; Dr. Sulayma Albarwani, Dept. Physiology, SQU; Prof. Nicolas Woodhouse, Dept. Medicine, SQU; Dr. Omayma El-Shafie, Dept. Medicine, SQUH.</td>
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<tr>
<td>Project Title</td>
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<tr>
<td>Searching for the origin of human lactase persistence in the Southern part</td>
<td>IG/MED/BIOC/10/02;</td>
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<td>of the Arabian Peninsula</td>
<td>Dates: 2010–2011</td>
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<tr>
<td>The Cytokines Profile monitoring in a Cohort of Omani Population Undergoing</td>
<td>IG/MED/BIOC/10/01;</td>
</tr>
<tr>
<td>Therapy for Rectal Cancer</td>
<td>Dates: 2010</td>
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<tr>
<td>Polymorphism of type 2 diabetes candidate genes among individuals of Oman</td>
<td>IG/MED/BIOC/07/01;</td>
</tr>
<tr>
<td>Genetic linkage mapping of recessive deafness in Oman.</td>
<td>IG/MED/BIOC/08/01;</td>
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<tr>
<td>Evaluation of vitamin D status of Omani adults with particular focus on</td>
<td>IG/MED/BIOC/09/01;</td>
</tr>
</tbody>
</table>
The brunt of mutations conferring drug resistance on the fitness of malaria parasites

Value: OR 18,800; Project Funder: Sultan Qaboos University
Investigators: Dr. Hamza Babiker, Dept. Biochemistry, SQU, Gote Swedberg, Dept. Medical Biochemistry & Microbiology, Uppsala University, Sweden; Dr. Petra Schneider, Institute of Infection & Immunology Research, Edinburgh University, UK; Dr. Abdel-Muhsin AG Abdel-Muhsin, The Institute of Medical Research, Sudan.

A study of the effects of pregnancy-related thyroid autoimmunity and oxidative stress in Omani women from conception to parturition

Project Code: IG/MED/BIOC/10/04; Dates: 2010–2012
Value: OR 7,000; Project Funder: Sultan Qaboos University
Investigators: Dr. Clifford Abiaka, Dept. Biochemistry, SQU; Dr. David Nkansa-Dwamena, Dept. Biochemistry, SQU; Dr. Lovina Machado, Dept. Obstetrics & Gynaecology, SQU.

Identifying Candidate Genes for Heart Pacemaker Control in Oman Family Study

Project code: IG/MED/BIOC/10/03; Dates: 2010
Value: OR 3,353; Project funder: Sultan Qaboos University
Investigators: Dr. Marit P. Delghandi, Dept. Biochemistry, SQU; Prof. Riad Bayoumi, Dept. Biochemistry, SQU; Prof. Mohammed O. Hassan, Dept. Physiology, SQU; Dr. Sulayma Albarwani, Dept. Physiology, SQU.

A Study of the Highly Polymorphic Vitamin D binding Protein in a healthy Omani Population

Project code: MREC # 328; Dates: 2010
Value: OR 1,893; Project funder: Sultan Qaboos University
Investigators: Dr. Marit P. Delghandi, Dept. Biochemistry, SQU; Dr. Clifford Abiaka, Dept. Biochemistry, SQU.

Is Performance in Preclinical Assessment a Good Predictor of the Final MD Grade?

Project Code: MREC #307; Dates: 2009
Value: Unfunded; Project Approval: Sultan Qaboos University
Investigators: Dr. Nadia Al-Wardi, Dept. Biochemistry, SQU

Primary Immunodeficiency in Oman: First Report of the National Registry at Sultan Qaboos University Hospital

Project Code: MREC # 312; Dates: 2009
Value: Unfunded; Project Approval: Sultan Qaboos University
Investigators: Dr. Marit Delghandi, Dept. Biochemistry, SQU; Mr. Abduallah Al-Muniri, Dept. Family Medicine & Public Health, SQU; Mr. Moosa Al-Kindi, SQU.

Evaluation of Fructosamine assay on cobas integra 800 and comparison of fructosamine concentration and glycated hemoglobin concentration in diabetic patients with hemoglobin variants

Project Code: MREC # 339; Dates: 2010
Value: Unfunded; Project Approval: Sultan Qaboos University
Investigators: Ms. Huda Al-Saadi, Dept. Biochemistry, SQU

RESEARCH PUBLICATIONS & BOOKS

Journal Publications

8. Burney IA, Al Sawai BS, Dawood AA, Babiker H, Al Moundhri MS. Association of polymorphisms in cytokine genes


**CONFERENCE & SEMINAR PRESENTATIONS**

**Conference Presentations**

**National**


THESIS SUPERVISION

Lamyaa Al-Anbouri

Qualification: M.Sc.
Title of Thesis: Identifying candidate genes for pacemaker control in Oman Family Study
Supervisor: Marit Delghandi
Date of Completion: June 2010