



KUWAIT UNIVERSITY



Health Sciences Center

The Research Unit for Genomics, Proteomic and Cellomic Sciences (OMICS)

RESEARCH CORE FACILITY (RCF)

Newsletter Issue No. 4, Dec 2014

ADVANCING RESEARCH IN THE HEALTH SCIENCES



OMICSRU/RCF Supervisors:

Prof. Raja'a Al-Attiyah
Prof. Haitham Lababidi

OMICSRU/RCF Director & Principal Investigator:

Prof. Abu Salim Mustafa

Co-Investigators:

Prof. Yunus Luqmani
Prof. Peter Lucas
Prof. Ali Dashti

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SRUL02/13





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Administration's Message

The Research Sector (RS) at Kuwait University (KU) has replaced the General Facility Project (supported by the grant no. GM01/01) with a Research Unit Project (supported by the grant no. SRUL02/13) at the Health Sciences Centre (HSC). The Unit has been designated as the "Genomics, Proteomics and Cellomics Sciences Research Unit" (OMICSRU). It is located in the Research Core Facility (RCF) building of the HSC. The OMICSRU has been established as a specialized scientific center for conducting advanced research in the fields of Genomics, Proteomics and Cell Biology.

Goals of the OMICSRU/RCF:

1. Effective utilization of facilities and capabilities and providing infrastructure for executing advanced scientific research projects
2. Development and implementation of strategic plans for raising the status of scientific research at KU
3. Highlighting and enhancing KU's research strengths
4. Encouraging multidisciplinary research, joint projects and activities across Faculties
5. Providing continuous support, and enhancing research infrastructure through:
 - a. Acquiring the latest and most advanced scientific equipment.
 - b. Avoiding duplication of facilities and equipment
 - c. Providing continuous maintenance of scientific equipment, with requisite upgrades, and ensuring that the facilities are maintained in good working condition
 - d. Providing trained cadres, developing their skills and ensuring safety
6. Improving the quality of scientific research through:
 - a. Promoting specialized research groups and consortiums
 - b. Training and encouraging participation of young researchers
 - c. Supporting and promoting graduate students' research activities
 - d. Focusing on priority research areas of direct relevance to society, and finding practical solutions to local concerns and problems
7. Development of partnerships and collaboration with local, regional and international research institutions
8. Focus on research results and outcomes, and exploration their commercial propensity

This newsletter is aimed at disseminating information about the facilities and equipment available at the OMICSRU/RCF, and the achievements during the year 2013/14.

All the academic and research staff of HSC and other KU Faculties, students (undergraduate, graduate), postgraduate residents and postdoctoral fellows are encouraged to utilize the facilities in order to advance their own research and enhance the international stature of Kuwait University. All users of the OMICSRU are requested to acknowledge the grant SRUL02/13 in their research publications, conference abstracts, thesis and project reports, etc. To use the OMICSRU/RCF facilities, kindly register by logging on-to the internet site: <http://www.hsc.edu.kw/rcf/LimsAccess.aspx>.



OMICSRU/RCF SUPERVISOR
Prof. Raja'a Al-Attayah



OMICSRU/RCF SUPERVISOR
Prof. Haitham Lababidi



OMICSRU/RCF Director
Prof. Abu Salim Mustafa

Summary of Achievements in 2013/2014

The aim of the OMICSRU/RCF is to have a specialized centre dedicated to facilitate front-line basic and clinical research in Genomics, Proteomics and Cell Biology. The OMICSRU/RCF has been very successful and productive in fulfilling this aim, as evident from:

- Full-length research publications (n= 27 papers, 12 papers in Q1 journals)
- Abstracts published in conference proceedings (n = 26)
- Three of the six awards (two for undergraduate and one for MSc research) in the 18th HSC Posterday Conference were given for posters acknowledging the projects supporting OMICSRU/RCF.
- Utilization of OMICSRU/RCF facilities by 60 researchers and 77 projects belonging to 30 departments of 11 Faculties/Institutions in Kuwait.
- International collaborations with scientists from USA, China, Brazil, Finland, India, Sweden and UK.

Furthermore, OMICSRU/RCF has been an important resource to infuse research culture in the undergraduate (BMed, BMBCh and BPharm) and graduate students (MSc and PhD) of HSC, and postgraduate trainees of Kuwait Institute of Medical Specialization (Kuwait Board Residents). During the present report period, the training was conducted for:

- 13 undergraduates
- 35 graduates (23 MSc and 12 PhD students)
- 15 postgraduates (Kuwait Board Residents)

To establish and promote research culture at HSC, the staff at OMICSRU/RCF has been actively engaged in conducting workshops/seminars (n=17) for HSC community. In addition, OMICSRU/RCF staff has been engaged in teaching of undergraduate and graduate courses (n=18); and training of staff belonging to various Faculties and Institutions in Kuwait, as given below.

- 21 staff of HSC and Kuwait University
- 3 staff Kuwait Institute of Scientific Research (KISR)
- 1 staff of Ministry of Health (MOH)

To improve the awareness about the facilities available in OMICSRU/RCF:

- The Director/PI presented four special seminars, one each for the staff in the Faculties of Allied Health Sciences, Dentistry and Pharmacy, and one for undergraduate and graduate students.
- 12 equipment-related e-mails were sent to staff and students at HSC and other institutions.
- A tour of the OMICSRU/RCF laboratories was organized for high school students.

In conclusion, the RCF/OMICSRU has become an essential and integral component of academic and health sciences research and research-related teaching and training activities at HSC. The un-interrupted and enthusiastic financial support for the OMICSRU/RCF (through the project SRUL02/13) from the Research Sector, Kuwait University, is gratefully acknowledged.



Prof. A.S. Mustafa (PI)



Prof. Y. Luqmani (Co-I)



Prof. P. Lucas (Co-I)



Prof. A. Dashti (Co-I)

OMICSRU/RCF usage by year

Users	2007/2008	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14
Academic staff	26	25	30	37	38	45	60
Projects	13	NA	30	37	39	66	77
MSc students	4	7	11	10	18	18	23
PhD students	0	0	0	3	2	5	12
Undergraduates	0	0	0	0	3	3	13
Kuwait Board Residents	0	0	0	0	0	9	15
Permanent manpower	4	4	6	6	7	8	10
Major equipment	NA	17	22	26	31	38	47
Seminars/workshops	Nil	Nil	Nil	Nil	1	16	17
Courses taught	Nil	Nil	Nil	Nil	Nil	6	18
Project-staff trained	Nil	Nil	Nil	Nil	Nil	15	21
NA = not available							

The OMICSRU/RCF uses the Laboratory Information Management System (LIMS) for its operation. To ensure a smooth service, kindly follow the guidelines given below.

1. The person interested should visit the OMICSRU/RCF website <http://www.hsc.edu.kw/rcf/> and click at Access RCF for Equipment Use to book an instrument.
2. Generate the LIMS request form by filling in the required details.
3. The LIMS form should be duly signed and sealed by the PI.
4. The LIMS form should be brought to the OMICSRU/RCF along with the sample(s). In the absence of LIMS form the sample(s) will not be accepted.
5. After the processing is completed, the user will receive a confirmation e-mail, so that he/she can come and collect the results.
6. The results are provided in CDs, so be sure to bring a CD with you for copying your results (External Hard Disks/Flash memories are not allowed).
7. The results in OMICSRU/RCF database are stored for a maximum period of one month, where applicable. Please collect your results within one month, otherwise they will be removed from the data base.

For more information on how to fill-in the LIMS forms, contact any of the OMICSRU/RCF Staff

For enquiries/complaints or arranging a visit to the OMICSRU/RCF, please contact the Director

Email: abusalim@hsc.edu.kw

Tel: (246)36426 /36505

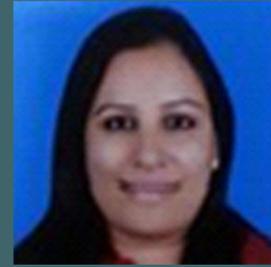
Mobile: 66529609

OMICSRU/RCF STAFF & THEIR SPECIALIZATIONS



Dr. FATMA SHABAN

PhD Immunology
Email: shabanfatma@hotmail.com
Phone: 24636596
Specialized in Cell Biology (Tissue & Cell Culturing, Recombinant DNA Techniques, Epitope Mapping & Immunological Techniques)



Dr. NAZIMA HABIBI

PhD Biotechnology
Email: nazima@hsc.edu.kw
Phone: 24636058
Specialized in Genomics (Next Generation Sequencing, Microarray and Bioinformatics)



Ms. SUNITHA PRAMOD

M.Sc. Microbiology
Email: sunitha@hsc.edu.kw
Phone: 24636596
Specialized in Cell Biology (Flow Cytometry, Fluorescence Microscopy, Live Cell Imaging and Tissue culture)



Ms. JUCY GABRIEL

M.Sc. Biotechnology
Email: jucyjinu@yahoo.com
Phone: 24636596
Specialized in Cell Biology (Confocal Microscopy, Immunological Assays, ELISA and Western Blotting)



Ms. FAIZA RASHEED

M.Sc. Biotechnology
Email: faiza@hsc.edu.kw
Phone: 24636058
Specialized in Genomics (Real Time PCR, Oligonucleotide Synthesis, Sample preparation using Biorobots)



Ms. BETTY TEENA THOMAS

M.Sc. Biotechnology
Email: betty@hsc.edu.kw
Phone: 24636058
Specialized in Proteomics (Protein Purification, Protein Fractionation and Mass Spectroscopy)



Mr. MOHD WASIF KHAN

M.Sc. Biotechnology
Email: wasifkhan@hsc.edu.kw
Phone: 24636058
Specialized in Proteomics (Peptide Synthesis and Purification, Protein Fractionation and Bioinformatics)



Mr. FARAZ SHAHEED

M.Sc. Biotechnology
Email: faraz@hsc.edu.kw
Phone: 24636058
Specialized in Genomics (Microarray, Next Generation and Sanger Sequencing)



Mr. NUMEER KADUNGATHAYIL

B. Tech Biotechnology
Email: numeer@hsc.edu.kw
Phone: 24636058
Specialized in Genomics (Karyotyping, Nucleic Acid Extraction and End-point PCR)



Mr. RIYAS SULAIMAN

M.Tech Biotechnology
Email: riyas@hsc.edu.kw
Phone: 24636058
Specialized in Genomics (Sanger Sequencing, PCR Fragment Analysis and Mutation Detection)



Mr. MOHD ARSHAD REZA

Intg. M.Sc. Biotech & Bioinformatics
Email: arshad@hsc.edu.kw
Phone: 24636596
Specialized in Cell Biology (Confocal microscopy, Flow Cytometry, Spectrophotometry and Fluorometry)

MAJOR INSTRUMENTS & TECHNOLOGIES

GENOMICS

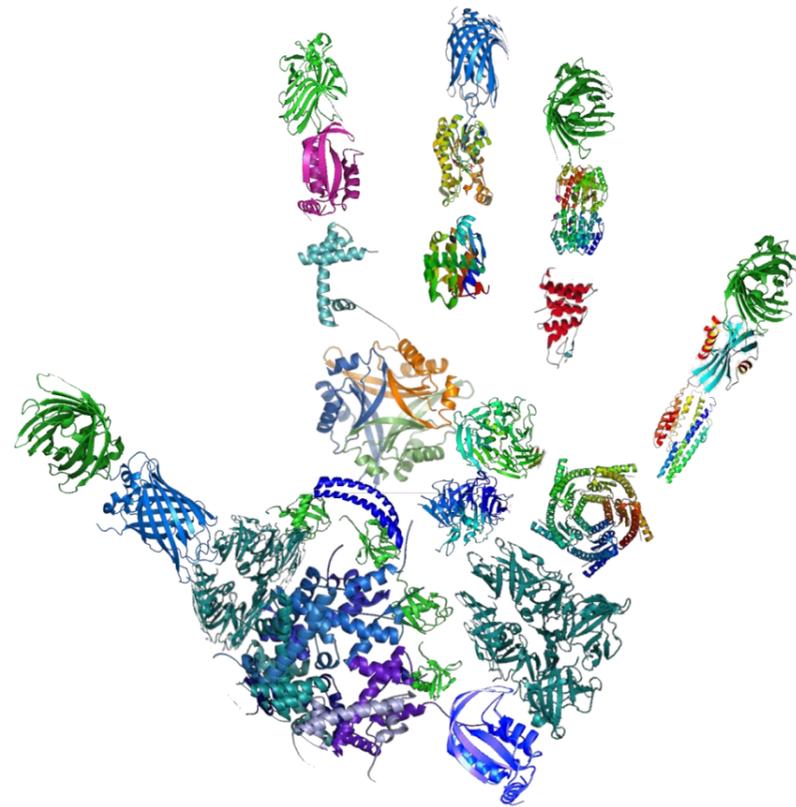
1. ABI 3400 DNA Synthesizer: Primer synthesis
2. WAVE 4500 System: DHPLC-high throughput mutation detection system
3. ABI 3130 XL Genetic Analyzer: DNA sequencing & Fragment analysis
4. CEQ™8000 Genetic Analysis System: DNA sequencing & Fragment analysis
5. Illumina MiSeq: Next Generation Sequencing

SAMPLE PREPARATION

1. Soniprep 150 plus: Sonicator
2. Omni THq: Homogenizer
3. QIAcube: DNA, RNA and protein extraction
4. Biorobot M48: High throughput nucleic acid extraction
5. Biorobot Universal: High throughput sample preparation
6. Autoclave
7. Ultra pure water system

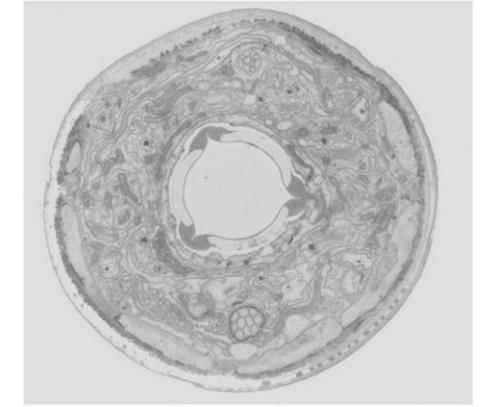
PROTEOMICS

1. ABI 4800 MALDI TOF/TOF Analyzer: Mass Spectrometry
2. Symphony Peptide Synthesizer: Peptide Synthesis
3. ProteomeLab™ PF 2D: Protein Fractionation
4. ProteomeLab™ PF 800: Protein Characterization
5. Fluoroskan: Fluorescence Reader
6. Multiskan: Spectrophotometer
7. Appliskan: Luminescence, fluorescence and absorbance reader
8. SDS-PAGE + Western Blotting System: Protein Analysis
9. BioTek Epoch: Low-volume (2 µl) spectrophotometer
10. ELISA Washer and Reader: Enzyme Immunoassays
11. Dark Room: Developing Films



CELL BIOLOGY: MICROSCOPY

1. LSM 510 Meta: Confocal Microscopy
2. LSM 700: Confocal Microscopy
3. Culture Cell Imaging System
4. In vitro Fertilization System
5. Cell Observer: Complete System for Live Cell Imaging
6. PALM Microbeam: Laser micro-dissection
7. Axio Imager: Fluorescence Microscopy
8. Optima L-100: Ultracentrifuge
9. Automated Karyotyping System: Multicolor FISH
10. Axiovert 40: Phase contrast microscope



CELL BIOLOGY: FLOW CYTOMETRY & TISSUE CULTURE

1. Cytomics FC 500: Flowcytometry
2. Vi-Cell Series: Cell Viability Analyzers
3. Gamma Cell 1000 Elite: Irradiation of cells
4. Tissue Culture Facility: Four Laminar Flow Hoods and Six CO2 incubators

OMICSRU/RCF UTILIZATION

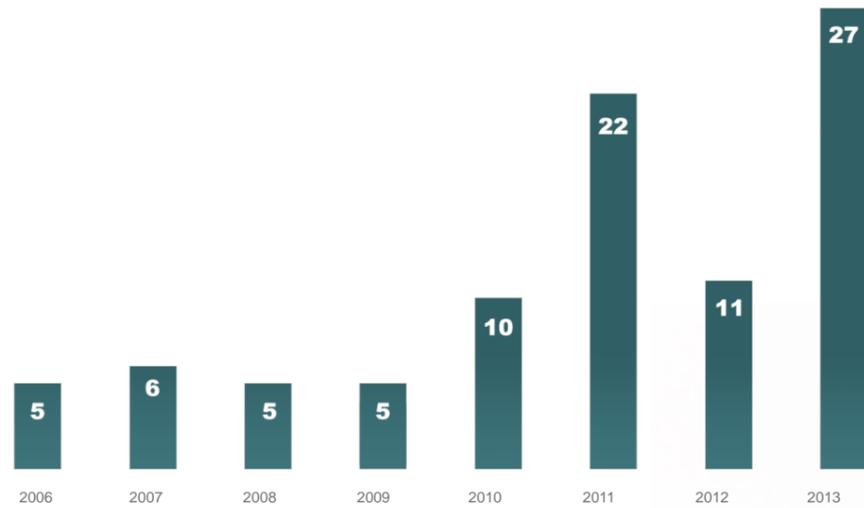
From April 1, 2013 to March 31, 2014

Projects	77
Samples	30,569
Researchers	60
MSc students	23
PhD students	12
Undergraduate students	13
Kuwait Board Residents	15

Faculty	Number of requests
Allied Health, HSC	101
Dentistry, HSC	114
Genetic Center, MOH	4
Medicine, HSC	1062
Pharmacy, HSC	199
Science, KU	7
Kuwait Board	1
KISR	14
Total	1,502

PUBLICATIONS

Since its establishment, RCF/OMICSRU has helped to publish 91 papers in scientific journals. A year-wise summary of the number of papers published is given below.



Full-length papers Published in 2013/14

1. Ahmad S, Dalwai A, Al-Nakib W. Frequency of enterovirus detection in blood samples of neonates admitted to hospital with sepsis-like illness in Kuwait. *Med Virol* 2013; 85: 1280-5. Q3, Impact Factor = 2.373
2. Al- Sabah S, Alasfar F, Al-Khaledi G, Dinesh R, Al- Sabah M, Abul H. Incretin response to a standard test meal in a rat model of sleeve gastrectomy with diet-induced obesity. *Obes Surg* 2013, DOI 10.1007/s11695-013-1056-2. Q1, IF = 3.102
3. Al-Awadhi R, Chehadeh W, Al-Jassar W, AL-Harmi J, Al-Saleh E, Kapila K. Viral load of human papilloma virus in women with normal and abnormal cervical cytology in Kuwait. *J Infect Dev Ctries* 2013; 7: 130-136. Q4, IF=0.996
4. Al-Awadhi R, Chehadeh W, Jaragh M, Al-Shaheen A, Sharma P, Kapila K. Distribution of human papillomavirus among women with abnormal cervical cytology in Kuwait. *Diagn Cytopathol.* 2013; 41:107-14. Q3, IF=1.487
5. Al-Awadhi R, Chehadeh W, Al-Jassar W, Al-Harmi J, Al-Saleh E, Kapila K. Phylogenetic analysis of partial L1 gene of 10 human papillomavirus types isolated most commonly from women with normal and abnormal cervical cytology in Kuwait. *Arch Virol* 2013; 158:1687-99. Q3, IF=2.030
6. Albert MJ, Mustafa AS, Islam A, Haridas S. Oral immunization with Cholera toxin provides protection against *Campylobacter jejuni* in an adult mouse intestinal colonization model. *mBio* 2013; 4:e00246-13. Q1, IF=5.621
7. Ali H, Bayatti N, Lindsay S, Dashti AA, Al-Mulla F. Directed differentiation of umbilical cord blood stem cells into cortical GABAergic neurons. *Acta Neurobiol Exp (Wars).* 2013; 73:250-9.

Q3, IF = 1.977

8. Al-Saeedi FJ, Mathew PM, Luqmani YA. Assessment of tracer ^{99m}Tc (V)-DMSA uptake as a measure of tumor cell proliferation in vitro. *PLoS ONE* 2013; e54361. Q1, IF=3.73

9. Bitar MS, Abdel-Halim SM, Al-Mulla F. Caveolin-1/PTRF upregulation constitutes a mechanism for mediating p53-induced cellular senescence: implications for evidence-based therapy of delayed wound healing in diabetes. *Am J Physiol Endocrinol Metab* 2013; 305 :E951-63. Q1, IF=4.514

10. Edan RA, Luqmani YA, Masocha W. COL-3. A chemically modified tetracycline inhibits lipopolysaccharide-induced microglia activation and cytokine expression in the brain. *PLoS One* 2013; 8:e57827. Q1, IF=3.73

11. El Farran CA, Sekar A, Balakrishnan A, Shanmugam S, Arumugam P, Gopalswamy J. Prevalence of biofilm-producing *Staphylococcus epidermidis* in the healthy skin of individuals in Tamil Nadu, India. *Ind J Med Microbiol* 2013; 31:19-23. Q4, IF=0.907

12. El Salhy M, Honkala S, Soderling E, Varghese A, Honkala E, Relationship between daily habits, *Streptococcus* mutants, and caries among schoolboys. *J Dentistry* 2013; 4:1. Q1, IF=3.2

13. El-Hashim AZ, Jaffal SM, Al-Rashidi FT, Luqmani YA, and Akhtar S. Nerve growth factor enhances cough via a central mechanism of action. *Pharmacol Res* 2013; 74:68-77. Q1, IF=4.346

14. Ezzeddine R, Al-Banaw A, Tovmasyan A, Craik JD, Batinic-Haberle I, Benov LT, Effect of molecular characteristics on cellular uptake, subcellular localization, and phototoxicity of Zn(II)N – alkylpyridylporphyrins. *J Biol Chem* 2013; 288:51. Q1, IF=4.641

PUBLICATIONS



15. Hanif SNM, Mustafa AS. TB DNA vaccines: review and advances. Vaccines and vaccine technologies. Omics Group eBooks.
16. Khajah MA, Almohri I, Mathew PM, Luqmani YA. Extracellular alkaline pH leads to increased metastatic potential of estrogen receptor silenced endocrine resistant breast cancer cells. *PLoS One* 2013; 8:e76327. Q1, IF=3.73
17. Kilarkaje N, Al-Bader M. Effects of antioxidants on drugs used against testicular cancer-induced alterations in metastasis-associated protein 1 signaling in the rat testis. *Toxicol Ind Health*. 2013; PMID: 24021429. Q3, IF=1.555
18. Kilarkaje N, Mousa AM, Al-Bader MM, Khan KM. Antioxidants enhance the recovery of three cycles of bleomycin, etoposide, and cisplatin-induced testicular dysfunction, pituitary-testicular axis, and fertility in rats. *Fertil Steril*. 2013; 100:1151-9. Q1, IF=4.17
19. Mouihate A, Al-Bader MD. Glucocorticoid-induced fetal brain growth restriction is associated with p73 gene activation. *J Neurosci Res* 2013; 91:95-104. Q2, IF=2.974
20. Mujaibel LM, Kilarkaje N. Mitogen-activated protein kinase signaling and its association with oxidative stress and apoptosis in lead-exposed hepatocytes. *Environ Toxicol*. 2013; doi: 10.1002/tox.21928. Q1, IF=2.708
21. Mustafa AS. Diagnostic and vaccine potentials of ESAT-6 family proteins encoded by *M. tuberculosis* genomic regions absent in *M. bovis* BCG. *Mycobac Dis* 2013; 3:2.
22. Mustafa AS. In silico analysis and experimental validation of *Mycobacterium tuberculosis* specific proteins and peptides of *Mycobacterium tuberculosis* for immunological diagnosis and vaccine development. *Med Prin Pract* 2013; 22:43. Q3, IF=0.963
23. Parvathy SS, Masocha W. Matrix metalloproteinase inhibitor COL-3 prevents the development of paclitaxel-induced hyperalgesia in mice. *Med Prin Pract* 2013; 22:35-41. Q3, IF=0.963
24. Shaban K, Amoudy HA, Mustafa AS. Cellular immune responses to recombinant *Mycobacterium bovis* BCG constructs expressing major antigens of region of difference 1 of *Mycobacterium tuberculosis*. *Clin Vaccine Immunol* 2013; 20:8 1230-7. Q2, IF=2.598
25. Sharma JN, Al-Shoumer KA, Matar KM, Al-Gharee HY, Madathil NV. Bradykinin-forming components in Kuwaiti patients with type 2 diabetes. *Int J Immunopathol Pharmacol*. 2013; 26:699-705.
26. Tovmasyan A, Reboucas JS, Benov L. Simple biological systems for assessing the activity of superoxide dismutase mimics. *Antioxid Redox Signal*. 2013. PMID: 23964890, Q1, IF=7.8
27. Tovmasyan A, Weitner T, Sheng H, Lu M M, Rajic Z, Warner DS, Spasojevic I, Reboucas JS, Benov L, Batinic-Haberle I. Differential coordination demands in Fe versus Mn water-soluble cationic metalloporphyrins translate into remarkably different aqueous redox chemistry and biology. *Inorganic Chemistry* 2013; 52:5677-5691. Q1, IF=4.593

Abstracts Published In 2013/14

1. Al Shimali HM, Rao MS, Renno WM, Smitha S. Neuron and astrocyte protection against lead toxicity by (-)- Epigallocatechin-3-gallate-(EGCG) in hippocampal primary cell culture. 18th Health Sciences Centre Poster Conference, 2013: 10.
2. Al-Sabah S, Al-Asfar F, Al-Khaledi GM, Dinesh R, Al-Saleh M, Abdul H. Incretin response to a meal in a rat model of sleeve gastrectomy with diet-induced obesity. 18th Health Sciences Centre Poster Conference, 2013: 139.
3. Babiker FA, Joseph S, Juggi JS, Prinzen FW. Gender differences and long – and short- term estrogen treatments: A union in origin and discrepancy in protection. 18th Health Sciences Centre Poster Conference, 2013: 153.
4. Dashti AA, Vali L, Jadaon MM, El-Shazly S and Al- Inizi S. The infiltration of OXA- 48 like carbapenemase producing *Klebsiella pneumoniae* in Kuwait. Society for General microbiology, Manchester, UK. March 2013.
5. Dashti AA, Vali L, Al Obaid K, Electrcwala Q, Al- Inizi S. First report on the insertion sequence ISAbA 19 and carbapenem resistance harbouring PER-1 *Acinetobacter baumannii* isolated from Kuwait. *Acinetobacter Conference*, Germany, 2013.
6. Dashti AA, Vali L, Jadaon MM. LA report on multi-resistant *Escherichia coli* O25b- type (ST) 131 B2 in Kuwait. Yokohama, Japan. June 2013.
7. El-Salhy M, Honkala S, Honkala E, Varghese A and Soderling E. Relationship between Daily habits Relationship between daily habits, *Streptococcus mutans*, and Caries. International Association of Dental Research. Aug 21-23, 2013, Bangkok, Thailand.
8. El-Salhy M, Honkala S, Honkala E, Varghese A and Soderling E. The Effect of 5 Weeks Xylitol Consumption on Oral microflora. 9th Iranian and 13th Kuwaiti Divisions of IADR Joint Congress. 11-13 Dec 2013. Tehran, Iran.
9. El-Salhy M, Varghese A, Honkala S, Soderling E, Honkala E. The Effects of 5 Weeks Xylitol Intervention on Salivary *mutans streptococci* (MS). 18th Health Sciences Centre Poster Conference, 2013: 43.
10. Hedaya OM, Rao MS, Renno WM, Smitha S. *Nigella sativa* seeds extract protects hippocampal neurons, enhances neurogenesis and increases astrocytes in kainic acid model of temporal lobe epilepsy. 18th Health Sciences Centre Poster Conference, 2013: 11.
11. Henkel AW, Al-Ali H, Redzic ZB. Fluoxetine Reverses Cell Hypermobility And increased Interleukin – 2 Expression in Dexamethasone Treated Astrocytes. Society for Neuroscience Meeting in San Diego, November 2013.
12. Henkel AW, Welzel O. Fluoxetine alters exocytosis in kinetically distinguished synaptic subtypes of hippocampal neurons. Biological Psychiatry Meeting, San Francisco, May 2013.
13. Honkala E, Elsalhy M, Soderling E, Varghese A and Honkala S. Association between ICDAS Scores in Primary and Permanent Teeth. World Congress on Preventive Dentistry. October 9 – 12: 2013.
14. Karched M, George S, Bhardwaj R, Philip P, Imbamani AR, Asikainen SE, Al-Khabbas AK. Real –Time PCR quantification of periodontal pathogens in diabetic Kuwaiti children. 9th Iranian and 13th Kuwaiti divisions of IADR meeting. Dec 11-13, 2013, Tehran, Iran.
15. Kilarkaje N, Mousa AM, Al-Bader MM, Khan KM. Effects of antioxidants on bleomycin, etoposide and cisplatin (BEP)-induced testicular dysfunction and Altered pituitary – gonadal axis in rats. 18th Health Sciences Centre Poster Conference, 2013: 13.
16. Mouihate A. Ovarian hormones rescue neurogenesis by dampening brain inflammation. 18th Health Sciences Centre Poster Conference, 2013: 94.
17. Mujaibel LM, Narayana K. Lead imparts Cytotoxic and Mitogenic Effects on Hepatocytes in a Dose and Time-Dependent manner in Rat Liver. 18th Health Sciences Centre Poster Conference, 2013: 14.
18. Mustafa AS Molecular techniques and bioinformatics identify next generation vaccine candidates against tuberculosis. 4th Kuwait international pharmacy Conference (KIPC). February 4-6, 2013.

PUBLICATIONS

19. Mustafa AS, Shaban F. Identification of delayed type hypersensitivity – inducing antigens encoded by Mycobacterium tuberculosis – specific genomic regions of differences. 18th Health Sciences Centre Poster Conference, 2013: 96.
20. Mustafa AS. Bioinformatics analyses of Mycobacterium tuberculosis specific genomic regions to identify immunodominant proteins and peptides. Experimental Biology 2013, Boston Convention & Exhibition Centre, April 20-24, 2013.
21. Mustafa AS. Chemically synthesized peptides for diagnosis and vaccine applications against tuberculosis. International Conference on Chemistry. March 2-3, 2013. Aligarh, India.
22. Mustafa AS. Genomics, bioinformatics and synthetic peptides identify major antigens and immunodominant Th1-cell epitopes encoded by Mycobacterium tuberculosis – specific genomic regions. NGS Translate Conference, May 28-30: 2013. Cambridge, USA.
23. Mustafa AS. Omics analyses identify genes, proteins and peptides of Mycobacterium tuberculosis useful for diagnosis and new vaccine. International Congress on Omics Studies. September 04-05, 2013, Orlando USA.
24. Mustafa AS. T- Helper 1, T- helper 2, pro inflammatory and anti-inflammatory cytokines in tuberculosis. Abstract in OMICS Group International Congress on Bacteriology & Infectious Diseases. November 20- 22, 2013, Baltimore, USA.
25. Turcani M, Ghadanfer E, Al- Bader M. Low dose Ouabain is not causing hypertension. 89th Physiological congress of Czech Physiological Society. Feb 5-7, 2013, Prague, Czech Republic.
26. Vali L, Dashti AA. Extended spectrum beta lactamase producing Acinetobacter baumannii in Kuwait. 124th International Conference on Epidemiology and Evolutionary genetics, Orlando Florida, USA. August 21-23, 2013.

MSc Theses Completed in 2013/14:

1. Hanan Alali

Title: Fluoxetine Reverses Cell Hypermobility and Increased Interleukin-2 Levels in Dexamethasone Challenged Astrocytes. Supervisor: Dr. Andreas W. Henkel
Co-supervisor: Prof. Zoran Redzic

2. Fatma Al Rashidi

Title: Investigations into the mechanisms by which nerve growth factor enhances the cough reflex
Supervisor: Prof Yunus Luqmani
Co-supervisor: Dr Ahmed El Hashim

3. Rawan Al Edan

Title: Studies on the effect of COL-3 on microglia activation and expression of cytokines in the mouse brain after inoculation with a bacterial endotoxin, lipopolysaccharide
Supervisor: Prof Yunus Luqmani
Co-supervisor: Dr Willias Masocha

4. Iman Al Mohric

Title: A study of the induced epithelial to mesenchymal transition in human breast cancer
Supervisor: Prof Yunus Luqmani

5. Hamad Ahmad Hassan

Title: Investigation of metalloporphyrins reducibility, redox-cycling and toxicity
Supervisor: L. Benov
Co-supervisor: J. Craik



PhD Dissertation completed in 2013/14:

1. Mariam Badran Al-Turab

The role of different human metapneumovirus (hMPV) genotypes in acute respiratory tract infection and diseases in Kuwait using advanced molecular techniques.
Supervisor: Prof. Widad Al-Nakib
Co-Supervisors: Prof Fahad Al-Mulla and Dr. Wassim Chehadeh

WORKSHOPS/SEMINARS CONDUCTED BY THE OMICSRU/RCF IN 2013/2014



Workshop/Seminar 1–April 15-17, 2013

Topic: Agilent Microarrays software GeneSpring training

Speaker: Dr. Markus Dueringer, GeneSpring Specialist, Agilent Technology, Germany

Topic Included:

1. Probe-or gene level expression analysis on all major microarray platforms including Agilent, Affymetrix and Illumina.
2. MicroRNA analysis and identification of gene targets using integrated Target Scan information.

Workshop/Seminar 2-May 5, 2013

Topic: Latest innovations with respect to sequencing services and other genomic tools /methods

Speaker: Dr Kevin Shami, Source Bioscience, UK

Topic Included:

1. Introduction to latest innovations with respect to se-

quencing services and other genomic tools /methods

Workshop/Seminar 3-May 6, 2013

Topic: Fast Track Diagnostics (FTD) kits-Multiplex

Real Time PCR assays.

Speaker: Ms. Ursula Nollen, Application Specialist – Fast Track Diagnostics, Mr. Brijesh Singh, Application Specialist - Fast Track Diagnostics, Consultant for India

Topic Included:

1. Introduction to FTD products
2. Theoretical introduction into PCR and FTD tests
3. Setup of FTD Bacterial Gastro Kit
4. Real Time analysis and rare pitfalls

Workshop/Seminar 4-May 13-14, 2013

Topic: Multilocus Sequence Typing (MLST)

Speaker: Mr. Mohammed Asadzadeh, PhD Scholar, Department Of Microbiology, Faculty of Medicine

Topic Included:

1. Introduction and application of Multilocus sequence typing (MLST)

Workshop/Seminar 5-August 28, 2013

Topic: Advanced Cell based Assays by Imaging Multimode Microplate System

Speaker: Dr. Steven Fisher, BioTek Instruments, USA

Topic Included:

1. Introduction to imaging multimode system.
2. Various applications with regard to the microplate systems.

Workshop/Seminar 6-Sept 16, 2013

Topic: Mass Spectrometry Based Solutions for Medical and Pharmaceutical Analysis

Speaker: Mr. Neeraj Gaur, Product Manager-Mass Spectrometry

Topic Included:

1. Introduction to a mass spectrometry and technology overview.
2. Metabolite identification and quantification along with impurity profiling.

Workshop/Seminar 7–Sept 25, 2013

Topic: Pyrosequencing and qPCR

Speaker: Dr. Sherif Habbak, Qiagen, Regional Application Specialist ME

Topic Included:

1. Introduction on pyrosequencing and qPCR.
2. Overview about sample to results solution for molecular biology application.

Workshop/Seminar 8-Sept 29, 2013

Topic: A New Level of Performance with LC Mass Spectrometry Systems.

Speaker: Dr. George Tsupras, Sr. Application Specialist, Agilent Technologies, Switzerland

Topic Included:

1. Overview of LC Mass Spectrometry systems and the latest technological advances.
2. Applications with regard to Forensic and toxicological analysis, therapeutic drug monitoring, metabolomics and clinical research.
3. Introduction on the various software's which included Dynamic MRM, Triggered MRM, Spectrum Mill software and Metlin Software.

Workshop/Seminar 9-October 21, 2013

Topic: Centrifugation Theory, Instruments and Applications

Speaker: Prof Abu Salim Mustafa, Director, Research Core Facility, Mr. Jiju Alex, Product Specialist, Technical Services Co., Kuwait

Topic Included:

1. Centrifugation theory and the various types of centrifuges.
2. Demonstration and training on the Lynx centrifuge present in RCF.

Workshop/Seminar 10-October 27, 2013

Topic: New Development in LC/MS/MS QTOF and Triple Quad Technology

Speaker: Dr. Tabisam Khan

Topic Included:

1. Latest developments and applications of LC/MS/MS QTOF.
2. Introduction to the Triple Quad Technology and their advantages.

WORKSHOPS/SEMINARS CONDUCTED BY THE OMICSRU/RCF IN 2013/2014

Workshop/Seminar 11-October28, 2013

Topic: Advancement in Qual/Quant analysis by Hybrid Tandem MS

Speaker: Dr. Alexander Paccou, ABSCIEX, Manager Support EMEA Clinical and Forensic

Topic Included:

1. Introduction to QTRAP technology for Qual/Quant analysis.
2. Biomarker identification and quantification with the Qtrap.
3. Quantification workflow by the MultiQuant software.
4. Importance of Cliquid Software and its applications.

Workshop/Seminar 12-Nov 11, 2013

Topic: Molecular analysis of disease via Next Generation Sequencing (NGS) and real time PCR arrays

Speaker: Dr. Raed Samara, PhD. PMP

Topic Included:

1. Advances in NGS and real time PCR array technologies.
2. Sample to insight solutions for the molecular analysis of diseases by examining mRNA, microRNA (miRNA), somatic mutations and copy number alterations.
3. Various applications of NGS with regard to the molecular analysis of cancer.

Workshop/Seminar 13-Nov 26, 2013

Topic: Confocal microscopy, the power of optical sectioning

Speaker: Mr. Aftab Ahmad, Product Specialist, Tectron, Kuwait

Topic Included:

1. Principle, scanning strategies and the various applications of confocal microscopy, LSM 700 with Zen Software.
2. Demonstration and training about the immunostaining protocol and thereby about the usage of the microscope.

Workshop/Seminar 14-Nov 28, 2013

Topic: Applications of IVIS System for In Vivo imaging studies.

Speaker: Dr. Ron Koop, Senior Technical Application Specialist, In Vivo Imaging at Perkin Elmer

Workshop Topics Included:

1. Introduction to the principles and applications of the IVIS imaging system.

Workshop/Seminar 15-Dec 2, 2013

Topic: Orbitrap Technology

Speaker: Dr. Hermann Katzlinger

Topic Included:

1. Introduction to the principles and applications Mass spectrometry.
2. Use of MALDI TOF TOF used for peptide identification.
3. Recent advances and applications Orbitrap Technology.

Workshop/Seminar 16-Feb 19, 2014

Topic: Principles and Operations of QIACube

Speaker: Mr. Suhas Shastri, Support Engineer, Tectron, Kuwait

Topic Included:

1. Principle, operations and various applications about the QIACube.
2. Demonstration and training about the operation of the QIACube.

Workshop/Seminar 17-March 19, 2014

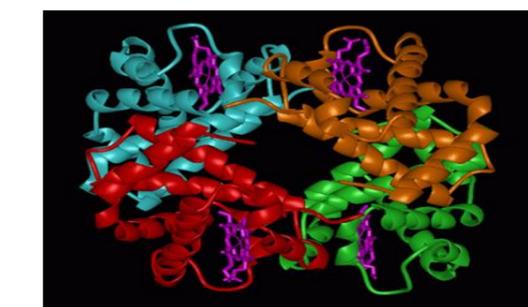
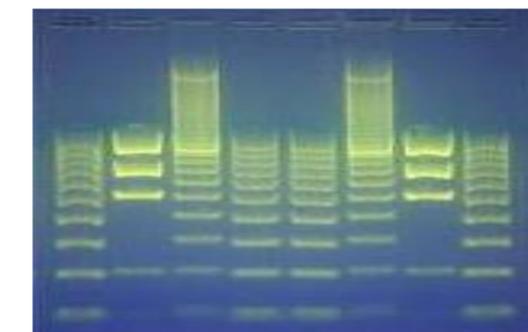
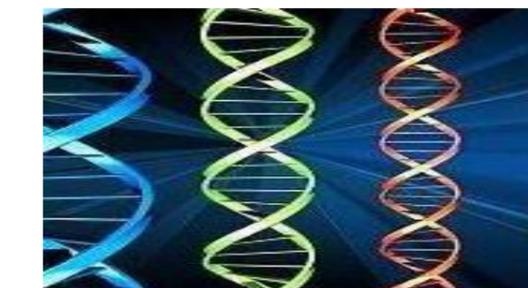
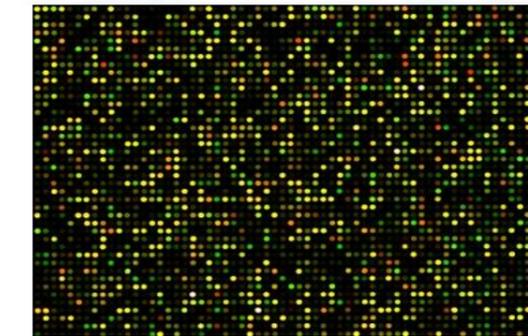
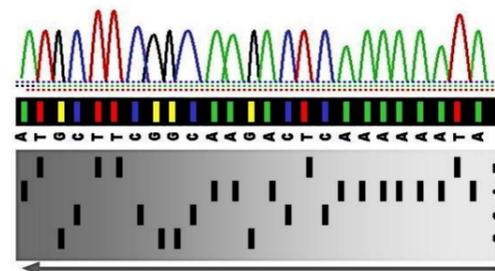
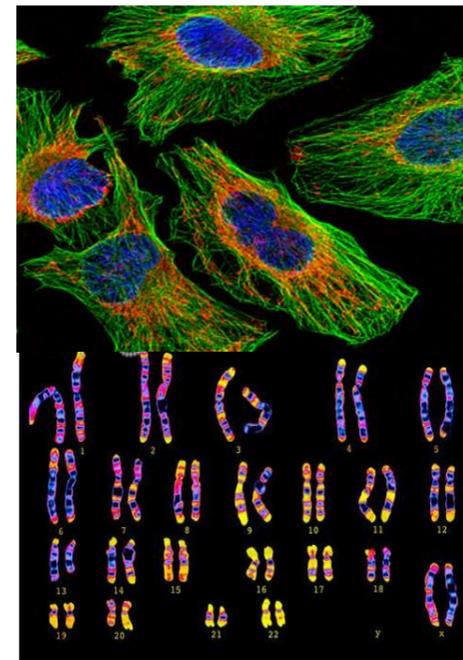
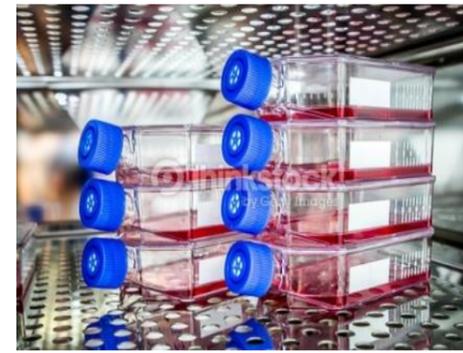
Topic: Mermade-12 Column DNA Synthesizer

Speaker: Mr. Ruman Haque, Support Engineer,

Al-Omir International General Trading Company, Kuwait

Topic Included:

1. Principles and applications of the Mermade-12 Column DNA Synthesizer, which included the theoretical aspects of DNA synthesis, hardware and software of the equipment.
2. Demonstration and training about the operation of the equipment.



WHAT'S NEW

This new Symphony® X peptide synthesizer is a fully automated peptide synthesizer which can generate peptides in an easy to use, high-throughput format, while providing the user the ultimate in flexibility and efficiency. It features 12 independent reaction vessel fluid paths capable of carrying up to 24 reaction vessels, 8 solvent positions and 40 amino acid positions. It is designed for users ranging from novice to expert peptide chemists and features an easy setup and simple software.



The QIAcube is a robotic workstation for automated purification of DNA, RNA, or proteins using QIAGEN spin-column kits. Up to 12 samples can be processed per run.

QIAcube offers the following advantages:

- Elimination of manual processing steps
- Purification of DNA, RNA, or proteins
- More free time with affordable automated processing.
- Standardized results and increased productivity

The applications of QIAcube include:

- Extraction and purification of total DNA
- Extraction and purification of total RNA
- Extraction and purification Viral nucleic acids
- Extraction and purification of genomic DNA from blood sample
- Purification of Proteins
- Purification of PCR products

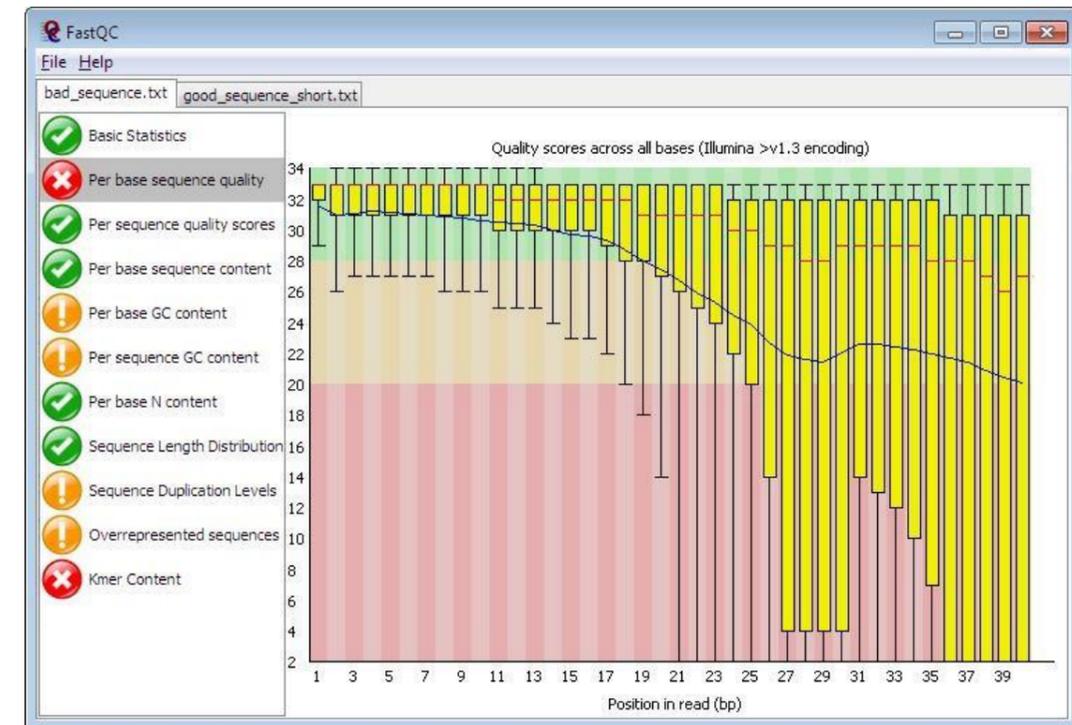


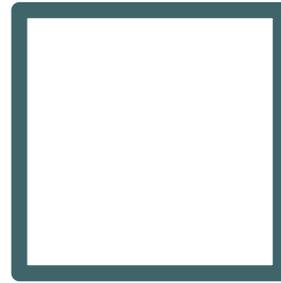
The MerMade-12 Oligonucleotide synthesizer is designed for the Synthesis of Single Stranded Oligonucleotides, e.g. Primers for PCR in a column format using standard or modified chemistries. The machine comes with a 12 column configuration and is capable of making a combination of standard, degenerate and modified oligos in the same run with scales varying from 50 nmole to 200 umole. A typical run time is 2.5 hours for 12 columns of 20 mers.



BIOINFORMATICS WORKSTATION FOR NGS DATA ANALYSIS

The analysis of NGS data has always been challenging particularly given the short read lengths (34-250bp) and massive amount of data generated. OMICS Research Unit/ RCF has now acquired a BioLinux OS software for the downstream analysis of DNA sequence data generated by using Next Generation sequencers.





ADVANCING RESEARCH IN THE HEALTH SCIENCES

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